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# MTX 15VRS

## Firmware and Software

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This documentation informs of corrections and supplements in the IndraMotion MTX software and firmware.

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# 1 Important information

## 1.1 Information about our products

Current release notes can be found on the contry-specific web pages of https://www.boschrexroth.com in the "Downloads" section, if you enter "ReleaseNotes_IndraWorks_MTX" as search term.

☞ The "Downloads" section is not available on the international page, but only on the country-specific web pages.

## 1.2 IT security

Please comply with the recommendations and specifications regarding IT security valid that apply to this device.

For more details refer to the following documentation.

“Security Guideline Electric Drives and Controls”,

DOK-IWORKS-SECURITY***-PRRS-EN-P ( R911342562)

For current information about IT security as well as security advisories, refer to:

- https://www.boschrexroth.com/en/dc/product-security/
- https://psirt.bosch.com/security-advisories/

## 1.3 SafeLogic safety control

All IndraWorks installations that do not contain the "SAFELOGIC" ID in the product description or the type code do not provide any SafeLogic safety control support. These versions are not released for SafeLogic.

- IndraWorks projects containing SafeLogic controls must not be opened with these IndraWorks versions
- SafeLogic controls must not be edited with these IndraWorks versions

Exclusively use IndraWorks installations explicitly released for the SafeLogic safety control to open and edit IndraWorks projects with SafeLogic controls.

These versions are identified by the ID "SAFELOGIC" contained in the product description or the type code.

The actual versions with SafeLogic release for version 15:

- IndraWorks ML SafeLogic 15V24
  (Type code: SWA-IWORKS-ML*-15VRS-D0-DVD**-SAFELOGIC)
- IndraWorks MTX SafeLogic 15V24
  (Type code: SWA-IWORKS-MTX-15VRS-D0-DVD**-SAFELOGIC)

## 1.4 Upgrading the CMLx5 control to the XM42 control

### 1.4.1 Differences between the CMLx5 control to the XM42 control

There are fundamental differences between the XM42 control to the CMLx5 control:

- No Profibus on the control, only available via extension module
- No Inline I/Os
- No ready contact

## 1.4.2 Requirements for conversion

1. An executable IndraWorks suite installation, including support for XM42 controls is available (from version 15V02). The existing project can be loaded and is available as archive. In the project, a control data backup (TAR file) is available.
2. An executable IndraWorks suite installation, including support for CMLx controls is available. In the latest version 14V22 patch x , the project to be converted can be loaded and executed.

## 1.4.3 Analysis of the available hardware

The used hardware components have to be taken into consideration in the project. Part of the connected devices has to be replaced by other hardware components.

There are different solutions:

- An Inline module can be replaced by a corresponding S20 module. Optionally, additional cams can be used on an existing Profibus bus coupler, Profinet bus coupler or Sercos bus coupler.
- If "fast action" inputs are used, an S20 module is required.
- If necessary, the machine can be operated using machine control keys at the multitouch HMI device. A (mechanical) IndraControl VAM machine control panel is not necessarily required for this purpose. For more information or support, refer to the basic MTX control project.

## 1.4.4 General mode of operation

1. Start the 14V22 patch x version and load the project to be converted.
2. Convert the project to the current version 14 (control and operating devices).
3. Create a project archive.

Take into consideration that all optional components are also archived when creating the archive!

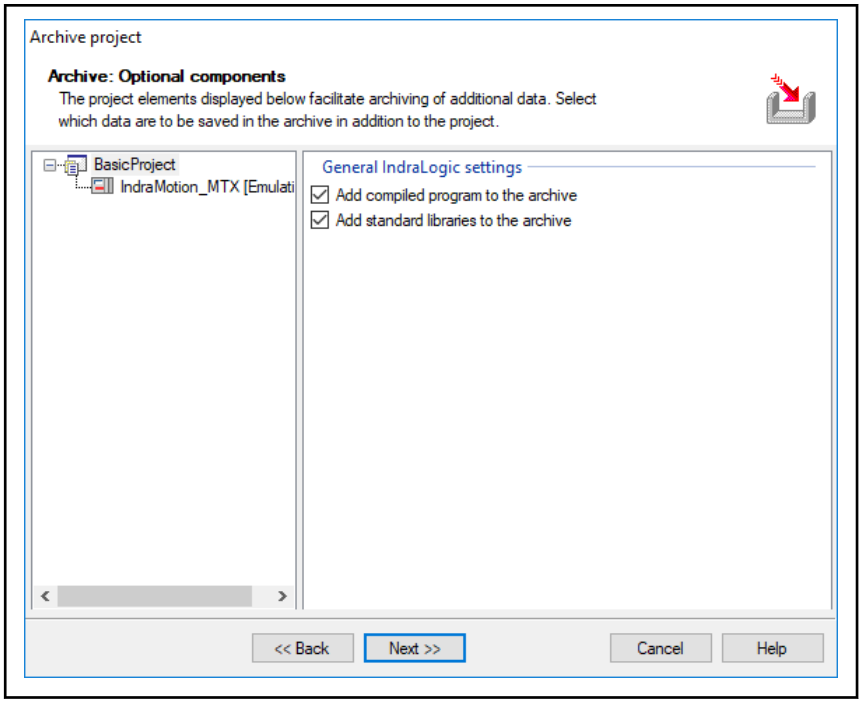


*Fig. 1-1: Project archiving*

4. Select the control node and export the complete node

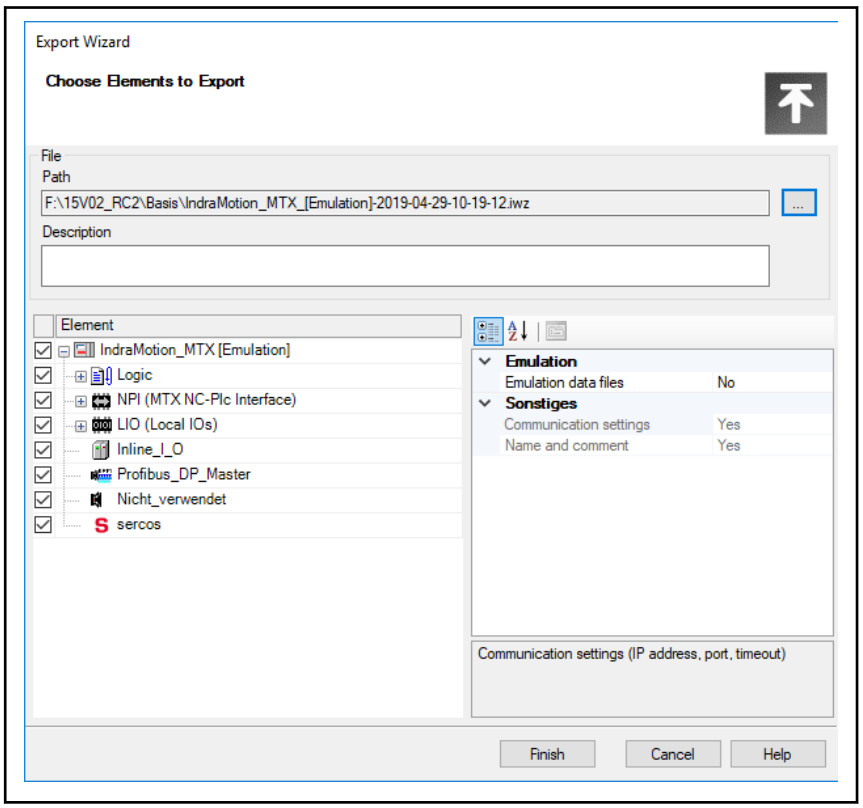


*Fig. 1-2: Exporting the control node*

5. Save the PLC program name or any information regarding the PLC address, module identifier, etc. The information is required in a later step.
6. Start the new IndraWorks suite 15Vxx

7. Open the project or restore the IndraWorks project archive using the function **Project ▸ Restore**.

   The following dialog is displayed.

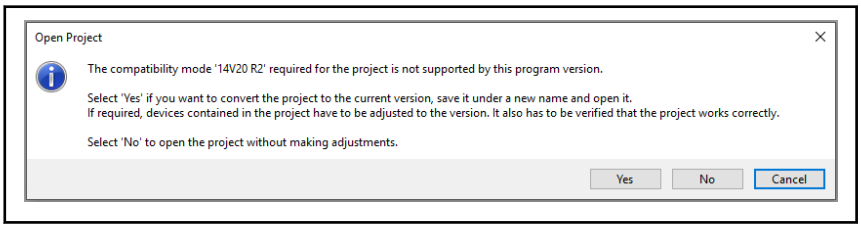


*Fig. 1-3: "Open project" dialog*

   Confirm the dialog with "Yes" and execute the following steps:

   1. Enter a new IndraWorks project name
   2. Set the PLC compiler version

   When confirming the dialog with "No", execute the following steps:

   1. Manually set the IndraWorks compatibility mode to the latest version
   2. Manually set the PLC compiler mode

8. Add an additional XM42 control to the existing project.

   There is only one XM42 control. The control type (Standard, Performance or Advanced) is specified by internal limits in the XM42 control hardware.

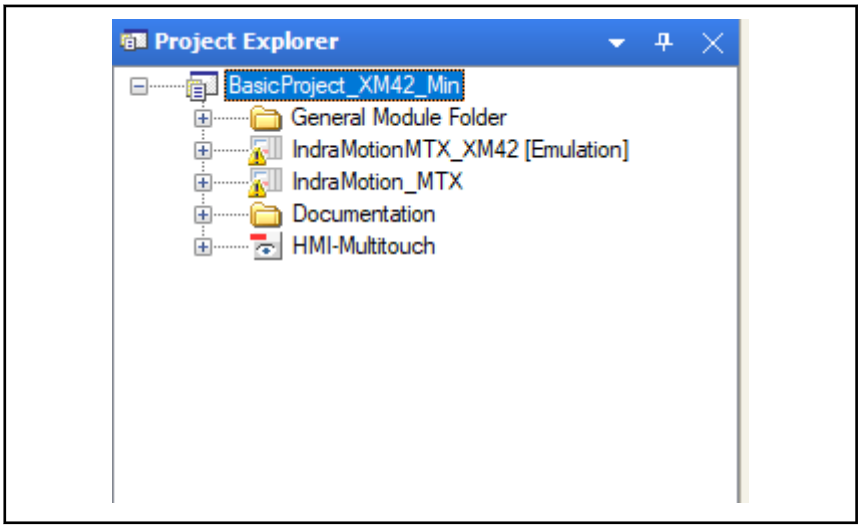


*Fig. 1-4: Project Explorer after inserting the new XM42 control*

   Additionally, there is an XM42 control in the project.

9. Check the configuration settings of the XM42 control

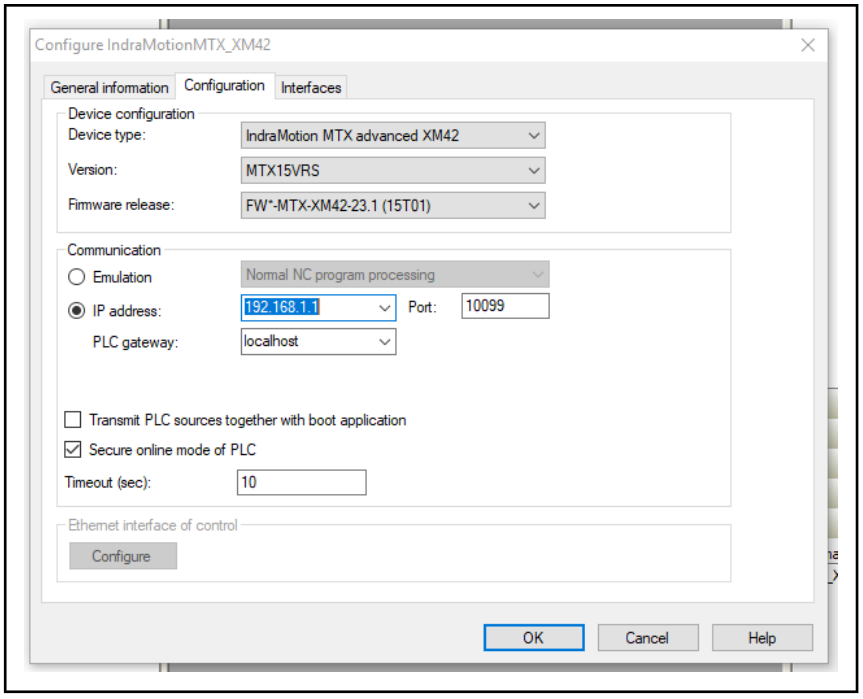


*Fig. 1-5: XM42 control dialog properties*

The latest setting should be entered for version and firmware release.

Enter the XM42 control address as IP address (default address 192.168.1.1).

Close the dialog.

10. Execute a connection test to the control

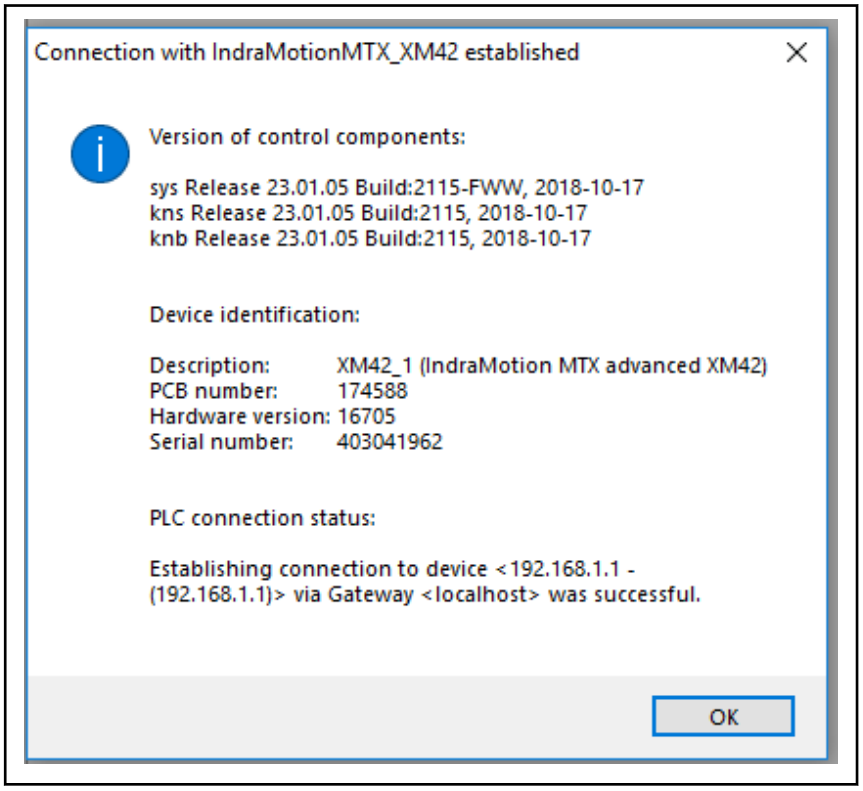


*Fig. 1-6: XM42 connection test*

Reasons for connection test failure:

- The IP address of the control is incorrect. Change the IP address in the settings or if you do not know the IP address, reset the IP address to default (see MTX Commissioning 15VRS)
- The IP address of your network interface in the PC is incorrect. If a CML control is connected to the interface, the IP address of the interface was 192.168.142.250. As the XM42 control has a different IP address, change the interface (e.g. to 192.168.1.200)

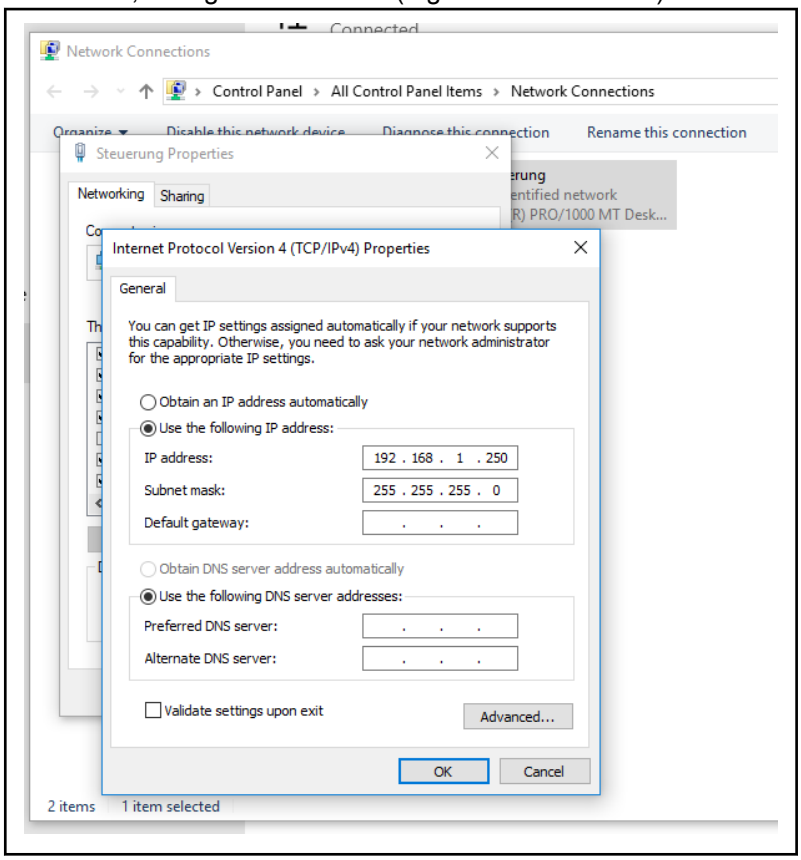


*Fig. 1-7: TCP/IP4 network settings of the PC*

11. The easiest way to change a CML control to a XM42 control is by using the export function and the import function in the Project Explorer. In the next steps, the use of Profibus or Inline I/Os is explained.
12. Check the PLC program name and if required, adjust it (also see step 5)
13. Select the control node of the XM42 control. Import the previously exported CML control

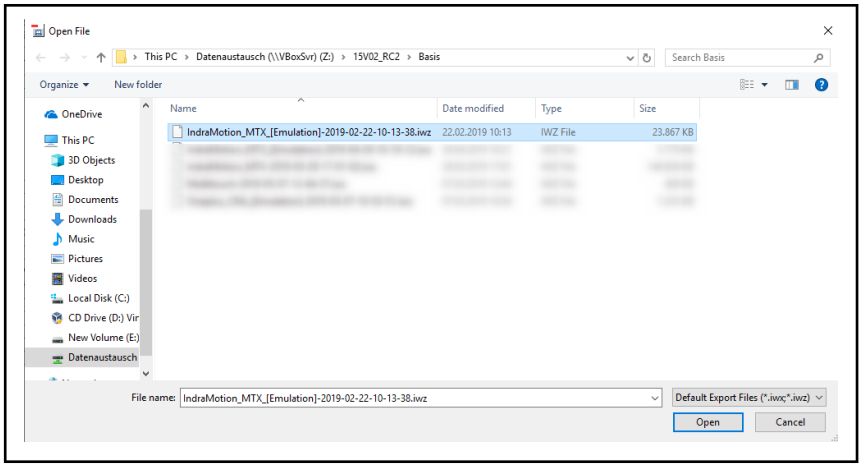


*Fig. 1-8: Import of control data*

Not all elements can be imported (e.g. Profibus, Inline I/O).

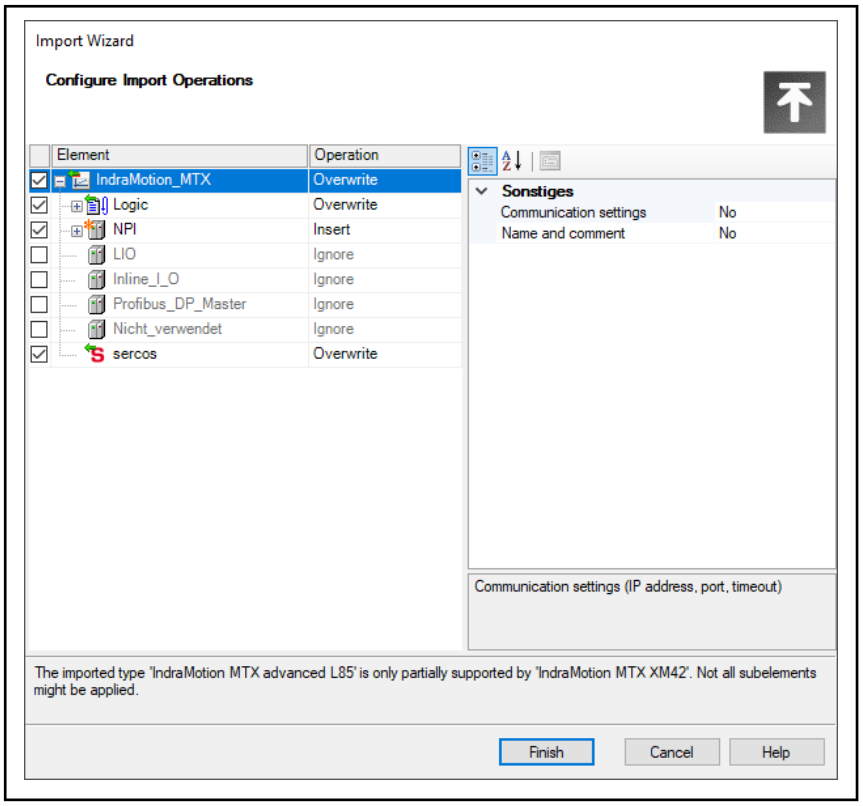


*Fig. 1-9: Import wizard*

14. If a Profibus module is used in the project, add a Profibus module (XFE01.1FB-10) to the project (Profibus master).

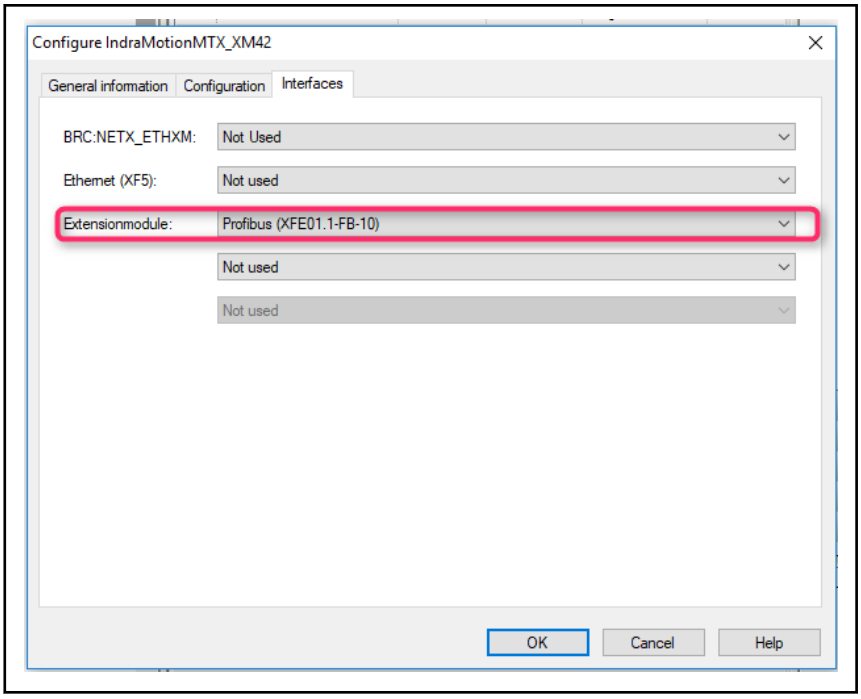


*Fig. 1-10: Add an XM42 Profibus interface*

Subsequently set the "Profibus DP master XM" in the Profibus module in the Project Explorer.

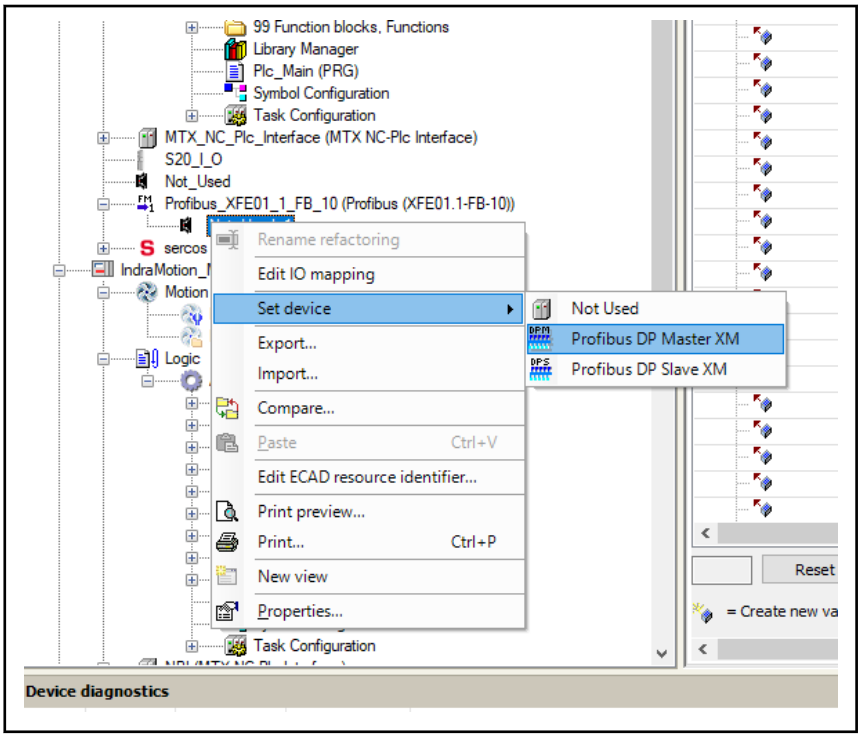


*Fig. 1-11: Set the Profibus master*

Subsequently, import the exported file from the CML project via **XM42 ▸ Profibus DP master XM** again.

The import reports an error.

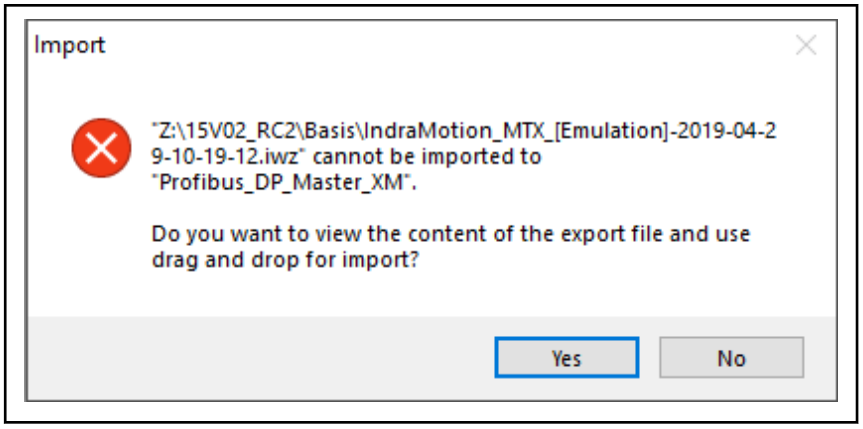


*Fig. 1-12: "Import" dialog*

Select the "Yes" button to start the import by using the "Drag and Drop" function.

15. Select the Profibus node in the export data view and copy the node to the Profibus_DB_Master node in the XM42 control. Subsequently, all Profibus devices should be available.

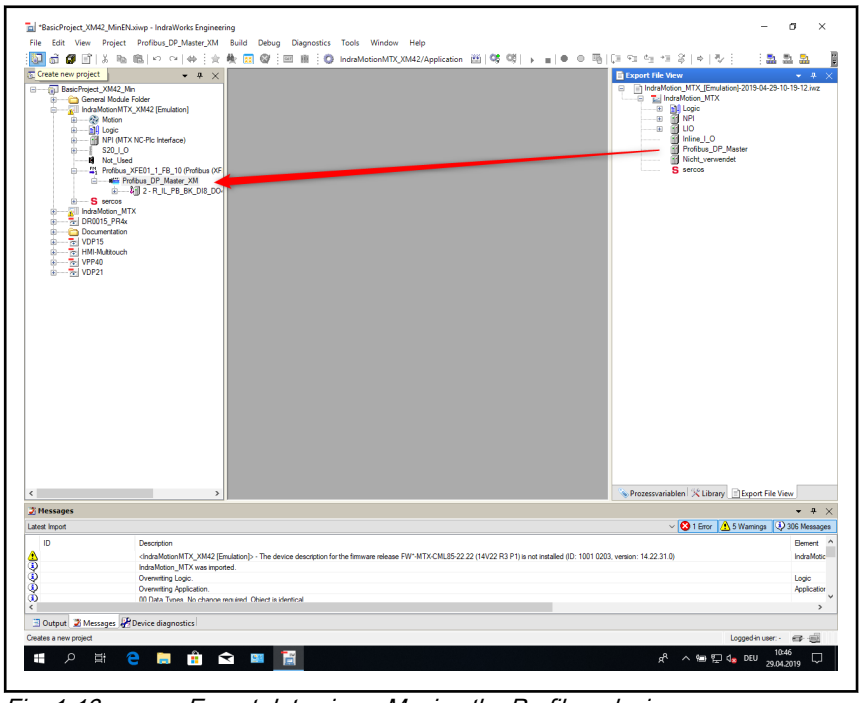

*Fig. 1-13: Export data view - Moving the Profibus devices*

16. If Profinet devices are available in the project, first select the Profinet node and subsequently copy the Profinet elements from the export data view

17. If local I/Os are used in the project, the only option is to replace these local I/Os by another hardware module.

    Options:

    - A Profibus bus coupler with the relevant modules can be used
    - An S20 I/O module can be used
    - A Profinet bus coupler with the relevant modules can be used

    The data within the modules have to be entered.

    Suggestion for Profibus local I/Os:

- R-IL PB DI8 DO4 - Profibus bus coupler
- R-IB IL 24 DI 8 - 8 digital inputs
- R-IB IL 24 DO 8 - 8 digital outputs

Suggestion for S20 local I/Os:

- S20 DIDO-8

Advantage of the Profibus bus coupler: the available Inline I/Os can be used as cams on the Profibus coupler. If no Profibus has previously been used in the project, S20 I/O modules can be used. These modules can be directly connected to the XM42 control.

☞ If FastAction I/Os or FlyCut I/Os are used, this can only be realized with S20 I/O modules.

☞ FastAction I/Os can only be used byte-by-byte. In the CML control, bit-by-bit use was still possible!

18. Check the I/O modules in the XM42 control

    Permanently entered I/O addresses also have to be entered in the XM42 control.

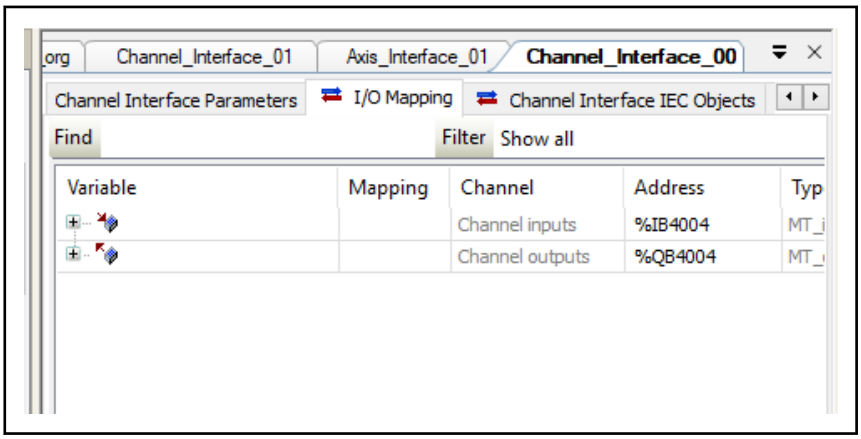


*Fig. 1-14: Check the I/O addresses*

☞ Set the addresses of the individual components to the same address as in the CML project. Due to the position change in the project, address conflicts can occur!

19. Set the active PLC application

    The CMLx control application is set as active control in your project. This application has been transmitted during a PLC download. The XM42 application has to be set as active application.

    Select the node **XM42 ▸ Logic ▸ Application**. Right-click to open the popup menu. Select "Set active application".

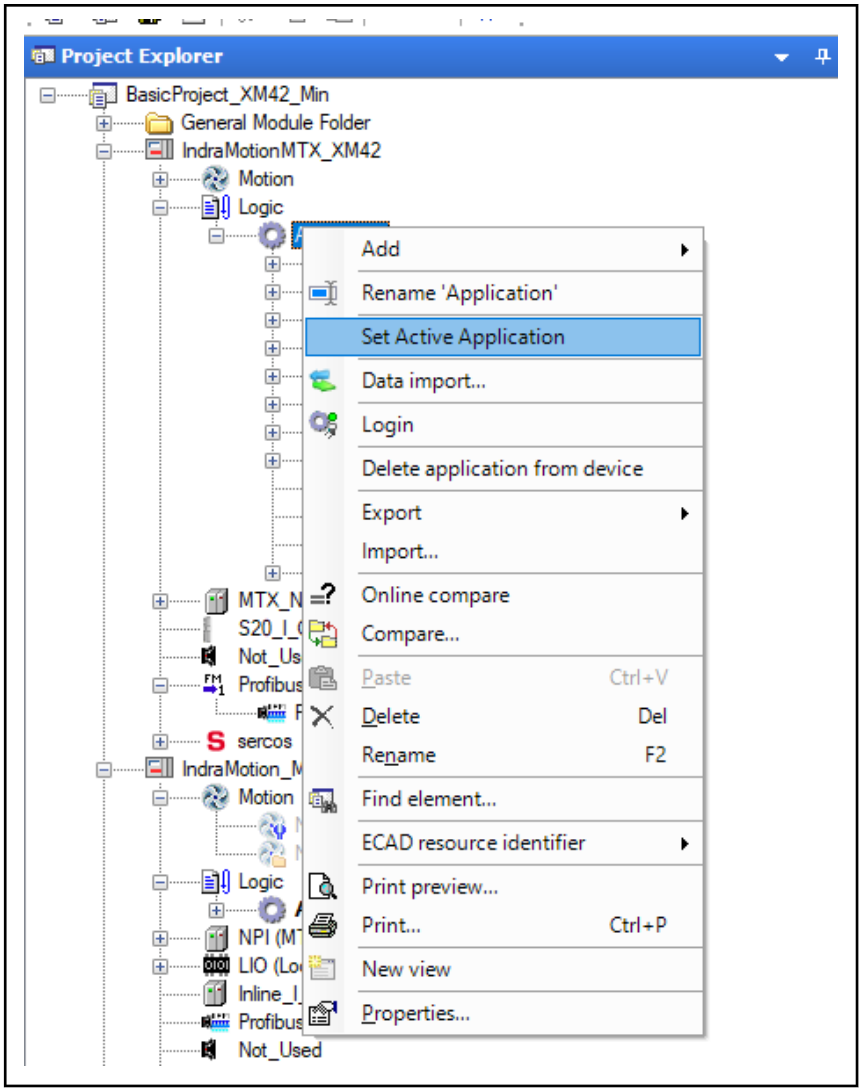


*Fig. 1-15: Set the active PLC application*

20. Transmit NC data

    Switch the XM42 control online. Subsequently, transmit the last saved TAR file of the CML control to the XM42 control via the "Restore" function. The TAR file can be found in the node of the XM42 control. The TAR archives are stored here during the import.

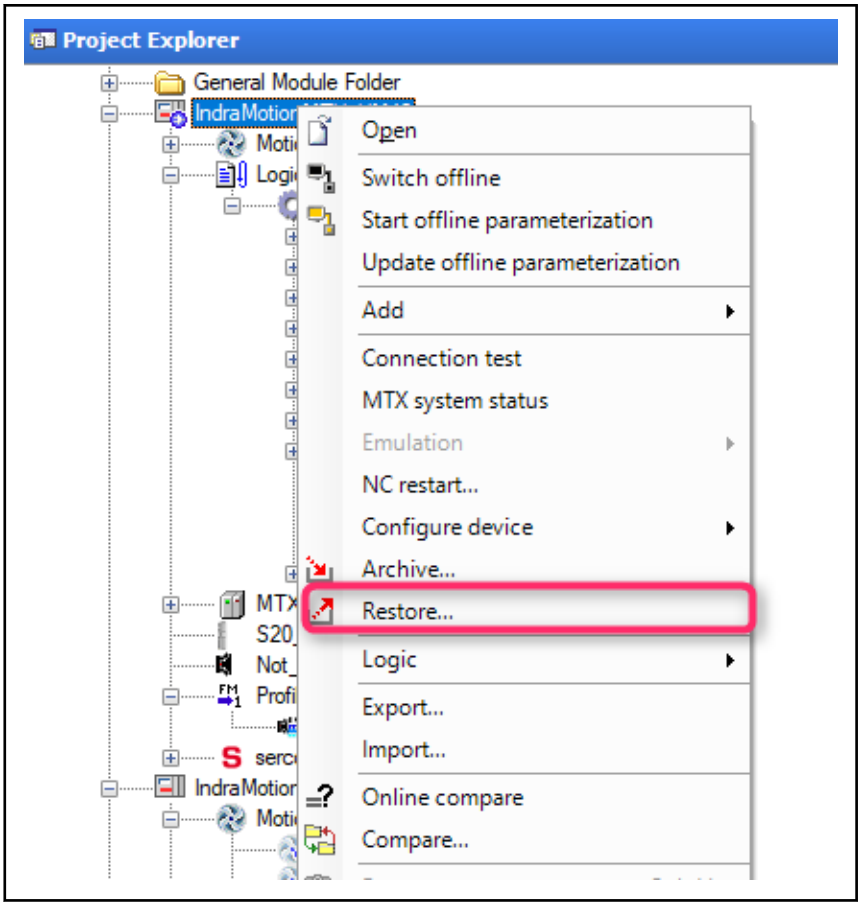


*Fig. 1-16: Restoring the NC data*

The NC data is now contained in the control.

21. Transmitting the PLC project

    If all I/Os have been applied to the project, the PLC program can be compiled and transmitted to the XM42 control. Subsequently, start the PLC program.

    Now, the PLC data is active.

---

☞ Occasionally, error messages are reported during the PLC download.
Possible causes:

- Channel or axes names have not been applied correctly
- User libraries are outdated
- PLC application name has been changed
- Different objects with the same name are defined in different libraries
- etc.

---

☞ Check the PLC library versions and if required, update them to a new version.

---

☞ When updating an existing PLC project to a new IndraWorks software version, translation errors may occur in the PLC program because new objects are defined in newer PLC libraries whose designation is already used in other, older PLC libraries.
That means: There are objects with the same name which can be defined differently. Their use by name in the PLC program can then result in compilation errors as an incorrect object may be accessed.
In this case, using the library's namespace provides the necessary remedy.
For a unique access, add the namespace in front of the function block name:
<namespace>.<variable name>
Specific example:

- In version MTX 14VRS, the "Timezone" structure is contained in the PLC library RIL_Utilities.
- In the MTX 15VRS version, there is an additional "Timezone" structure in the Util PLC library.
- Although identical in name, the two structures are defined differently.
- When used simply by name in the PLC program, it is not clear which of the two structures is used. This can result in access or compilation errors.
- Remedy: Insert the namespace of the library before the name of the structure.
  – Original program line:
    `Timezone: IL_TIMEZONE := Timezone.CEST;`
  – Corrected program line:
    `Timezone: IL_TIMEZONE := RIL_Utilities.Timezone.CEST;`

22. Adjusting the visualization device

    Open the "Properties" dialog of the used visualization device. Update the device version to the latest available version (e.g. 15V02).

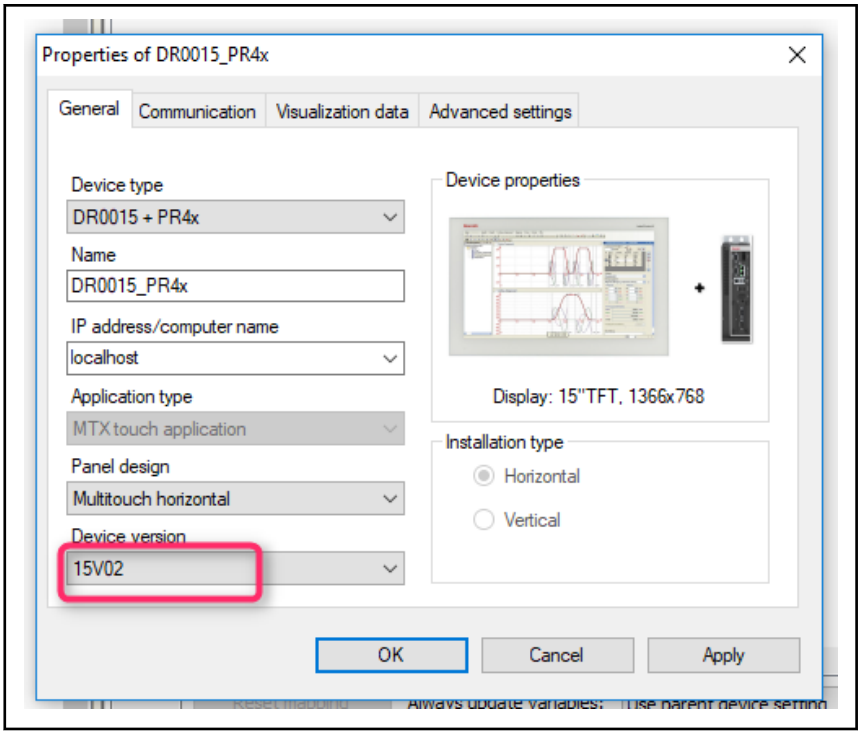


*Fig. 1-17: Update the visualization device*

Change to the "Communication" tab. Change the CMLx control to your XM42 control in the "Control" field. With other fields, proceed identically and select the relevant variables from your XM42 PLC program.

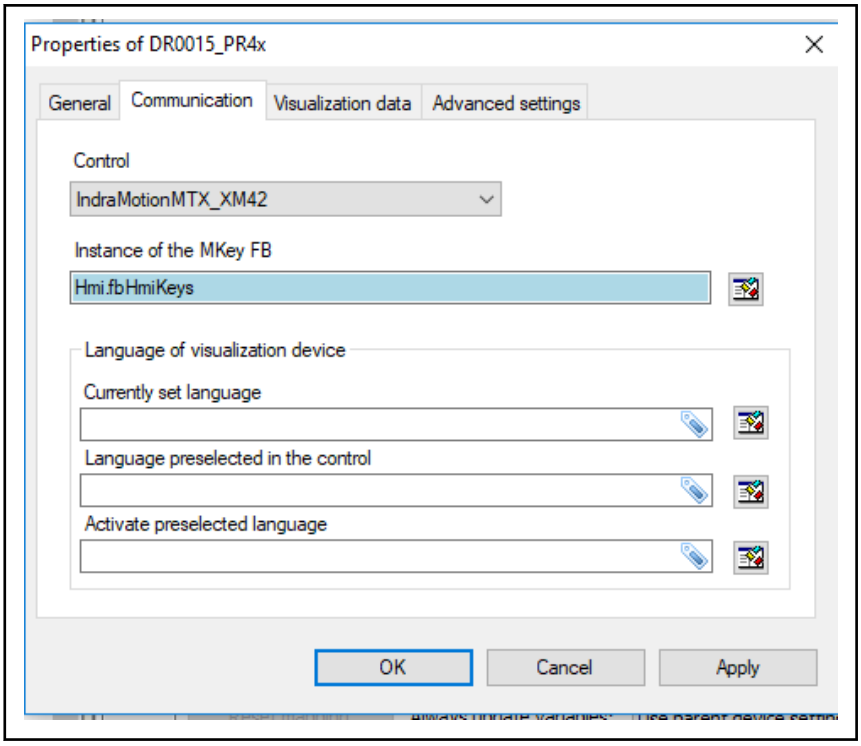


*Fig. 1-18: Adjust the communication settings*

Close the dialog.

Validate the visualization by using a right-mouse click on the hardware and the menu entry **Validate**.

Transmit and enable the visualization data.

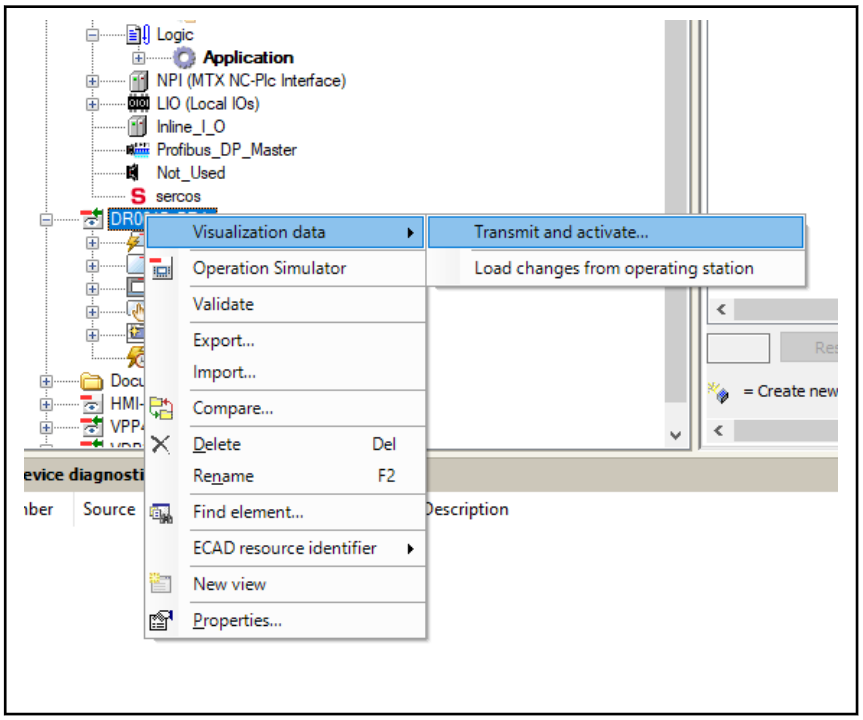


*Fig. 1-19: Transmit the visualization data*

23. Delete the old CML control node
24. Start the Operation desktop

### 1.4.5 Ready contact

As the controls of the XM family are not equipped with a ready contact, an available wiring has to bridge the contact.

## 1.5 Migrating IndraDrive to ctrlX DRIVE

### 1.5.1 Introduction

The new compact modular drive system ctrlX DRIVE from Bosch Rexroth is the successor to the previous IndraDrive drive system.

From version MTX 15V10, ctrlX DRIVE drives (AXS-V-0206) can be operated on the Sercos ring of an IndraMotion MTX.

As of version MTX 15V16, the commissioning of ctrlX DRIVE drives (AXS-V-0308) is also supported in IndraWorks Engineering.

### 1.5.2 Associated IndraWorks MTX software and ctrlX DRIVE firmware versions

New ctrlX DRIVE firmware versions support new drive functions. New, compatible commissioning software is usually also required to configure and commission these new drive functions.

There are two different commissioning tools for ctrlX DRIVE:

- IndraWorks Engineering
- ctrlX DRIVE Engineering

"IndraWorks Engineering" is a licensed component of the IndraWorks MTX software. Different IndraWorks MTX software versions support different ctrlX

DRIVE firmware versions. In chapter 4 "Overview of MTX 15VRS software/ firmware versions" on page 59 you find a list of the associated IndraWorks MTX software versions and ctrlX DRIVE firmware versions.

As the release dates for new releases and versions of ctrlX DRIVE and IndraWorks MTX differ, there may not yet be a suitable IndraWorks engineering for the "latest" ctrlX DRIVE firmware version. In such a case, the relevant "ctrlX DRIVE Engineering" has to be used instead.

The "ctrlX DRIVE Engineering" app is available in the ctrlX OS Store of the ctrlX AUTOMATION portal, see https://community.boschrexroth.com/home.

### 1.5.3 Required machine parameter adjustments for operating ctrlX DRIVE drives

The basic configuration of the NC also includes the definition of the drive types used. The machine parameter "Drive type" (DrType) is used for this purpose.

From version MTX 15V10, ctrlX DRIVE drives can be operated on the IndraMotion MTX machine tool control system. The value 2 (for IndraDrive, HNC100-3X (HydraulicDrive)) has to be set in the machine parameter "Drive type".

From version MTX 15V22, the value 7 (for ctrlX DRIVE) has to be set in the machine parameter "Drive type".

| MTX version | Machine parameter "Drive type" (DrType) setting for operating ctrlX DRIVE |
|---|---|
| MTX 15V10 ... MTX 15V20 | 2 IndraDrive, HNC100-3X (HydraulicDrive) |
| MTX 15V22 and newer | 7 ctrlX DRIVE |

### 1.5.4 Known functional changes and functional limitations of the ctrlX DRIVE compared to the IndraDrive

#### Parameter block switching

IndraDrive drives are equipped with switchable parameter blocks. Switching can also take place while the drive is in operation.

The parameter block switching function is available for ctrlX DRIVE drives from firmware version AXS-V-0504. However, ctrlX DRIVE still has some limitations compared to IndraDrive.

These restrictions are:

- No switching of the load gear parameters
- No switching of the winding parameters

For this reason, ctrlX DRIVE drives cannot yet be used for the following applications:

- Combined spindle-turret axis
- Thread cutting in "demanding" applications with high accuracy
- Spindle/C-axis operation in "demanding" applications with high accuracy

#### IndraMotion MLD (drive-integrated PLC)

The drive-integrated PLC is not available for ctrlX DRIVE drives.

#### CIP Safety on Sercos (CSoS)

Up to and including IndraWorks MTX 15V22 Patch1 and ctrlX DRIVE AXS-V-05VRS, CIP Safety on Sercos (CSoS) is not supported for ctrlX

DRIVE. Therefore, the safety functions of a ctrlX DRIVE cannot be controlled via Sercos with these versions.

A safe connection via CIP Safety on Sercos (CSoS) can only be configured and used for ctrlX DRIVE drives from IndraWorks MTX 15V24 and ctrlX DRIVE AXS-V-0610. The safe connection can be used to implement safety functions for ctrlX DRIVE drives in a safety PLC (SafeLogic or SafeLogic compact).

### Drive double-axis modules

IndraDrive double axes and ctrlX DRIVE double axes differ in terms of their representation as devices in the Sercos ring.

The IndraDrive double-axis has one master and one slave axis. Both axes have the same Sercos IP address. The two axes are differentiated by the "SlaveIndex": 0 for the master and 1 for the slave.

With the ctrlX DRIVE double axis, the two axes the Sercos IP addresses must not be identical. The "SlaveIndex" is 0 for both axes.

### Operating the XVR and XVE power supply units as Sercos I/O device

The XVR (regenerative) and XVE (feed-in) power supply units from the ctrlX DRIVE portfolio can be operated as Sercos I/O device in the Sercos ring. In contrast to the drives, however, Sercos I/O devices are not automatically included in the Sercos ring, but have to be explicitly retrieved from the device library (periphery - Sercos) in IndraWorks Engineering and inserted below the Sercos node.

Double-click on the "PowerSupply" entry below the device in the project tree to open the "PowerSupply" configuration dialog.

Two drive parameters have to be added to the "General inputs and outputs" tab:

- At the inputs: S-0-0135 Drive status word
- At the outputs: S-0-0134 Master control word

# 1.6 Functional restrictions

## 1.6.1 Functional restrictions when retracing on contour (Retrace) during spline interpolation

In connection with a spline interpolation, the function "retracing on contour" (Retrace) does not work properly and must therefore not be used.

If no spline interpolation is used, the function "retracing on contour" (Retrace) can be used.

The previous functional restrictions (from 15V02, 15V04, 15V06, 15V06 Patch 1)...

- Asynchronous subroutines (ASUP) cannot be used for spline interpolation
- Cancel distance to go cannot be used during spline interpolation

…no longer exist with MTX 15V08 (MTX NC core 23.8.5.0).

From this version these functions can be used again without restrictions.

### 1.6.2 Cycle G591 (HSC settings) and spline types 420x are no longer supported

Cycle G591 and spline types 4201, 4202, 4203, 4204 and 4205 are no longer supported. Cycle G592 or the corresponding spline type (4233) serves as a replacement.

## 1.7 Unexpected technical problems with the new software/firmware

If unexpected technical problems occur in connection with the new IndraMotion MTX software/firmware, please verify the following points:

1. Did errors occur during the installation or has the installation not been completed successfully?
   - Check the version of the installed software and firmware.
   - Repeat the installation and note down error messages that are reported.
2. Do individual components (e.g. certain I/O modules or drives) not function correctly?
   - Please refer to chapter 1 "Important information" on page 1.
   - If required, contact the Bosch Rexroth service and verify, if the software and firmware of the component you are experiencing problems with is up-to-date.
3. In case of problems with the PLC, please check the set PLC compiler version and the PLC libraries. Only use PLC libraries, compatible with the project version. Using outdated PLC libraries can result in malfunctions.

# 2 New functions

## 2.1 CNC operation

### 2.1.1 Extended diagnostic messages in HTML format also for ctrlX DRIVE (from 15V24)

**FEAT-ID:** [FEAT-937502]

**Brief description:** In IndraWorks Operation, diagnostic messages (status, warning or error messages), the cause information and the rectification information are displayed as text.

In addition, "extended diagnostic messages" are available in HTML format, but only for ProVi messages and IndraDrive drive diagnostics. This functionality has previously not been available for ctrlX DRIVE drives.

From 15V24, the extended diagnostic messages in HTML format are also available for ctrlX DRIVE diagnostics.

By selecting the drive diagnostic message and selecting <F3> "Detail", the diagnostic message is displayed in HTML format in the detailed view.

### 2.1.2 Diagnosemeldungen mit Begriff "Sercos Fehler" umbenannt (ab 15V20)

**FEAT-ID:** [FEAT-669036]

**Brief description:** In some diagnostic messages, the term "Sercos error" has been replaced by the term "drive error" in the message text as the cause is a drive error.

The modification affects the following diagnostic messages:

- 1303: "Sercos error %s axis %s” was replaced by “Drive error %s axis %s"
- 1405: “Sercos error while referencing the %s axis" was replaced by “Drive error when referencing %s axis"
- 2401, 2432, 2945: "Gantry referencing: Sercos error system axis %s" has been replaced by "Gantry referencing: Drive error system axis %s"

### 2.1.3 NC simulation MTX: Immediate tool display if a program is selected (from 15V16)

**FEAT-ID:** [FEAT-451972]

**Brief description:** The workpiece is traced if the STOCK cycle is called during program processing. To renew the workpiece, the main program has to be started and at least one STOCK command has to be completed. Renewing the last machined workpiece without STOCK command is optional.

The new feature allows displaying a workpiece prior to the start if the function comment described in the following is inserted in the main program.

**Functional principle:** During the program selection, the main program is interpreted and the raw part matching the last workpiece coordinate system at the first StockNode of the machine model (zero point offsets, placements) is displayed after finding the function comment.

Previous STOCK commands remain valid and change the workpiece graphics at program runtime; in particular their orientation in the workspace.

**Programming:** Syntax: //STOCK/BLOCK,<L>,<W>,<H>{,{<X>}{,{<Y>}{,{<Z>}}}}{\\}

Parameters:

L length, mandatory

W width, mandatory

H height, mandatory

X offset in X, optional, default 0

Y offset in Y, optional, default 0

Z offset in Z, optional, default 0

All parameters are constants without addresses.

*Example:*

---

1) only mandatory parameters

//STOCK/BLOCK,2000,1000,0.8

2) Additional offset in X and Y

//STOCK/BLOCK,2000,1000,0.8,20,20

3) Offset in Y and Z

//STOCK/BLOCK,2000,1000,0.8,,20,0.8\\

---

Other semi-finished forms:

The function comment to immediately display a raw part can also be used for other semi-finished forms (e.g. cylinder).

**Application:**

- The feature is intended for sheet metal forming as it only refers to one workpiece node and the workpiece position during the program selection depends on the previously enabled workpiece coordinate system. This can result in collision messages during other machining processes
- The function comment is only contained in main programs with the extension .npg
- The function comment has to be contained within the first 100 lines
- Syntax errors are not reported. In case an error occurs, no tools are displayed

## 2.1.4 MTX cta: Cycle time analysis for NC channels 1…60 (from 15V16)

**FEAT-ID:** [FEAT-374301]

**Brief description:** The MTX cta "cycle time analyzer" is a program module in the context of the "efficiency workbench" MTX ewb and is used to analyze the cycle time.

Previously, the cycle time analysis was limited to machines with up to 12 NC channels and the channel numbers 1…12 . In case of machines with more than 12 channels or channel numbers greater than 12, the cycle time analysis could not be used.

With this functional extension, the cycle time analysis can now also be used for machines with more than 12 NC channels. This means that the NC channel 1…60 can now be recorded. However, not more than 12 NC channels can be recorded simultaneously.

The NC channels to be recorded are configured via the new system data table CTAChanMap.

The new function is disabled if this table is not available or empty. The cycle time analysis is then limited to machines with a maximum of 12 NC channels and the channels 1…12 .

The CTAChanMap system date is defined in the /feprom/SDDefCta.xml_ file. The corresponding scheme is defined in the scheme file /feprom/schemas/sdcta.xsd_.

12 “real” NC channel numbers within the range of 1...60 can be assigned to the 12 “virtual” recording channels via the CTAChanMap table.

*Example:*

- The recording channel 1 records the real channel 60.
- The recording channel 6 records the real channel 17.
- The recording channel 12 records the real channel 1.

*Program:*

```
<SD>
  <CTAChanMap>
    <ChanVirt2Real>60</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>17</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>0</ChanVirt2Real>
    <ChanVirt2Real>1</ChanVirt2Real>
  </CTAChanMap>
</SD>
```

## 2.1.5 Revision of NC Editor and text editor for large files (from 15V14)

**FEAT-ID:** [FEAT-288041]

**Brief description:** The NC editor as well as the “text editor for large files” have been revised and issues and errors have been fixed. The NC block sequence call is not supported anymore. “Text editor for large files” now also supports cycle entry masks.

## 2.1.6 Extending the ADSLAB function (from 15V10)

**Feature number:** ADS-207521

**Brief description:** The function "Programmable distance-dependent signal" (ADS) was extended:

- The block look-ahead for Advance-Distance signal (ADS) is not limited to more than 20 programmed NC blocks anymore but can be defined using the system date (SD variable)
- Use the system date (SD variable) to set whether the switching time calculation "TimeOn" and "TimeOff" of the feed override is to be taken into consideration or not.

For more information about this function, refer to the following product information:

"MTX 15VRS Functional Description - Special Functions", DOK-MTX***-NC*F*SP*V15-RERS-EN-P (R911393309), chapter "Programmable distance-dependent signal"

## 2.1.7 NC simulation with virtual machine simulation/virtual machine builder (from 15V08 onwards)

**Feature number:** <none>

**Brief description:** If the name of a geometric object in a simulation model (type MachineGeometryNode) contains the character string "ALWAYSVISIBLE", the object remains always visible (not case-sensitive).

### 2.1.8 "Laser power control" via performance and/or frequency (from 15V08 onwards)

**Feature number:** TFS-135045

**Brief description:** This function automatically adjusts the laser power via the laser frequency and/or the duty cycle.

### 2.1.9 Extension of shape cutting template (from 15V08 onwards)

**Feature number:** TFS-133278

**Brief description:** The new function "SHEET alignment", "PreciTech sensor", "Laser power control by duty and/or frequency" are available. The technology function "Leap frog" and “Hight control" are optimized. Errors with "fly cut" using LCTS/circle are solved.

### 2.1.10 Function "Sheet alignment" for 2D-shape cutting (from 15V08)

**Feature number:** TFS-129235

**Brief description:** The position offset and alignment of sheets are calculated with these new functions. Offset variables are available in the NC program.

### 2.1.11 "MTX Developer Kit for Customer HMI" (from 15V08 onwards)

**Feature number:** TFS-160138

**Brief description:** The machine manufacturer might use the integrated external application to implement its own applications into IndraWorks Operation. The machine manufacturer has the possibility to hide the standard panels like M-keys, F-keys, headers etc. and replace them with his own panels.

### 2.1.12 Administrative project data for simulation issues within IndraWorks (from 15V08 onwards)

**Feature number:** FEAT-00066918

**Brief description:** Model data of the simulation, which was previously saved in the installation folder, is now saved in the project under the new nodes **Model ▸ Machines** independent of the visualization device.

Therefore the node "Models" has to be created again.

The model data for the machine model are now included in the project archiving.

Older configurations with model data in the installation folder are still working.

Further information are available in the documentations "MTX 15VRS Commissioning" and "MTX 15VRS NC-Simulation Multitouch".

### 2.1.13 NC simulation: Collision monitoring (from 15V06 onwards)

**Feature number:** TFS-79476

**Brief description:** Collision detection was extended by a collision-list in order to monitor past collision events. Via the collision-list it is possible to display and edit the relevant NC blocks.

### 2.1.14 NC-Cockpit: Implementation of redesign und program progress display (from 15V06 onwards)

**Feature number:** TFS-117853

**Brief description:** NC-Cockpit was visually redesigned and program progress display is also displayed in NC-Cockpit.

### 2.1.15 Programming system LANEK inside for shape cutting (from 15V06 onwards)

**Feature number:** TFS-111221

**Brief description:** Due to integration of the CAM-software "Easy Lantek" in the operation desktop it is possible to generate NC programs for sheet machining. A license is required to use Lantek software.

### 2.1.16 Remaining open features for the new NC editor for large programs (from 15V06)

**Feature number:** TFS-117667

**Brief description** Block pre-run and block search functions are now also available for large NC programs.

### 2.1.17 HTML5 browser plug-in for OPD (from 15V04)

**Feature number:** TFS-93480

**Brief description:** The HTML5 browser plug allows the user to display HTML5 pages of a server in IndraWorks Operation. The browser plug-in can be called via an F-key to be configured and a tile to be defined in the Home control. Navigate via keyboard, burger-menu or touch operation.

### 2.1.18 New NC editor to edit large NC programs (from 15V04)

**Feature number:** TFS-110901

**Brief description:** A new editor to process large files is provided. It is automatically selected which editor is used to process available files. The selection criterion is the size of the files to be edited.

### 2.1.19 Multitouch – Extensions Easy HMI (from 15V04)

**Feature number:** TFS-18204

**Brief description:** The texts for virtual VAM keys and the tiles of the Home control can now be configured in multiple languages. Furthermore, the number and size of the virtual VAM keys is user-defined.

### 2.1.20 Integration of a programming system for shape cutting (from 15V02)

**Feature number:** FEAT-00069219

**Brief description:** Taking the example of the "Lantek Expert inside" programming system, it is now possible to integrate external applications in an HMI of the MTX control.

The following features have been implemented:

- Program progress display
- NC status display that can be shown or hidden with a fold out/fold in touch keyboard

## 2.2 CNC technology

### 2.2.1 Programmable axis acceleration reserve (AACR) and axis jerk reserve (AJKR) (from 15V24)

**Feature number:** [FEAT-1177990]

As of MTX 14V22 Patch 20.1 or MTX 15V24, the effective axis acceleration reserve and the effective axis jerk reserve of the channel axes can be changed using an NC command.

Two new NC commands have been introduced:

- AxAccRes (short form: AACR) for changing the axis acceleration reserve
- AxJerkRes (short form: AJKR) for changing the axis jerk reserve

### Change axis acceleration reserve "AxAccRes, AACR"

Description:

Changes the axis acceleration reserve. The function blends the axis acceleration reserves from the machine parameters with the programmed values.

Syntax:

AxAccRes(<Values>) Change axis acceleration reserve

AxAccRes() or AxAccRes(0) Reactivate the axis acceleration reserve from the machine parameters for all current channel axes.

Short form: AACR(..)

<Values> Axis names and acceleration reserves. The information for several axes is comma-separated. Depending on the active unit of measurement (G71/G70), the control interprets the programmed data as "1000 inch/s2" or "m/s2".

Programming Example:

The X, Y and Z axes are preset in the machine parameters with an acceleration reserve of 2 m/s².

*Program:*

```
N40 AACR(X1.0,Z1.5)
 ; Acceleration reserve of the X-axis: 1.0 m/s²
 ; Acceleration reserve of the Z-axis: 1.5 m/s²
 ; The acceleration reserve of the Y-axis remains unchanged (2 m/s²)
N90 AACR()
 ; Reactivate values from the machine parameters: Acceleration reserve (X,Y,Z): 2.0 m/s²
```

N40 AACR(X1.0,Z1.5)

;acceleration reserve of the X-axis: 1.0 m/s²

;acceleration reserve of the Z-axis: 1.5 m/s²

;the acceleration reserve of the Y-axis remains unchanged (2 m/s²)

N90 AACR()

;reactivate values from the machine parameters: Acceleration reserve (X,Y,Z): 2.0 m/s²

Specifics and restrictions:

If both a physical and a logical axis of the active channel exist in the system under the same name, the acceleration reserve of the logical axis is always affected.

AxAccRes can only be used to program values that are smaller than the values set in the AxAccReserve "Axle acceleration reserve" parameter (1010 00012).

### Change axis jerk reserve "AxJerkRes, AJKR"

Description:

Changes the axis jerk reserve. To do this, the function blends the axis jerk reserves from the machine parameters with the programmed values.

Syntax:

AxJerkRes(<Values>) Change axis jerk reserve

AxJerkRes() or AxJerkRes(0) Reactivate the axis jerk reserve from the machine parameters for all current channel axes.

Short form: AJKR(..)

<Values> Axis names and jerk reserves. The information for several axes is comma-separated.

Depending on the active unit of measurement (G71/G70), the control interprets the programmed data as "1000 inch/s³" or "m/s³".

Programming Example:

The X, Y and Z axes are preset in the machine parameters with a jerk reserve of 500.0 m/s³.

*Program:*

```
N40 AJKR(X300,Z200)
 ; Jerk reserve of the X-axis: 300 m/s³
 ; Jerk reserve of the Z-axis: 200 m/s³
 ; The jerk reserve of the Y-axis remains unchanged (500 m/s³)
N90 AJKR()
 ; Reactivate values from the machine parameters: Jerk reserves (X,Y,Z): 500 m/s³
```

Specifics and restrictions:

If both a physical and a logical axis of the active channel exist under the same name in the system, the jerk of the logical axis is always influenced.

AxJerkRes can only be used to program values that are smaller than the values set in the AxJerkReserve “Axis jerk reserve" parameter (1010 00013).

The jerk reserves only work when jerk control is enabled (JerkControl/JKC).

## 2.2.2 Extending the kinematic limitation (KLL) to level 4 (from 15V24)

**Feature number:** [FEAT-1166744]

The NC command "JerkControl" (JKC) provides the option of reducing the kinematic limitation via parameter KINLIMLEVEL (KLL). Previously, the kinematic limitation levels 0 to 3 were available.

Starting with MTX 14V22 Patch 20.1 and MTX 15V24, the KINLIMLEVEL (KLL) parameter has been expanded by level 4.

In level 4, the kinematic limitation is reduced even further by taking into account the axis acceleration reserve and the axis jerk reserve in addition to the reductions in level 3.

Supplementary notes:

The machine parameter "Kinematics limitation level (default setting)" defines the effective default value. The factory default setting is 0. For applications with high dynamic requirements, the use of values 3 or 4 is recommended.

Further information can be found in the product documentation: MTX 15VRS Functional Description - Basics, chapter "Parameters of the axis-specific jerk limiter "JerkControl, JKC""

## 2.2.3 Fast Action (fa): The memory address of the system date used is provided as additional information (from 15V24)

**Feature number:** [FEAT-1062675]

If system data is read or written via Fast Action (fa), the memory address of the respective system data has to meet the following requirements:

- 4-byte values have to start on 4-byte address limits.
- 2-byte values must not exceed 4-byte address limits. Irrespective of this, the recommendation is that 2-byte values should start on 2-byte address limits if possible.
- 1-byte values can be located at any memory address.

These memory address requirements have to be taken into account when defining a system data structure if individual structure elements are to be accessed via fast action (fa).

If necessary, data has to be entered (“padding”) which only serve to ensure that subsequent data elements begin on the required address limit.

Otherwise, the warning "5052 Fast actions, configuration error 9" is displayed.

**Address determination when the interface warning "5052 Fast actions, configuration error 9" occurs**

In IndraWorks MTX versions with a higher version than MTX 14V22 Patch20 or MTX 15V22 Patch1, a function extension is available with which the memory addresses of the system data determined by the fast action logic can be displayed.

When checking and applying the fast action configuration, the absolute memory address is entered in the data element "Index4" in the FA subsystem data structure SysFA.PLCTask[i].Config.CycData.

Example:

*Program:*

```
<CycData>
  <ConfError>0</ConfError>
  <Cmd>SystemData</Cmd>
  <ID>0</ID>
  <Access>0</Access>
  <Index1>0</Index1>
  <Index2>0</Index2>
  <Index3>SysIpoWcsPos[1].Active</Index3>
  <Index4>Adresse des Systemdatums</Index4>
</CycData>
```

## 2.2.4 5-axis transformation RRLLL with swivel/rotary table with programming of the rotary axes (from 15V24)

**Feature number:** [FEAT-790061]

The 5-axis transformation RRLLL with swivel/rotary table has been extended for the CBLLL and CALLL variants. To specify the orientation of the tool relative to the workpiece during active transformation, the positions of the rotary axes C and B or C and A can now also be programmed. Previously, only the orientation coordinates phi, theta or the orientation vector O(..) could be programmed, and transformation then converted them into the required positions of the rotary axes. The transformation type is 3032003. This has to be specified for the machine parameter 103000110.

## 2.2.5 Dynamic tool length compensation (from 15V22 Patch1)

**Feature number:** [FEAT-900613]

The "Dynamic tool length compensation" function makes it possible to dynamically influence the effective length of a tool during machining. An additive tool length can be specified as a command value via a system date. This additive command value is added to the tool length and thus acts in the direction of the tool length (Z-direction in the tool coordinate system).

The command value can be specified cyclically and can contain both positive and negative values. Positive values cause the tool to move away from the contour in the TCS-z direction. The distance between the tool tip and the contour increases. Negative values cause the tool to move in the TCS-z direction towards the contour.

The "Dynamic tool length correction" function can be used, for example, to implement distance control for beam cutting.

Prerequisites:

The function is available from version IndraWorks MTX 15V22 Patch1 (NC kernel 23.22.6).

The function is configured and controlled via the system data structure SD.SysToolLength[<Channel>]. This system data structure has to be created accordingly. In addition, an asynchronous axis has to be created for use with the system axis coupling.

Note:

For correct functioning of a 5-axis transformation with orientation, MTX has to know all relevant lever arms of the kinematics. This means that the effective length of the cutting head, plus the expected beam length, has to be communicated to the MTX. This can be done either by direct consideration in the transformation parameter "L2z" or by specifying tool data (D or ED and G47).

Restrictions and special features:

The function supports 2.5D machining and the following 5-axis transformations:

- 5-axis transformation with swivel rotary axis LLLRR (3232201, 3232101, 3032001)
- Cardanic 5-axis transformation with swivel rotary axis LLLRR (3232211, 3232111)
- Cardanic 5-axis transformation with rotary table RLLLR (3232212, 3232112)
- 5-axis transformation with rotary table RLLLR (3232202, 3232102)
- 5-axis transformation with swivel/rotary table RRLLL (3232203, 3232103, 3030013)

Note:

The axis position change generated by the dynamic tool length compensation is not detected by the travel range limit monitoring.

Relevant NC functions:

CHEAD_ADOPT

This function transfers the compensation value active when the system axis coupling is switched off to the block preparation.

Relevant system data:

The "Dynamic tool length compensation" function is configured and controlled via the system data structure /SysToolLength.

The system data structure /SysToolLength[<Channel>] contains the following data elements:

ApplyOnlCorr

Applies the dyn. Tool length compensation

0: Function is not applied

1 .. 250: Applies the dynamic tool length compensation and determines the number of the axis for the calculation of the effective distance. Function is created when the NC is started (in the boot process) and can be used after the NC has started up

UnsignedByte_t (1 Byte)

Access: WMH: write

ConfigError

Error during application

Bit 0: The drive (ApplyOnlCorr) is not available

Bit 1: The drive (ApplyOnlCorr) is a spindle

Bit 2: EnablVirtMode is not set for the drive

Bit 3: SupprCmdValOut is not set for the drive

Bit 7: Internal error state

UnsignedByte_t (1 Byte)

Access: All: Read

Status

Current state of the dyn. Tool length compensation

Bit 0: The function is applied

Bit 1: The system axis coupling enabled

Bit 2: The active system axis coupling changed the target position.

Bit 9: Attention: The current position differs from the target position. An old compensation value has not yet been transferred to the block preparation. Please use CHEAD_ADOPT for data transfer.

UnsignedShort_t (2 Byte)

Access: All: read

RejectReason

Reason for rejection, why the command value of the dyn. Tool length compensation can currently not be changed

Bit 0: At least one relevant drive is not in AF

Bit 5: Other reason

UnsignedShort_t (2 Byte)

Access: All: read

CmdCorrVal

For optional use as input of the system axis coupling:

Command value of the tool length compensation in [mm]

For example: SD.SysAxCoupleCmd[AUXAX%].Formula = STR$ ("SD.SysToolLength[##].CmdCorrVal + AC",CHAN%)

Float_t (4 bytes)

Access: PLC program: write, NC program: write

ActCorrVal

Actual value of the tool length compensation in [mm]

Float_t (4 bytes)

Access: All: read

Applying

Creating an auxiliary axis:

1. Create an asynchronous axis in the configurator for use with the system axis coupling. This has to be parameterized virtually (EnablVirtMode) and without command value input (SupprCmdValOut).
2. Set the maximum axis velocity MaxVel and maximum axis acceleration FeedAxAcc to a moderate value. FThese two parameters limit the dynamics of the motion in the TCS-z direction. A motion in the TCS-z direction results in a superimposed motion in the x, y and z coordinates. The smallest value of the axes X, Y and Z involved can therefore be regarded as the absolute maximum for the velocity and acceleration of the virtual axis.

Creating the system data

1. Copy the file /feprom/schemas/sdtoollength.xsd_ to /usrfep/schemas/sdtoollength.xsd.
2. Copy the file /feprom/SDDefToolLength.xml_ to /usrfep/SDDefToolLength.xml.
3. Restart the NC.
4. Subsequently, the dyn. Apply tool length compensation for the desired NC channels. To do this, assign the value of the auxiliary axis to be used to the element "/SysToolLength[<Chan>]/ApplyOnlCorr" in the SDDatMTB.xml file, for example.

   Example:

   System axis 9 is used for dynamic tool length compensation in channel 2. When the MTX is restarted, /SysToolLength[2]/ApplyOnlCorr is assigned the value 9.

   Program:

   <SD>

   ...

   <SysToolLength Dimension="2">

   <ApplyOnlCorr>9</ApplyOnlCorr>

   </SysToolLength>

   ...

   </SD>
5. Restart the NC.
6. After the control has started up, check the state by reading out the /SysToolLength/Status. If bit 0 of Status is not set, refer to /SysToolLength/ConfigError.

Adjusting the PLC program:

1. The PLC program (FA task) requires access to the components (status, RejectReason and ActCorrVal) of the system file /SysTool-Length[<Channel>].

   Information on configuring the data exchange between NC and PLC can be found in the Function Description - Special Functions, chapter 14 Fast actions MTX fa).

Creating the system axis coupling:

The data structures of the system axis coupling are always available.

1. Create cycles to control the system axis coupling.

You can use the sample files for DynToolLen_On and DynToolLen_Off shown here directly. When using a separate variable instead of SD.SysToolLength[CH%].CmdCorrVal, change the description for "Formula" accordingly.

*Program:*

```
1 GOTO .COMMEND
; ---------------------------------------------------------------------
; Copyright (c) 2024 Bosch Rexroth AG
; All Rights Reserved
; ---------------------------------------------------------------------
;
; Function: DynToolLen_On
;
; Description: Activates system axis coupling for dynamic tool length
;
; Parameter: P1%: SystemChannelNo (For optional use)
;
; =====================================================================
2 .COMMEND
10 IF P1% = NUL THEN
10 SYSCH% = SD(8)
10 ELSE
10 SYSCH% = P1%
10 ENDIF
10 SYSAX% = SD.SysToolLength[SYSCH%].ApplyOnlCorr
20 IF SD.SysToolLength[SYSCH%].Status = 0 THEN
20 SETERR("DynToolLength not applied",,1)
20 ENDIF
; --- to avoid unintented movements, first check CmdCorrValue
30 LOOP% = 0
40 WHILE (ABS(SD.SysToolLength[SYSCH%].CmdCorrVal) > 0.001) DO
N060 G4F0.1 ; Wait 100 ms
N070 WAIT
80 LOOP% = LOOP% + 1
90 IF (LOOP% > 2) THEN
; Something went seriously wrong. FA control task may be inactive.
; Check whats wrong with the control task!
100 SETERR("Error in FA logic!",,1)
110 ENDIF
120 END
; --- Prepare coupling
;---------------------------------------------------------------------
140 SD.SysAxCoupleCmd[SYSAX%].OnOff = 1
150 SD.SysAxCoupleCmd[SYSAX%].IpoEnable = TRUE
160 SD.SysAxCoupleCmd[SYSAX%].VelCouple = 0.0 :REM Use config data
170 SD.SysAxCoupleCmd[SYSAX%].AccCouple = 0.0 :REM Use config data
180 SD.SysAxCoupleCmd[SYSAX%].Reset = 1
190 SD.SysAxCoupleCmd[SYSAX%].ExtError = 0
200 SD.SysAxCoupleCmd[SYSAX%].RecoupleEnable = TRUE
210 SD.SysAxCoupleCmd[SYSAX%].GearTeeth = 0
220 SD.SysAxCoupleCmd[SYSAX%].SyncMode = 0 :REM shortest path
230 SD.SysAxCoupleCmd[SYSAX%].Rigidity = 0
240 SD.SysAxCoupleCmd[SYSAX%].PosWinSel = 1
250 SD.SysAxCoupleCmd[SYSAX%].PosWin[1] = 0.1
260 SD.SysAxCoupleCmd[SYSAX%].PosWin[2] = 0.0
270 SD.SysAxCoupleCmd[SYSAX%].AbortEnable = 0
280 SD.SysAxCoupleCmd[SYSAX%].AbortDelay = 0
290 SD.SysAxCoupleCmd[SYSAX%].AbortRetractPos = 0.0
300 SD.SysAxCoupleCmd[SYSAX%].AbortAction = 0
310 SD.SysAxCoupleCmd[SYSAX%].AbortAsupNo = 0
320 SD.SysAxCoupleCmd[SYSAX%].AbortAsupChan = 0
330 SD.SysAxCoupleCmd[SYSAX%].Formula =
STR$("SD.SysToolLength[##].CmdCorrVal + AC",SYSCH%)
; ---------------------------------------------------------------------
; --- switch on coupling
N340 P SACVALID
```

*Program:*

```
1 GOTO .COMMEND
; ---------------------------------------------------------------------
; Copyright (c) 2024 Bosch Rexroth AG
; All Rights Reserved
; ---------------------------------------------------------------------
;
; Function: DynToolLen_Off
;
; Description: Switch off system axis coupling for dynamic tool length
;
; Parameter: P1%: SystemChannelNo (For optional use)
;
; =====================================================================
2 .COMMEND
10 IF P1% = NUL THEN
10 SYSCH% = SD(8)
10 ELSE
10 SYSCH% = P1%
10 ENDIF
10 SYSAX% = SD.SysToolLength[SYSCH%].ApplyOnlCorr
20 IF SD.SysToolLength[SYSCH%].Status = 0 THEN
N020 M30
20 ENDIF
;N0130 ... ;Freeze PLC variable (CmdCorrVal) by using AuxFunc or System datum
; --- Prepare decoupling
;---------------------------------------------------------------------
140 SD.SysAxCoupleCmd[SYSAX%].OnOff = 0
150 SD.SysAxCoupleCmd[SYSAX%].IpoEnable = FALSE
180 SD.SysAxCoupleCmd[SYSAX%].Reset = 1
190 SD.SysAxCoupleCmd[SYSAX%].ExtError = 0
200 SD.SysAxCoupleCmd[SYSAX%].RecoupleEnable = FALSE
210 SD.SysAxCoupleCmd[SYSAX%].GearTeeth = 0
220 SD.SysAxCoupleCmd[SYSAX%].SyncMode = 2 :REM velocity-synchronous
230 SD.SysAxCoupleCmd[SYSAX%].Rigidity = 0
240 SD.SysAxCoupleCmd[SYSAX%].PosWinSel = 0
250 SD.SysAxCoupleCmd[SYSAX%].PosWin[1] = 0.0
260 SD.SysAxCoupleCmd[SYSAX%].PosWin[2] = 0.0
270 SD.SysAxCoupleCmd[SYSAX%].AbortEnable = 0
280 SD.SysAxCoupleCmd[SYSAX%].AbortDelay = 0
290 SD.SysAxCoupleCmd[SYSAX%].AbortRetractPos = 0.0
300 SD.SysAxCoupleCmd[SYSAX%].AbortAction = 0
310 SD.SysAxCoupleCmd[SYSAX%].AbortAsupNo = 0
320 SD.SysAxCoupleCmd[SYSAX%].AbortAsupChan = 0
330 SD.SysAxCoupleCmd[SYSAX%].Formula = ""
;---------------------------------------------------------------------
; --- switch off coupling
N340 P SACVALID
350 SD.SysAxCoupleCmd[SYSAX%].Reset = 0
360 SD.SysAxCoupleCmd[SYSAX%].SyncMode = 0
N370 SACSYNC
N380 CHEAD_ADOPT ;Transfers the last correction value to the block preparation
```

2. Copy the cycle "/feprom/shapecut/SACVALID" to "/usrfep".

Adjusting the init program:

1. The CHEAD_ADOPT command has to be entered in the channel initialization program.

*Program:*

```
Programm:
LPS ProgEndProg
;*****************************************************
;* Subprogram after program end (M30) of main program *
;*****************************************************
;To avoid wrong commanded position values
CHEAD_ADOPT ;Transfers the last correction value to the block preparation
N1000 G1 G17 G90 G71 ...
PEND
```

Activate and apply:

After creating the general start condition for planned machining - change tool, activate axis transformation and approach starting position - the dynamic tool

length compensation can be activated by calling DynToolLen_On. From this point, the FA task can specify a correction value to the PLC.

After finishing machining, the dynamic tool length compensation is switched off by calling DynToolLen_Off.

Reasons that lead to automatic termination of dynamic tool length compensation:

- Switching off an 5-axis transformation (CRD(0)).

  Note:

  The last active compensation value has to be transferred to the block preparation by calling CHEAD_ADOPT.
- Switching the 5-axis transformations or switching on a 5-axis transformation. The result is a runtime error that can be eliminated by a home position.
- Switching off the power of a drive required for the correct execution of the tool length compensation. A drive is required if it is needed to move the x, y and z coordinates.

  Note:

  The last active compensation value remains active! This position offset can, for example, be transferred to the block preparation by means of a home position.

Disabling:

By calling DynToolLen_Off, the system axis coupling is ended and the last correction value is transferred to the block preparation.

## 2.2.6 The "Circular arc in space" function now also supports the "Linear circular spline conversion" (LCTS) function (from 15V22 Patch 1)

**Feature number:** [FEAT-786702]

The "Circular arc in space" function (CircPtsCro, CPC, CircPtsByp, CPB) has been available since MTX 15V20 and previously did not support the use in combination with the "Linear circular spline conversion" (LCTS) function.

This restriction has been removed: From MTX 15V22 Patch1, the "Circular arc in space" function can also be used in combination with the "Linear-circular spline conversion" function.

## 2.2.7 Extension of the value range of the machine parameter "Drive type": 7 ctrlX DRIVE (from 15V22)

**Feature number:** [FEAT-768827]

The basic configuration of the NC also includes the definition of the drive types used. The machine parameter "Drive type" (DrType) is used for this purpose.

For an improved support of the ctrlX DRIVEs, the value range has been extended by one entry: 7 ctrlX DRIVE

Until now, ctrlX DRIVE could also be operated as drive type 2. This is no longer possible from MTX 15V22: Drive type 7 has to be set to operate a ctrlX DRIVE.

## 2.2.8 Shape cutting technology: Revision (from 15V20)

**Feature number:** [FEAT-609414]

**Brief description**

- The PWM-FlyCut(FlycutType3) function block has been removed from the template. This function block can still be called by MT_Technology if required.
- A new chapter "MT_TechnologyExtended" has been added to the documentation.

  The function blocks for gas and focus control have been moved to this library, although the function blocks for gas and focus control are still in the "old" "MT_Technology" library.

## 2.2.9 New NC function for programming a tilted arc through three points (from 15V20)

**Feature number:** [FEAT-556443]

Three points in a plane that do not lie on a straight line clearly define a circle in this plane. Three points in space that do not lie on a straight line clearly define a plane in space. This also defines a circle in this plane, and therefore a circle in space.

If a circle in space is to be traversed by an NC function, this circle can be specified by three points in space. One of these points is the start point of the movement and one is the end point. Additionally, an auxiliary point is required to define the circle.

However, as the travel movement only extends from the starting point to the end point, only part of the circle defined by the three points is traveled, i.e. only one arc.

Therefore, there are two ways to reach the end point from the starting point on the circle defined by the three points. One path leads from the starting point on the circle through the auxiliary point to the end point. One path extends from the starting point on the circle through the auxiliary point to the end point.

Accordingly, there are two NC functions for programming a circle in space consisting of three points:

CircPtsCro, CPC: Arc from the starting point through the auxiliary point to the end point (cross)

CircPtsByp, CPB: Circular arc from the starting point past the auxiliary point to the end point (bypass)

Syntax:

`CircPtsCro <EP> <IP>` Arc from the starting point through the auxiliary point to the end point (cross)

`CircPtsByp <EP> <IP>` Circular arc from the starting point past the auxiliary point to the end point (bypass)

Short forms: CPC, CPB

whereby

`<EP>` WCS coordinates of the end point in space

`<IP>` for programming the auxiliary point interpolation parameters (I..., J..., K...)

This syntax can also be used to program an arc in the active plane, for example.

Examples:

Programming of a quarter circle in the XY-plane circle with local relative dimension programming of the center point:

```
G1 X50 Y0 Z0 F1000 G17
```

```
G3 X0 Y50 Z0 I-50 J0
```

Circle with local absolute dimension programming of the center point:

```
G1 X50 Y0 Z0 F1000 G17
G3 X0 Y50 Z0 I=AC(0) J=AC(0)
```

Circle of three points with travel path through the auxiliary point and local relative dimension programming of the auxiliary point:

```
G1 X50 Y0 Z0 F1000
CPC X0 Y50 Z0 I-10 J30 K0
```

Circle of three points with travel path through the auxiliary point and local absolute dimension programming of the auxiliary point:

```
G1 X50 Y0 Z0 F1000
CPC X0 Y50 Z0 I=AC(40) J=AC(30) K=AC(0)
```

Circle of three points with travel path through the auxiliary point and local relative dimension programming of the auxiliary point:

```
G1 X50 Y0 Z0 F1000
CPB X0 Y50 Z0 I-100 J0 K0
```

Circle of three points with travel past the auxiliary point and local absolute dimension programming of the auxiliary point:

```
G1 X50 Y0 Z0 F1000
CPB X0 Y50 Z0 I=AC(-50) J=AC(0) K=AC(0)
```

All these programming variants result in the same circular arc in the XY plane.

Example:

This example shows an inclined arc in space:

```
G1 X1.52 Y4.032 Z9.024 F1000
CPB X-6 Y6.4 Z4.8 I=AC(6) J=AC(-6.4) K=AC(-4.8)
```

## 2.2.10 Extension of the CPL command "PLC" by the data type "unsigned integer" for byte, word and double word (from 15V18 patch 1)

**Feature number:** [FEAT-665624]

Unsigned PLC values that are within the following ranges are read as negative values with the CPL command "PLC":

- BYTE greater than 127
- WORD greater than 32767
- DWORD greater than 2147483647

In order to also read these PLC values correctly without signs, the CPL command "PLC" was extended by new, additional entries for the parameter <Size>:

- 11 (unsigned byte)
- 12 (unsigned word)
- 14 (unsigned double word)

The result of the "PLC" command with size 14 has to be assigned to an unsigned CPL variable (e.g. UI%%).

## 2.2.11 New CPL command MDL (modulo operation) (from 15V18 patch 1)

**Feature number:** [FEAT-492440]

The new MDL command implements the modulo operation in CPL.

The value 2 is assigned to the variable ERG by the following part program line (rest of division of 10 divided by 4):

10 ERG% = MDL (10,4)



If an MDL variable is used in a part program, this results in a part program error. The variable has to be renamed.

## 2.2.12 Project template for shape cutting (Shape Cutting Template, SHC2) : Improvements and bug fixes (from 15V18)

**Feature number:** [FEAT-497989]

With IndraMotion MTX 15V18, the applicability of the Shape Cutting Template (SHC2) project template has been improved and the following issues have been resolved:

- Defdb00211297

  Shape Cutting Template (SHC2): Error in the combination of "UserRetract" and "bRecoverRetract"

- Defdb00211298

  Shape Cutting Template (SHC2): Creating a new project on template basis takes too long

- Defdb00211299

  Shape Cutting Template (SHC2): PLC error 3088 resp. 5771 according to M195 in MDI mode

- Defdb00211536

  Shape Cutting, LeapFrog: Incorrect movement of the Z-axis when resetting a channel during a LeapFrog

## 2.2.13 Support of 3D radius correction when programming rotary axes (from 15V18)

**Feature number:** [FEAT-510527]

Support for 3D tool radius compensation (G141, G142) has been extended to include 5-axis transformation with rotary axis programming (LLLRR).

Thus, the 3D tool radius correction G141, G142 is now available for the following transformation types:

- 3032001: 5-axis transformation with rotary axis programming (LLLRR)
- 3232101: 5-axis transformation with linear orientation (LLLRR)
- 3232201: 5-axis transformation with vector orientation (LLLRR)

## 2.2.14 New 5-axis transformation LLLCA (from 15V18)

**Feature number:** [FEAT-510526]

Previously, the 5-axis transformation LLLCB was provided with the linear axes X, Y, Z and a C-axis that rotates the tool swivel unit around the Z-axis. The tool swivel unit consists of an swivel axis B used to swivel the tool. In the reference position, the C-axis is rotated so that the B-axis points in the direction of the Y-axis, and the B-axis is rotated so that the tool is parallel to the Z-axis (MTX 15VRS Functional Description - Extension, Chapter 11 "Axis Transformation"). The new 5-axis transformation LLLCA differs from this only by a different definition of the reference position, namely in the way that in the

reference position the swivel axis points in the direction of the X-axis, and is therefore referred to as the A-axis.

In the machine parameters, there are the following differences between variants LLLCB and LLLCA:

FwdInCoordIndTrafo[5]:

LLLCB: System axis number of B

LLLCA: System axis number of A

CoordClass[5]:

LLLCB: B or no entry

LLLCA: A

RefPosTrafo[5]:

LLLCB: $B^0$

LLLCA: $A^0$

JointParTrafo[1]:

LLLCB: $l_{1x}$

LLLCA: 0 (not applicable)

JointParTrafo[2]:

LLLCB: 0 (not applicable)

LLLCA: $l_{1y}$

## 2.2.15 Tool-specific limits - functional extension (from 15V16)

**Feature number:** [FEAT-456864]

Acceleration and maximum speed of a spindle can be limited when using a special tool (e.g. multi-spindle boring head). Additionally, the gear ratio can be taken into consideration if the machine is equipped with a gear.

Previously, the tool-specific limit was switched once the motor stopped. The function extension allows for switching without motor stop.

SToolLim(<SpName>=11) or SSpToolLim(<SSpNr.>|<SSpName>, 11)

*Example:*

---

```
N00 M5 SPWAIT
... 010 SSP% = SD(223,"S1")
011 SD.SysSpCmdData[SSP%].Tool.Enable = 1
012 SD.SysSpCmdData[SSP%].Tool.N_Input = 3
013 SD.SysSpCmdData[SSP%].Tool.N_Outnput = 2
N14 SToolLim(S1=11)
...
N20 M103 S1=1000 ;motor speed 1500/min
...
030 SSP% = SD(223,"SP1")
031 SD.SysSpCmdData[SSP%].Tool.Enable = 1
032 SD.SysSpCmdData[SSP%].Tool.N_Input = 2
033 SD.SysSpCmdData[SSP%].Tool.N_Input = 1
; Switching at constant motor speed
; The spindle speed “jumps" from 1000/min to 750/min
```

```
N34 SToolLim(S1=11)
...
```

## 2.2.16 New axis transformation XYZC (from 15V16)

**Feature number:** [FEAT-454195]

Already available: axis transformation LLR of type 2121002 with the variants XYC, ZXB, YZA, as well as the axis transformation LLLR of type 3131002 with the variants XYZA, XYZB.

The new axis transformation completes this range with the previously missing variant XYZC which was assigned type 3131004 due to administrative reasons.

## 2.2.17 Fast actions: 2-dim. Double field for data exchange between FA and SAC (from 15V16)

**Feature number:** [FEAT-429142]

System axis coupling formula data read/write (ID 100007)

If system data of type “double” is used in a system axis coupling formula, it is not possible to access the system data using “fast actions” due to consistency reasons.

An internal field of so-called “hidden doubles” is available as special functionality (SD.FA2SAC[1..20] with 20 elements) which can be used in the SAC formula.

Extension:

In addition to the one-dimensional field SD.FA2SAC[1..20], a two-dimensional field SD.FA2SAC[1..64,1..4] is provided.

Both fields can be configured simultaneously as it is differentiated according to the dimension.

Only constants, no variables are valid field indices.

The "hidden double" syntax is the same as for the system data.

☞ A system date with the variable name SD.FA2SAC must not be defined as the “hidden double” variable is superimposed by the system date.

The “hidden double” variable can only be accessed using “fast actions” and the system axis coupling. It is not possible to access the variables using the variable editor, a function block or similar.

Syntax; in “fast actions" system data configuration (XPath in Index 3) as well as in the system axis coupling formula:

SD.FA2SAC[Index] with Index 1..20

SD.FA2SAC[Index1,Index2] with Index1 1..64, Index2 1..4

## 2.2.18 Microsoft Windows 11 is supported from MTX 15V16 (from 15V16)

**Feature number:** [FEAT-405890]

Microsoft Windows 11 new operating system is supported from MTX 15V16.

Supported operating systems:

- Microsoft Windows 10
- Microsoft Windows 11 (from MTX 15V16)

## 2.2.19 Shape cutting technology template: New functions and changes in the corresponding library MT_Technology (from 15V16)

**Feature number:** [FEAT-393655]

The shape cutting technology template was extended by four new function blocks:

- MT_GasControlType02
- MT_PlateSearchType03
- MT_FlyCutType03
- MT_FlyCutType04

The corresponding MT_Technology library was divided into MT_Technology and MT_TechnologyExtended. Some hardware-related function blocks were moved to the MT_TechnologyExtended library.

## 2.2.20 New technology function “Plate Digitization” for water jet cutting (from 15V16)

**Feature number:** [FEAT-315845]

The capacitive distance sensor cannot be used for height control during water jet cutting due to the process. Thus, height control via MT_HeightCtrlType01 cannot be used.

To avoid collisions during the subsequent cutting process, the new technology function “Plate Digitization” is available to digitally probe the height profile of a material plate prior to cutting with a probe.

## 2.2.21 Jog and handwheel operation in TCS z-direction for 5- and 6-axis transformation with rotary axis programming (from 15V14 Patch 1)

**Feature number:** [FEAT-418684]

Use the function Jog and Handwheel in workpiece coordinates to traverse the workpiece coordinates (WCS) and - if an orientable axis transformation is active - the z-direction of the tool (TCS).

The option of a motion in TCS-z-direction is now also available for a 5- or 6-axis transformation with rotary axis programming.

When using the transformation type 3033001, additionally, the machine parameters for "reference orientation of the tool coordinate system TCS (TcsRefOri / MP 1030 00150)" have to parameterized. An instruction to determine the values is contained in the description to the transformation type 3333301.

## 2.2.22 Two new "Fast Action” data elements for system axes: Axis end position of the active NC block and feed inhibit (from 15V14)

**Feature number:** [FEAT-367041]

**Brief description:** FA date for the axis end position of a system axis

The new FA date for an axis end position returns the axis end position for the active NC block for a system axis (synchronous/asynchronous) in the operation mode Automatic or MDI. For other operation modes (e.g. jog mode), no practical value is available, i.e., the value returned by the FA is invalid.

The axis end position is exclusively provided in the axis coordinates (ACS). WCS, BCS and MCS are not supported.

FA date: Axis end position of a system axis

- Returns the programmed end position of the system axis (1 .. n) specified in index 1

ID: 100000

Command: AxisPos

Selector/Index 2: 5

8 byte value/double

**FA date for feed inhibit of a system axis**

By analogy to the PLC interface signal “feed inhibit" (qAx_DrvLock), the new FA date "FADrivelock” used to set the feed inhibit for a system axis is now available. The PLC interface signal “feed inhibit" and the FA item "FADrivelock” are additive. When using the FA item, no waiting state and no message is generated.

Possible “Locks” due to incorrect use of the item have to be visualized applicatively.

FA date: Feed inhibit of a system axis

- Affects the system axis (1 .. n) specified in index 1 and is not self-locking
- Acts like the PLC interface signal qAx_DrvLock
- PLC signal and FA command are overlaying

ID: 100403

Command: FADrivelock

4 byte value

## 2.2.23 Adding of the new height control mode "EN_HC_HoldPosition" (from 15V14)

**Feature number:** [FEAT-315830]

**Brief description:** The height control mode "EN_HC_HoldPosition" was added to the "EN_HC_USRMODE_t” structure. The height control mode can be configured by using the attribute "MT_DistanceSensorType01.HCMode”.

## 2.2.24 Adjusting the ShapeCuttingTemplates (from 15V14)

**Feature number:** [FEAT-309684]

**Brief description:** The ShapeCuttingTemplate was adjusted for 15V14:

- Adding of the new function block MT_GenerateOVSArray for the OVS module
- Debug for unexpected height control upon reentry (Defdb00210369,Defdb00210370)

## 2.2.25 Axis transformation LLLCA with cardanic head (from 15V14)

**Feature number:** [FEAT-315724]

**Brief description:** So far, only a 5-axis transformation with Cardanic head was provided: LLLCB with the linear axes X, Y, Z and a C-axis rotating the tool swivel unit around the z-axis. The tool swivel unit consists of an inclined B-axis used to swivel the tool. In the reference position, the C-axis is rotated so that the B-axis is in the yz-plane. The B-axis is rotated so that the zero tool is in parallel to the z-axis (MTX 15VRS Functional Description - Extension, chapter 11 “Axis transformation“).

The new 5-axis transformation LLLCA with Cardanic head differentiates only by a different definition of the reference position: the reference position of the inclined axis is in the xz-plane and is thus referred to as A-axis.

In the machine parameters, there are the following differences between variants LLLCB and LLLCA:

LLLCB: System axis number of B

LLLCA: System axis number of A

CoordClass[5]:

LLLCB: B or no entry

LLLCA: A

RefPosTrafo[5]:

LLLCB: $B^0$

LLLCA: $A^0$

JointParTrafo[1]:

LLLCB: $l_{1x}$

LLLCA: Not relevant

JointParTrafo[2]:

LLLCB: Not relevant

LLLCA: $l_{1y}$

## 2.2.26 Function extension for fast switching of compensation tables (LSEC and CCOMP) (from 15V14)

**Feature number:** [FEAT-312123]

**Brief description:** To compensate mechanical inaccuracies, the MTX control is equipped with compensation tables for lead screw error compensation (LSEC) as well as for cross compensation (CCOMP). Usually, these axis compensation tables are only loaded once and used permanently.

However, there are use cases where a frequent change of the compensation table of an axis is required during running operation. To optimize the activation times, the compensation tables can be read in and saved in the NC before activation.

Preparation:

The reloadable table is identified by the configuration parameter “COMPILE”.

Reading in the table in the NC (e.g. in the init program):

AxCompTab(<Axisname>,<Tablename>,LOAD)

Enabling the table in the parts program:

AxCompTab(<Axisname>,<Tablename>)

## 2.2.27 New “fast action” elements to read the axis position, the axis velocity and the axis acceleration (from 15V14)

**Feature number:** [FEAT-289665]

**Brief description:** There are several “fast action” elements to read the axis position, the axis velocity and the axis acceleration:

- FA data

  **Read axis position**

  – Command
    AxisPos
  – ID
    100000
  – Index 1
    Axis number
  – Index 2
    Selector:
    – 0: Command value
    – 1: Actual value
    – 2: Command value before SAC (system axis coupling)
    – 3: Actual value LSEC-adjusted
    – 4: Command value LSEC-assigned
  – Access|Size|Type
    Read|8 Byte|double

- FA data

  **Read axis velocity**

  – Command
    AxisVel
  – ID
    100001
  – Index 1
    Axis number
  – Index 2
    Selector: Scaling
    – 0: 1/100mm/Sec
    – 1: mm/Sec
    – 2:m/Sec
  – Access|Size|Type
    Read|8 Byte|double

- FA data

  **Read axis acceleration**

  – Command
    AxisAcc
  – ID
    100003
  – Index 1
    Axis number
  – Index 2
    Selector: Scaling

  - 0: 1/100mm/Sec^2
  - 1: mm/Sec^2
  - 2: m/Sec^2
- Access|Size|Type
  Read|8 Byte|double

## 2.2.28 System axis coupling (SAC): monitoring window for axis target positions (from 15V14)

**Feature number:** [FEAT-289680]

**Brief description:** It is now possible to define a monitoring window in the system axis coupling (SAC). This window uses the target positions of the axes instead of the actual axis positions. The element SD.SysAxCoupleCmd[x].PosWinSel was extended by two menu items 11 and 12 in the SAC control structure.

- .PosWinSel Byte
  - **11** Lag monitoring with PosWin[2] - target position
  - **12** Lag monitoring with PosWin[2] - target position

The maximum position difference is set in the SD.SysAxCoupleCmd[x].PosWin[1..2] item.

- .PosWin[1..2] Double mm,°

To be able to use monitoring, the SD.SysAxCoupleCmd[x].RecoupleEnable item has to be set to TRUE.

- .RecoupleEnable BOOL
  - **TRUE** recoupling permitted
  - **FALSE** Interruption of coupling triggers error

The errors are evaluated in the SD.SysAxCoupleCmd[x].AbortEnable item by setting bit 24.

- .AbortEnable BITMASK 24
  - **16777216** Exiting the selected accuracy window of the synchronous run monitoring

Example:

1 SD.SysAxCoupleCmd[SLAVE%].RecoupleEnable = TRUE

1 SD.SysAxCoupleCmd[SLAVE%].PosWinSel = 11

1 SD.SysAxCoupleCmd[SLAVE%].PosWin[1] = 1

1 SD.SysAxCoupleCmd[SLAVE%].AbortEnable = 16777216 + 2

1 SD.SysAxCoupleCmd[SLAVE%].AbortAction = 4

- As long as the command value difference is within the range of position window 1, the NC tries to balance the lag using the coupling mechanism (re-coupling)
- A channel error occurred when exceeding the position window.

## 2.2.29 Shape cutting technology: Functional extension during piercing and more bug fixes (from 15V12)

**Feature number:** [FEAT-295240]

**Brief description**

1. The cycle command “PIERCING” can either be programmed with or without coordinates. The "SD.SysPiercing.ProgName" system date differentiates whether piercing should be executed or not.
   - Example 1:

     The parameter SD.SysPiercing.ProgName contains a valid path with program names, the piercing sequence is loaded and executed.
   - Example 2:

     The parameter SD.SysPiercing.ProgName does not contain a valid path with program names and an error message is generated.
   - Example 3:

     The parameter SD.SysPiercing.ProgName contains an empty string. Piercing is not executed. The process continues to run.
2. Bug fixes in focus control and height control (PlateSearch)

## 2.2.30 Adjusting the IndraWorks Operation Simulator to integrate an OEM user interface (HMI) (from 15V12)

**Feature number:** [FEAT-258449]

**Brief description** The IndraWorks Operation Simulator can be switched to an integration mode from version 15V12 by specifying a command line switch (OpdEmbeddedMode) or by adjusting a configuration file. In this mode, all panel keys (OP-, M- and F-keys) immediately respond to a mouse-click, irrespective of the activation state of the IndraWorks Operation Simulator. The F-key pad is not deleted when disabling the application. This allows the OEMS to directly integrate the application window of the IndraWorks Operation Simulator in the HMI interface.

## 2.2.31 New 4-axis transformation (type 3: RLLLR): CLLL (from 15V12)

**Feature number:** [FEAT-296179]

**Brief description** In addition to the already available axis transformation ALLL and BLLL, the new 4-axis transformation CLLL was developed. To use CLLL, the value 300 (C (rotary)) has to be entered in the "Classification system axis/coordinate" (CoordClass, Macoda-ID 1030 00125) machine parameter.

## 2.2.32 New NC cycles: G628, G629 Measuring in space (from 15V12)

**Feature number:** [FEAT-247697]

**Brief description** Measuring in space is facilitated by using the cycles G628 and G629 for the transformation types RRLLL, RLLLR and LLLRR. By using a probe and a calibrated ball, G629 determines the center of the calibrated ball.. The cycle G628 calculates the plane orientation by using three probed ball center points.

## 2.2.33 Feature 188149 Function extensions in the context of fast actions and system axis coupling (SAC) (from 15V12)

**Feature number:** [FEAT-55617]

**Brief description** Fast Action (FA) and system axis coupling (SAC):

New internal data group to exchange 64 bit floating point numbers

- A new internal data group was created to increase accuracy: SD.FA2SAC[<i>] with i: 1..20

- This data group consists of 20 "double” values (64 bit floating point numbers)
- The data group access is restricted to fast actions (FA) and to system axis coupling (SAC)
- There is no access option for all other instances: Thus, it i not possible to access this data group by using e.g. an NC variable editor or a PLC function block

Fast action (FA) and system axis coupling (SAC): new “fast action” data elements with data for the slave axis

- There are four new "Fast Action" access items with the FA data ID 100010 to access data elements of the system axis coupling. The data elements are of type 64 bit floating point number.
- Index2 = 0: Coupling lag of slave axis;

  Difference between reference position and current target position

  Unit [mm]
- Index2 = 1: Master position of slave axis

  Position command value resulting from the coupling relation

  Unit [mm]
- Index2 = 2: Target position of slave axis

  Currently generated position command value which can deviate from the reference position during coupling and when coupling is interrupted

  Unit [mm]
- Index2 = 3: Target velocity of slave axis

  Unit [0.01 mm/s]

## 2.2.34 Calotte transformation (from 15V10)

**Feature number:** [FEAT-6079]

**Brief description** Using the calotte transformation, traverse a contour on a calotte without taking their form into consideration for programming.

For more information about this function, refer to the following product information:

"MTX 15VRS Functional Description - Basics", DOK-MTX***-NC*F*BA*V15-RE02-EN-P (R911401401), chapter "Calotte transformation CaloGeo (CLG), CaloCrd (CLC)"

## 2.2.35 5-axis tripod transformation (from 15V10)

**Feature number:** [FEAT-5699/118307]

**Brief description** The MTX control system is now also equipped via a tripod transformation allowing for a 5-axis machining.

For more information about this function, refer to the following product information:

" MTX 15VRS Functional Description - Extension", DOK-MTX***-NC*F*EX*V15-RERS-EN-P (R911393316):

- Chapter "5-axis transformation - type 7: Tripod transformation with wobble plate"
- Chapter "5-axis transformation - type 8: Tripod transformation with wobble plate and additional C-axis for tangential too guidance"

## 2.2.36 Measuring in space (from 15V10)

**Feature number:** [FEAT-80493]

**Brief description** The ProbeBall cycle determines the center of a sphere. The measuring cycle is started and automatically misses the sphere by probing 5 points. Thus, the sphere center position is measured in BCS and WCS. The PlaneCalc cycle calculates the orientation of a plane using three sphere centers determined by a ProbeBall.

## 2.2.37 Circle programming: Tolerant behavior in the case of inaccurate NC programming (from 15V04)

**Brief description** For circle center point generation, offsets/corrections of the center point are tolerated which result from programming tolerances in the drive resolution. Inaccurate programming outside the tolerances will still cause an error message if the center point offset is big (greater than MP 70500020).

## 2.2.38 Fast actions MTX fa (fast action): Increased number of cyclic data elements (from 15V04)

**Brief description** It is now possible to transmit up to 500 FA data elements. Previously, the number had been limited to 20 data elements.

The number of cyclic elements can be adjusted in the "sdfa.xsd" schema file.

In the "sdfa.xsd" schema, the number can be increased to a maximum of 500 elements by <xs:element name="CycData" maxOccurs="500">

The number of cyclic elements is identical for all PLC tasks, i.e. increasing the number has an effect on all the configured PLC FA tasks.

If only one PLC FA task is required, adjust the setting in "sdfa.xsd" for resource optimization:

<xs:element name="PLCTask" minOccurs="0" maxOccurs="1>

## 2.2.39 Fast actions MTX fa (fast action): new FA data (from 15V04)

**Brief description** There are three more data elements that can be exchanged between fast NC task and fast PLC task:

- Advance-Distance-Signal-LABel (ADSLAB)
- Interpolator block switching
- NC block line number

## 2.2.40 Measuring cycle for axis-parallel measuring of the center point of a sphere with defined radius (from 15V02)

**Feature number:** FEAT-00074109

**Brief description:** Use cycle G328 "Probe sphere" to determine the sphere center point with known radius by using axis-parallel measuring. Furthermore, the function is available in the "Manual" operation mode as manual measuring function.

## 2.2.41 Automatic linear-circular-spline conversion (from 15V02)

**Feature number:** FEAT-00065957

**Brief description:** The function converts a contour programmed with straight lines and circles into a spline sequence. Each motion specified with G1 (straight line interpolation with feed) and specified with G2/G3/G5 (circular/helical interpolation) is sectioned into a polyline. The number of points depends on the specified tolerance (BAP(E<Tol>)). The generated points are subsequently connected by splines. Programmed as well as MTX-internally generated straight lines and

circles (roundings, chamfers, inserted blocks of the milling path correction) are converted.

# 2.3 Communication

## 2.3.1 OPC UA: Access to Sercos parameters (from 14V22 Patch 17.2, from 15V20 Patch 0.1)

**FEAT-ID:** [FEAT-753431]

**Brief description:** The OPC UA Server enables read access to the elements of the Sercos parameters and write access to the operating date of the Sercos parameters. The NC.Sercos.GetParameter and NC.Sercos.SetParameter methods are provided for this purpose.

**Method NC.Sercos.GetParameter:**

The item is used for read access to drive parameters if the drives can be accessed via the control. Drives are selected via the DeviceNumber.

**NodeId of the method:**

| | |
|---|---|
| NamespaceIndex: | 27 |
| IdentifierType: | String |
| Identifier: | NC.Sercos.GetParameter |

**Syntax:**

GetParameter (
[in] UInt32 DeviceNumber
[in] String IDN
[in] UInt32 ElementMask
[out] UInt16 DataStatus
[out] String Name
[out] UInt32 Attributes
[out] String Unit
[out] String MinValue
[out] String MaxValue
[out] String Value
[out] UInt32 ListLength
[out] UInt32 ListMaxLength
);

| | |
|---|---|
| DeviceNumber | Normally: Drive address<br>Upon start-up with topology addressing: Topology address |
| IDN | Sercos-Ident in string format |

| | |
|---|---|
| ElementMask | Bit mask for specifying which data elements of the Sercos parameter are to be read. The values can be linked using "OR".<br>0x01 DataStatus<br>0x02 Name<br>0x04 Attributes<br>0x08 Unit<br>0x10 MinValue<br>0x20 MaxValue<br>0x40 Value |
| DataStatus | Data status<br>(if not requested: 0) |
| Name | Name<br>(if not requested: empty string) |
| Attributes | Attributes<br>(if not requested: 0) |
| Unit | Unit<br>(if the parameter does not support this element: "--")<br>(if not requested: empty string) |
| MinValue | Minimum input value in display format<br>(if the parameter does not support this element: "--")<br>(if not requested: empty string) |
| MaxValue | Maximum input value in display format<br>(if the parameter does not support this element: "--")<br>(if not requested: empty string) |
| Value | Operating date in display format<br>For a list parameter, the individual values are separated by a line break "\n"<br>(if not requested: empty string) |
| ListLength | If Value is a list parameter: Length of the list<br>else: 0<br>(if value is not requested: 0) |
| ListMaxLength | If Value is a list parameter: Maximum length of the list<br>else: 0<br>(if value is not requested: 0) |

### Method NC.Sercos.SetParameter:

The item is used for write access to drive parameters if the drives can be accessed via the control. Drives are selected via the DeviceNumber.

**NodeId of the method:**

| | |
|---|---|
| NamespaceIndex: | 27 |
| IdentifierType: | String |
| Identifier: | NC.Sercos.SetParameter |

**Syntax:**

```
SetParameter (
[in] UInt32 DeviceNumber
[in] String IDN
[in] String value
[in] UInt32 Attributes
);
```

| | |
|---|---|
| DeviceNumber | Normally: Drive address<br>Upon start-up with topology addressing: Topology address |
| IDN | Sercos-Ident in string format |
| Value | Operating date in display format<br>For a list parameter, the individual values have to be separated by a line break "\n". |
| Attributes | Attribute (optional, value "0" has the same effect as not available).<br>Specifying the attribute improves the performance of the item. |

## 2.3.2 From IndraWorks 15V20, the Tool Calling Interface (TCI) also supports selected online use cases (from 15V20)

**Feature number:** [FEAT-482874]

**Brief description:** From IndraWorks 15V20, the Tool Calling Interface (TCI) also supports selected online use cases.

By activating the optional IndraWorks TCI-CommunicationServer, Conformance Class C3 is supported for Profinet devices.

See IndraWorks 15VRS Field Bus documentation, chapter "Profinet IO, Tool Calling Interface (TCI)" / "Activating and using the optional IndraWorks TCI communication server".

An online use case for Device Tools is the assignment of the PROFIsafe address for PROFIsafe devices. Refer to the documentation of the PROFIsafe device manufacturer.

If you have any questions, please contact your contact person at Bosch Rexroth or the MLC & MTX support.

## 2.3.3 OPC UA: The certificates are stored in the OEM Project Data (from 15V18)

**Feature number:** [FEAT-439493]

**Brief description:** The OPC UA certificates are now stored in the OEM Project Data. The repository path is "\IndraMotionMTX\OEM\ProjectData\CertificateStore". The certificates can be accessed via the Explorer in IndraWorks Engineering. Upon the initial control start with the new firmware, the new certificate repository is

created. This results in the old certificate repository to be deleted. Any existing certificates are also deleted. A new certificate exchange for encrypted OPC UA communication is required. However, the certificate repository along with the certificates are retained in future firmware upgrades.

### 2.3.4 OPC UA server: New method "CopyFile" in the file system address space (from 15V14 Patch 1)

**Feature number:** [FEAT-302659]

**Brief description:** The CopyFile method is used to copy a file.

The method can be parameterized so that an already existing target file is overwritten.

### 2.3.5 Repositioning to the contour via OPC UA (from 15V12)

**Feature number:** [FEAT-233905]

**Brief description:** The following OPC UA nodes are available for leaving and returning to contour:

- NC.Chan.ReturnToContour.Strategy (variable)
- NC.Chan.ReturnToContour.Recording (variable)
- NC.Chan.ReturnToContour.RetContPath (variable)
- FinishRecording (method)

### 2.3.6 Extend NC.DynamicRT diagnostics (from 15V10)

**Feature number:** [FEAT-137225]

**Brief description:** The diagnostic item NC.DynamicDataRTDiag is available for NC.DynamicRT.

### 2.3.7 Automatic execution of an oscilloscope measurement with serveral devices (from 15V10)

**Feature number:** [FEAT-217810]

**Brief description:** The following new OPC UA items are provided for the oscilloscope:

- Variable: NC.Osci.SupportedDrives
- Method: NC.Osci.ConfigureDrives

### 2.3.8 OPC UA server: Make "Non Secure Communication" deactivatable (from 15V08 onwards)

**Feature number:** [FEAT-155559]

**Brief description:** Unsecure endpoints might be deactivated.

### 2.3.9 OPC UA server: Reading out NC.DbTableDataRec and NC.SystemDataXml as XML-stream (from 15V08 onwards)

**Feature number:** [FEAT-129480]

**Brief description:** Reading out NC.DbTableDataRec and NC.SystemDataXml as XML-stream is also possible.

### 2.3.10 OPC UA server: Function Plc.State2 (from 15V08 onwards)

**Feature number:** [FEAT-62712]

**Brief description:** The state of the loaded PLC application in the item ApplicationSate is displayed.

### 2.3.11 OPC UA server: Sercos phase switching in MTX (compare NC.SercosPhase) (from 15V08 onwards)

**Feature number:** [FEAT-60327]

**Brief description:** Support of Sercos phase switching.

### 2.3.12 OPC UA server: MTX-system data (from 15V08 onwards)

**Feature number:** [FEAT-00007817]

**Brief description:** Illustrating MTX system data in the OPC UA address space is supported. System structures might be read and written.

### 2.3.13 OPC UA: Access to structured data of PLC (from 15V06 onwards) patch 1

**Feature number:** [FEAT-00073031]

**Brief description:** Support of data access to structures of PLC applications via OPC UA. It is possible to access the complete structure or individual elements of the structure. For access, corresponding structures must be released via the symbol configuration.

### 2.3.14 OPC UA server: NC.DataRT version 2 (support of many channels) (from 15V06)

**Feature number:** [FEAT-60329]

**Brief description:** The new item "NC.DynamicDataRT" supports the recording of different NC data from several NC channels in the interpolator cycle.

### 2.3.15 Function block for supply as DC/DC-converters (e.g. HMU05, Drive X) (from 15V06 onwards)

**Feature number:** [REQ-00076318]

**Brief description:** Function blocks MB_SIIIPowerSupplyDcDcIslandGrid in library RMB_SercosIII_Util monitors and controls a supplier with one of the function packages of DCE for DC/DC-converter mode or MSE for microgrit mode.

### 2.3.16 Extending the OPC UA Sercos provider by the representation of controller axes (from 15V02)

**Feature number:** [FEAT-00073032]

**Brief description:** Sercos controller axes configured in the MLC parameter "C-0-0484" are represented in the OPC UA address space and is mapped as the other Sercos devices. Read and write access is provided to the parameters.

### 2.3.17 OPC UA server: Setting the system time (from 15V02)

**Feature number:** [FEAT-00072489]

**Brief description:** The OPC UA server facilitates direct setting of the system time and an automatic time synchronization with a time server.

### 2.3.18 OPC UA server: Access to database-based tables (tool tables) (from 15V02)

**Feature number:** [FEAT-00025266]

**Brief description:** The OPC UA server allows read and write access to the database-based tables (tool tables) of the CNC control. A complete data set, a sub-structure of a data set or an individual value can be accessed. The table structure (sec-

tors, places) and the data set structure can be determined by browsing. The methods: Load, Save, Query and Unlock are available.

### 2.3.19 New function blocks to read and write I/O link parameters from/to a Sercos device (from 15V02)

**Feature number:** [FEAT-00071945]

**Brief description:** By providing a Sercos I/O link gateway, there is the option to connect I/O link devices to the Sercos bus via the gateway. The new function blocks allow to read and write parameters from the connected I/O link devices. I/O mater parameters can also be read/written. For more Information refer to the documentation in the RIL_Sercos III library.

## 2.4 HMI solutions

### 2.4.1 New “operating mode" for the IndraWorks Operation Simulator: The “integration mode” to integrate in an OEM-specific HMI interfaces (from 15V14)

**Feature number:** [FEAT-258449]

**Brief description:** The IndraWorks Operation Simulator can be switched to an integration mode from version 15V14 by specifying a command line switch (OpdEmbeddedMode) or by adjusting a configuration file. In this mode, all control keys (OP-, M- and F-keys) immediately respond to a mouse-click, irrespective of the activation state of the IndraWorks Operation Simulator. The F-key pad is not deleted when disabling the application. This allows the OEMS to directly integrate the application window of the IndraWorks Operation Simulator in the HMI interface.

### 2.4.2 Revision of IndraWorks device library for HMI-device

**Feature number:** [FEAT-00072813]

**Brief description:** HMI devices are removed from the device library. These devices are not sold anymore and are thus not provided anymore (e.g. VPP21.1 XP device or VEH30 XPe device). The devices cannot be created in a project anymore. This applies to new projects, existing projects and projects in an older compatibility mode (e.g. 13V10). Existing projects already containing such a device can be edited.

### 2.4.3 MTXencrypt - silent call

**Feature number:** [FEAT-00074691]

**Brief description:** The application to encrypt NC programs can be called automatically without any input dialog. Thus, it is possible to automatically encrypt NC programs generated by a machine and to subsequently transmit it to the control.

### 2.4.4 Hamburger menu for MTX applications

**Feature number:** [FEAT-00072711]

**Brief description:** The introduction of the so-called "Burger-menu", as it is also known from tablets and smartphones, leads to a simple and clear operation of the MTX applications. Thus, F-button levels can be reduced considerably.

The burger menu is characterized by a symbol (icon) with three horizontal lines placed parallel to each other. The structure of the icon symbolizes a menu list. The designation "Burger-menu" was created because the icon can be associated with the three layers of a hamburger.

# 2.5 Motion technology

## 2.5.1 MTX supports CSoS (functional safety) for ctrlX DRIVE (from 15V24)

**FEAT-ID:** [FEAT-926176]

**Brief description:** As of IndraWorks MTX 15V24, a safe connection via CIP Safety on Sercos (CSoS) can now also be configured and used with MTX if a ctrlX DRIVE (as of drive firmware AXS-V-0610) is connected. This means that the ctrlX DRIVE behaves in exactly the same way as an IndraDrive at this point. The safe connection can be used to implement safety functions for these ctrlX DRIVE drives in a safety PLC (SafeLogic or SafeLogic compact).

## 2.5.2 Functional safety: Support of the PROFIsafe V2.6 standard (from 15V22 Patch 1)

**FEAT-ID:** [FEAT-812041]

**Brief description:** PROFIsafe V2.6 is supported from IndraWorks 15V22 Patch1. PROFIsafe V2.6 provides new functions, e.g. signal channel-specific passivation, time monitoring for configuration during operation, as well as new error models for calculating the residual error rate in the future edition of IEC 61784-3.

## 2.5.3 Support of the ctrlX DRIVE firmware AXS-V-0504 (from 15V22)

**FEAT-ID:** [FEAT-889699]

**Brief description:** IndraMotion MTX 15V22 also supports the ctrlX DRIVE firmware AXS-V-0504.

## 2.5.4 Support of the ctrlX DRIVE firmware AXS-V-0402 (from 15V20)

**FEAT-ID:** [FEAT-677303]

**Brief description:** IndraMotion MTX 15V20 also supports the ctrlX DRIVE firmware AXS-V-0402.

## 2.5.5 MTX 15VRS - ctrlX DRIVE support (from 15V10)

**Feature number:** ADS-55617

**Brief description:** MTX 15V10 now also officially supports the new compact drive system ctrlX DRIVE (from drive firmware V-0206 and newer).

## 2.5.6 Shape cutting remaining open features (from 15V06)

**Feature number:** TFS-110533

**Brief description:** Following extension and improvements were implemented:

- Extended laser power control
- Gas control added
- Performance improvements in contour command (700 ms to 70 ms)
- Performance improvement for sensor calibration (2 s to 300 ms)
- Performance des "Leap Frog" has been improved

## 2.5.7 MTX 15VRS - IndraDrive drive firmware MPx-21VRS support (from 15V06)

**Feature number:** TFS-53417

**Brief description:** MTX 15V06 now also officially supports the IndraDrive drive firmware MPx-21VRS.

### 2.5.8 Project template for shape cutting technology in IndraWorks (from 15V04)

**FEAT-ID:** REQ-00074587

**Brief description:** The project template for the shape cutting machine supports the user when configuring and commissioning shape cutting machines. It provides all required technology functions. The project template can be selected when creating a new IndraWorks project.

It can be used for the following machine types:

- Plasma cutters
- Flame cutting machines
- Plasma cutting machines
- Water jet cutting machines
- Combined water jet and sawing machines
- More 2D applications

Furthermore, more shape cutting application such as pipe cutting machines can be realized by using the system MTX. The project template for shape cutting machines, however, cannot be used for these machine types or to a limited extend only. Apart from the regular NC functionality of the system MTX, additional special functions are required for shape cutting machines.

The technology functions comprise:

- Axis distance control
- Fly Cut
- Leap Frog
- Power control
- Re-entry and retrace functionality
- Cutting width compensation
- Axis group (Gantry)
- Continuous Cut
- Material tables

### 2.5.9 No CML control support in 15VRS

**Feature number:** FEAT-00072982

**Brief description:** From IndraWorks 15VRs, the CML controls IndraControl L45, L65, L75, L85 and MTX micro (HCT/HCQ) are not supported anymore. In the device library, the control unit "IndraControl XM42" is available. As these controls technically differ from CML controls and MTX micro (function modules, interfaces), a fully automated conversion of existing projects is not possible. Please refer to the MTX conversion description for project conversion Upgrading the CMLx5 control to the XM42 control in the MTX Release Notes, or in the MTX 15VRS commissioning manual (DOK-MTX***-STARTUP*V15-CORS-EN-P) or in the online help.

## 2.6 Available language packages

### 2.6.1 Extension of the language packages (15V22 Patch 1)

**Feature number:** [FEAT-924627]

**Brief description:** The following MTX-OPD language packages have been added:

- Chinese (traditional) (ZT)

☞ During the update installation, the Chinese (traditional) language has to be explicitly selected, if desired, in order for it to be installed.

Existing language packages have been updated.

## 2.6.2 Extension of the language packages (15V22)

**Feature number:** <none>

**Brief description:** The following MTX-OPD language packages have been added:

- Korean (KO)

☞ During the update installation, the Korean language has to be explicitly selected, if desired, in order for it to be installed.

Existing language packages have been updated.

## 2.6.3 Extension of the language packages (15V16)

**Feature number:** <none>

**Brief description:** The following MTX-OPD language packages have been added:

- Czech (CS)

Existing language packages have been updated.

## 2.6.4 Extension of the language packages (15V14)

**Feature number:** <none>

**Brief description:** The following MTX-OPD language packages have been added:

- Portuguese (PT)

Existing language packages have been updated.

## 2.6.5 Extension of the language packages (15V12)

**Feature number:** <none>

**Brief description:** The following MTX-OPD language packages have been added:

- Polish (PL)
- Hungarian (HU)

Existing language packages have been updated.

## 2.6.6 Extension of the language packages (15V08 Patch 2)

**Feature number:** FEAT-00072847

**Brief description:** The following MTX-OPD language packages have been updated:

- French (FR)
- Italian (IT)
- Spanish (ES)
- Swedish (SV)
- Chinese (ZH-CN)

The following MTX-OPD language packages have been added:

- Turkish (TR)

The following ENG language packages have been updated:

- Chinese (ZH-CN)

# 2.7 Miscellaneous

## 2.7.1 Elimination of the "Year 2038 problem" (Y2K38) (from 15V24)

**Feature number:** [FEAT-405227]

In 2038, or more precisely on January 19, 2038, there will be an increasing number of failures of electronic devices of all kinds that internally process "Unix time" as a signed 32-bit integer. Unix time counts the time elapsed in seconds since January 1, 1970. On January 19, 2038 at 03:14:07 UTC, the number of seconds elapsed causes the most significant bit (MSB) of the 32-bit integer to be set. If it is a value with a sign, it is interpreted as a negative number. January 19, 2038 then suddenly becomes December 13, 1901 UTC. This date change results in software and firmware crashes and thus to the failure of many devices and machines.

The IndraWorks Suite from Bosch Rexroth has already dealt with this problem and eliminated the Y2K38 problem:

As of version IndraWorks Suite 15V24, the control and drive system continues to function reliably after January 19, 2038.

# 3 Overview of supported Microsoft Windows versions

The Bosch Rexroth IndraWorks software uses the .NET Framework from Microsoft as software platform.

The different Microsoft Windows operating system versions use and support different versions of the Microsoft .NET Framework.

For details, see "System requirements for .NET Framework"(https://learn.microsoft.com/de-de/dotnet/framework/get-started/system-requirements).

These dependencies mean that certain newer IndraWorks software versions can no longer be used on older Microsoft Windows operating systems.

| IndraWorks versions | Required .NET Framework | Windows versions that are not supported |
|---|---|---|
| 15V24 | 4.8 | Windows 10 (Version 1511)<br>Windows 10 (Version 1507) / IoT Enterprise LTSB 2015 |
| 15V02 ... 15V22 Patch 1 | 4.6 | No restrictions with Windows 10 and Windows 11 |

# 4 Overview of MTX 15VRS software/firmware versions

The following table lists the associated software/firmware versions with the following information:

- Overview of MTX versions and their release date
- Specification of the associated IndraWorks MTX software versions and MTX NC kernel firmware versions
- Specification of the preferred IndraDrive drive firmware versions
- Specifying the "latest" supported ctrlX DRIVE drive firmware versions

| MTX version | Date | IndraWorks MTX | NC kernel | IndraDrive | ctrlX DRIVE |
|---|---|---|---|---|---|
| 15V24 | 2026-03 | 15.24.1 | 23.24.3.0 | MPx-20V32 | AXS-V-0610 |
| 15V22 Patch1 | 2025-05 | 15.22.2 | 23.22.7.0 | MPx-20V32 | AXS-V-0504 |
| 15V22 | 2024-07 | 15.22.0 | 23.22.2.0 | MPx-20V32 | AXS-V-0504 |
| 15V20 | 2023-11 | 15.20.0 | 23.20.2.0 | MPx-20V32 | AXS-V-0402 |
| 15V18 Patch1 | 2023-08 | 15.18.3 | 23.18.3.0 | MPx-20V32 | AXS-V-0314 |
| 15V18 | 2023-02 | 15.18.1 | 23.18.2.0 | MPx-20V32 | AXS-V-0314 |
| 15V16 | 2022-07 | 15.16.3 | 23.16.3.0 | MPx-20V28 | AXS-V-0308 |
| 15V14 Patch1 | 2022-03 | 15.14.3 | 23.14.5.0 | MPx-20V28 | AXS-V-0306 |
| 15V14 | 2021-10 | 15.14.1 | 23.14.3.0 | MPx-20V28 | AXS-V-0306 |
| 15V12 Patch1 | 2021-08 | 15.12.4 | 23.12.4.0 | MPx-20V28 | AXS-V-0304 |
| 15V12 | 2021-05 | 15.12.3 | 23.12.3.0 | MPx-20V28 | AXS-V-0206 |
| 15V10 Patch1 | 2021-03 | 15.10.3 | 23.10.7.0 | MPx-20V28 | AXS-V-0206 |
| 15V10 | 2020-12 | 15.10.0 | 23.10.5.0 | MPx-20V26 | AXS-V-0206 |
| 15V08 Patch2 | 2020-10 | 15.8.3 | 23.8.5.0 | MPx-20V26 | - - - |
| 15V08 | 2020-07 | 15.8.1 | 23.8.5.0 | MPx-20V26 | - - - |
| 15V06 Patch1 | 2020-01 | 15.6.6 | 23.6.5.0 | MPx-20V18 | - - - |
| 15V06 | 2019-11 | 15.6.1 | 23.6.3.0 | MPx-20V18 | - - - |
| 15V04 | 2019-08 | 15.4.4 | 23.4.3.0 | MPx-20V18 | - - - |
| 15V02 | 2019-04 | 15.2.3 | 23.2.3.0 | MPx-20V18 | - - - |

*Tab. 4-1: Overview of MTX 15VRS software/firmware versions*

# 5 MTX 15V24 Firmware and Software

## 5.1 Compatibility settings in IndraWorks Engineering

The following compatibility settings apply to MTX 15V24 in IndraWorks Engineering:

| | |
|---|---|
| Menu item<br>**Project ▸ Changing the compatibility mode...** | 15V24 |
| Menu item<br>**Project ▸ Changing the PLC compiler version...** | 3.5.15.60 (15V20) |
| Project node of the control<br>**Properties...** – Tab "Configuration" -Firmware release:<br>(Control node "offline" and PLC "logged out") | FW*-MTX-XM42-23.24 (15V24) |
| Project node of the HMI device<br>**Properties...** -Device version: | 15V24 |

*Tab. 5-1: Compatibility settings for IndraMotion MTX 15V24*

## 5.2 Software

### 5.2.1 Resolved defects

#### IndraWorks ML / Engineering / _Other

**IndraWorks Engineering: Sporadic "System.OutOfMemoryException" exception errors, especially in connection with VCS**

**CQ-ID:** Defdb00212994

**Severity:** K3 - malfunction (no workaround)

**Description:** When working with IndraWorks Engineering, the exception error "System.OutOfMemoryException" occurred sporadically. Errors of this type occurred mainly when using the version control system (VCS) and meant that IndraWorks could no longer be operated. In order to continue working, IndraWorks Engineering had to be closed.

#### IndraWorks ML / Engineering / PLC Programming

**IndraWorks Engineering: The "Cross-reference list" command does not show all usage locations of the referenced PLC variables**

**CQ-ID:** Defdb00212642

**Severity:** K3 - malfunction (no workaround)

**Description:** The "Cross-reference list" command is actually intended to display all usage locations of a PLC variable:

Declaration, read and write accesses.

However, in many cases only the declaration of the PLC variables was displayed. The read and write accesses were often ignored.

#### IndraWorks MTX / _Other

**MTX NC Simulation: With generically created geometries, 180° arcs were often not displayed**

**CQ-ID:** Defdb00213054

**Severity:** K2 - serious malfunction

**Description:** If geometries are defined by extruding or rotating two-dimensional contours and these contours contain circular arcs with an approximate opening angle of 180°, then these circular arcs were often not displayed.

### IndraWorks version switching from V15 to V14 fails if the user name contains a space

**CQ-ID:** Defdb00213307

**Severity:** K4 - malfunction

**Description:** During an IndraWorks multiple installation, the version switching from version 15 to version 14 was canceled with an error if the user name of the user contained a "space". Subsequently, only a repair installation of version 15 was possible to get it running again.

### Safety warning BOSCH-SA-591522: Vulnerabilities in Rexroth IndraWorks

**CQ-ID:** Defdb00213430

**Severity:** K2 - serious malfunction

**Description:** Trend Micro has identified several vulnerabilities in Rexroth IndraWorks that affect both IndraWorks and the service programs included in the package. In the worst case, a successful attack leads to remote code execution.

Warning ID: BOSCH-SA-591522

Affected products

• Rexroth IndraWorks

• Rexroth OPC DA Client

• Rexroth UA.TestClient

Details: https://psirt.bosch.com/security-advisories/BOSCH-SA-591522.html

**Fixing:** • OPC DA Client: Fixed with IndraWorks 15V24.

• UA.TestClient: As of IndraWorks 15V24, the UA.TestClient is no longer included in the standard scope of delivery of the IndraWorks installation. If required, users can download the UA.TestClient-2.14.0 from Bosch Rexroth or the UaExpert from Unified Automation.

**Workaround:** • OPC DA Client: For older IndraWorks 15VRS releases, the OPC DA Client V33.0.0.0 is available in the Bosch Rexroth "Downloads" section, this version is not affected by the vulnerability.

Link: https://www.boschrexroth.com/de/de/media-details/2f969694-b755-407f-9d02-8f86aee0e98c

• UA.TestClient: In the Bosch Rexroth "Collaboration Rooms" the UA.TestClient-2.14.0 is available, which is not affected by the vulnerability.

Navigation: Home > myRexroth > myRexroth Home > Collaboration Rooms > ctrlX AUTOMATION > ctrlX Store > ctrlX OS - OPC UA Apps > UA.TestClient-2.14.0

Link: https://www.boschrexroth.com/de/de/myrexroth/collaboration/collaboration-rooms/?path=/Ctrlx-Automation/ctrlX_eShop/ctrlX%20CORE%20-%20OPC%20UA%20Apps

Users of both applications are strongly advised to download the standalone packages and replace the vulnerable versions in the IndraWorks installation folder.

## IndraWorks MTX / Engineering / _Other

### IndraWorks Engineering: The error status for ctrlX DRIVE drives is not displayed in the project tree

**CQ-ID:** Defdb00213205

**Severity:** K3 - malfunction (no workaround)

**Description:** If the control and drive are switched "online" in IndraWorks Engineering, drive errors are displayed in the IndraWorks project tree:

The affected axis is marked with an exclamation mark and is displayed in red.

This does not work anymore for ctrlX DRIVE drives.

## IndraWorks MTX / Engineering / Drive

### IndraDrive: Sercos cycle time shows the value "invalid"

**CQ-ID:** Defdb00212956

**Severity:** K3 - malfunction (no workaround)

**Description:** The parameter S-0-0002 was displayed for the cycle time in the Sercos protocol in the Management Communication dialog. However, this parameter does not exist in the firmware. The parameter S-0-1002 should be displayed instead.

**Fixing:** In case of the Sercos master communication, parameter S-0-1002 is displayed as the cycle time.

## IndraWorks MTX / Engineering / Firmware Management

### IndraWorks Engineering: Sporadic cancellation of the MTX firmware download

**CQ-ID:** Defdb00213014

**Severity:** K4 - malfunction

**Description:** Sporadically, the download process was aborted when updating the MTX control firmware. This may be due to network problems or a too slow control start-up.

**Fixing:** In this particular context, robustness and diagnostics have been improved.

## IndraWorks MTX / Engineering / HMI

### IndraWorks Engineering: Double-click on "*.xiwp" file creates "debug.log" file

**CQ-ID:** Defdb00213137

**Severity:** K3 - malfunction (no workaround)

**Description:** Double-click on an IndraWorks project file (file extension ".xiwp") to open IndraWorks Engineering. However, this type of call resulted in a diagnostic file with the name "debug.log" being created in the directory of the IndraWorks project file used.

### IndraWorks 15VRS Incorrect Windows program icon for IndraWorks project files

**CQ-ID:** Defdb00213138

**Severity:** K3 - malfunction (no workaround)

**Description:** The Windows program icon of IndraWorks Engineering 14VRS and IndraWorks Engineering 15VRS is different. When using IndraWorks 15VRS, the IndraWorks project file was still assigned the "obsolete" Windows program icon of IndraWorks 14VRS.

### IndraWorks Suite 15VRS: PLC check functions not up-to-date

**CQ-ID:** Defdb00213216

**Severity:** K2 - serious malfunction

**Description:** The PLC check functions are a tool for finding any programming errors in a PLC program. The following check functions (POUs for implicit checks) are available for this purpose:

- CheckBounds, CheckPointer
- CheckDivInt, CheckDivLInt, CheckDivLReal, CheckDivReal
- CheckRangeSigned, CheckRangeUnsigned

Previously, POU version 13.1.0.0 has been used in the IndraWorks Suite 15VRS. However, this version has not been up-to-date for some time.

**Fixing:** The outdated PLC check functions (check functions) have been updated. The current version of the POUs is now version 14.0.0.0 from Nov. 04th 2024

## IndraWorks MTX / Engineering / PLC Programming

### IndraWorks Engineering: Language switching for comments of PLC structure variables does not work

**CQ-ID:** Defdb00212964

**Severity:** K3 - malfunction (no workaround)

**Description:** Following a language switch in the IndraWorks project, the translated comments for PLC variables of type STRUCT were not available and were therefore not displayed. When "logging in" to the PLC, compilation errors occurred.

## IndraWorks MTX / Operation / NC Operating

### IndraWorks Operation: Incorrect display of the locked M-key "Progr. set"

**CQ-ID:** Defdb00213140

**Severity:** K2 - serious malfunction

**Description:** If the function of a machine operating button (M-key) is not available due to the situation ("locked" status), the label of this M-key is grayed out. Only the button is still displayed in white.

When the M-key "Progr. blk" (M-Panel GlobalAutoLeft") was locked, not only the label but also the button was grayed out.

### IWO, Multitouch: Configuration dialogs in the additional operating area partly only in German

**CQ-ID:** Defdb00213185

**Severity:** K3 - malfunction (no workaround)

**Description:** IndraWorks Operation multitouch user interface:

The configuration dialogs for the "Home Control" and "VAM" (virtual machine keyboard) tabs in the additional operating area of IndraWorks Operation were always displayed in German, regardless of the language set.

### IWO, Multitouch: Functions in the "Prepare" operating area cannot be operated when the virtual keyboard is activated

**CQ-ID:** Defdb00213257

**Severity:** K4 - malfunction

**Description:** IndraWorks Operation multitouch user interface:

If an input mask has been created in the "Prepare" operating area, e.g. “Probe zero point" was activated and the virtual keyboard in the additional operating area was active at this time, the input screen associated with the function was not displayed.

The problem was limited to IndraWorks Operation (OperationDesktop) and did not affect IndraWorks Operation Simulator (HostedOperationDesktop).

### IndraWorks MTX / Operation / NC Programming

#### IWO, NC-Editor: Screen content "jumps" uncontrollably several lines when scrolling and clicking on a line

**CQ-ID:** Defdb00212686

**Severity:** K3 - malfunction (no workaround)

**Description:** When "scrolling" through an NC program or a text in the NC editor, a display problem occurs under certain circumstances:

The screen content does not move continuously, but "jumps" by several lines in a seemingly uncontrolled manner. This also happens when you click on a text line.

The problem depended on the ratio of the font size to the window height and occurred when lines of text at the top and bottom of the text area were only partially visible. Only the "Editor for editing regular files" was affected by this problem, not the text editor for large files.

## 5.2.2 Known issues

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been created incorrectly

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT.

- This global variable list is located in the general module folder.

- This GVL is not provided with {attribute 'qualified_only’}.

Example:

Definition in the general module folder:

VAR_GLOBAL RETAIN PERSISTENT

RetainVar2 :INT;

END_VAR

After executing the command "Add all instance paths", the PersistenVars says:

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created

.RetainVar2: INT;

END_VAR

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

{attribute 'qualified_only'}

VAR_GLOBAL RETAIN PERSISTENT

RetainVar2 :INT;

END_VAR

Result after executing the command "Add all instance paths":

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created

GVLRetain2.RetainVar2: INT;

END_VAR

### PLC compilation error as different objects with the same name are defined in different libraries

**CQ-ID:** Defdb00212022

**Severity:** K4 - malfunction

**Description:** When updating an existing PLC project to a new IndraWorks software version, compilation errors may occur in the PLC program, as new objects are defined in newer PLC libraries whose designation is already used in other, older PLC libraries. That means: There are objects with the same name which can be defined differently. Their use by name in the PLC program can then result in compilation errors as an incorrect object may be accessed.

**Workaround:** In this case, using the library's namespace provides the necessary remedy: For a unique access, add the namespace in front of the function block name: <namespace>.<variable name>

Specific example:

- In version MTX 14VRS, the “Timezone” structure is contained in the PLC library RIL_Utilities.

- In version MTX 15VRS, there is an additional "Timezone" structure in the PLC library Util.

- Although identical in name, the two structures are defined differently.

- In the case of simple, named use in the PLC program, it is not clear which of the two structures is used. That can result in access or compilation errors.

- Remedy: Insert the namespace of the library before the name of the structure.

- Original program line:

Timezone: IL_TIMEZONE := Timezone.CEST;

- Corrected program line:

Timezone: IL_TIMEZONE := RIL_Utilities.Timezone.CEST;

### PROFINET I/O module, "Remove device" function results in error message "The name <empty> is not valid for the device"

**CQ-ID:** Defdb00212951

**Severity:** K4 - malfunction

**Description:** In certain cases, the "Remove device" function results in the error message "The name <empty> is not valid for the device". This means that the device cannot be removed.

**Workaround:** The associated logic I/O below the SafetyApp first has to be deleted manually. The associated PROFINET I/O module can then be successfully removed using the "Remove device" function.

Optionally, the connection to the “Logic I/O" can first be reset manually in the "I/O image" tab of the PROFINET I/O module editor.

## IndraWorks ML / Engineering / PLC Safety

### Only the "Extended format" can be used for CIP Safety on Sercos devices (CSoS targets).

**CQ-ID:** Defdb00210688

**Severity:** K4 - malfunction

**Description:** Only the "Extended format" can be used for CIP Safety on Sercos devices (CSoS targets). The "Extended Format" is preset for the CIP Safety connection (IndraWorks SafeLogic, Editor for logic I/Os, "Safe configuration" tab, attribute "Format Type")

The "Base Format" must not be used anymore as it does not comply with the specifications of IEC 61784-3 Edition 4.0.

The following Rexroth devices (CSoS targets) are affected:

• Sercos IndraDrive mit SMO (Drive_Control, Drive_Status)

• Sercos-S20 Safety Inputs (S20-SSDI-8/4)

• Sercos-S20 Safety Outputs (S20-SSDO-8/3)

### PROFINET GSDML file for Wago Safety I/Os Generation 4 (use with SafeLogic IW15V22P1)

**CQ-ID:** Defdb00212346

**Severity:** K5 - non critical problem

**Description:** The GSDML file suitable for IndraWorks has to be used to operate the Wago Safety I/Os Generation 4.

**Workaround:** With IndraWorks 15V22P1 and SafeLogic SMFW 02V10.0650, SafeLogic also supports PROFIsafe host version 2.6.

The use of the Wago description file "GSDML-V2.33-wago-series750_753-20240415.xml" is recommended.

- Caution: Adding the GSDML file to the IndraWorks device database takes several minutes, the GSDML file is large. Please wait!

- This means that the Wago PROFIsafe version 2.6 submodules and the Wago PROFIsafe version 2.4 submodules are available in IndraWorks.

- Use the Wago PROFIsafe version 2.6 submodules!

## IndraWorks ML / Engineering / SL Manager

### In the "Project Compare - SafetyApp Differences" dialog, the "Print comparison" interface cannot be used

**CQ-ID:** Defdb00208751

**Severity:** K3 - malfunction (no workaround)

**Workaround:** Leave the dialog "Project Compare - SafetyApp Differences" open and return to the dialog "Project compare - Differences". Double-clickk on the difference of the "SafetyApp" object. Thus, it is automatically returned to the "Project Compare - SafetyApp Differences" dialog. Now, the "Print comparison" interface can be used.

## IndraWorks ML / Operation / HMI

### WinStudio: IndraWorks abruptly shuts down when changing the font of a WinStudio image

**CQ-ID:** Defdb00213354

**Severity:** K4 - malfunction

**Description:** When selecting a font for a Winstudio text object that is not installed on the industrial PC, IndraWorks Engineering abruptly shuts down.

**Workaround:** Before selecting a font, make sure that the selected font is also installed on the IPC. To do this, check the link in the properties dialog of the text field.

## IndraWorks MTX / _Other

### IWE: Creating a new project based on the "Shape cutting project" template takes a very long time

**CQ-ID:** Defdb00213439

**Severity:** K4 - malfunction

**Description:** IndraWorks Engineering contains a project template for a "Laser cutting project with multi-touch HMI" for the MTX. With IndraWorks MTX 15V24, creating a new IndraWorks project based on this project template takes very long. Depending on the computing power of the industrial PC used, the process takes between 4 and 15 minutes.

**Workaround:** Please be patient and wait until the process is complete.

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

### IWE: Opening "Configuration CIP Safety on sercos ..." does not work on the ctrlX DRIVE drive project node

**CQ-ID:** Defdb00213438

**Severity:** K4 - malfunction

**Description:** In IndraWorks Engineering, the project nodes of the existing Sercos drives are below the "sercos" project node. Below the drive project nodes is the axis project node (or nodes).

The menu item "Configuration CIP Safety on sercos ..." is provided both at the level of the drive project nodes and at the level of the axis project nodes.

However, with ctrlX DRIVE drives, the call of "Configuration CIP Safety on sercos ..." only works at the level of the axis project nodes and not at the level of the drive project nodes. With IndraDrive drives, the call works on both levels.

**Workaround:** Opening "Configuration CIP Safety on sercos ..." for ctrlX DRIVE drives on the axis project node of the drive.

## IndraWorks MTX / Engineering / Drive

### Changing the Sercos communication to "Service channel" only works after reopening the project

**CQ-ID:** Defdb00213410

**Severity:** K3 - malfunction (no workaround)

**Description:** Generally, Sercos III communication takes place via IP communication, as this is significantly more powerful than via a service channel. However, the Sercos III communication can be switched from IP communication to service channel if required.

The direct change from IP communication to "service channel" does not work with MTX 15V24. Only when the IndraWorks project is closed and reopened, switching to "Service channel" become active.

**Workaround:** If the "Service channel" setting is activated, the project has to be saved and then closed. The changed setting is only applied when the project is opened again.

## IndraWorks MTX / Engineering / HMI

### IndraWorks Engineering terminates itself abruptly under certain circumstances

**CQ-ID:** Defdb00213131

**Severity:** K2 - serious malfunction

**Description:** If the following conditions are met, IndraWorks Engineering terminates abruptly by itself:

- Condition #1: The IndraWorks project includes a WinStudio application.

- Condition #2: IndraWorks Engineering was not started directly, but from IndraWorks Operation.

- Condition #3: IndraWorks Operation is closed.

- Condition #4: The WinStudio project node is opened in the IndraWorks Engineering project explorer.

**Temporary solution:** There are two ways to avoid the problem:

- do not fulfill "Condition #3", i.e. do not exit IndraWorks operation.

- do not fulfill "Condition #2", i.e. do not start IndraWorks Engineering from IndraWorks Operation, but start IndraWorks Engineering separately.

## IndraWorks MTX / Engineering / Periphery

### IndraWorks Engineering: No IP channel support for PROFINET and EtherNet/IP with IndraMotion MTX

**CQ-ID:** Defdb00205647

**Severity:** K3 - malfunction (no workaround)

**Description:** The IndraMotion MTX does not support the IP channel for PROFINET I/Os and Ethernet/IP, although it can be selected in IndraWorks Engineering. The function is not available for MTX.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channels 1…60
- Control 2: NC channels 61…120
- Control 3: NC channels 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the token connected to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token connected to the control name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks Operation: The "PLC variable list" display function is no longer supported

**CQ-ID:** Defdb00212176

**Severity:** K4 - Malfunction

**Description:** The "PLC variable list" function is only supported by MTX versions that include IndraLogic 1G. Since the changeover to IndraLogic 2G (with IndraWorks MTX 12VRS for CMLx5), the display function is no longer supported. The function has not been removed from the MTX product documentation.

**Temporary solution:** The "PLC variable list" function cannot be used. The function is no longer be documented in more recent editions of the MTX product documentation.

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not a enabled or disabled.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Operating

### NC simulation incorrect if the STOCK command is programmed immediately before a rotary axis movement (A,B,C)

**CQ-ID:** Defdb00207873

**Severity:** K3 - malfunction (no workaround)

**Description:** The incorrect behavior occurs if axis motions, affecting the raw part position, i.e. rotary table axes or telescope axes, are programmed immediately after the raw part definition.

As a result, the virtual workpiece does not lie in space as intended, but assumes unwanted intermediate positions. As a result, the wrong raw part position in the NC simulation can then result in a succession of collisions.

Additional remark: The axes with the meaning X, Y and Z do not cause the previously mentioned problem.

**Workaround:** Program only movements of the main axes X, Y or Z immediately after the raw part definition. If it is mandatory to immediately move a rotary axis or telescopic axis which may affect the raw part position. Program a dwell time of approx. 0.2 to 0.5 sec after the STOCK command.

## IndraWorks MTX / Operation / NC Programming

### Input and display in a variable list is limited to 4 decimal places

**CQ-ID:** Defdb00213262

**Severity:** K2 - serious malfunction

**Description:** The representation of the values of SD data with a floating point data type is limited to:

- Data type "Float_t" - 4 decimal places
- Data type "Double_t" - 5 decimal places

If a higher accuracy is required than is ensured by the specified number of decimal places (e.g. when programming in inches), there will be a deviation between the displayed value, which is rounded, and the (exact) variable value in the NC kernel.

**Temporary solution:** In the schema files for those SD data for which a higher accuracy is required, the use of the data type "DoubleHP_t" is recommended.

Adapt existing schemes accordingly.

Variables of the type "DoubleHP_t" cover the same value range as "Double_t" and 9 decimal places are always displayed.

The number of digits before the decimal point must not exceed 7, otherwise the values in the last decimal places are incorrect.

## MTX Firmware / _Other

### Action recorder (ACR): Error message 5110 when creating the AcrLog file

**CQ-ID:** Defdb00212716

**Severity:** K3 - malfunction (no workaround)

**Description:** A new AcrLog file is created when the action recorder (ACR) is started. This action results in error 5110 "MTX acr: Error creating or writing file xxxx". Despite the error message, the file is physically created.

**Workaround:** Perform the ACR initial commissioning wizard:

1. Start IndraWorks Operation
2. Press the OP button "<OP9> Diagnostics"
3. Press the F-key <F8> “More functions"
4. Press the F-key <F5> "MTX acr"
5. Press the F-key <F8> “More functions"
6. Press the F-key <F7> "MTX acr commissioning"
7. Carry out the "MTX acr commissioning"

## MTX Firmware / Logic

### XM42: An online change of the PLC fails in case of a cycle time of 1 ms

**CQ-ID:** Defdb00210965

**Severity:** K2 - serious malfunction

**Description:** If the cycle time of the PLC task is set to 1 ms, changes to the PLC project cannot be applied anymore using online change. This process is canceled with an error.

This known problem can only be avoided by using a higher PLC cycle time. If a PLC cycle time of 1 ms is required, the entire PLC project has to be reloaded following a change. The PLC is stopped during this process.

# 5.3 Firmware

## 5.3.1 Resolved defects

### MLC Firmware / OPC UA

**OPC UA: When the SecurityToken is renewed, communication is interrupted on the server side**

**CQ-ID:** Defdb00212800

**Severity:** K2 - serious malfunction

**Description:** OPC UA SecurityTokens have a limited “service life". An OPC UA client will therefore request a new security token when 75% of this service life has been reached. This is realized via the "OpenSecureChannel" renewal procedure.

However, in this case the OPC UA server switched to the new token ID too early and OPC UA communication was briefly interrupted.

### MTX Firmware / Corrections

**G41/G42: A programmed short arc mutates into a non-programmed, complementary full circle**

**CQ-ID:** Defdb00213127

**Severity:** K2 - serious malfunction

**Description:** If an arc is programmed with active G41/G42 whose length is significantly smaller than the circle radius and also significantly smaller than the tool radius, and which is almost tangential to the previous block, it is possible that this circle block is completed complementarily to an (almost) full circle if the block look-ahead for collision protection (CLN(DLA..)) is too small.

**G41/G42: Tool spacing too large from programmed contour**

**CQ-ID:** Defdb00213215

**Severity:** K2 - serious malfunction

**Description:** If an arc is programmed with active G41/G42 whose length is significantly smaller than the circle radius and also significantly smaller than the tool radius, and which is almost tangential to the previous block, the tool may lift off the contour even though the block look-ahead for collision protection (CLN(DLA..)) is sufficiently large.

### MTX Firmware / NC Program / CPL

**Thread cutting via G33 does not work in connection with the SPCC command**

**CQ-ID:** Defdb00213034

**Severity:** K3 - malfunction (no workaround)

**Description:** If two spindles are synchronized via "SPCC" (SpCoupleConfig, define/resolve coupling) and G33 (thread cutting) is called in both channels during their coupling (master/slave), the channel of the slave axis remains blocked until the coupling of the spindles is released.

### MTX Firmware / NC Program / NC-Function

**Cycle G191: Contour violations during contour roughing and finishing**

**CQ-ID:** Defdb00212580

**Severity:** K2 - serious malfunction

**Description:** Contour violations occurred during the G191 “Groove turning" cycle:

a) When reducing the edge radius correction by a compensatory movement in longitudinal direction. The error was particularly noticeable with grooves whose width was equal to or slightly greater than the tool width.

b) At the end of contour roughing or contour finishing, if the contour of the basic straight line is only approached but not turned along the basic straight line.

### Error 5526 NC block for restart not found in NC program

**CQ-ID:** Defdb00213004

**Severity:** K2 - serious malfunction

**Description:** During asynchronous interruption on the contour, error 5526 "NC block for restart in NC program was not found" occurs due to incorrect considerations in the target block search.

### Unintentional reverse travel with G2/G3 in connection with G41/G42 and large circle and tool radius

**CQ-ID:** Defdb00213037

**Severity:** K2 - serious malfunction

**Description:** If a very small change in the tool radius is programmed between a linear block (G1) and a subsequent circular block (G2/G3) with a very large circle radius with active milling path compensation (G41/G42) with a large tool radius, a very short, non-programmed reverse travel with a corresponding drop in velocity may occur.

### G41: Block sequence G1..DCT(4,..)..G2 can result in a non-programmed reverse travel

**CQ-ID:** Defdb00213072

**Severity:** K2 - serious malfunction

**Description:** With active milling path correction (G41), the block sequence G1..DCT(4,..)..G2 could lead to an unprogrammed reverse travel.

### LCTS, delete distance-to-go: Error 5526 "NC block for restart not found in NC program"

**CQ-ID:** Defdb00213076

**Severity:** K2 - serious malfunction

**Description:** During asynchronous interruption on the contour, error 5526 "NC block for restart in NC program was not found" occurs due to incorrect considerations in the target block search.

### No syntax error message for incorrect ROT programming

**CQ-ID:** Defdb00213159

**Severity:** K2 - serious malfunction

**Description:** The following signed ROT programming did not result in a negative angular movement or a syntax error:

```
1 @MYREAL = 45
1 WAIT
ROT(-[@MYREAL])
```

**Fixing:** This type of programming now results in error 387 "Syntax error at ..."

### Runtime error 1515 "Internal software error: PBI42093 is missing"

**CQ-ID:** Defdb00213170

**Severity:** K3 - malfunction (no workaround)

**Description:** During the execution of an NC program with active LCTS (linear-circular-spline conversion) and active axis transformation with vector orientation, the runtime error 1515 "Internal software error: PBI42093 is missing" occurred with larger orientation motions.

### System error 1832 (Task: Jlm_01) when processing a part program

**CQ-ID:** Defdb00213218

**Severity:** K2 - serious malfunction

**Description:** 5-axis transformation, G592: System error 1832 (Page Fault Trap, Task Jlm_01) when executing an NC program.

### NC program stops during the execution without error message

**CQ-ID:** Defdb00213228

**Severity:** K3 - malfunction (no workaround)

**Description:** When processing an NC program, the NC simply stopped at the start of a block without an error message. The cause of this problem was the combination of an auxiliary function requiring acknowledgment and a very short traversing block.

### Programmable distance-dependent signal: ADSLAB command does not work with multiple signals

**CQ-ID:** Defdb00213233

**Severity:** K4 - malfunction

**Description:** If more than one signal was used for the "ADSLAB" command (set reference point), the command did not work.

### Drive error F2028 due to contour error with simultaneous use of FAD(1) and SCO(Exx)

**CQ-ID:** Defdb00213316

**Severity:** K3 - malfunction (no workaround)

**Description:** A contour described by many short NC blocks in the X/Y plane is machined. The Y-axis is hidden from the feed formation by means of FAD and the contour kinks are smoothed with SCO.

In this case, the path traveled deviates selectively from the programmed contour, which can results in drive error "F2028 Excessive control deviation".

### Block pre-run: Part program error 2434 "The following synchronous axes of the x. channel are not enabled: ..."

**CQ-ID:** Defdb00213359

**Severity:** K3 - malfunction (no workaround)

**Description:** If the DAX command is used several times in a part program, the error 2434 "The following synchronous axes of the x. channel are not enabled: ..." may occur.

### Block pre-run , AXC: Drive error "F2037 Excessive position command value difference" in slave axis

**CQ-ID:** Defdb00213373

**Severity:** K3 - malfunction (no workaround)

**Description:** A block search with active channel axis coupling and missing adjustment in the InitAdjust program often results in a jump in the command value position

of the slave axis and thus causes the drive error "F2037 Excessive position command value difference".

### Block pre-run , AXC: Part program error 2390 "Invalid traversing motion for the secondary axis %s"

**CQ-ID:** Defdb00213375

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of an active motion type SPLINE (G6, LTS, LCTS, G592), error 2390 “Invalid motion for slave axis ..." can be output during a block search if channel axis coupling is active at the same time.

## MTX Firmware / OPC UA

### OPC UA: Sporadic system error SF3464 when using an already closed OPC UA Secure Channel

**CQ-ID:** Defdb00212639

**Severity:** K4 - malfunction

**Description:** A segmentation fault (fatal system error SF3464 - Task: tsk_OPCUAStack) occurred sporadically when renewing the OPC UA Secure Channel. The error could occur if an already closed Secure Channel was still being used on the client side.

### OPC UA: System error SF984 when writing a "NaN" 32-bit floating point value to a PLC variable

**CQ-ID:** Defdb00212871

**Severity:** K4 - malfunction

**Description:** NaN is an abbreviation for "Not a Number" “No number"). This is a special value used in computer science and mathematics to represent the result of an invalid or undefined arithmetic operation.

When writing such a NaN value via OPC UA to a PLC variable of type REAL, system error 984 occurred.

## MTX Firmware / Sercos

### IndraDrive multi-axis devices: Secondary axes not accessible via Sercos IP and OPC UA

**CQ-ID:** Defdb00213036

**Severity:** K3 - malfunction (no workaround)

**Description:** On the Sercos node of the control (Sercos III master), you can set whether the IP addresses of the drives are assigned automatically. As a rule, the activated setting is used, with which the mentioned problem does not occur.

However, if the setting is disabled and the IP addresses of the drives are NOT assigned automatically, then the so-called "slave index" is not generated correctly for the multi-axis devices (e.g. IndraDrive double-axis or CCD network): 0 (zero) is always entered as the "SlaveIndex", even for the second drive of the IndraDrive double-axis drive and also for the CCD slaves. This means that these drives cannot be reached via Sercos IP and OPC UA.

## MTX Firmware / System Data

### Fast Action: Problems when using the "Shape Cutting" system data structure "Sd.sysheightctrl"

**CQ-ID:** Defdb00213171

**Severity:** K3 - malfunction (no workaround)

**Description:** If system data is read or written via Fast Action (fa), the memory address of the respective system data has to meet the following requirements:

- 4-byte values have to start on 4-byte address limits.

- 2-byte values must not exceed 4-byte address limits.

Irrespective of this, the recommendation is that 2-byte values should start on 2-byte address limits if possible.

1-byte values can be located at any memory address.

These memory address requirements have to be taken into account when defining a system data structure if individual structure elements are to be accessed via fast action (fa). If necessary, data has to be entered (“padding”) which only serve to ensure that subsequent data elements begin on the required address limit.

Otherwise, the warning 5052 Fast actions, configuration error 9 is displayed.

The system data structure "Sd.sysheightctrl" defined for "Shape Cutting" (SHC2) did not meet the above requirements if it was used and indexed as an "array". Some structure elements were then located at invalid memory addresses, which led to warning message 5052 (Fast actions, configuration error 9) when used with Fast Action.

#### Determining the remaining dwell time (G4) of another NC channel

**CQ-ID:** Defdb00213305

**Severity:** K6 - functional enhancement

**Description:** The remaining dwell time (G4) of another NC channel could not yet be determined.

**Enhancement:** To remedy this, the new system datum "SD.DwellRemainSec[<channel no.>]" was introduced. The system datum "SD.DwellRemainSec[<channel no.>]" provides the remaining time (in seconds) of a G4 programming of another NC channel. The function is available from version IndraWorks MTX 15V22 Patch1 (NC kernel 23.24.3).

Programming Example:

```
1 LJUST
2 CHN%= 1
3 WHILE SD.DwellRemainSec[CHN%] > 0 DO
4  PRN#(0,"Remaining dwell time(s):  ",SD.DwellRemain-
Sec[CHN%])
5 WAIT(,500)
6 END
7 PRN#(0,TIME,": G4 Dwell time expired")
```

## 5.3.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

VAR_GLOBAL

{attribute 'symbol' := 'read'}

stTest: TestStruct;

END_VAR

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

## IndraLogic Firmware / Logic

### Error when accessing "In_Out" structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

## MTX Firmware / Block Management

### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported sporadically.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

### Re-entry with callchain sporadically results in the error “unable to find abort position in target block”

**CQ-ID:** Defdb00210556

**Severity:** K2 - serious malfunction

**Description:** In case of part programs with an only incremental coordinate specification or only for coordinates changed upon re-entry, the error “unable to find abort position in target block” can occur when specifying the abort callchain.

**Workaround:** Upon re-entry via callchain, the control executes a block pre-run from the start of the program to the callchain. Thus, the abort state is restored. For program coordinates changed incrementally or only in the adjust program, the absolute reference has to be explicitly specified in block pre-run. The program reference position of the callchain has to be backed up with RERF(). If a coordinate is only changed in the adjustment program, the reference position can also be corrected with RERF(<coord>=<value>). In the block pre-run

(SD.SysSRun.Active<>0), the reference saved with RERF has to be restored at the start of the program. Read the reference position of the callchain out with the CPL instruction SDR(100,<coordindex>,1) and enable the absolute reference with G90 <coord>=<refpos>.

Also refer to the NC functional description “ReEntryRef, RERF” in the MTX15 Programming Manual, chapter “NC functions with high-level language syntax”, subchapter “Saving the programming starting point for re-entry after program interruption”.

### Syntax error 387 when programming SCO(L1[..], L2[..]) without equal sign

**CQ-ID:** Defdb00211672

**Severity:** K4 - malfunction

**Description:** If SCO is programmed without "=" separator contrary to the instruction in the MTX documentation, e.g. SCO(L1[23],L2[2.5]), the function is executed correctly, but the syntax error 387 occurs when an Asynchronous Subroutine (ASUP) is called, or "Clear distance-to-go" is executed.

**Workaround:** If programmed correctly with equal signs, e.g. SCO(L1=[23],L2=[2.5]), the problem does not occur.

## MTX Firmware / Communication

### OPC UA: Connection between MTX OPC UA Server and PLC OPC UA Client not possible with MTX emulation

**CQ-ID:** Defdb00211421

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the MTX emulation (sco.exe), the OPC UA client of the PLC cannot connect to the OPC UA server of the MTX. The error "BadCommunicationError" occurs at the UaConnect function block (RIL_OpcUaClient library).

**Workaround:** When using a real control hardware (XM42), the connection between MTX OPC UA Server and PLC OPC UA Client is not working correctly.

## MTX Firmware / Error Announcement

### Minor system error 2621 with note programming with PRN# and too many outputs per time unit

**CQ-ID:** Defdb00213288

**Severity:** K3 - Malfunction (no workaround)

**Description:** If the PRN# command is used to issue too many messages within a short period of time, this results in the minior system error 2621 "Continuous messages due to incorrect message programming". In this case, it is not the PRN# command itself that is faulty, but the number of outputs per time unit is too high (e.g. 100 per 5 s).

**Temporary solution:** Significantly reduce the number of notes issued per time unit.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

## MTX Firmware / Logic

### Access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

## MTX Firmware / Machine Parameters

### IWE, NC Configuration: Importing the data group "SUP" is not possible

**CQ-ID:** Defdb00212608

**Severity:** K3 - Malfunction (no workaround)

**Description:** When opening the "SUP" data group in the NC configurator and wanting to perform an import via the context menu, this is usually aborted with an error.

**Temporary solution:** Workaround 1:

The file name of the file to be imported for the "SUP" data group has to be "sup.cfg" (lower case only!). Subsequently, the import can be completed successfully. However, the data group display is only refreshed upon an NC configurator restart.

Workaround 2:

Execute the "Export data record (optional)" function in the main menu under the "NC configurator" menu item. All configuration files of all data groups are strored in a single export file (*.cdt, cdt = configuration data table). In this format, the parameters and their values are arranged line-by-line in the display sequence of the data groups in the NC configurator.

The entries of the "SUP" data group can be found at the start. You can edit the exported file and delete all entries below the "SUP" data group. After saving the file, you can execute the "Import data record (alternative)" function with the modified export file. The changes are applied and the NC configurator display is refreshed.

## MTX Firmware / OPC UA

### OPC UA: Modifying the item "NC.DynamicDataRT" leads to blocking of the OPC UA Server

**CQ-ID:** Defdb00210351

**Severity:** K2 - serious malfunction

**Description:** The OPC UA Server blocks if the item "ns=27;s=NC.DynamicDataRT" is modified by one of the methods "AddField", "AddAxis", "RemoveField" or "RemoveAxis" and the item is not created in a subscription.

The OPC UA Server can only be reactivated by a control restart.

If the item "ns=27;s=NC.DynamicDataRT" is created in a subscription, it can be modified using the previously mentioned methods.

### OPC UA: For the item "ns=27;s=NC.DynamicDataRT", deleting a non-existent data item results in blocking of the OPC UA Server

**CQ-ID:** Defdb00210364

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA Server blocks if an element is deleted that is not available in the current configuration in the item "ns=27;s=NC.DynamicDataRT" with the method "RemoveField”.

The OPC UA Server can only be reactivated by a control restart.

The error only occurs with a real control and not in the MTX emulation (sco.exe).

### OPC UA: System error 984 (FPU trap in task tsk_OPCUAStack) when reading a structure variable

**CQ-ID:** Defdb00212782

**Severity:** K4 - malfunction

**Description:** The attempt to access a field (array) of structures via OPC UA may lead to the fatal system error SF984 (FPU trap ... occurred in task with Id ... at address ...). This behavior occurs when an OPC UA client attempts to read the entire data field (e.g. MyStructureArray). Accessing individual elements of the array (e.g. MyStructureArray[1]), however, is possible without any problems and does not result in the system error SF984.

The cause of the problem lies in an incorrect internal calculation of the memory size and the element spacing (offsets) when accessing arrays of structures by the OPC UA implementation. The internal function for size calculation does not correctly take into account the in-memory alignment of structure elements. This causes the OPC UA encoder functions to work with incorrect size and offset information, which results in invalid memory accesses and the system error SF984.

**Workaround:** The problem with the system error SF984 when accessing via OPC UA can be avoided by correctly defining the alignment of the data in the memory. This is achieved by using the "pack_mode" attribute in the structure type definition. To do this, the attribute {attribute 'pack_mode' := '4'} is added immediately before the structure definition if this structure is used as a data field (array) and is to be accessed via OPC UA. This means that the corresponding structure is always positioned on a 4-byte memory address (4-byte alignment), which results in an improved compatibility with the internal OPC UA coding mechanisms and enables the correct size and offset calculation.

## MTX Firmware / Sercos

### XM42: The "Sercos status" LED does not indicate Sercos connection interruptions

**CQ-ID:** Defdb00206007

**Severity:** K3 - malfunction (no workaround)

**Description:** The XM42 has a block of 10 LEDs for signalling device status. The "s" LED indicates the Sercos status. Unfortunately, Sercos connection interruptions (e.g. the absence of a Sercos drive) are not indicated by the "s" LED.

### Sercos I/Os: No support for the "hotplug" function for failed or missing Sercos I/Os

**CQ-ID:** Defdb00211400

**Severity:** K3 - malfunction (no workaround)

**Description:** If Sercos devices have failed or are missing during start-up, the IndraMotion MTX supports the resumption of communication with these devices via Sercos hotplug. However, this function is only supported for Sercos drives and not for Sercos I/Os.

## MTX Firmware / System Data

### SD data: Possible system error 1514 or 3464 due to the use of an incompatible schema file SDDef.xml

**CQ-ID:** Defdb00213372

**Severity:** K4 - Malfunction

**Description:** The schema file SDDef.xml is located in the /feprom directory in the file system of the control. This schema file defines data structures that are required for the operation of the control. The content of this schema file corresponds to the functional scope of the corresponding MTX firmware version. Different MTX firmware versions may therefore have different SDDef.xml schema files.

**Temporary solution:** The cause of this problem is most likely an application problem:

In the search path of the control, there is another schema file with the name SDDef.xml, which does not correspond to the required status of the MTX firmware version used.

In this case, the user (commissioning engineer) has to clarify why this additional but inappropriate schema file SDDef.xml exists.

In the simplest case, the incompatible schema file can be deleted.

Alternatively, it can also be replaced by the SDDef.xml schema file from the /feprom directory.

However, if the user has made their own adjustments to the inappropriate schema file, it is necessary to use the current /feprom/SDDef.xml file as a new template and migrate the changes.

# 6 MTX 15V22 Patch 1 Firmware and Software

## 6.1 Compatibility settings in IndraWorks Engineering

In IndraWorks Engineering, the following compatibility settings apply for IndraMotion MTX 15V22 Patch 1:

| | |
|---|---|
| Menu item<br>**Project ▸ Changing the compatibility mode...** | 15V22 P1 |
| Menu item<br>**Project ▸ Changing the PLC compiler version...** | 3.5.15.60 (15V20) |
| Project node of the control<br>**Properties...** - Tab "Configuration" - Firmware release:<br>(control node "offline" and PLC "logged out") | FW*-MTX-XM42-23.22 (15V22 P1) |
| Project node of the HMI device<br>**Properties…** – Device version: | 15V22 |

*Tab. 6-1: Compatibility settings for IndraMotion MTX 15V22 Patch 1*

## 6.2 Software

### 6.2.1 Resolved defects

#### IndraWorks ML / Engineering / Periphery

**IndraWorks 15V22: Sercos bus coupler S20-S3-BK+ faulty in the device library**

**CQ-ID:** Defdb00212754

**Severity:** K4 - malfunction

**Description:** Not all possible I/O modules for configuration are displayed for the S20-S3-BK+ device in the IndraWorks device library.

#### IndraWorks ML / Engineering / PLC Libraries

**IL: Instantiation of function blocks contained in IoDrvCIFXProfinetV3DCIA library caused the IWE to freeze when logging in**

**CQ-ID:** Defdb00212527

**Severity:** K3 - malfunction (no workaround)

**Description:** The declaration of the "no_assign" attribute was missing in the IoDrvCIFX-ProfinetV3DCIA library. This made it possible to assign instances of this library to another instance. Due to this instance assignment, IndraWorks Engineering froze when logging in and downloading to the PLC.

**Fixing:** The declaration of the "no_assign" attribute was missing in the IoDrvCIFX-ProfinetV3DCIA library. Assigning an instance from this library to another instance (e.g. Instance2 := Instance1;) now results in an error when compiling the PLC project: "C0328: Assignment not permitted for type."

#### IndraWorks MTX / Engineering / _Other

**IWE, “Sercos properties", "Communication status": ctrlX DRIVE double-axis device is displayed incompletely**

**CQ-ID:** Defdb00212619

**Severity:** K4 - malfunction

**Description:** The communication status of the Sercos drives can be displayed in IndraWorks Engineering in the “Sercos properties" dialog in the "Communication status" tab.

For ctrlX DRIVE dual-axis devices, only the communication status of the first axis was displayed there. The communication status of the second axis was not displayed.

## IndraWorks MTX / Engineering / Drive

### IWE: "Parameter access error" when transferring changed drive parameters to the flash memory of the drive

**CQ-ID:** Defdb00212818

**Severity:** K4 - malfunction

**Description:** To ensure that changes made to drive parameters in IndraWorks Engineering are not lost in IndraDrive and ctrlX DRIVE, the "Parameters not yet saved" dialog is displayed when the control is switched "Offline". This enables the user to save the changed drive parameters permanently in the device memory (flash) of the drive. However, an error message "Error during parameter access" was displayed when the parameter changes were transferred to the flash memory using the "C2200 command Save RAM".

Technical background: For IndraDrive and ctrlX DRIVE drives, the drive parameter S-0-0269 "Storage mode" is usually set to the value 1. Value "1" signifies: Parameter changes are lost after 24V is switched off (non-resident behavior). This setting ensures that cyclic write accesses to drive parameters are only saved in the working memory (RAM) and not cyclically in the device memory (flash) of the drive, as the number of write cycles for the device memory is limited. To ensure that drive parameter changes are not lost, they can be explicitly saved in the device memory.

**Fixing:** When the project is closed, the drive parameters are saved in the device memory (flash) of the drive. The error message “Error when accessing parameters" should no longer occur.

## IndraWorks MTX / Engineering / Periphery

### IndraWorks Engineering: Device description files (GSDML) can sporadically not be distinguished from each other

**CQ-ID:** Defdb00212692

**Severity:** K2 - serious malfunction

**Description:** If several versions of device descriptions of a Profinet device are installed, it may not be possible to distinguish between them as device-specific categories specified in the GSDML file are not displayed.

**Fixing:** The device-specific categories specified in the GSDML file are displayed both in the device library and in the "Add" menu and dialog.

## IndraWorks MTX / Engineering / PLC Programming

### IndraWorks Engineering: Exception when using the PLC localization data table

**CQ-ID:** Defdb00212743

**Severity:** K3 - malfunction (no workaround)

**Description:** During the development of a PLC project, the PLC localization data is not always automatically up-to-date. Sporadically, an exception occurred when

double-clicking on a line in the PLC localization data table as the jump target no longer existed.

#### Shape Cutting Template: NC channel reset can not clear retrace error

**CQ-ID:** Defdb00212814

**Severity:** K4 - malfunction

**Description:** If an error occurs while the NC function "Retrace" is actived (qCh_Retrace = TRUE), the retrace signal qCh_Retrace can not be resetted to FALSE by clearing the error with a NC channel reset.

**Fixing:** The "Retrace" signal qCh_Retrace can be resetted by the NC channel reset signal.

## IndraWorks MTX / Engineering / Project Handling

#### IndraWorks Engineering: Invalid IndraWorks project compatibility mode "15V18 Patch1"

**CQ-ID:** Defdb00212857

**Severity:** K4 - malfunction

**Description:** In IndraWorks Engineering of IndraWorks versions 15V20 and 15V22, the project compatibility mode "15V18 Patch1" is available. However, this is an incorrect entry that should not be used. IndraWorks version 15V18 Patch 1 only supports the project compatibility mode "15V18" (or smaller).

**Fixing:** The incorrect entry "15V18 Patch1" is no longer available from version 15V22 Patch 1.

#### IndraWorks Engineering: Problems when archiving/restoring drive data if not all drives are "online"

**CQ-ID:** Defdb00212890

**Severity:** K4 - malfunction

**Description:** If drives were previously "online" and then switched "offline", problems occurred both when archiving drive data and when restoring drive data: Creating an archive was canceled with an error message. There was no error message during the restore operation, but the data transfer was not executed.

## IndraWorks MTX / Operation / _Other

#### IWO: Editing the configuration file for the NC simulation no longer works

**CQ-ID:** Defdb00212827

**Severity:** K2 - serious malfunction

**Description:** The XML file for configuring the NC simulation can be edited in IndraWorks Operation (IWO). By default, IndraWorks Operation uses the Microsoft Wordpad application. As Microsoft has started to remove Wordpad from new Windows installations, an intercepted exception now occurs when trying to edit the configuration of the NC simulation. The configuration file can therefore no longer be edited in IndraWorks Operation.

**Fixing:** To edit the configuration of the NC simulation, IndraWorks Operation no longer calls the Microsoft Wordpad, but the integrated NC editor in the "Text editor" version.

If a different text editor is required, this can be defined in the options, section <General> as follows:

<ExternalTextEditor>myEditor.exe</ExternalTextEditor>

The valid path to this application has to be stored in the Windows registry in the Computer\HKEY_CLASSES_ROOT\Applications\myEditor.exe\shell\open \command node for the agreed Editor.

## IndraWorks MTX / Operation / NC Operating

### MTX user interface: Symbol error on M-key after fast switching

**CQ-ID:** Defdb00212786

**Severity:** K2 - serious malfunction

**Description:** If an M-button is pressed with the mouse but the mouse button is not released until the mouse pointer is not on the M-button, M-button switching (e.g. due to a screen change) is not possible anymore until the button is pressed and released again.

## IndraWorks MTX / Operation / NC Programming

### MTX, IndraWorks Operation: File write protection in "usrfep" no longer works

**CQ-ID:** Defdb00212643

**Severity:** K2 - serious malfunction

**Description:** The NC-Editor could save files to the "usrfep" directory, whereas this was not possible with older IndraWorks MTX versions on a real control.

Furthermore, it was established that a bak file was still created if saving was not successful.

**Fixing:** The NC-Editor generally does not allow direct saving to the "usrfep" directory. In order to save a file in "usrfep", it first has to be saved in another directory for which write permission exists using "Save as". This file can then be copied or moved from there to the "usrfep" directory using the project explorer.

Depending on the options, the bak file for saving the old content is only created after it has been successfully saved.

### IWO, multi-touch user interface, operating area <OP4> program, NC file system: Problems when copying directories

**CQ-ID:** Defdb00212661

**Severity:** K2 - serious malfunction

**Description:** If IndraWorks Operation was operated exclusively via multi-touch user interface, problems occurred when copying directories in the "Program" operating area <OP4> as the "Rename directory" dialog for renaming the copied directory could not be operated via the virtual keyboard. If the user management is active (Winlock active), this can sporadically render the user interface unusable.

**Fixing:** When inserting a directory copy with identical name, the "Rename directory" dialog is no longer displayed, but the directory is created with the addition "-Copy" in Microsoft Windows. If required, the directory can then be renamed.

### IndraWorks Operation: When saving, the editor removes the control character for the "carriage return"

**CQ-ID:** Defdb00212878

**Severity:** K2 - serious malfunction

**Description:** When saving files with a regular size (not the editor variant for very large files), the control characters at the end of the line were incorrectly converted: "\r\n" or 0D 0A (carriage return, line feed) became "\n" or 0A. As a result, the saved file was corrupt for certain applications.

**Fixing:** After changing and saving a file, the character string for the line break remains unchanged.

#### IndraWorks Operation with Asian language When entering characters, the display in the NC editor jumps

**CQ-ID:** Defdb00212896

**Severity:** K3 - malfunction (no workaround)

**Description:** If an Asian language (e.g. Chinese) was enabled in IndraWorks Operation via language switching, the display was unintentionally shifted upwards by one line when characters were entered in the NC editor.

## 6.2.2 Known issues

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been created incorrectly

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
```

END_VAR

### PLC compilation error as different objects with the same name are defined in different libraries

**CQ-ID:** Defdb00212022

**Severity:** K4 - malfunction

**Description:** When updating an existing PLC project to a new IndraWorks software version, compilation errors may occur in the PLC program, as new objects are defined in newer PLC libraries whose designation is already used in other, older PLC libraries. That means: There are objects with the same name which can be defined differently. Their use by name in the PLC program can then result in compilation errors as an incorrect object may be accessed.

**Workaround:** In this case, using the library's namespace provides the necessary remedy: For a unique access, add the namespace in front of the function block name: <namespace>.<variable name>

Specific example:

- In version MTX 14VRS, the “Timezone” structure is contained in the PLC library RIL_Utilities.

- In version MTX 15VRS, there is an additional "Timezone" structure in the PLC library Util.

- Although identical in name, the two structures are defined differently.

- In the case of simple, named use in the PLC program, it is not clear which of the two structures is used. That can result in access or compilation errors.

- Remedy: Insert the namespace of the library before the name of the structure.

- Original program line:

Timezone: IL_TIMEZONE := Timezone.CEST;

- Corrected program line:

Timezone: IL_TIMEZONE := RIL_Utilities.Timezone.CEST;

### PROFINET IO module, function "Remode device" causes error message "The name <empty> is not valid for the device"

**CQ-ID:** Defdb00212951

**Severity:** K4 - malfunction

**Description:** In certain cases, the "Remove device" function results in the error message "The name <empty> is not valid for the device". This means that the device cannot be removed.

**Workaround:** The associated logical I/O below the SafetyApp first must be deleted manually. After that, the associated PROFINET IO module can be successfully removed using the "Remove device" function.

## IndraWorks ML / Engineering / PLC Safety

### PROFINET GSDML file for Wago Safety I/Os generation 4 (use with SafeLogic IW15V22P1)

**CQ-ID:** Defdb00212346

**Severity:** K5 - non critical problem

**Description:** For the operation of Wago Safety I/Os generation 4, the GSDML file suitable for IntraWorks must be used!

**Workaround:** With IndraWorks 15V22P1 and SafeLogic SMFW 02V10.0650, SafeLogic also supports PROFIsafe Host Version 2.6.

It is recommended to use the Wago description file "GSDML-V2.33-wago-series750_753-20240415.xml".

• Attention: Adding the GSDML file to the IndraWorks device database takes several minutes, as the GSDML file is very large. Please wait!

• This means that both the Wago PROFIsafe Version 2.6 submodules and the Wago PROFIsafe Version 2.4 submodules are available in IndraWorks.

• Use the Wago PROFIsafe Version 2.6 submodules!

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

## IndraWorks MTX / Engineering / Periphery

### IndraWorks Engineering: No IP channel support for Profinet and Ethernet/IP with IndraMotion MTX

**CQ-ID:** Defdb00205647

**Severity:** K3 - malfunction (no workaround)

**Description:** The IndraMotion MTX does not support the IP channel for Profinet I/Os and Ethernet/IP, although it can be selected in IndraWorks Engineering. The function is not available for MTX.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the token connected to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token connected to the control name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not a enabled or disabled.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Operating

### NC simulation incorrect if the STOCK command is programmed immediately before a rotary axis movement (A,B,C)

**CQ-ID:** Defdb00207873

**Severity:** K3 - malfunction (no workaround)

**Description:** The incorrect behavior occurs if axis motions, affecting the raw part position, i.e. rotary table axes or telescope axes, are programmed immediately after the raw part definition.

As a result, the virtual workpiece does not lie in space as intended, but assumes unwanted intermediate positions. As a result, the wrong raw part position in the NC simulation can then result in a succession of collisions.

Additional remark: The axes with the meaning X, Y and Z do not cause the previously mentioned problem.

**Workaround:** Program only movements of the main axes X, Y or Z immediately after the raw part definition. If it is mandatory to immediately move a rotary axis or telescopic axis which may affect the raw part position. Program a dwell time of approx. 0.2 to 0.5 sec after the STOCK command.

## IndraWorks MTX / Operation / NC Programming

### IWO, NC editor: Screen content "jumps" uncontrollably several lines when scrolling and when clicking on a line

**CQ-ID:** Defdb00212686

**Severity:** K3 - malfunction (no workaround)

**Description:** When scrolling through an NC program or text in the NC editor, an display problem may occur under certain circumstances:

The screen content does not scroll continuously, but appears to "jump" several lines in an uncontrolled manner. This also happens when clicking on a line with the mouse.

This problem can occur if the user has set a different font or font size in the "Options" of the editor via "Change font ...".

**Workaround:** The problem depends on the font and font size. To resolve the issue, it may be necessary to set a different font size and/or font. Unfortunately, the only solution is to try different options until you find one that works.

## MTX Firmware / Logic

### XM42: An online change of the PLC fails in case of a cycle time of 1 ms

**CQ-ID:** Defdb00210965

**Severity:** K2 - serious malfunction

**Description:** If the cycle time of the PLC task is set to 1 ms, changes to the PLC project cannot be applied anymore using online change. This process is canceled with an error.

This known problem can only be avoided by using a higher PLC cycle time. If a PLC cycle time of 1 ms is required, the entire PLC project has to be reloaded following a change. The PLC is stopped during this process.

### MTX Firmware / _Other

**Action recorder (ACR): Error message 5110 when creating the AcrLog file**

**CQ-ID:** Defdb00212716

**Severity:** K3 - malfunction (no workaround)

**Description:** A new AcrLog file is created when the action recorder (ACR) is started. This action results in error 5110 "MTX acr: Error creating or writing file xxxx". Despite the error message, the file is physically created.

**Workaround:** Perform the ACR initial commissioning wizard:

1. Start IndraWorks Operation
2. Press the OP button "<OP9> Diagnostics"
3. Press the F-key <F8> “More functions"
4. Press the F-key <F5> "MTX acr"
5. Press the F-key <F8> “More functions"
6. Press the F-key <F7> "MTX acr commissioning"
7. Carry out the "MTX acr commissioning"

## 6.3 Firmware

### 6.3.1 Resolved defects

### IndraWorks MTX / Engineering / PLC Programming

**IWE, PLC log: Date and time of the log entries are displayed incorrectly**

**CQ-ID:** Defdb00212819

**Severity:** K2 - serious malfunction

**Description:** Although the date and time of the control were set correctly, an incorrect date and time were displayed in the messages in the PLC logger in IndraWorks Engineering (e.g. 14/01/1994). Only the MTX emulation of XM42 was affected by this problem.

### MLC Firmware / OPC UA

**OPC UA: Sporadic exception when reading Sercos data via the OPC UA Server**

**CQ-ID:** Defdb00212900

**Severity:** K3 - malfunction (no workaround)

**Description:** Sporadically, an exception occurred on the control when it was tried to read Sercos parameters via OPC UA that were not available on the Sercos device connected to the control.

### MTX Firmware / Block Management

**Circle in space: From a certain feed rate, the drive error "F2037 Excessive position command value difference" occurred**

**CQ-ID:** Defdb00212683

**Severity:** K2 - serious malfunction

**Description:** The programming of CPC or CPB resulted in the drive error "F2037 Excessive command position value difference" from a certain feed rate. The feed

value resulting in the drive error depends on the geometry of the circle and therefore varies.

## MTX Firmware / NC Program / NC-Function

### Approach and return to contour, spline 4233, LTS: Parts program error 5526 "NC block for restart not found" (before WAIT)

**CQ-ID:** Defdb00212530

**Severity:** K3 - malfunction (no workaround)

**Description:** In spline programs with LTS and spline type 4233, part program error 5526 "The NC block for restarting in the NC program was not found" could occur both with "Delete distance-to-go" and after leaving the contour when subsequently returning to the contour. The problem also occurred in particular at program points with "WAIT" instructions.

**Fixing:** The probability of this error occurring has been significantly reduced.

### System error SF1464 when executing NC programs

**CQ-ID:** Defdb00212823

**Severity:** K6 - functional enhancement

**Description:** The MTX control has numerous configuration data (machine parameters) that have a significant influence on the memory management and memory consumption of the control unit. This includes the configuration data of the NC basic configuration (MAIN) and the configuration data of the memory management (Mem: system memory, channel-specific memory). Value ranges with individual maximum values are defined for this configuration data.

Viewed on its own, the respective maximum value may be a sensible setting. However, the available memory of the control is not sufficient if the maximum value is set in all of these configuration data. Consequently, the user has to carefully select the settings and adjust them to the actual requirements.

This applies in particular to the configuration date "Number of blocks for retrace mode" (NofBlkRetrace). It has been shown that the maximum value of 100000 defined on the NC side is too high and in practice leads to the increased occurrence of the system error SF1464 during the execution of NC programs.

**Enhancement:** To avoid such problems in the future, the "Number of blocks for retrace operation" (NofBlkRetrace) is now limited internally in the NC to the value 10000, regardless of the fixed maximum value of 100000.

### Retrace: Warning 5497 following a block pre-run into a retrace area, retracing is not possible

**CQ-ID:** Defdb00212876

**Severity:** K3 - malfunction (no workaround)

**Description:** During a block pre-run into a retrace area, retrace could not be activated after re-entering the contour and the warning 5497 "Direction reversal not possible in the current block!" was issued.

## MTX Firmware / Sercos

### ctrlX DRIVE multi-axis devices: No SIP communication possible as the MTX does not change the second axis IP address

**CQ-ID:** Defdb00212150

**Severity:** K4 - malfunction

**Description:** SIP communication between MTX and ctrlX DRIVE multi-axis devices was not possible because each axis of a ctrlX DRIVE multi-axis device has its own IP address. MTX had assumed that only the Sercos IP address of the first drive had to be defined for multi-axis devices.

**Enhancement:** Each axis of a ctrlX DRIVE multi-axis device is now addressed via its own Sercos IP address.

## 6.3.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

VAR_GLOBAL

{attribute 'symbol' := 'read'}

stTest: TestStruct;

END_VAR

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out” structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using the IecVarAccess library to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

#### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported sporadically.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

## MTX Firmware / Block Management

### Re-entry with callchain sporadically results in the error “unable to find abort position in target block”

**CQ-ID:** Defdb00210556

**Severity:** K2 - serious malfunction

**Description:** In case of part programs with an only incremental coordinate specification or only for coordinates changed upon re-entry, the error “unable to find abort position in target block” can occur when specifying the abort callchain.

**Workaround:** Upon re-entry via callchain, the control executes a block pre-run from the start of the program to the callchain. Thus, the abort state is restored. For program coordinates changed incrementally or only in the adjust program, the absolute reference has to be explicitly specified in block pre-run. The program reference position of the callchain has to be backed up with RERF(). If a coordinate is only changed in the adjustment program, the reference position can also be corrected with RERF(<coord>=<value>). In the block pre-run (SD.SysSRun.Active<>0), the reference saved with RERF has to be restored at the start of the program. Read the reference position of the callchain out with the CPL instruction SDR(100,<coordindex>,1) and enable the absolute reference with G90 <coord>=<refpos>.

Also refer to the NC functional description “ReEntryRef, RERF” in the MTX 15 Programming Manual, chapter “NC functions with high-level language syntax”, subchapter “Saving the programming starting point for re-entry after program interruption”.

### Syntax error 387 when programming SCO(L1[..], L2[..]) without equal sign

**CQ-ID:** Defdb00211672

**Severity:** K4 - malfunction

**Description:** If SCO is programmed without "=" separator contrary to the instruction in the MTX documentation, e.g. SCO(L1[23],L2[2.5]), the function is executed correctly, but the syntax error 387 occurs when an Asynchronous Subroutine (ASUP) is called, or "Clear distance-to-go" is executed.

**Workaround:** If programmed correctly with equal signs, e.g. SCO(L1=[23],L2=[2.5]), the problem does not occur.

## MTX Firmware / Communication

### OPC UA: Connection between MTX OPC UA Server and PLC OPC UA Client not possible with MTX emulation

**CQ-ID:** Defdb00211421

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the MTX emulation (sco.exe), the OPC UA Client of the PLC cannot connect to the OPC UA Server of the MTX. The error "BadCommunicationError" occurs at the UaConnect function block (RIL_OpcUaClient library).

**Workaround:** When using a real control hardware (XM42), the connection between MTX OPC UA Server and PLC OPC UA Client is not working correctly.

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

## MTX Firmware / Machine Parameters

### IWE, NC Configuration: Importing the data group "SUP" is not possible

**CQ-ID:** Defdb00212608

**Severity:** K3 - Malfunction (no workaround)

**Description:** When opening the "SUP" data group in the NC configurator and wanting to perform an import via the context menu, this is usually aborted with an error.

**Temporary solution:** Workaround 1:

The file name of the file to be imported for the "SUP" data group has to be "sup.cfg" (lower case only!). Subsequently, the import can be completed successfully. However, the data group display is only refreshed upon an NC configurator restart.

Workaround 2:

Execute the "Export data record (optional)" function in the main menu under the "NC configurator" menu item. All configuration files of all data groups are strored in a single export file (*.cdt, cdt = configuration data table). In this format, the parameters and their values are arranged line-by-line in the display sequence of the data groups in the NC configurator.

The entries of the "SUP" data group can be found at the start. You can edit the exported file and delete all entries below the "SUP" data group. After saving the file, you can execute the "Import data record (alternative)" function with the modified export file. The changes are applied and the NC configurator display is refreshed.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

## MTX Firmware / OPC UA

### OPC UA: Modifying the item "NC.DynamicDataRT" leads to blocking of the OPC UA Server

**CQ-ID:** Defdb00210351

**Severity:** K2 - serious malfunction

**Description:** The OPC UA Server blocks if the item "ns=27;s=NC.DynamicDataRT" is modified by one of the methods "AddField", "AddAxis", "RemoveField" or "RemoveAxis" and the item is NOT created in a subscription.

The OPC UA Server can only be reactivated by a control restart.

If the item "ns=27;s=NC.DynamicDataRT" is created in a subscription, it can be modified using the previously mentioned methods.

### OPC UA: Deleting a non-existent field results in blocking of the OPC UA Server for the item "ns=27;s=NC.DynamicDataRT"

**CQ-ID:** Defdb00210364

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA Server blocks if an element is deleted that is not available in the current configuration in the item "ns=27;s=NC.DynamicDataRT" with the method "RemoveField”.

The OPC UA Server can only be reactivated by a control restart.

The error only occurs with a real control and not in the MTX emulation (sco.exe).

## MTX Firmware / Sercos

### XM42: The "Sercos status" LED does not indicate Sercos connection interruptions

**CQ-ID:** Defdb00206007

**Severity:** K3 - malfunction (no workaround)

**Description:** The XM42 has a block of 10 LEDs for signalling device status. The "s" LED indicates the Sercos status. Unfortunately, Sercos connection interruptions (e.g. the absence of a Sercos drive) are not indicated by the "s" LED.

### Sercos I/Os: No support for the "hotplug" function for failed or missing Sercos I/Os

**CQ-ID:** Defdb00211400

**Severity:** K3 - malfunction (no workaround)

**Description:** If Sercos devices have failed or are missing during start-up, the IndraMotion MTX supports the resumption of communication with these devices via Sercos hotplug. However, this function is only supported for Sercos drives and not for Sercos I/Os.

# 7 MTX 15V22 Firmware and Software

## 7.1 Incompatible change

For the operation of ctrlX DRIVE drives for 15V22 and higher it is necessary to set the value 7 in the machine parameter "Drive type" (DrType).ctrlX DRIVE drives can no longer be operated as drive type 2.

## 7.2 Compatibility

### 7.2.1 Compatibility settings in IndraWorks Engineering

In IndraWorks Engineering, the following compatibility settings for "IndraMotion MTX 15V22" (IndraWorks MTX 15.22.0.0) apply:

| | |
|---|---|
| Menu item<br>**Project ▸ Changing the compatibility mode...** | 15V22 |
| Menu item<br>**Project ▸ Changing the PLC compiler version...** | 3.5.15.60 (15V20) |
| Project node of the control<br>**Properties...** - Tab "Configuration" - Firmware release:<br>(control node "offline" and PLC "logged out") | FW*-MTX-XM42-23.22 (15V22) |
| Project node of the HMI device<br>**Properties…** – Device version: | 15V22 |

*Tab. 7-1: Compatibility settings for IndraMotion MTX 15V22*

## 7.3 Software

### 7.3.1 Resolved defects

#### IndraWorks ML / Engineering / Version Control System

**Version control system (VCS): Version differences are not detected**

**CQ-ID:** Defdb00212060

**Severity:** K4 - malfunction

**Description:** Due to a general error, the current work status of an IndaWorks project could not be saved. After all, it was possible to check in the changes in the version control system (VCS: team server).

After closing and opening the project in IndraWorks, the changes were not included in the working copy, as expected. However, even when updating the working copy, no differences were detected by the VCS.

#### IndraWorks MTX / Engineering / _Other

**Version control system (VCS): The retrieval of Profinet devices from VCS is faulty in certain cases**

**CQ-ID:** Defdb00212323

**Severity:** K3 - malfunction (no workaround)

**Description:** When retrieving data from the VCS, it could happen that predefined, fixed modules were already available when inserting a Profinet device. These modules were not recognized correctly when adding the modules from the

VCS if they did not have the predefined name. Retrieval from VCS or overwriting could not be carried out and an error was output.

#### IndraWorks Engineering, NC configurator: Texts are displayed in German, although Chinese is set as the language

**CQ-ID:** Defdb00212525

**Severity:** K3 - malfunction (no workaround)

**Description:** Although Chinese was set as the "User interface language" in IndraWorks Engineering, the NC configurator texts were displayed in German. The reason for this was the lack of the corresponding text files in the IndraWorks installation.

## IndraWorks MTX / Engineering / HMI

#### IndraWorks Operation, HmiWebBrowser: Outdated Chromium CefSharp version results in display problems with web pages

**CQ-ID:** Defdb00211635

**Severity:** K3 - malfunction (no workaround)

**Description:** IndraWorks Operation uses a Chromium web browser to display web pages. Chromium CefSharp version 79.1.360.0 has been used up to now. However, this version is outdated and caused display problems in some cases.

**Fixing:** IndraWorks Operation now uses the new Chromium CefSharp version 123.0.60.0.

#### IndraWorks Engineering: Transfer of an MSI package to the PR_VR3x visualization device not possible

**CQ-ID:** Defdb00212607

**Severity:** K4 - malfunction

**Description:** It should be possible to download the MSI packages of the HMI project to the HMI device. However, this did not work with the PR_VR3x visualization device.

## IndraWorks MTX / Engineering / NC-Configuration

#### The IWE closes automatically if the library manager and NC configurator are used consecutively or simultaneously

**CQ-ID:** Defdb00212148

**Severity:** K2 - serious malfunction

**Description:** Simultaneous use of the library manager and the NC configurator causes IndraWorks Engineering to exit automatically.

The same problem occurs if the library manager has already been used after starting IndraWorks Engineering: IndraWorks Engineering closes automatically when the NC configurator is called up. It does not matter whether the library manager was closed before the NC configurator was called or not.

Conversely, the behavior is not as critical: If the library manager has not been used after starting IndraWorks Engineering, the NC configurator can be used as required. The library manager can also be opened if the NC configurator has been closed beforehand.

## IndraWorks MTX / Engineering / User Management

#### IndraWorks Operation: The virtual keyboard (on-screen keyboard) may not open under certain circumstances

**CQ-ID:** Defdb00212526

**Severity:** K3 - malfunction (no workaround)

**Description:** If a user in the "Operator" group was automatically logged in when IndraWorks Operation was started, the on-screen keyboard could not be called up by this user.

### IndraWorks MTX / Operation / _Other

#### IndraWorks Operation, WinStudio: Sporadically no display of values in WinStudio images after switching on the IPC

**CQ-ID:** Defdb00212592

**Severity:** K2 - serious malfunction

**Description:** The abrupt shutdown of a machine via emergency stop switch sporadically led to corrupt WinStudio files in the IndraWorks operation. When the machine was switched on, there were permanent communication problems in the WinStudio images.

#### NC Editor: “Find and replace" and "Replace all" do not work reliably

**CQ-ID:** Defdb00212463

**Severity:** K2 - serious malfunction

**Description:** The NC editor functions "Find and replace" and "Replace all" did not work reliably, for example if the two expressions had the same text length. Some replacements were incomplete or the "Replace all" process did not finish and IndraWorks operation stopped responding.

### IndraWorks MTX / Operation / NC Programming

#### Asian Microsoft Windows operating system and IWO: Neither the NC editor nor block pre-run/block search can be called up

**CQ-ID:** Defdb00212490

**Severity:** K2 - serious malfunction

**Description:** When using an Asian Microsoft Windows operating system (e.g. Chinese Language Edition), neither the NC editor nor the dialogs for block search/ block pre-run could be called up. The call attempt did not result in any response or error message. As a result, NC programs could neither be created nor edited and block search/block pre-run could not be used either. When ending IndraWorks Operation, additional problems occurred.

## 7.3.2 Known issues

### IndraWorks ML / Engineering / Periphery

#### IndraWorks 15V22: Sercos bus coupler S20-S3-BK+ faulty in device library

**CQ-ID:** Defdb00212754

**Severity:** K4 - malfunction

**Description:** Not all possible I/O modules for configuration are displayed for the S20-S3-BK+ device in the IndraWorks device library.

**Workaround:** In the device tree, execute the command sequence "Add" -> "Module" via the context menu at the respective node below the inserted S20-S3-BK+ module and select the desired submodule. The device is subsequently attached to the node.

## IndraWorks ML / Engineering / PLC Programming

### Persistent data: Instance has been created incorrectly

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
END_VAR
```

## IndraWorks MTX / Engineering / Periphery

### IndraWorks Engineering: No IP channel support for Profinet and Ethernet/IP with IndraMotion MTX

**CQ-ID:** Defdb00205647

**Severity:** K3 - malfunction (no workaround)

**Description:** The IndraMotion MTX does not support the IP channel for Profinet I/Os and Ethernet/IP, although it can be selected in IndraWorks Engineering. The function is not available for MTX.

## IndraWorks MTX / Engineering / PLC Programming

### PLC compilation error as different objects with the same name are defined in different libraries

**CQ-ID:** Defdb00212022

**Severity:** K4 - malfunction

**Description:** When updating an existing PLC project to a new IndraWorks software version, compilation errors may occur in the PLC program, as

new objects are defined in newer PLC libraries whose designation is already used in other, older PLC libraries. That means: There are objects with the same name which can be defined differently. Their use by name in the PLC program can then result in compilation errors as an incorrect object may be accessed.

**Workaround:** In this case, using the library's namespace provides the necessary remedy: For a unique access, add the namespace in front of the function block name: <namespace>.<variable name>

Specific example:

- In version MTX 14VRS, the “Timezone” structure is contained in the PLC library RIL_Utilities.

- In version MTX 15VRS, there is an additional "Timezone" structure in the PLC library Util.

- Although identical in name, the two structures are defined differently.

- In the case of simple, named use in the PLC program, it is not clear which of the two structures is used. That can result in access or compilation errors.

- Remedy: Insert the namespace of the library before the name of the structure.

- Original program line:

Timezone: IL_TIMEZONE := Timezone.CEST;

- Corrected program line:

Timezone: IL_TIMEZONE := RIL_Utilities.Timezone.CEST;

## IndraWorks MTX / Engineering / _Other

### ProVi-Meldungen werden nach SPS "Online-Change" im IndraWorks Engineering nicht mehr angezeigt

**CQ-ID:** Defdb00205929

**Schwere-Grad:** K3 - Fehlfunktion (Kein Workaround)

**Beschreibung:** Zur Laufzeit werden ProVi-Meldungen korrekt angezeigt. Führt man in der SPS einen "Online-Change" durch, dann werden die ProVi-Meldungen nicht mehr angezeigt.

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not a enabled or disabled.

**Workaround:**
- Save IndraWorks project and terminate IndraWorks Engineering.
- Rename the corresponding project file (*.xiwp) in *.zip.
- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).
- Delete the folder "Download" (\Project\CMx\Download).
- In the folder \Project\CMx delete following four files:
- CMx.diag
- CMx.ILD.di
- CMx.ILD.dix
- CMx.ILD.ld
- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Operating

### NC simulation incorrect if the STOCK command is programmed immediately before a rotary axis movement (A,B,C)

**CQ-ID:** Defdb00207873

**Severity:** K3 - malfunction (no workaround)

**Description:** The incorrect behavior occurs if axis motions, affecting the raw part position, i.e. rotary table axes or telescope axes, are programmed immediately after the raw part definition.

As a result, the virtual workpiece does not lie in space as intended, but assumes unwanted intermediate positions. As a result, the wrong raw part position in the NC simulation can then result in a succession of collisions.

Additional remark: The axes with the meaning X, Y and Z do not cause the previously mentioned problem.

**Workaround:** Program only movements of the main axes X, Y or Z immediately after the raw part definition. If it is mandatory to immediately move a rotary axis or telescopic axis which may affect the raw part position. Program a dwell time of approx. 0.2 to 0.5 sec after the STOCK command.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60
- Control 2: NC channel 61…120
- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the token connected to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token connected to the control name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

# 7.4 Firmware

## 7.4.1 Resolved defects

### MTX Firmware / Axis

**Drive error F2028 Excessive control deviation due to jump in axis velocity**

**CQ-ID:** Defdb00212424

**Severity:** K3 - malfunction (no workaround)

**Description:** If the maximum value of the feed override (MaxChOvrd) was parameterized with 100%, the permitted axis acceleration could be significantly exceeded if the override was commanded to 100%. This resulted in drive error F2028 Excessive control deviation.

### MTX Firmware / NC Program / CPL

**CPL, DIRINF: Command mode "3" returns an incorrect result on CF card or USB stick**

**CQ-ID:** Defdb00212509

**Severity:** K3 - malfunction (no workaround)

**Description:** The CPL command "DIRINF(3,...)" (= number of existing files in the directory) returned an incorrect result for a USB or CF card directory in the top directory level, i.e. the number of files determined was too small by factor 2. Consequently, not all files/file names in a directory could be determined.

## MTX Firmware / NC Program / NC-Function

### Excessive position command value difference after disabling the tool compensation with active end face transformation

**CQ-ID:** Defdb00212251

**Severity:** K4 - malfunction

**Description:** With active end face transformation (turning), active tool length compensation is disabled while the tool tip is exactly at position (0.0). This resulted in a position jump in the C-axis command value and thus to drive error F2037 "Excessive position command value difference".

### Frequent part program error 5526 in spline programs with LTS, spline type 4233 after leaving contour and returning to contour

**CQ-ID:** Defdb00212309

**Severity:** K3 - malfunction (no workaround)

**Description:** In spline programs with LTS and spline type 4233, the part program error 5526 "The NC block for restarting in the NC program was not found" could frequently occur after leaving the contour and subsequently returning to the contour.

**Fixing:** The probability of this error occurring has been significantly reduced.

### Approaching and returning to contour, spline 4233, LTS: NC program freezes with minimal residual paths

**CQ-ID:** Defdb00212480

**Severity:** K3 - malfunction (no workaround)

**Description:** With repeated "path and restart" in conjunction with splines (LTS), the NC program froze following a restart with minimal residual paths in various axes (channel status = running).

### System axis coupling: Validation of an unchanged formula coupling results in recoupling

**CQ-ID:** Defdb00212557

**Severity:** K3 - malfunction (no workaround)

**Description:** With the validation of the system axis coupling (SD.SysAxCoupleCtr.Validate=1), a recoupling was sporadically triggered even with unchanged formula couplings. In particular, formulas with cyclically changed CPL variables (global variables or system data) resulted in this behavior.

**Fixing:** If the coupling rule for the axis (SysAxCoupleCmd[axis]) remains unchanged, no recoupling takes place.

### Incorrect positioning when using SetPos and ACP simultaneously

**CQ-ID:** Defdb00212602

**Severity:** K2 - serious malfunction

**Description:** When using the "SetPos/SPS" function (set program position) for a rotary axis with modulo calculation, an incorrect position may be approached when positioning with the sign logic (ACP/ACN).

This error behavior always occurs when SetPos determines a negative offset.

The offset value can be read out with the CPL function AXO.

### Wobble tripod with calotte: Programmed rotation is ignored at the apex of the calotte

**CQ-ID:** Defdb00212696

**Severity:** K2 - serious malfunction

**Description:** The rotation angle programmable with the NC command CaloCrd (3rd parameter) was ignored if the programming level touched the calotte at the apex. For example, the programmed twist angle of 23° in CaloCrd ( 0, 0, 23 ) was ignored.

### Contour violation when measuring on the contour (MOC) with quick drive stop with ctrlX DRIVE

**CQ-ID:** Defdb00212713

**Severity:** K2 - serious malfunction

**Description:** In conjunction with ctrlX DRIVE, measuring on the contour (MOC) with drive quick stop could sporadically result in contour violation during probing.

## MTX Firmware / Sercos

### Sercos hotplug: Incorrect Sercos timing calculation if Sercos nodes are already missing during the Sercos start-up

**CQ-ID:** Defdb00211159

**Severity:** K3 - malfunction (no workaround)

**Description:** Sercos hotplug: If the Sercos device was already missing in the Sercos start-up, the Sercos timing calculation was carried out without taking the missing device into account. Sporadically, this could lead to a later Sercos hotplug not functioning properly.

### IWO, Sercos diagnostics: The error counter for Sercos ring interruptions is possibly counted at an incorrect position

**CQ-ID:** Defdb00211226

**Severity:** K3 - malfunction (no workaround)

**Description:** In combination with double-axis devices, the error counter for Serocs ring interruptions was sporadically displayed in the wrong place in the topology view of the Sercos diagnostics.

### Multiple Sercos ring healings at the same interruption point did not work reliably

**CQ-ID:** Defdb00211234

**Severity:** K4 - malfunction

**Description:** The number of Sercos ring healings at the same interruption point is limited so that Sercos ring healings do not occur endlessly and at high frequency: Maximum of three Sercos ring healings within 10 minutes. However, sporadically no further Sercos ring healing was possible even after 10 minutes.

**Fixing:** The limitation of the number of Sercos ring healings at the same interruption point has been removed.

### Sercos hotplug with IndraDrive drives does not work with the "Sercos line" topology

**CQ-ID:** Defdb00211489

**Severity:** K3 - malfunction (no workaround)

**Description:** If the “Sercos line" topology was used instead of a “Sercos double ring”, a Sercos hotplug with IndraDrive drives did not work.

**Fixing:** Sercos hotplug works with IndraDrive drives in all Sercos topologies: Sercos line, Sercos double line (= T-structure) and Sercos double ring.

### Sercos hotplug with IndraDrive Economy (MPE) does not work

**CQ-ID:** Defdb00211494

**Severity:** K3 - malfunction (no workaround)

**Description:** Sercos hotplug did not work with IndraDrive Economy (MPE) drives.

### Sercos hotplug does not work with the first and last drive in the Sercos double ring

**CQ-ID:** Defdb00211495

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the "Sercos double ring" topology, a Sercos hotplug did not work with the first and last IndraDrive drive.

### System error SF3464 (Task: ScsEvent) during Sercos start-up with a missing drive in the Sercos ring

**CQ-ID:** Defdb00211499

**Severity:** K3 - malfunction (no workaround)

**Description:** If the Sercos multiplex channel was configured, a missing drive in the Sercos ring resulted in the system error SF3464 (Task: ScsEvent) during Sercos start-up.

### Missing setting of the system time when a drive returns to the Sercos ring via Sercos hotplug

**CQ-ID:** Defdb00211519

**Severity:** K3 - malfunction (no workaround)

**Description:** If a drive that was previously switched off came back into the Sercos ring via Sercos hotplug, the system time of this drive was not automatically adjusted to the control time.

**Fixing:** When performing a Sercos hotplug, all connected drives are supplied with the current system time of the control.

### Parking of an axis with ctrlX DRIVE via system datum SD.SysScsDrPar[].ParkAx not possible

**CQ-ID:** Defdb00212158

**Severity:** K6 - functional enhancement

**Description:** The "parking axis" function is not implemented in the ctrlX DRIVE in accordance with the Sercos specification. The "parking axis" function now comprises a total of 4 Sercos parameters.

**Fixing:** The MTX was adapted to the new procedure when the drive type "ctrlX DRIVE" was preselected. If the parking mode has been selected in the SD variable "parking axis", the parking mode is enabled in ctrlX DRIVE as before in CP2. The MTX also switches off parking.

### Sercos phase switching error if error F8359 is pending at the drive

**CQ-ID:** Defdb00212554

**Severity:** K2 - serious malfunction

**Description:** If error F8359 (SMO: Encoder evaluation error) was reported in a drive, the attempt to switch the Sercos phase to parameterization mode failed with the error message "M_CTRL: Change parameterization level - error during setting of Sercos phase.internal error (unknown NCS error)".

### XM42 / Other

#### XM42, XM22, XM21 and VPx: Possibly sporadic system errors due to insufficient interrupt stack size

**CQ-ID:** Defdb00212695

**Severity:** K3 - malfunction (no workaround)

**Description:** With the XM42, XM22, XM21 and VPx controller variants, the size of the interrupt stack was insufficient, which could lead to sporadic system errors.

In the MTX machine tool control system, this can result in a fatal system error 5741 (Task: Starttsk) in conjunction with axis transformations.

## 7.4.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

VAR_GLOBAL

{attribute 'symbol' := 'read'}

stTest: TestStruct;

END_VAR

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out” structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

### MTX Firmware / Block Management

#### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported sporadically.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]
- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime
- Linking at program selection

Pre-assignment: Linking at program runtime

### Re-entry with callchain sporadically results in the error “unable to find abort position in target block”

**CQ-ID:** Defdb00210556

**Severity:** K2 - serious malfunction

**Description:** In case of part programs with an only incremental coordinate specification or only for coordinates changed upon re-entry, the error “unable to find abort position in target block” can occur when specifying the abort callchain.

**Workaround:** Upon re-entry via callchain, the control executes a block pre-run from the start of the program to the callchain. Thus, the abort state is restored. For program coordinates changed incrementally or only in the adjust program, the absolute reference has to be explicitly specified in block pre-run. The program reference position of the callchain has to be backed up with RERF(). If a coordinate is only changed in the adjustment program, the reference position can also be corrected with RERF(<coord>=<value>). In the block pre-run (SD.SysSRun.Active<>0), the reference saved with RERF has to be restored at the start of the program. Read the reference position of the callchain out with the CPL instruction SDR(100,<coordindex>,1) and enable the absolute reference with G90 <coord>=<refpos>.

Also refer to the NC functional description “ReEntryRef, RERF” in the MTX15 Programming Manual, chapter “NC functions with high-level language syntax”, subchapter “Saving the programming starting point for re-entry after program interruption”.

### Syntax error 387 when programming SCO(L1[..], L2[..]) without equal sign

**CQ-ID:** Defdb00211672

**Severity:** K4 - malfunction

**Description:** If SCO is programmed without "=" separator contrary to the instruction in the MTX documentation, e.g. SCO(L1[23],L2[2.5]), the function is executed correctly, but the syntax error 387 occurs when an Asynchronous Subroutine (ASUP) is called, or "Clear distance-to-go" is executed.

**Workaround:** If programmed correctly with equal signs, e.g. SCO(L1=[23],L2=[2.5]), the problem does not occur.

## MTX Firmware / Communication

### OPC UA: Connection between MTX OPC UA Server and PLC OPC UA Client not possible with MTX emulation

**CQ-ID:** Defdb00211421

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the MTX emulation (sco.exe), the OPC UA client of the PLC cannot connect to the OPC UA server of the MTX. The error "BadCommunicationError" occurs at the UaConnect function block (RIL_OpcUaClient library).

**Workaround:** When using a real control hardware (XM42), the connection between MTX OPC UA Server and PLC OPC UA Client is not working correctly.

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

### XM42: An online change of the PLC fails in case of a cycle time of 1 ms

**CQ-ID:** Defdb00210965

**Severity:** K2 - serious malfunction

**Description:** If the cycle time of the PLC task is set to 1 ms, changes to the PLC project cannot be applied anymore using online change. This process is canceled with an error.

This known problem can only be avoided by using a higher PLC cycle time. If a PLC cycle time of 1 ms is required, the entire PLC project has to be reloaded following a change. The PLC is stopped during this process.

## MTX Firmware / Machine Parameters

### IWE, NC Configuration: Importing the data group "SUP" is not possible

**CQ-ID:** Defdb00212608

**Severity:** K3 - Malfunction (no workaround)

**Description:** When opening the "SUP" data group in the NC configurator and wanting to perform an import via the context menu, this is usually aborted with an error.

**Temporary solution:** Workaround 1:

The file name of the file to be imported for the "SUP" data group has to be "sup.cfg" (lower case only!). Subsequently, the import can be completed successfully. However, the data group display is only refreshed upon an NC configurator restart.

Workaround 2:

Execute the "Export data record (optional)" function in the main menu under the "NC configurator" menu item. All configuration files of all data groups are strored in a single export file (*.cdt, cdt = configuration data table). In this format, the parameters and their values are arranged line-by-line in the display sequence of the data groups in the NC configurator.

The entries of the "SUP" data group can be found at the start. You can edit the exported file and delete all entries below the "SUP" data group. After saving the file, you can execute the "Import data record (alternative)" function with the modified export file. The changes are applied and the NC configurator display is refreshed.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

## MTX Firmware / OPC UA

### OPC UA: Modifying the item "NC.DynamicDataRT" leads to blocking of the OPC UA Server

**CQ-ID:** Defdb00210351

**Severity:** K2 - serious malfunction

**Description:** The OPC UA server blocks if the item "ns=27;s=NC.DynamicDataRT" is modified by one of the methods "AddField", "AddAxis", "RemoveField" or "RemoveAxis" and the item is NOT created in a subscription.

The OPC UA Server can only be reactivated by a control restart.

If the item "ns=27;s=NC.DynamicDataRT" is created in a subscription, it can be modified using the previously mentioned methods.

### OPC UA: Deleting a non-existent data item results in blocking of the OPC UA Server For the item "ns=27;s=NC.DynamicDataRT"

**CQ-ID:** Defdb00210364

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA Server blocks if an element is deleted that is not available in the current configuration in the item "ns=27;s=NC.DynamicDataRT" with the method "RemoveField”.

The OPC UA Server can only be reactivated by a control restart.

The error only occurs with a real controller and not in the MTX emulation (sco.exe).

## MTX Firmware / Sercos

### Sercos I/Os: No support for the "hotplug" function for failed or missing Sercos I/Os

**CQ-ID:** Defdb00211400

**Severity:** K3 - malfunction (no workaround)

**Description:** If Sercos devices have failed or are missing during start-up, the IndraMotion MTX supports the resumption of communication with these devices via Sercos hotplug. However, this function is only supported for Sercos drives and not for Sercos I/Os.

## MTX Firmware / _Other

### Action recorder (ACR): Error message 5110 when creating the AcrLog file

**CQ-ID:** Defdb00212716

**Severity:** K3 - malfunction (no workaround)

**Description:** A new AcrLog file is created when the action recorder (ACR) is started. This action results in error 5110 "MTX acr: Error creating or writing file xxxx". Despite the error message, the file is physically created.

**Workaround:** Perform the ACR initial commissioning wizard:

1. Start IndraWorks Operation
2. Press the OP button "<OP9> Diagnostics"
3. Press the F-key <F8> “More functions"
4. Press the F-key <F5> "MTX acr"
5. Press the F-key <F8> “More functions"
6. Press the F-key <F7> "MTX acr commissioning"
7. Carry out the "MTX acr commissioning"

# 8 MTX 15V20 Firmware and Software

## 8.1 Compatibility

### 8.1.1 Compatibility settings in IndraWorks Engineering

In IndraWorks Engineering, the following compatibility settings for "IndraMotion MTX 15V20" (IndraWorks MTX 15.20.0) apply:

| | |
|---|---|
| Menu item<br>**Project ▸ Changing the compatibility mode...** | 15V20 |
| Menu item<br>**Project ▸ Changing the PLC compiler version...** | 3.5.15.60 (15V20) |
| Project node of the control<br>**Properties...** - Tab "Configuration" - Firmware release:<br>(control node "offline" and PLC "logged out") | FW*-MTX-XM42-23.20 (15V20) |
| Project node of the HMI device<br>**Properties…** – Device version: | 15V20 |

*Tab. 8-1: Compatibility settings for IndraMotion MTX 15V20*

## 8.2 Software

### 8.2.1 Resolved defects

#### IndraWorks Ds / _Other

**IndraWorks Drive / IndraWorks Ds / ctrlX DRIVE Engineering: Display of an incorrect parameter value in the FXC dialog**

**CQ-ID:** Defdb00212028

**Severity:** K4 - malfunction

**Description:** When using an encoderless, flux-controlled motor (open loop, FXC control), the operating date of parameter P-0-0048 was not displayed as the input variable in the corresponding FXC dialog (see control block diagram in the function description), but the operating date of parameter S-0-0036.

#### IndraWorks ML / Engineering / _Other

**Error message "The path is too long" when creating an IndraWorks project archive**

**CQ-ID:** Defdb00212053

**Severity:** K3 - malfunction (no workaround)

**Description:** The creation of an IndraWorks project archive was sporadically incomplete if devices were included whose device description had very long path names.

The project archive was created, but the devices were not included.

#### IndraWorks ML / Engineering / Drive

**IndraWorks Engineering, IW-Drive: In the "Invalid parameters" dialog, the width of the "IDN" column cannot be changed**

**CQ-ID:** Defdb00211779

**Severity:** K2 - serious malfunction

**Description:** In the "Invalid parameters" dialog, the "IDN" column was too narrow so that the Sercos identification numbers were displayed incompletely. This representation could not be changed because, the width of the "IDN" column cannot be changed

### IWE, Sercos node, ctrlX DRIVE: Function "IndraWorks Ds here" does not open ctrlX DRIVE Engineering but IndraWorks Ds

**CQ-ID:** Defdb00211768

**Severity:** K4 - malfunction

**Description:** For ctrlX DRIVE drives, the function "IndraWorks Ds here" (context: IndraWorks Engineering, Sercos node of the control) should open crtlX DRIVE Engineering. Instead, IndraWorks Ds was opened to configure the drive.

**Fixing:** When calling the "IndraWorks Ds here" function, the "ctrlX DRIVE Engineering" configuration tool is now started for all ctrlX DRIVE and IndraDrive MPx-2 devices.

## IndraWorks ML / Engineering / HMI

### WinStudio: Error message "ZipFunctions - Couldn't open file!" when archiving and unpacking recorded trend data

**CQ-ID:** Defdb00211782

**Severity:** K2 - serious malfunction

**Description:** When using a WinStudio Trend object, the error message "ZipFunctions - Couldn't open file!” is sporadically displayed when displaying archived data.

### WinStudio: Some multi-touch gestures did not work when "1:Inside" was set as mode for "Zoom/Move"

**CQ-ID:** Defdb00211781

**Severity:** K2 - serious malfunction

**Description:** The setting "1:Inside" as mode for "Zoom/Move" resulted in some multi-touch gestures, such as "Scroll screen" or "Zoom screen" did not work.

**Workaround:** Instead of the "1:Inside" setting, use the "2: Outside" setting.

### WinStudio, OPC UA: Display of "question marks" (?) instead of values after long periods of inactivity

**CQ-ID:** Defdb00211982

**Severity:** K3 - malfunction (no workaround)

**Description:** If there is no interaction between a WinStudio application and the OPC UA server for a longer period of time, the connection is disconnected from the client.

This resulted in question marks being displayed at all positions where an OPC UA item was configured in the screen. Only after an update, e.g. a value change in the PLC or writing values from the HMI, was the OPC UA connection re-established and the values were displayed correctly again.

## IndraWorks ML / Engineering / Periphery

### Support of the S20 function module "S20-IOL-8" on the S20-S3-BK+ Sercos bus coupler

**CQ-ID:** Defdb00211783

**Severity:** K6 - functional enhancement

**Description:** The corresponding device description file for Sercos devices (SDDML) has been added so that the S20 function module 8 IO-Link ports (S20-IOL-8) can be operated on the IndraControl S20 bus coupler for Sercos (S20-S3-BK+).

## IndraWorks ML / Online-Help

### IndraWorks: Online help for ctrlX DRIVEs sporadically does not work

**CQ-ID:** Defdb00211929

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the online help for ctrlX DRIVE topics, a "search" sometimes returned no results or "links" that often did not work or referenced incorrect chapters.

Examples: A search for e.g. individual parameters did not find any entries for the ctrlX DRIVE firmware AXS-V-03. Links from the AXS-V-02 parameter description to the corresponding function description did not work. A search using the "Search" button in the menu bar of the AXS-V-02 parameter description did not return any search results (links) to the ctrlX DRIVE firmware AXS-V-02, but it did return links to the ctrlX DRIVE firmware AXS-V-03.

## IndraWorks MTX / Engineering / _Other

### IndraWorks Engineering: Import of PROFINET modules does sporadically not work correctly

**CQ-ID:** Defdb00212103

**Severity:** K3 - malfunction (no workaround)

**Description:** When importing Profinet I/O modules (e.g. Murr Cube67+ bus nodes, GSDML: 56526_Cube67+_KFG_x_26), the following problems could occur:

1. If an IO link node is imported separately at a slave, the import takes place at the wrong position.

2. Elements below an IO link node that contain only an empty slot are not imported as the associated device description file was not found.

**Fixing:** 1.) The import mechanism has been corrected so that the IO link node is imported at the correct position.

2.) The device description file for the empty slot is now part of the IndraWorks Suite.

### IndraWorks Engineering: The MTX system status does not always show the correct state

**CQ-ID:** Defdb00205558

**Severity:** K3 - malfunction (no workaround)

**Description:** If the IndraMotion MTX was in a system error state and the MTX system status was subsequently opened in IndraWorks Engineering, it was no longer indicated that a system error was pending on the control.

If the MTX system status was already open before the system error occurred, the system error was displayed correctly.

### IWE: The creation of an NC archive only reaches 99% and then continues (supposedly) indefinitely

**CQ-ID:** Defdb00212159

**Severity:** K3 - malfunction (no workaround)

**Description:** Saving the control data can take up to 20 minutes for large amounts of data. The previous progress indicator was based on a rough estimate, which could mean that the last 1% sometimes took more than 14 minutes.

**Fixing:** Therefore, once the 99% has been reached, the time elapsed for the backup is now displayed and continuously updated until the backup process is complete.

### IndraWorks Engineering, VCS: Incorrect order in Profinet slaves

**CQ-ID:** Defdb00212145

**Severity:** K4 - malfunction

**Description:** If there are two identical working copies of a VCS project (VCS = Version Control System), after inserting a Profinet module (only when inserting in between other Profinet modules, not when attaching to the last position in the module list), the modules are updated in the wrong order when the second copy is updated. However, this only becomes apparent when the project is opened again.

**Fixing:** The order of the modules remains identical after updating and reopening the projects.

### IWE,"OEM data" project node,language switching: Dialogs, context menus were only partially translated into foreign languages

**CQ-ID:** Defdb00209812

**Severity:** K4 - malfunction

**Description:** After language switching, many texts within dialogs and context menus were only displayed in "German" in the context of the "OEM data" project node.

### IWE: Error (PLC not stopped) when backing up device data of the XM42 control

**CQ-ID:** Defdb00212117

**Severity:** K4 - malfunction

**Description:** When backing up the control data, the error message "Errors occurred during backup" is sporadically displayed. The detailed error message contains the following information...

- Error: The PLC could not be switched to the STOP state
- Error: Errors occurred during the device data backup.

This problem occurred when there were sporadic delays when the PLC was stopped and the PLC was supposedly not yet stopped at the time the control data was archived.

**Fixing:** When saving the control data, an additional "wait time" has now been added for stopping the PLC. This means that this problem should not occur anymore.

**Workaround:** Explicitly stop the PLC before saving the device data.

### Several Safety CPUs can be added to an MTX control. This is incorrect.

**CQ-ID:** Defdb00208379

**Severity:** K5 - non critical problem

**Description:** In the IndraWorks Project Explorer, several Safety CPUs can be added to an MTX control via the context menu. This behavior is incorrect.

Only one Safety CPU can be added and operated.

## IndraWorks MTX / Engineering / Drive

### IndraWorks Engineering: “Unexpected exception” during “online” switching of a ctrlX DRIVE as a Sercos I/O drive

**CQ-ID:** Defdb00212146

**Severity:** K2 - serious malfunction

**Description:** If a ctrlX DRIVE was created as a (PLC-controlled) I/O drive and communicated with the drive exclusively via a Sercos service channels instead of via Sercos IP, an “unexpected exception” occurred during “online” switching.

### IndraWorks Egineering, parameter editor: No online help for ctrlX DRIVE parameters

**CQ-ID:** Defdb00211484

**Severity:** K3 - malfunction (no workaround)

**Description:** When opening the parameter editor for drive parameters in IndraWorks Engineering (IWE) and enter the identification number (IDN) of an existing drive parameter, the corresponding online help can be opened via the "question mark" symbol ( "?" icon, parameter description F1). However, ctrlX DRIVEs only displayed a blank HTML page with the message "Page not found".

### IndraWorks Engineering: "Unexpected exception" after creating and switching a ctrlX DRIVE "online"

**CQ-ID:** Defdb00211826

**Severity:** K4 - malfunction

**Description:** Under certain conditions, the ctrlX DRIVEs were not initialized correctly the first time they went "online" in the IndraWorks project. This state was remanent and led to an unexpected exception error every time the system went online.

**Fixing:** The initialization of the ctrlX DRIVE drives now also works correctly under these conditions, i.e. this problem should no longer occur with new projects.

However, IndraWorks projects affected by the previous problem cannot be corrected automatically. To correct the problem, the affected drives have to be deleted from the project and have to be created again.

### IWE: When switching an actuator "online", the control sporadically connects to the wrong actuator

**CQ-ID:** Defdb00211738

**Severity:** K4 - malfunction

**Description:** In certain commissioning situations and in connection with the Sercos IP communication, sporadically the control unit did not connect to the correct drive when switching a drive "online". The problem occurred, for example, if the same Sercos IP address was configured several times and this configuration error was corrected by the user without subsequently switching the drives off and on again.

**Fixing:** To avoid such "mix-ups", an explicit check is carried out when switching a drive "online" to ensure that it is the correct drive.

## IndraWorks MTX / Engineering / NC-Configuration

### IWE, NC Configuration: Some of the available axis transformations are not displayed in the selection

**CQ-ID:** Defdb00212072

**Severity:** K4 - malfunction

**Description:** In the NC configurator, some of the actually available axis transformations (e.g. axis transformation XYZC) were not displayed in the selection and could therefore not be configured via the selection list.

**Workaround:** Configuration of the desired axis transformation not via drop-down list, but directly by entering the number of the axis transformation type (TrafoType). Example: Transformation XYZC = 3131004.

## IndraWorks MTX / Engineering / PLC Programming

### PROFINET configurator: When selecting the available interfaces, the device assignment cannot be identified

**CQ-ID:** Defdb00211877

**Severity:** K2 - serious malfunction

**Description:** If different GSDML files contained names with the same name for the available Data Access Points (DAP), the Profinet configurator only displayed the available DAPs several times when an interface was inserted. However, it was not possible to identify which Profinet device the displayed interface is part of.

### IndraWorks Engineering crashes sporadically

**CQ-ID:** Defdb00212102

**Severity:** K3 - malfunction (no workaround)

**Description:** The error is only relevant if the option "Transfer PLC sources together with boot application" is activated in the IndraWorks project. Sporadic exceptions occurred when transferring the PLC sources to the control. This resulted in immediately closing of the IndraWorks programming environment.

## IndraWorks MTX / Operation / _Other

### IndraWorks Operation: Exception after repeated display of DXF files

**CQ-ID:** Defdb00210516

**Severity:** K2 - serious malfunction

**Description:** When displaying DXF files, both in the preview of the MTX navigator and in the NC simulation, memory leaks occurred which could lead to an exception (OutOfMemory exception).

### IWO: Language switching of user-defined F-key pads only works the second time

**CQ-ID:** Defdb00212163

**Severity:** K2 - serious malfunction

**Description:** When changing the "User interface language" in IndraWorks Operation, the language of user-defined F-key bars was not switched on the first language selection, but only on the second language selection. To display the user interface correctly in a standardized language, this language had to be explicitly selected twice in succession.

Due to this problem, the "next language" function for language switching could not be used: The language on the user-defined F-key bars never matched the language of the user interface, but always lagged behind by one language switch.

**Workaround:** To display the user interface correctly in a standardized language, this language had to be explicitly selected twice in succession.

### NC simulation: Exceptions in the status bar during measuring

**CQ-ID:** Defdb00211719

**Severity:** K3 - malfunction (no workaround)

**Description:** When simulating NC programs with touch probes using an NC emulation (sco.exe) with measuring on the workpiece model, exceptions (MW_ASSERT Exception) were displayed in the status line of the NC simulation. These exceptions had no negative effects, neither on the stability of the user interface nor on the quality of the simulation.

### WinStudio: Setting the read trigger from the screen script resulted in a blockade within WinStudio

**CQ-ID:** Defdb00211151

**Severity:** K4 - malfunction

**Description:** If a read trigger was used to synchronously read variables in the screen script ("OnWhile"), the data was not displayed correctly in the screen.

### DXF import: Graphical display shows an additional full circle

**CQ-ID:** Defdb00211192

**Severity:** K5 - non critical problem

**Description:** When graphically displaying the content of an AutoCAD drawing in DXF format, an additional full circle was sometimes displayed that did not actually belong to the defined contour.

## IndraWorks MTX / Operation / NC Operating

### IndraWorks Operation: Display of larger DXF files takes a very long time

**CQ-ID:** Defdb00211222

**Severity:** K2 - serious malfunction

**Description:** The display of larger DXF files in the part program preview of the MTX Navigator and in the NC simulation sometimes took longer than a minute.

### IndraWorks Operation: Incorrect display when a DXF is replaced by another file with identical name

**CQ-ID:** Defdb00211666

**Severity:** K3 - malfunction (no workaround)

**Description:** In the preview of the MTX Navigator and in the NC simulation, the contents of previous DXF and STL files were displayed if the corresponding DXF or STL file was replaced by a file of the same name with different contents. Subsequently, the graphic of the old file was still displayed instead of the graphic of the new file.

## Winstudio / Engineering

### WinStudio: Sporadic delays when switching screens and executing script functions

**CQ-ID:** Defdb00211661

**Severity:** K3 - malfunction (no workaround)

**Description:** When switching between different WinStudio screens, the stored script functions were sometimes called with a delay and the screen layout was also significantly delayed.

### WinStudio: Variables are sporadically not refreshed

**CQ-ID:** Defdb00211662

**Severity:** K3 - malfunction (no workaround)

**Description:** Some values in the active WinStudio screen were only updated after a screen change (e.g. switching to another screen and back again). The error occurred sporadically and mostly in the context of array variables.

## 8.2.2 Known issues

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been created incorrectly

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
END_VAR
```

### IndraWorks MTX / Engineering / NC-Configuration

#### IWE crashes when the library manager is opened, the library is selected and a function block is selected

**CQ-ID:** Defdb00212148

**Severity:** K4 - malfunction

**Description:** IndraWorks Engineering may crash if the library manager is open, an existing library has been selected and a structure or a function block has also been selected in this library.

If the NC configuration is now opened, IndraWorks Engineering crashes.

## IndraWorks MTX / Engineering / Periphery

### IndraWorks Engineering: No IP channel support for Profinet and Ethernet/IP with IndraMotion MTX

**CQ-ID:** Defdb00205647

**Severity:** K3 - malfunction (no workaround)

**Description:** The IndraMotion MTX does not support the IP channel for Profinet I/Os and Ethernet/IP, although it can be selected in IndraWorks Engineering. The function is not available for MTX.

## IndraWorks MTX / Engineering / PLC Programming

### PLC compilation error as different objects with the same name are defined in different libraries

**CQ-ID:** Defdb00212022

**Severity:** K4 - malfunction

**Description:** When updating an existing PLC project to a new IndraWorks software version, compilation errors may occur in the PLC program, as

new objects are defined in newer PLC libraries whose designation is already used in other, older PLC libraries. That means: There are objects with the same name which can be defined differently. Their use by name in the PLC program can then result in compilation errors as an incorrect object may be accessed.

**Workaround:** In this case, using the library's namespace provides the necessary remedy: For a unique access, add the namespace in front of the function block name: <namespace>.<variable name>

Specific example:

• In version MTX 14VRS, the “Timezone” structure is contained in the

PLC library RIL_Utilities.

• In version MTX 15VRS, there is an additional "Timezone" structure

in the PLC library Util.

• Although identical in name, the two structures are defined differently.

• In the case of simple, named use in the PLC program,

it is not clear which of the two structures is used. That can

result in access or compilation errors.

• Remedy: Insert the namespace of the library before the name of

the structure.

• Original program line:

Timezone: IL_TIMEZONE := Timezone.CEST;

• Corrected program line:

Timezone: IL_TIMEZONE := RIL_Utilities.Timezone.CEST;

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the token connected to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token connected to the control name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

### IndraWorks MTX / Operation / Diagnosis

**Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated**

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not a enabled or disabled.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

### IndraWorks MTX / Operation / NC Operating

**NC simulation incorrect if the STOCK command is programmed immediately before a rotary axis movement (A,B,C)**

**CQ-ID:** Defdb00207873

**Severity:** K3 - malfunction (no workaround)

**Description:** The incorrect behavior occurs if axis motions, affecting the raw part position, i.e. rotary table axes or telescope axes, are programmed immediately after the raw part definition.

As a result, the virtual workpiece does not lie in space as intended, but assumes unwanted intermediate positions. As a result, the wrong raw part position in the NC simulation can then result in a succession of collisions.

Additional remark: The axes with the meaning X, Y and Z do not cause the previously mentioned problem.

**Workaround:** Program only movements of the main axes X, Y or Z immediately after the raw part definition. If it is mandatory to immediately move a rotary axis or telescopic axis which may affect the raw part position. Program a dwell time of approx. 0.2 to 0.5 sec after the STOCK command.

## 8.3 Firmware

### 8.3.1 Resolved defects

### MLC Firmware / OPC UA

**OPC UA server: Memory leak when creating a MonitoredItems**

**CQ-ID:** Defdb00211730

**Severity:** K3 - malfunction (no workaround)

**Description:** A memory leak could could be caused in the OPC UA Server when a MonitoredItem was created. This occurred in the OPC UA service "CreateMonitoredItems" if an item was added that corresponded to the value (attribute ID: 13 for Value) of a PLC structure variable.

### MTX Firmware / NC Program / NC-Function

#### Approaching and returning to contour, LTS and spline type 4233: NC program error 5526 "NC block for restart not found"

**CQ-ID:** Defdb00211949

**Severity:** K3 - malfunction (no workaround)

**Description:** With active B-spline approximation, B-spline function blocks can be generated that do not overlap geometrically with their logically assigned NC blocks.

In the event of an asynchronous interruption, this can lead to incorrect geometry saving of the spline parameter data.

As a result, the reconstruction for the restart movement can result in the error 5526 "NC block for restart not found"

**Fixing:** The error has been fixed on the basis of spline type 4233.

#### Approaching and returning to contour, spline 4233, LTS: Part program error 1515 "Bsa touchpoint not found!"

**CQ-ID:** Defdb00212174

**Severity:** K3 - malfunction (no workaround)

**Description:** In NC programs with the "LTS" function and spline type 4233, NC program error 1515 "Bsa touchpoint not found!" could occur when moving away from and returning to the contour.

#### Approaching and returning to contour, spline 4233, LTS: Part program error 1515 "Error ModifyContourAtStartEndPoint"

**CQ-ID:** Defdb00212173

**Severity:** K3 - malfunction (no workaround)

**Description:** In NC programs with the "LTS" function and spline type 4233, NC program error 1515 "Error ModifyContourAtStartEndPoint" could occur when moving away from and returning to the contour.

## 8.3.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

```
VAR_GLOBAL
{attribute 'symbol' := 'read'}
stTest: TestStruct;
END_VAR
```

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

## IndraLogic Firmware / Logic

### Error when accessing "In_Out" structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

## MTX Firmware / Block Management

### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported sporadically.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

### Re-entry with callchain sporadically results in the error “unable to find abort position in target block”

**CQ-ID:** Defdb00210556

**Severity:** K2 - serious malfunction

**Description:** In case of part programs with an only incremental coordinate specification or only for coordinates changed upon re-entry, the error “unable to find abort position in target block” can occur when specifying the abort callchain.

**Workaround:** Upon re-entry via callchain, the control executes a block pre-run from the start of the program to the callchain. Thus, the abort state is restored. For

program coordinates changed incrementally or only in the adjust program, the absolute reference has to be explicitly specified in block pre-run. The program reference position of the callchain has to be backed up with RERF(). If a coordinate is only changed in the adjustment program, the reference position can also be corrected with RERF(<coord>=<value>). In the block pre-run (SD.SysSRun.Active<>0), the reference saved with RERF has to be restored at the start of the program. Read the reference position of the callchain out with the CPL instruction SDR(100,<coordindex>,1) and enable the absolute reference with G90 <coord>=<refpos>.

Also refer to the NC functional description “ReEntryRef, RERF” in the MTX15 Programming Manual, chapter “NC functions with high-level language syntax”, subchapter “Saving the programming starting point for re-entry after program interruption”.

### Syntax error 387 when programming SCO(L1[..], L2[..]) without equal sign

**CQ-ID:** Defdb00211672

**Severity:** K4 - malfunction

**Description:** If SCO is programmed without "=" separator contrary to the instruction in the MTX documentation, e.g. SCO(L1[23],L2[2.5]), the function is executed correctly, but the syntax error 387 occurs when an Asynchronous Subroutine (ASUP) is called, or "Clear distance-to-go" is executed.

**Workaround:** If programmed correctly with equal signs, e.g. SCO(L1=[23],L2=[2.5]), the problem does not occur.

## MTX Firmware / Communication

### OPC UA: Connection between MTX OPC UA Server and PLC OPC UA Client not possible with MTX emulation

**CQ-ID:** Defdb00211421

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the MTX emulation (sco.exe), the OPC UA client of the PLC cannot connect to the OPC UA server of the MTX. The error "BadCommunicationError" occurs at the UaConnect function block (RIL_OpcUaClient library).

**Workaround:** When using a real control hardware (XM42), the connection between MTX OPC UA Server and PLC OPC UA Client is not working correctly.

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

### XM42: An online change of the PLC fails in case of a cycle time of 1 ms

**CQ-ID:** Defdb00210965

**Severity:** K2 - serious malfunction

**Description:** If the cycle time of the PLC task is set to 1 ms, changes to the PLC project cannot be applied anymore using online change. This process is canceled with an error.

This known problem can only be avoided by using a higher PLC cycle time. If a PLC cycle time of 1 ms is required, the entire PLC project has to be reloaded following a change. The PLC is stopped during this process.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

## MTX Firmware / OPC UA

### OPC UA: Modifying the item "NC.DynamicDataRT" leads to blocking of the OPC UA Server

**CQ-ID:** Defdb00210351

**Severity:** K2 - serious malfunction

**Description:** The OPC UA server blocks if the item "ns=27;s=NC.DynamicDataRT" is modified by one of the methods "AddField", "AddAxis", "RemoveField" or "RemoveAxis" and the item is NOT created in a subscription.

The OPC UA Server can only be reactivated by a control restart.

If the item "ns=27;s=NC.DynamicDataRT" is created in a subscription, it can be modified using the previously mentioned methods.

### OPC UA: Deleting a non-existent data item results in blocking of the OPC UA Server For the item "ns=27;s=NC.DynamicDataRT"

**CQ-ID:** Defdb00210364

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA Server blocks if an element is deleted that is not available in the current configuration in the item "ns=27;s=NC.DynamicDataRT" with the method "RemoveField”.

The OPC UA Server can only be reactivated by a control restart.

The error only occurs with a real controller and not in the MTX emulation (sco.exe).

## MTX Firmware / Sercos

### Sercos I/Os: No support for the "hotplug" function for failed or missing Sercos I/Os

**CQ-ID:** Defdb00211400

**Severity:** K3 - malfunction (no workaround)

**Description:** If Sercos devices have failed or are missing during start-up, the IndraMotion MTX supports the resumption of communication with these devices via Sercos hotplug. However, this function is only supported for Sercos drives and not for Sercos I/Os.

# 9 MTX 15V18 Patch 1 Firmware and Software

## 9.1 Compatibility

### 9.1.1 Compatibility settings in IndraWorks Engineering

In IndraWorks Engineering, the following compatibility settings for IndraMotion MTX 15V18 Patch 1 apply:

| | |
|---|---|
| Menu item<br>**Project ▸ Changing the compatibility mode...** | 15V18 |
| Menu item<br>**Project ▸ Changing the PLC compiler version...** | 3.5.15.58 (15V18) |
| Project node of the control<br>**Properties...** - Tab "Configuration" - Firmware release:<br>(control node "offline" and PLC "logged out") | FW*-MTX-XM42-23.18 (15V18) |
| Project node of the HMI device<br>**Properties…** – Device version: | 15V18 |

*Tab. 9-1: Compatibility settings for IndraMotion MTX 15V18 Patch 1*

## 9.2 Software

### 9.2.1 Resolved defects

#### IndraLogic / _Other

**IndraLogic: Exceptions after editing operations with graphic editors**

**CQ-ID:** Defdb00210492

**Severity:** K2 - serious malfunction

**Description:** When working with the graphic PLC editors (e.g. SFC, FBD/LD/IL and CFC), sporadic exceptions occurred in IndraWorks.

#### IndraWorks Ds / Diagnostic

**IndraWorks Drive: On IndraDrive dual-axis devices, the error memory of the second axis is not displayed**

**CQ-ID:** Defdb00211785

**Severity:** K4 - malfunction

**Description:** The error memory of the second axis of IndraDrive dual-axis devices was not displayed.

#### IndraWorks Engineering / _Other

**ctrlX DRIVE: Unexpected exception when opening the “Touch probe” dialog**

**CQ-ID:** Defdb00211902

**Severity:** K2 - serious malfunction

**Description:** When opening the “Touch probe" dialog for ctrlX DRIVE drives with firmware older than AXS-V-0314, an exception occurred.

## IndraWorks ML / Engineering / PLC Programming

### IndraWorks Engineering, IndraLogic: Exception during PLC program download

**CQ-ID:** Defdb00211854

**Severity:** K3 - malfunction (no workaround)

**Description:** The following procedure results in an "unexpected exception" in IndraWorks Engineering, which then displays the message window "IndraLogic: Execution ... is currently paused at a breakpoint ..." keeps appearing after closing. IndraWorks Engineering has to be closed using the Task Manager.

- Set breakpoint in PLC program and wait until the program stops
- Logging out
- Modify PLC program:
- Logging in
- IndraLogic message "The execution ... is currently stopped at a breakpoint ..." confirm with [Yes]
- Log in with download

An "unexpected exception" occurs.

## IndraWorks MTX / Engineering / _Other

### IWE, ctrlX DRIVE as I/O device: Error message "The configured device type is not compatible with the found hardware"

**CQ-ID:** Defdb00212122

**Severity:** K2 - serious malfunction

**Description:** Prerequisite for error occurrence: A ctrlX DRIVE was integrated into the project as a Sercos I/O device based on the device description file "SDDML-v3.0_Bosch_Rexroth_AG-crtlX_DRIVE ...".

If the "Configure Sercos devices" dialog is called via “Sercos device address assignment ..." and the existing Sercos devies are searched for via [scan ring], the corresponding drive is marked with a white "X" on a red background and "The configured device type is not compatible with the found hardware" is displayed in the tool tip.

The reason for this is that a new FSP type (Function Specific Profile) is defined in SDDML-v3.0, which has so far not been supported by IndraWorks Engineering of the IndraMotion MTX.

### IndraWorks Engineering in projects with many PLC symbol variables are not functional for minutes following PLC changes

**CQ-ID:** Defdb00211976

**Severity:** K3 - malfunction (no workaround)

**Description:** Until now, when accessing a PLC element, the associated symbol information was also always queried, even for elements where the symbol information was not required. This resulted in significant delays in IndraWorks Engineering for a large number of PLC symbol variables.

**Fixing:** This access has now been optimized. Symbol information is only requested if it is needed for the PLC element.

### IWE, ctrlX DRIVE as Sercos I/O device: Exception when exiting the “Configure Sercos devices” dialog

**CQ-ID:** Defdb00212128

**Severity:** K3 - malfunction (no workaround)

**Description:** Prerequisite for error occurrence:

A ctrlX DRIVE is contained in the project as a Sercos I/O device and the PLC is logged in. If the dialog “Configure Sercos devices" is called using “Sercos device address specification ...” and the existing Sercos devices are searched via “Scan ring", a "System exception" (no changes possible: PLC is logged in) occurs when exiting this dialog.

#### PROFINET I/O controller: Import of PROFINET modules does not work correctly

**CQ-ID:** Defdb00211935

**Severity:** K3 - malfunction (no workaround)

**Description:** A PROFINET configuration with one device 56526_Cube67+_KFG_x_26 was created and exported. The device was deleted and the export file was imported. A module configuration was lost in the process.

**Fixing:** The module that cannot be imported has subelements. These sub-elements are now taken into account during import.

Restrictions:

The following restrictions apply:

1. If an IO link node is imported separately at a slave, the import takes place at the wrong position. The node has to be deleted again and the element can only be inserted manually.

2. Elements below an IO link node that contain only an empty slot are not imported as the associated device description file is not found.

## IndraWorks MTX / Engineering / Oscilloscope

#### IndraWorks Engineering: Drive oscilloscope does not work with ctrlX DRIVE

**CQ-ID:** Defdb00211523

**Severity:** K3 - malfunction (no workaround)

**Description:** If a ctrlX DRIVE is connected to an IndraMotion MTX, the drive oscilloscope in IndraWorks Engineering does not work. An unexpected exception occurs.

[Exception]

System.InvalidCastException

[Description]

The object of type "Rexroth.IndraWorks.Drive.Package.IndraDriveX" cannot be converted to type "Rexroth.IndraWorks.Drive.Package.DriveAxis".

**Workaround:** For MTX 15V16 and MTX 15V18 this problem has been solved with MTX 15V18 Hotfix1.

## IndraWorks MTX / Operation / NC Programming

#### IndraWorks Operation, NC-Editor: Existing file cannot be opened if no local mount directory exists

**CQ-ID:** Defdb00211761

**Severity:** K3 - malfunction (no workaround)

**Description:** If no local mount directory is set up on the industrial PC, IndraWorks Operation is running on, an existing file (e.g. an NC program) cannot be opened with the NC Editor. Instead, the NC editor remains infinitely long in the state

"The editor is opened" and IndraWorks Operation cannot be operated anymore.

**Workaround:** Create a new local mount directory on the PC executing IndraWorks Operation.

### IndraWorks MTX / Operation / Tool Management

#### IndraWorks Operation, tool management: Tool data can be lost when creating a new tool

**CQ-ID:** Defdb00211798

**Severity:** K2 - serious malfunction

**Description:** When creating a new tool in the operating area of the MTX tool management (Multitouch HMI), the tool data entered is lost if you have switched to another window (e.g. to the existing tool list) in between. After returning to the tool data editor and saving the newly created tool, all entered data was discarded.

### MTX Firmware / Logic

#### IndraWorks Engineering: Sporadically incorrect display value for “Max. cycle time (µs)" of a PLC task

**CQ-ID:** Defdb00211797

**Severity:** K3 - malfunction (no workaround)

**Description:** In the context IndraWorks Engineering - Project Explorer - Logic - Task configuration - Monitoring, a value that is much too high is sporadically displayed for a PLC cycle task as “Max cycle time (µs)”.

The displayed value is not correct and is “close to” 4,294,967,296 (equivalent to 2^32).

## 9.2.2 Known issues

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been created incorrectly

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT

- This global variable list is located in the general module folder

- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

VAR_GLOBAL RETAIN PERSISTENT

RetainVar2 :INT;

END_VAR

After executing the command "Add all instance paths", the PersistenVars says:

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR

Result after executing the command "Add all instance paths":

{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
END_VAR

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

## IndraWorks MTX / Engineering / PLC Programming

### PLC compilation error as different objects with the same name are defined in different libraries

**CQ-ID:** Defdb00212022

**Severity:** K4 - malfunction

**Description:** When updating an existing PLC project to a new IndraWorks software version, compilation errors may occur in the PLC program, as

new objects are defined in newer PLC libraries whose designation is already used in other, older PLC libraries. That means: There are objects with the same name which can be defined differently. Their use by name in the PLC program can then result in compilation errors as an incorrect object may be accessed.

**Workaround:** In this case, using the library's namespace provides the necessary remedy: For a unique access, add the namespace in front of the function block name: <namespace>.<variable name>

Specific example:

• In version MTX 14VRS, the “Timezone” structure is contained in the

PLC library RIL_Utilities.

• In version MTX 15VRS, there is an additional "Timezone" structure

in the PLC library Util.

• Although identical in name, the two structures are defined differently.

• In the case of simple, named use in the PLC program,

it is not clear which of the two structures is used. That can

result in access or compilation errors.

• Remedy: Insert the namespace of the library before the name of the structure.

• Original program line:

Timezone: IL_TIMEZONE := Timezone.CEST;

• Corrected program line:

Timezone: IL_TIMEZONE := RIL_Utilities.Timezone.CEST;

## IndraWorks MTX / Engineering / Periphery

### IndraWorks Engineering: No IP channel support for ProfiNet and EtherNet/IP with IndraMotion MTX

**CQ-ID:** Defdb00205647

**Severity:** K3 - malfunction (no workaround)

**Description:** The IndraMotion MTX does not support the IP channel for ProfiNet I/Os and Ethernet/IP, although it can be selected in IndraWorks Engineering. The function is not available for MTX.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the token connected to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token connected to the control name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not a enabled or disabled.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Operating

### NC simulation incorrect if the STOCK command is programmed immediately before a rotary axis movement (A,B,C)

**CQ-ID:** Defdb00207873

**Severity:** K3 - malfunction (no workaround)

**Description:** The incorrect behavior occurs if axis motions, affecting the raw part position, i.e. rotary table axes or telescope axes, are programmed immediately after the raw part definition.

As a result, the virtual workpiece does not lie in space as intended, but assumes unwanted intermediate positions. As a result, the wrong raw part position in the NC simulation can then result in a succession of collisions.

Additional remark: The axes with the meaning X, Y and Z do not cause the previously mentioned problem.

**Workaround:** Program only movements of the main axes X, Y or Z immediately after the raw part definition. If it is mandatory to immediately move a rotary axis or telescopic axis which may affect the raw part position. Program a dwell time of approx. 0.2 to 0.5 sec after the STOCK command.

# 9.3 Firmware

## 9.3.1 Resolved defects

### IndraLogic Firmware / _Other

#### IndraLogic: The CPU load of the control increases with every PLC cleanup and login

**CQ-ID:** Defdb00211675

**Severity:** K4 - malfunction

**Description:** The execution of the IndraLogic commands "Clean up" and "Log in" resulted in an increase of the CPU load of the control. The multiple application of these commands then eventually resulted in the watchdog function responding.

The problem only occurred in connection with a configured safety module.

#### IndraLogic: The execution of a PLC application program in a single step [Alt]+[F12] sporadically results in the system error

**CQ-ID:** Defdb00211429

**Severity:** K4 - malfunction

**Description:** Debugging a PLC program in a single step [Alt]+[F12] sporadically resulted in a system error.

### IndraWorks MTX / Operation / NC Programming

#### All standard NC cycles with transfer parameter MOD can no longer be used

**CQ-ID:** Defdb00211654

**Severity:** K3 - malfunction (no workaround)

**Description:** All NC cycle calls using the MOD transfer parameter can no longer be used A syntax error occurs in the interpretation of the MOD expression, including error 635 or error 2454:

- Error 625: '(' missing -> <cycle path and name>
- Error 2454: Parts program <Cycle name> does not exist

The following NC cycle calls are affected by this problem:

- G171 Contour roughing, longitudinal
- G172 Contour roughing, plane
- G214 Hole pattern line punching
- G215 Hole pattern matrix punching
- G219 Multi-part punching

- G591 Spline

This problem is caused by the introduction of the new CPL command MOD (modulo operation).

The following MTX software/firmware versions are affected:

- MTX 14V22 Patch13.1 / NC kernel 22.22.36
- MTX 15V16 / NC kernel 23.16.3
- MTX 15V18 / NC kernel 23.18.2

The versions MTX 14V22 Patch13 (and older) and MTX 15V14 Patch1 (and older) are not affected.

**Fixing:** The problem will only be fixed with the next MTX software/firmware releases. It is expected to be fixed with MTX 14V22 Patch17 and MTX 15V18 Patch1.

The problem is solved by renaming the modulo CPL command from MOD to MDL. NC programs in which the CPL command MOD is used have to be adapted accordingly.

## MLC Firmware / Logic

### IndraLogic, sequential control: Activating the sequential control results in a system error or crash of the control

**CQ-ID:** Defdb00210994

**Severity:** K3 - malfunction (no workaround)

**Description:** With the sequential control, the processing of the application program can be tracked. However, a system error or a crash of the control occurred after a short time when the sequential control was activated. Consequently, the sequential control could not be used.

## MTX Firmware / Axis

### System error 1031 and 5118 when using an axis transformation with LCTS

**CQ-ID:** Defdb00211944

**Severity:** K2 - serious malfunction

**Description:** When executing an NC program with LCTS that contains circles (also circles automatically generated with the NC function RND), the system errors 1031 (floating point underflow) and 5118 (FPU trap in channel) occur if one of the following axis transformations is active:

3032001: LLLCA with linear movement of the rotary axes

3032001: LLLCB with linear movement of the rotary axes

3131001: 4-axis transformation - type 1: SCARA on linear axis

3131002: 4-axis transformation - type 2: LLLR

3131003: 4-axis transformation - type 3: RLLL

## MTX Firmware / Block Management

### Unauthorized linker error 387 when calling encrypted subroutines

**CQ-ID:** Defdb00211793

**Severity:** K2 - serious malfunction

**Description:** With the encryption program "MTXCrypt”, NC programs can be encrypted and can thus be "protected": An encrypted NC program can only be interpreted internally by the control. The textual content of the NC program remains hidden from the user.

Linker error 387 occurs when executing encrypted subroutines. Only the execution of encrypted main programs works.

The problem has existed since MTX 15V16.

### Misconfiguration of Sercos I/O caused system error 1514 after startup and reset

**CQ-ID:** Defdb00211928

**Severity:** K3 - malfunction (no workaround)

**Description:** After a misconfiguration of the Sercos I/O, the internal system error 1514 (CAD shrink: unreleased blocks found!) occurred during the first reset after startup.

### Unauthorized NC program syntax error 387 when using RLF in an Init program

**CQ-ID:** Defdb00211989

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the NC command "ResetLeapFrog" (RLF) in a channel initialization program ("Init program"), the syntax error 387 incorrectly occurred during the execution of a channel reset.

## MTX Firmware / Manual-Mode / Machine-Preparing

### Sporadic error 1033 "Division by zero" when selecting the handwheel in workpiece coordinates

**CQ-ID:** Defdb00211703

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of an active axis transformation 3030001 "3-axis - non-orthogonal", error 1033 "Division by zero" occurred sporadically when selecting a handwheel in workpiece coordinates.

### System error 1835 when switching on a incompletely parameterized Sercos axis

**CQ-ID:** Defdb00211696

**Severity:** K3 - malfunction (no workaround)

**Description:** When switching on a Sercos axis with incompletely parameterized Sercos drive telegram, the system error 1835 "Page fault trap in interrupt" could occur.

### Jogging in workpiece coordinates is not executed if the buffer size for external block input is too small

**CQ-ID:** Defdb00211773

**Severity:** K4 - malfunction

**Description:** If the value 0 was entered in the machine parameter BuffSizeExternBlk "Buffer size for external block specification" (Macoda ID 7060 00510), a specified jog movement could not be executed in the operating mode “Manual workpiece coordinate setup".

**Workaround:** Set machine parameter BuffSizeExternBlk "Buffer size for external record set" (Macoda ID 7060 00510) to a value of at least 1024 bytes and accept with system default.

## MTX Firmware / NC Program / CPL

### G230 programming of OX, OY, OZ results in drive error F2037 "Excessive position command value difference"

**CQ-ID:** Defdb00211778

**Severity:** K2 - serious malfunction

**Description:** When using the G230 swivel cycle by specifying a new coordinate origin (new zero point: OX, OY, OZ), the drive error F2037 "Excessive position command value difference" occurred if the 5-axis transformation met the following condition:

The axis position of the reference position (machine parameter RefPosTrafo, 103000130) for the A-axis or B-axis is 90° or higher resp.

-90° or lower.

**Fixing:** Object of this bugfix is the new cycle file "STC_G230" (version 1.1.14, or newer).

### Negative values when accessing PLC operands via CPL "PLC" command

**CQ-ID:** Defdb00212021

**Severity:** K2 - serious malfunction

**Description:** Unsigned PLC values, which are stored in the ranges ...

BYTE greater than 127

WORD greater than 32767

DWORD greater than 2147483647

... are read as negative values with the CPL command "PLC":

**Fixing:** The CPL command "PLC" has new, additional entries for the parameter <Size>:

11 (unsigned byte)

12 (unsigned word)

14 (unsigned double word)

The result of the "PLC" command with size 14 has to be assigned to an unsigned CPL variable (e.g. UI%%).

### Allow zeros instead of spaces for CPL commands PRN# and STR$ as fill characters.

**CQ-ID:** Defdb00211899

**Severity:** K6 - functional enhancement

**Description:** Using the CPL commands PRN# and STR$, it is possible to program a format string to be able to output the string as formatted. Digits are represented by "#" and decimal points by ".". Empty digits are replaced by spaces.

As an alternative to spaces, a new CPL command facilitates to specify zeros as fill characters.

**Fixing:** For formatted output with the CPL commands PRN# and STR$, the new CPL command SETFORMAT allows to define either spaces or zeros as fill characters:

SETFORMAT(<Mode>)

<Mode> = 0: Zeros as fill characters

<Mode> = 1: Space as fill characters (default)

## MTX Firmware / NC Program / NC-Function

### After exiting "Handwheel in workpiece coordinates", the channel feed override no longer has an effect

**CQ-ID:** Defdb00211923

**Severity:** K2 - serious malfunction

**Description:** If neither the machine parameter "ChResetState" nor the initialization program contain the NC function OVE, the behavior described below could occur.

If the "Manual workpiece coordinate setup" mode is exited with the handwheel activated, the channel feed rate override is no longer active (OVD remains active).

**Workaround:** Enter OVE in "ChResetState" or in the initialization program.

### G592 and G41/G42: Velocity dips when traversing a contour (non-programmed back and forth travelling)

**CQ-ID:** Defdb00211701

**Severity:** K2 - serious malfunction

**Description:** First, the offset contour offset by the tool radius is determined from the programmed contour. If the intersection point between the leading corner block and the trailing corner block of an internal corner is not on both the leading corner block and the trailing corner block, if G44 is active, the gap between the end point of the leading corner block and the start point of the trailing corner block is not closed by moving the end point of the leading corner block and the start point of the trailing corner block to the intersection point, but by a linear insert block between the end point of the leading corner block and the start point of the trailing corner block. This creates a loop in the contour, which the subsequent collision protection removes again. The mistake is that this correct procedure has not been applied to a weak internal corner so far. Instead, if G44 is active, the gap is closed by moving the endpoint of the leading corner block and the start point of the trailing corner block to the intersection point.

### G592 and G41/G42: Velocity dips when traversing a contour from G1 blocks (non-programmed full circle)

**CQ-ID:** Defdb00211689

**Severity:** K2 - serious malfunction

**Description:** When traversing a contour consisting of many short straight line blocks with tool radius compensation (G41/G42) and G592 (LCTS), undesired velocity drops occurred as sporadically very small, non-programmed full circles were traversed.

### Travel to fixed stop (FSM) with relative path specification (IC) does not work

**CQ-ID:** Defdb00211967

**Severity:** K2 - serious malfunction

**Description:** When moving to a fixed stop with relative path specification, the axis is "positioned" to the absolute value of the relative specification when the stop is detected.

Specifically:

N10 G1 U-20 F500

N20 FST(U10)

N30 FSM U=IC(-5) F150

N40 G4 F5

N50 FSR

In block N30 the search movement is started in direction -25.0.

When the stop is detected, the axis "moves" to -5.0.

**Workaround:**

For synchronous axes, relative programming can be converted to absolute programming:

N10 G1 U-20 F500

N20 FST(U10)

N30 WAIT

N40 FSM U=[ACS("U")-5] F150 ;instead of U=IC(-5)

N50 G4 F5

N60 FSR

### Drive error F2037 with set machine parameter KeepPathVelNoIpoAct

**CQ-ID:** Defdb00209085

**Severity:** K3 - malfunction (no workaround)

**Description:** With the machine parameter KeepPathVelNoIpoAct set, drive error F2037 "Excessive position command value difference" could occur when setting a placement (G151 - G159.5) or a workpiece position correction (BCR).

### Runtime error 5118 when interrupting a LeapFrog move by an asynchronous subroutine

**CQ-ID:** Defdb00212009

**Severity:** K3 - malfunction (no workaround)

**Description:** If a "LeapFrog" movement was interrupted by an asynchronous subroutine, at the end of the asynchronous subroutine the part program error 5118 "FPU trap in channel. Call-Chain: ...” could occur.

### Unintended velocity drops of the path velocity during contour machining with G41/G42

**CQ-ID:** Defdb00211729

**Severity:** K3 - malfunction (no workaround)

**Description:** When machining a contour with tool radius compensation G41/G42, unwanted velocity drops occurred. These drops occurred when the contour contained barely perceptible, small, shallow indentations: Indentations with a longitudinal extension smaller than the tool radius and an even smaller depth.

### G592: Error 2518, 2519 or 5526 when using the "input assistances" and triggering an asynchronous subroutine

**CQ-ID:** Defdb00211650

**Severity:** K4 - malfunction

**Description:** If a so-called “input assistance" is switched on or is switched during free-form surface milling with G592, the errors 2518/2519 (limit switch error) or 5526 (touchdown point not found) can occur after triggering an asynchronous subroutine.

Input assistances...

- Mirroring (MIR)

- Rotating (Rotate, RED)
- Scaling (Scale, SCL)
- Programmed contour offset (Shift, SHT)

Using the NC function program coordinate offset (TRS, ATR) can also result in this error.

**Workaround:** The problem can be avoided by inserting an additional WAIT command before the subsequent processing records after using the above mentioned commands.

## 9.3.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

```
VAR_GLOBAL
{attribute 'symbol' := 'read'}
stTest: TestStruct;
END_VAR
```

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out” structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

### MTX Firmware / Block Management

#### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported sporadically.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

### Re-entry with callchain sporadically results in the error “unable to find abort position in target block”

**CQ-ID:** Defdb00210556

**Severity:** K2 - serious malfunction

**Description:** In case of part programs with an only incremental coordinate specification or only for coordinates changed upon re-entry, the error “unable to find abort position in target block” can occur when specifying the abort callchain.

**Workaround:** Upon re-entry via callchain, the control executes a block pre-run from the start of the program to the callchain. Thus, the abort state is restored. For program coordinates changed incrementally or only in the adjust program, the absolute reference has to be explicitly specified in block pre-run. The program reference position of the callchain has to be backed up with RERF(). If a coordinate is only changed in the adjustment program, the reference position can also be corrected with RERF(<coord>=<value>). In the block pre-run (SD.SysSRun.Active<>0), the reference saved with RERF has to be restored at the start of the program. Read the reference position of the callchain out with the CPL instruction SDR(100,<coordindex>,1) and enable the absolute reference with G90 <coord>=<refpos>.

Also refer to the NC functional description “ReEntryRef, RERF” in the MTX15 Programming Manual, chapter “NC functions with high-level language syntax”, subchapter “Saving the programming starting point for re-entry after program interruption”.

### Syntax error 387 when programming SCO(L1[..], L2[..]) without equal sign

**CQ-ID:** Defdb00211672

**Severity:** K4 - malfunction

**Description:** If SCO is programmed without "=" separator contrary to the instruction in the MTX documentation, e.g. SCO(L1[23],L2[2.5]), the function is executed correctly, but the syntax error 387 occurs when an Asynchronous Subroutine (ASUP) is called, or "Clear distance-to-go" is executed.

**Workaround:** If programmed correctly with equal signs, e.g. SCO(L1=[23],L2=[2.5]), the problem does not occur.

## MTX Firmware / Communication

### OPC UA: Connection between MTX OPC UA Server and PLC OPC UA Client not possible with MTX emulation

**CQ-ID:** Defdb00211421

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the MTX emulation (sco.exe), the OPC UA client of the PLC cannot connect to the OPC UA server of the MTX. The error "BadCommunicationError" occurs at the UaConnect function block (RIL_OpcUaClient library).

**Workaround:** When using a real control hardware (XM42), the connection between MTX OPC UA Server and PLC OPC UA Client is not working correctly.

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

### XM42: An online change of the PLC fails in case of a cycle time of 1 ms

**CQ-ID:** Defdb00210965

**Severity:** K2 - serious malfunction

**Description:** If the cycle time of the PLC task is set to 1 ms, changes to the PLC project cannot be applied anymore using online change. This process is canceled with an error.

This known problem can only be avoided by using a higher PLC cycle time. If a PLC cycle time of 1 ms is required, the entire PLC project has to be reloaded following a change. The PLC is stopped during this process.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

## MTX Firmware / OPC UA

### OPC UA: Modifying the item "NC.DynamicDataRT" leads to blocking of the OPC UA Server

**CQ-ID:** Defdb00210351

**Severity:** K2 - serious malfunction

**Description:** The OPC UA server blocks if the item "ns=27;s=NC.DynamicDataRT" is modified by one of the methods "AddField", "AddAxis", "RemoveField" or "RemoveAxis" and the item is NOT created in a subscription.

The OPC UA Server can only be reactivated by a control restart.

If the item "ns=27;s=NC.DynamicDataRT" is created in a subscription, it can be modified using the previously mentioned methods.

### OPC UA: Deleting a non-existent data item results in blocking of the OPC UA Server For the item "ns=27;s=NC.DynamicDataRT"

**CQ-ID:** Defdb00210364

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA Server blocks if an element is deleted that is not available in the current configuration in the item "ns=27;s=NC.DynamicDataRT" with the method "RemoveField”.

The OPC UA Server can only be reactivated by a control restart.

The error only occurs with a real controller and not in the MTX emulation (sco.exe).

# 10 MTX 15V18 Firmware and Software

## 10.1 Compatibility mode

The following compatibility settings for "IndraMotion MTX 15V18.0 (build 3220)" in IndraWorks Engineering apply:

| | |
|---|---|
| Menu item<br>**Project ▸ Changing the compatibility mode...** | 15V18 |
| Menu item<br>**Project ▸ Changing the PLC compiler version...** | 3.5.15.58 (15V18) |
| Project node of the control<br>**Properties...** - Tab "Configuration" -Firmware release:<br>(Control node "offline" and PLC "logged off") | FW*-MTX-XM42-23.18 (15V18) |
| Project node of the HMI device<br>**Properties...** - Device version: | 15V18 |

*Tab. 10-1: Compatibility settings for IndraMotion MTX 15V18*

## 10.2 Software

### 10.2.1 Resolved defects

#### IndraWorks Engineering / _Other

**WinStudio: After generating HTML files, "Check" renders the application unusable**

**CQ-ID:** Defdb00211556

**Severity:** K3 - malfunction (no workaround)

**Description:** If WinStudio images were saved as HTML files and the validation function "Check" was called, the application could not be operated anymore and had to be terminated via the Windows Task Manager.

#### IndraWorks ML / Engineering / HMI

**WinStudio: Access to indexed driver sheet variables does not work via OPC UA**

**CQ-ID:** Defdb00210848

**Severity:** K3 - malfunction (no workaround)

**Description:** The indexed access to WinStudio driver sheet variables does not work correctly via OPC UA. The initial value was read only once in case of indexed variables. Subsequently, the values are not refreshed anymore.

**Workaround:** The variables can be refreshed via a trigger for synchronous/asynchronous reading.

#### IndraWorks ML / Engineering / PLC Programming

**IndraWorks Engineering: The PLCopen files cannot be imported in the Global Variable List**

**CQ-ID:** Defdb00211195

**Severity:** K4 - malfunction

**Description:** The attempt to insert corresponding files at the IWE project node “Global Variable List" via PLCopen import resulted in the error message "The object reference was not specified to an object instance". At the project node of the application, the same import could be completed successfully.

**Workaround:** Import the PLCopen at the project node of the application and move the imported data to the General Module Folder using "Drag & Drop".

## IndraWorks MTX / _Other

### MtxNcSimulation: "Show sheet dimensions on program selection" does not refresh following a program change

**CQ-ID:** Defdb00211329

**Severity:** K4 - malfunction

**Description:** If an NC program with the file extension ".npg" is selected, it is possible to display a raw part in the NC simulation without starting the program.

Requirements:

- The NC program has to contain a corresponding //STOCK/ function comment.

- The "StlFileCompatibility" setting in the NC simulation options is set to "False".

When the raw part geometry was changed in the active NC program, the changed raw part geometry was not displayed after its reselection, but the original raw part geometry.

### WinStudio,OPC UA: After converting the project from 14VRS to 15VRS, sporadically no values are displayed in WinStudio screens

**CQ-ID:** Defdb00210547

**Severity:** K4 - malfunction

**Description:** After converting an IndraWorks project from version 14 to version 15, the IndraWorks operation may not display values in the WinStudio images. The reason of this problem is a missing safety certificate for the WinStudio, OPC UA communication. No information is provided to the user.

**Fixing:** Only after creating and assigning a corresponding safety certificate, the OPC UA communication is possible again and the values are displayed in the WinStudio screens again.

**Workaround:** Create an OPC UA safety certificate and assign this certificate to the OPC UA communication channel.

## IndraWorks MTX / Engineering / _Other

### IndraWorks Engineering: ctrlX DRIVE devices missing from device library

**CQ-ID:** Defdb00211414

**Severity:** K2 - serious malfunction

**Description:** The ctrlX DRIVE devices were missing in the IndraWorks device library. The devices were not available in the "Drive and Control" tab, nor in the “Periphery - Sercos" section.

## IndraWorks MTX / Engineering / HMI

### IndraWorks Engineering, operating screens: Unexpected exception error when executing the "Reset to default values" function

**CQ-ID:** Defdb00211592

**Severity:** K2 - serious malfunction

**Description:** If the function "Save as default" was executed in IndraWorks Engineering for the application type "MTX-Multitouch" in the operating screen editor and subsequently, the saved settings were restored in another operating screen using the function "Reset to default values", an unexpected exception error occurred.

#### WinStudio/OPC UA: No access to NC arrays possible

**CQ-ID:** Defdb00211534

**Severity:** K3 - malfunction (no workaround)

**Description:** Access to entire NC arrays was not possible via OPC UA in a WinStudio project. No or incorrect data was displayed in the WinStudio screen.

## IndraWorks MTX / Engineering / Periphery

#### IndraWorks Engineering: Incomplete import of a ProfiNet slave device

**CQ-ID:** Defdb00211314

**Severity:** K3 - malfunction (no workaround)

**Description:** When importing a ProfiNet slave device, not all settings were applied. In the I/O image, e.g. the variable declaration, the addresses and the "mapping" were not applied. The reason for this was that for slaves containing direct I/O points, the I/O mapping was not imported.

## IndraWorks MTX / Engineering / Simulation

#### NC simulation does not take into account the workpiece position compensation

**CQ-ID:** Defdb00208396

**Severity:** K4 - malfunction

**Description:** The workpiece position correction BCR was not taken into consideration in the orientation of a new workpiece or other geometry, unlike the placements and zero point offsets.

## IndraWorks MTX / Engineering / User Management

#### IndraWorks Operation: Despite restricted user rights, the operating range keys (OP keys) could be selected

**CQ-ID:** Defdb00203287

**Severity:** K3 - malfunction (no workaround)

**Description:** The OP keys for hidden operating areas were visible and could be selected although they were disabled by the HMI user management (hide function).

**Workaround:** To exclude the user from access to the hidden OP keys, any other user has to be logged in first. Only after the user has logged in again with restricted rights, the hidden operating areas can no longer be selected.

## IndraWorks MTX / Operation / _Other

#### WinStudio: Setting the read trigger from the screen script resulted in a blockade within WinStudio

**CQ-ID:** Defdb00211151

**Severity:** K4 - malfunction

**Description:** If a read trigger was used to synchronously read variables in the screen script ("OnWhile"), the data was not displayed correctly in the screen.

## IndraWorks MTX / Operation / Diagnosis

### IndraWorks Engineering: Missing translation for ProVi message editor and process variables.

**CQ-ID:** Defdb00211278

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Engineering, German text is displayed at several places even though “English” was selected. Amongst others, this affected the ProVi message editor and the process variables.

### IndraWorks Operation: Some texts in the diagnostic screen are not refreshed when switching languages

**CQ-ID:** Defdb00207044

**Severity:** K4 - malfunction

**Description:** In the diagnostic screen, the texts for "Cause" and "Remedy" were not refreshed immediately when switching languages.

**Workaround:** The texts are displayed in the correct language when the diagnostic screen is closed via menu bar (<Alt>-<M>) and is then reopened or IndraWorks Operation is restarted.

## IndraWorks MTX / Operation / NC Operating

### Program icons of terminated IndraWorks processes remain visible in the Windows info area

**CQ-ID:** Defdb00210627

**Severity:** K4 - malfunction

**Description:** The program or process icons displayed by Microsoft Windows in the info area remained visible even though the associated programs or processes were already inactive. This could result in more and more symbols being displayed over time. Only “hovering” using the pointer eliminated the icons of inactive programs and processes.

## IndraWorks MTX / Operation / NC Programming

### NC Editor: Navigating to the incorrect position in the NC program does not work

**CQ-ID:** Defdb00211563

**Severity:** K3 - malfunction (no workaround)

**Description:** If there is a syntax error in the NC program, the cursor should automatically be located at the incorrect text position after opening the NC editor for the active program. Due to a malfunction, the cursor was not positioned correctly.

### NC program editor for small/regular files: “Scrolling” through the file does not work

**CQ-ID:** Defdb00211025

**Severity:** K3 - malfunction (no workaround)

**Description:** The “Options editor” dialog can be used to set from which number of lines the text editor is used for large files in IndraWorks Operation. By default, the value "1000000" is used.

Starting from a file size of approx. 160 kilobytes, the "scrolling" (= scrolling or screen scrolling) in the NC program editor no longer worked correctly for small/regular files. It was not possible to navigate to the center or to the end

of the file via the scroll bar and make changes there. The editor always returned to the upper part of the file.

This error behavior did not depend on the "Select editor type" setting. The error occurred both with the "NC Program Editor" setting and with the "Text Editor" setting.

**Workaround:** Instead of the editor for small files, the editor for large files should be used from this file size. Change the setting “Use text editor from number of characters” in the “Options editor” dialog to a smaller value. For example, enter the value 150000 instead of 1000000.

## 10.2.2 Known issues

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been created incorrectly

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
END_VAR
```

## IndraWorks MTX / _Other

### IndraWorks Engineering: Sporadically incorrect display value for the "Max. cycle time (µs)" of a PLC task

**CQ-ID:** Defdb00211797

**Severity:** K3 - malfunction (no workaround)

**Description:** In the context IndraWorks Engineering - Project Explorer - Logic - Task Configuration - Monitoring, a value that is much too high is sporadically displayed for a PLC cycle task as “Max cycle time (µs)”.

The displayed value is not correct and is “close to” 4,294,967,296 (equivalent to 2^32).

## IndraWorks MTX / Engineering / Oscilloscope

### IndraWorks Engineering: Drive oscilloscope does not work with ctrlX DRIVE

**CQ-ID:** Defdb00211523

**Severity:** K3 - malfunction (no workaround)

**Description:** If a ctrlX DRIVE is connected to an IndraMotion MTX, the drive oscilloscope in IndraWorks Engineering does not work. An unexpected exception occurs.

[Exception]

System.InvalidCastException

[Description]

The object of type "Rexroth.IndraWorks.Drive.Package.IndraDriveX" cannot be converted to type "Rexroth.IndraWorks.Drive.Package.DriveAxis".

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

## IndraWorks MTX / Engineering / Periphery

### IndraWorks Engineering: No IP channel support for ProfiNet and EtherNet/IP with IndraMotion MTX

**CQ-ID:** Defdb00205647

**Severity:** K3 - malfunction (no workaround)

**Description:** The IndraMotion MTX does not support the IP channel for ProfiNet I/Os and Ethernet/IP, although it can be selected in IndraWorks Engineering. The function is not available for MTX.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the token connected to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token connected to the control name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not a enabled or disabled.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.
- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).
- Delete the folder "Download" (\Project\CMx\Download).
- In the folder \Project\CMx delete following four files:
- CMx.diag
- CMx.ILD.di
- CMx.ILD.dix
- CMx.ILD.ld
- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Operating

### NC simulation incorrect if the STOCK command is programmed immediately before a rotary axis movement (A,B,C)

**CQ-ID:** Defdb00207873

**Severity:** K3 - malfunction (no workaround)

**Description:** The incorrect behavior occurs if axis motions, affecting the raw part position, i.e. rotary table axes or telescope axes, are programmed immediately after the raw part definition.

As a result, the virtual workpiece does not lie in space as intended, but assumes unwanted intermediate positions. As a result, the wrong raw part position in the NC simulation can then result in a succession of collisions.

Additional remark: The axes with the meaning X, Y and Z do not cause the previously mentioned problem.

**Workaround:** Program only movements of the main axes X, Y or Z immediately after the raw part definition. If it is mandatory to immediately move a rotary axis or telescopic axis which may affect the raw part position. Program a dwell time of approx. 0.2 to 0.5 sec after the STOCK command.

## IndraWorks MTX / Operation / NC Programming

### IndraWorks Operation, NC-Editor: Existing file cannot be opened if no local mount directory exists

**CQ-ID:** Defdb00211761

**Severity:** K3 - malfunction (no workaround)

**Description:** If no local mount directory is set up on the industrial PC, IndraWorks Operation is running on, an existing file (e.g. an NC program) cannot be opened with the NC Editor. Instead, the NC editor remains infinitely long in the state "The editor is opened" and IndraWorks Operation cannot be operated anymore.

**Workaround:** Create a new local mount directory on the PC executing IndraWorks Operation.

# 10.3 Firmware

## 10.3.1 Resolved defects

### IndraWorks MTX / Engineering / NC-Configuration

#### Shape Cutting Template (SHC2): Unexpected syntax error 387 when processing LASERDEMO.npg

**CQ-ID:** Defdb00211333

**Severity:** K4 - malfunction

**Description:** When processing the NC programs "/usr/bosch/NPG/LASERDEMO.npg" and "/usr/bosch/NPG/MAIN.npg" a syntax error occured:

Syntax error for " ^TCH01PLA" -> /feprom/cycles/TCH(9162).

### IndraWorks MTX / Engineering / PLC Libraries

#### Shape Cutting Template (SHC2): Creating a new project based on this template takes way too long

**CQ-ID:** Defdb00211298

**Severity:** K4 - malfunction

**Description:** When using the Shape Cutting Template (SHC2 template) to create a new IndraWorks project it took about nine minutes to finish this action. In former releases it took about a minute.

#### Shape Cutting Template (SHC2): Error in combination of "UserRetract" and "bRecoverRetract"

**CQ-ID:** Defdb00211297

**Severity:** K4 - malfunction

**Description:** If the signal "UserRetract" was "true" and the signal "bRecoverRetract" switched from "false" to "true" the laser cutting process was supposed to continue. But instead the laser head was raised again to twice the heigth of "RetractWay".

#### Shape Cutting Template (SHC2): PLC error 3088 resp. 5771 after M195 in MDI mode

**CQ-ID:** Defdb00211299

**Severity:** K4 - malfunction

**Description:** When using M195 in MDI mode a PLC exception (division by zero) occurred.

### IndraWorks MTX / Engineering / PLC Programming

#### System error SF 3462 when loading the PLC application or system error SF3464 after the control restart

**CQ-ID:** Defdb00210900

**Severity:** K3 - malfunction (no workaround)

**Description:** If the S20_I_O project node was excluded from the build in an IndraWorks Engineering project with IndraMotion MTX, this resulted in system error SF 3462 when loading the PLC application or in system error SF3464 following a control restart.

**Fixing:** The “Build” tab is no longer available from 15V16 Patch1 or 15V18, and thus the project node S20_I_O can no longer be excluded from the build.

## MTX Firmware / _Other

### System time in drive was set incorrectly after the machine startup

**CQ-ID:** Defdb00211280

**Severity:** K2 - serious malfunction

**Description:** Although the system time (date and time) of the control was set correctly, the system time of the drives was set to a date in the year 1970 after the machine had been started up (restart, NC restart or Sercos phase switching).

### Fast Actions: FA item 100402 (quick VS stop) does not work for channels > 32

**CQ-ID:** Defdb00211483

**Severity:** K3 - malfunction (no workaround)

**Description:** The Fast Action item 100402 “Quick feed stop" did not work for channel numbers > 32.

## MTX Firmware / Block Management

### Sporadic system error 1835 (handler trap) in connection with G592 and FFW

**CQ-ID:** Defdb00211580

**Severity:** K3 - malfunction (no workaround)

**Description:** When programming the G592 technology cycle and subsequently enabling the feedforward control with FFW, a system error 1835 "Handlertrap" sporadically occurred. After a reboot, the machine was running again.

**Workaround:** The error does not occur if the FFW command is programmed before the G592 command.

### Two macros in one line, separated by a colon, resulted in parts program error 1125

**CQ-ID:** Defdb00211525

**Severity:** K3 - malfunction (no workaround)

**Description:** If two macros separated by colons were programmed in one NC program line, this resulted in part program error 1125.

## MTX Firmware / Machine Parameters

### XM42S (MTX standard): Unauthorized warning 4030 for configuration with axis gaps

**CQ-ID:** Defdb00211364

**Severity:** K4 - malfunction

**Description:** With an IndraMotion MTX standard (XM42S), up to 12 active axes can be configured in the axis number range 1...64. If axis numbers greater than 12 were configured, the warning 4030 "Requested configuration setting (2) could not be activated due to limitation" occurred, although no more than 12 axes were configured in total. Technically, this warning had no consequences: Nevertheless, the control worked correctly.

## MTX Firmware / NC Program / CPL

### GOTO jump target in a macro replacement text may result in an incorrect jump

**CQ-ID:** Defdb00211567

**Severity:** K3 - malfunction (no workaround)

**Description:** If the CPL command "GOTO", or more precisely the GOTO jump target, was used in a macro replacement text, an incorrect program flow could occur.

The error could occur only with preset linking at program runtime (parameter "Type of linking process", NCO/FileOrg/ChFileOrg/Ch[n]/KindOfLinking = 0, MacodaID 7070 00030).

## MTX Firmware / NC Program / NC-Function

### NC part program freezes during dwell time in revolutions

**CQ-ID:** Defdb00211471

**Severity:** K3 - malfunction (no workaround)

**Description:** Sporadically, a programmed dwell time froze in revolutions "G4(Sx)". This state could only be existed using a reset.

### Spline interpolation (LTS): Part program error 1515 "Bsf: Under-determined equation system"

**CQ-ID:** Defdb00211221

**Severity:** K3 - malfunction (no workaround)

**Description:** When running an NC program with active spline interpolation (LTS), a part program error 1515 "Bsf: Under-determined equation system" occurred.

**Workaround:** An (experimental) change in the number of lookahead blocks for spline interpolation can result in the error no longer occurring in this NC program.

### Block pre-run to subroutine in retrace area results in error 5762 or error 736 with active tool compensation

**CQ-ID:** Defdb00211465

**Severity:** K4 - malfunction

**Description:** The block pre-run to a subroutine in a retrace area resulted in error 5762 "File access error" or error 736 "Incorrect jump target" if tool compensation was enabled.

### Shape Cutting, LeapFrog: Incorrect movement of the Z axis when a channel reset is performed during LeapFrog

**CQ-ID:** Defdb00211536

**Severity:** K4 - malfunction

**Description:** The Z-axis moves incorrectly if a channel reset is performed during the execution of the LeapFrog function.

## MTX Firmware / NC-Interface

### Switching spindle/C-axis via bit interface freezes after some time

**CQ-ID:** Defdb00211458

**Severity:** K3 - malfunction (no workaround)

**Description:** The following error occurred during spindle/C-axis switching via the PLC bit interface (qSp_CAxOn/qSp_CAxOff):

Switching jobs were set for up to 8 spindle/turret axes. However, the jobs were no longer executed after some time. As a result, motion specification via the bit interface was no longer possible for other spindles either. A system reset did not solve this problem.

### MTX Firmware / OPC UA

#### System error 1348 after changing the drive to parameter scaling

**CQ-ID:** Defdb00211447

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the OPC UA real-time items NC.AxisPosRT and NC.DynamicRT, axis positions outside the range of -214.7483648 ... +214.7483647 m resulted in the system error 1348 "Illegal Operation".

In the specific case, the position scaling of the drive was set to 10^-6 m and the modulo value was set to 2000.000000 m for an endless linear axis.

After driving in one direction for a longer time, the axis position has exceeded the displayable value range of NC.AxisPosRT and resulted in the system error.

## 10.3.2 Functional enhancements

### XM42 / Other

#### XM42: Activation of the standby mode of the mSATA hard disk immediately before a "warm start" (soft reset)

**CQ-ID:** Defdb00211599

**Severity:** K2 - serious malfunction

**Description:** To prevent damage to the file system, the mSATA hard disk has to immediately be switched to standby mode in certain operating situations. This has also been done in the past in case of power failure and when restarting the control via the reset button (hard reset), but not in the event of a "warm start" (soft reset) via software/firmware.

The latter has now been changed: Immediately before executing the soft reset, a "Standby Immediate" command is sent to the mSATA hard disk.

## 10.3.3 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

```
VAR_GLOBAL
{attribute 'symbol' := 'read'}
stTest: TestStruct;
END_VAR
```

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out” structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

## IndraWorks MTX / Operation / NC Programming

### All standard NC cycles with transfer parameter MOD can no longer be used

**CQ-ID:** Defdb00211654

**Severity:** K3 - malfunction (no workaround)

**Description:** All NC cycle calls using the MOD transfer parameter can no longer be used A syntax error occurs in the interpretation of the MOD expression, including error 635 or error 2454:

- Error 625: '(' missing -> <cycle path and name>
- Error 2454: Parts program <Cycle name> does not exist

The following NC cycle calls are affected by this problem:

- G171 Contour roughing, longitudinal
- G172 Contour roughing, plane
- G214 Hole pattern line punching
- G215 Hole pattern matrix punching
- G219 Multi-part punching
- G591 Spline

This problem is caused by the introduction of the new CPL command MOD (modulo operation).

The following MTX software/firmware versions are affected:

- MTX 14V22 Patch13.1 / NC kernel 22.22.36
- MTX 15V16 / NC kernel 23.16.3
- MTX 15V18 / NC kernel 23.18.2

The versions MTX 14V22 Patch13 (and older) and MTX 15V14 Patch1 (and older) are not affected.

**Workaround:** The problem will only be fixed with the next MTX software/firmware releases. It is expected to be fixed with MTX 14V22 Patch17 and MTX 15V20.

The problem is solved by renaming the modulo CPL command from MOD to MDL. NC programs in which the CPL command MOD is used have to be adapted accordingly.

## MTX Firmware / Block Management

### Re-entry with callchain sporadically results in the error “unable to find abort position in target block”

**CQ-ID:** Defdb00210556

**Severity:** K2 - serious malfunction

**Description:** In case of part programs with an only incremental coordinate specification or only for coordinates changed upon re-entry, the error “unable to find abort position in target block” can occur when specifying the abort callchain.

**Workaround:** Upon re-entry via callchain, the control executes a block pre-run from the start of the program to the callchain. Thus, the abort state is restored. For program coordinates changed incrementally or only in the adjust program, the absolute reference has to be explicitly specified in block pre-run. The program reference position of the callchain has to be backed up with RERF(). If a coordinate is only changed in the adjustment program, the reference position can also be corrected with RERF(<coord>=<value>). In the block pre-run (SD.SysSRun.Active<>0), the reference saved with RERF has to be restored at the start of the program. Read the reference position of the callchain out with the CPL instruction SDR(100,<coordindex>,1) and enable the absolute reference with G90 <coord>=<refpos>.

Also refer to the NC functional description “ReEntryRef, RERF” in the MTX15 Programming Manual, chapter “NC functions with high-level language syntax”, subchapter “Saving the programming starting point for re-entry after program interruption”.

### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported sporadically.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

### Syntax error 387 when programming SCO(L1[..], L2[..]) without equal sign

**CQ-ID:** Defdb00211672

**Severity:** K4 - malfunction

**Description:** If SCO is programmed without "=" separator contrary to the instruction in the MTX documentation, e.g. SCO(L1[23],L2[2.5]), the function is executed correctly, but syntax error 387 occurs when an asynchronous subroutine (ASUP) is called, or a "Clear distance-to-go" is executed.

**Workaround:** If programmed correctly with equal signs, e.g. SCO(L1=[23],L2=[2.5]), the problem does not occur.

### Unauthorized linker error 387 when calling encrypted subroutines

**CQ-ID:** Defdb00211793

**Severity:** K2 - serious malfunction

**Description:** With the encryption program "MTXCrypt”, NC programs can be encrypted and can thus be "protected": An encrypted NC program can only be interpreted internally by the control. The textual content of the NC program remains hidden from the user.

The linker error 387 occurs during the execution of encoded subprograms. Only the execution of encrypted main programs works. The problem has existed since MTX 15V16.

## MTX Firmware / Communication

### OPC UA: Connection between MTX OPC UA Server and PLC OPC UA Client not possible with MTX emulation

**CQ-ID:** Defdb00211421

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the MTX emulation (sco.exe), the OPC UA client of the PLC cannot connect to the OPC UA server of the MTX. The error "BadCommunicationError" occurs at the UaConnect function block (RIL_OpcUaClient library).

**Workaround:** When using a real control hardware (XM42), the connection between MTX OPC UA Server and PLC OPC UA Client is not working correctly.

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

### XM42: An online change of the PLC fails in case of a cycle time of 1 ms

**CQ-ID:** Defdb00210965

**Severity:** K2 - serious malfunction

**Description:** If the cycle time of the PLC task is set to 1 ms, changes to the PLC project cannot be applied anymore using online change. This process is canceled with an error.

This known problem can only be avoided by using a higher PLC cycle time. If a PLC cycle time of 1 ms is required, the entire PLC project has to be reloaded following a change. The PLC is stopped during this process.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

## MTX Firmware / OPC UA

### OPC UA: Modifying the item "NC.DynamicDataRT" leads to blocking of the OPC UA Server

**CQ-ID:** Defdb00210351

**Severity:** K2 - serious malfunction

**Description:** The OPC UA server blocks if the item "ns=27;s=NC.DynamicDataRT" is modified by one of the methods "AddField", "AddAxis", "RemoveField" or "RemoveAxis" and the item is NOT created in a subscription.

The OPC UA Server can only be reactivated by a control restart.

If the item "ns=27;s=NC.DynamicDataRT" is created in a subscription, it can be modified using the previously mentioned methods.

### OPC UA: For the item "ns=27;s=NC.DynamicDataRT", deleting a non-existent data item results in blocking of the OPC UA Server

**CQ-ID:** Defdb00210364

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA Server blocks if an element is deleted that is not available in the current configuration in the item "ns=27;s=NC.DynamicDataRT" with the method "RemoveField”.

The OPC UA Server can only be reactivated by a control restart.

The error only occurs with a real controller and not in the MTX emulation (sco.exe).

# 11 MTX 15V16 Firmware and Software

## 11.1 Compatibility mode

The following compatibility settings for IndraMotion MTX 15V16 in IndraWorks Engineering apply:

| | |
|---|---|
| Menu item<br>**Project ▸ Changing the compatibility mode...** | 15V16 |
| Menu item<br>**Project ▸ Changing the PLC compiler version...** | 3.5.15.56 (15V12) |
| Project node of the control<br>**Properties...** - Tab "Configuration" -Firmware release: | FW*-MTX-XM42-23.16 (15V16) |
| Project node of the HMI device<br>**Properties...** - Device version: | 15V16 |

*Tab. 11-1: Compatibility settings for IndraMotion MTX 15V16*

## 11.2 Software

### 11.2.1 Resolved defects

#### IndraWorks ML / Engineering / HMI

##### Security vulnerability: logback-classic

**CQ-ID:** Defdb00211055

**Severity:** K2 - serious malfunction

**Description:** A vulnerability in the library logback-classic allows an attacker to execute potential malicious code in the context of the WebConnector application. The attacker had to check an LDAP server that can be contacted from the WebConnector. The WebConnector is provided in a standard IndraWorks installation and possibly started even though it is not currently used.

**Fixing:** The library logback-classic was updated and replaced with a version that is not affected by the vulnerability.

##### WinStudio Standalone: Database editor update

**CQ-ID:** Defdb00210926

**Severity:** K3 - malfunction (no workaround)

**Description:** If new variables are created when the database editor is opened, these variables were not immediately visible in the database editor. The variables were only displayed after closing and reopening the editor.

##### WinStudio: Error when creating variables after importing screen objects for example

**CQ-ID:** Defdb00210976

**Severity:** K3 - malfunction (no workaround)

**Description:** If WinStudio screen objects were copied from a second project and they contained variables that did not exist in the inserted project, the user was requested to create these variables. An error message occurred and the variables were not created correctly.

#### WinStudio: DataSheet view - data type changes back to the default setting

**CQ-ID:** Defdb00210924

**Severity:** K4 - malfunction

**Description:** When changing a variable tag in the WinStudio database editor, this tag was reset to the old value when confirming with ENTER. Only after closing the editor and reopening it, the changed data type was applied.

#### WinStudio: Variable editor view is not refreshed

**CQ-ID:** Defdb00210952

**Severity:** K4 - malfunction

**Description:** If individual entries (variables) were deleted from the WinStudio variable editor, the editor is only refreshed correctly after the variable editor was opened again.

## IndraWorks ML / Engineering / PLC Programming

#### Error when importing certain Profinet devices (VCS)

**CQ-ID:** Defdb00210793

**Severity:** K3 - malfunction (no workaround)

**Description:** If the Profinet device is exported from a project and a module of this device is changed and when trying to restore its initial state using the import, a warning was issued and the module did not return to the initial state. No message was issued when updating via VCS.

## IndraWorks MTX / Engineering / _Other

#### MTXCrypt - Errors when encrypting several files

**CQ-ID:** Defdb00210180

**Severity:** K4 - malfunction

**Description:** If the option encrypt several files was selected in the MTXCrypt software and if the length of a file was =0, an exception occurred and encryption was canceled.

## IndraWorks MTX / Engineering / HMI

#### IndraWorks Operation: "System.OutOfMemory" exception in case of frequent use

**CQ-ID:** Defdb00210586

**Severity:** K2 - serious malfunction

**Description:** When opening the NC editor, memory was allocated which was not released correctly anymore upon closing the editor. In case of frequent use or during continuous operation, this results in a "System.OutOfMemory-Exception".

#### WinStudio: License is invalid for the Polish language

**CQ-ID:** Defdb00210785

**Severity:** K2 - serious malfunction

**Description:** If the “Polish” language package was enabled and if Polish was selected, the WinStudio licenses were not detected as valid anymore.

Cause: The language directories WinStudio\bin\pl-PI und WinStudio\Redist \FullIntegrationSDK\pl-PI contains a ProgrammSettings.mui file with incorrect product information (CompanyID, etc.).

#### IndraWorks Engineering is unexpectedly closed when generating a OPC UA safety certificate.

**CQ-ID:** Defdb00210539

**Severity:** K4 - malfunction

**Description:** In IndraWorks Engineering, a safety certificate can be generated for an OPC UA connection in the WinStudio application. When entering the country, only two characters are expected. If more than two characters are entered, an exception occurred.

## IndraWorks MTX / Operation / _Other

#### IndraWorks Operation, operating area “Prepare”: Exception when exiting the “Calibrate probe” dialog

**CQ-ID:** Defdb00210964

**Severity:** K3 - malfunction (no workaround)

**Description:** Premature closing of a cycle input mask in the operating area “Prepare” before loading of this cycle mask was completed, resulted in an exception.

#### IndraWorks Operation: "Simple re-entry" can cause an endless loop

**CQ-ID:** Defdb00210905

**Severity:** K3 - malfunction (no workaround)

**Description:** There are two function modes for the re-entry (ReEntry): "Simple re-entry" and "Extended re-entry".

If the point of interruption was recorded in a subroutine, an error might have occurred during the simple re-entry (without dialog). The re-entry is executed multiple times until it was executed correctly. IndraWorks could not be operated anymore during that time.

## IndraWorks MTX / Operation / Diagnosis

#### IndraWorks Engineering: Missing translation for ProVi message editor and process variables.

**CQ-ID:** Defdb00211278

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Engineering, German text is displayed at several places even though “English” was selected. Amongst others, this affected the ProVi message editor and the process variables.

#### MTX Sercos diagnostics: Ring interruption might be shown graphically at the wrong position

**CQ-ID:** Defdb00209418

**Severity:** K5 - non critical problem

**Description:** If there is a multiple axis drive in the Sercos ring, an incorrect point of interruption was shown in the Sercos diagnostics when the ring was interrupted before the multiple axis drive.

## IndraWorks MTX / Operation / NC Operating

#### NC Simulation in IndraWorks Operation does not have any function or does not result in a reaction

**CQ-ID:** Defdb00211260

**Severity:** K2 - serious malfunction

**Description:** Following an IndraWorks installation, the control for NC simulation was sporadically empty and could not be used. In particular, the problem could occur if previously an IndraWorks was installed which contained Microsoft Visual C++ 2015 Redistributable (x86).

## 11.2.2 Known issues

### IndraWorks ML / Engineering / HMI

#### WinStudio: Access to indexed driver sheet variables does not work via OPC UA

**CQ-ID:** Defdb00210848

**Severity:** K3 - malfunction (no workaround)

**Description:** The indexed access to WinStudio driver sheet variables is incorrect via OPC UA. The starting value is only read in once for indexed variables. There is no refresh.

**Workaround:** The variables can be refreshed via a trigger for synchronous/asynchronous reading.

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been created incorrectly

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created

GVLRetain2.RetainVar2: INT;

END_VAR

## IndraWorks MTX / _Other

### WinStudio, OPC UA: After converting the project from 14VRS to 15VRS no values are displayed in WinStudio screens

**CQ-ID:** Defdb00210547

**Severity:** K4 - malfunction

**Description:** After converting an IndraWorks project from version 14 to version 15, sporadically no values are displayed in WinStudio screens in IndraWorks Operation. The reason of this problem is a missing safety certificate for the WinStudio, OPC UA communication. No information is provided to the user.

**Workaround:** Generating an OPC UA safety certificate and assigning this certificate to the OPC UA communication channel.

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" in IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access

conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the Token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** In IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not activated or rather deactivated.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

### IndraWorks MTX / Operation / NC Programming

**NC program editor for small/regular files: “Scrolling” through the file does not work**

**CQ-ID:** Defdb00211025

**Severity:** K3 - malfunction (no workaround)

**Description:** The “Options editor” dialog can be used to set from which number of lines the text editor is used for large files in IndraWorks Operation. By default, the value "1000000" is used.

From a file size of approx. 160 kilo byte, “scrolling” in the NC program editor does not work correctly anymore for small files. It is not possible to navigate to the center or the end of the file via the scroll bar to change the file. The editor always returns to the upper part of the file.

This error behavior does not depend on the "Editor type selection” setting: this behavior also occurs in the “NC program editor” setting but also with the “Text editor” setting.

**Workaround:** Instead of the editor for small files, the editor for large files should be used from this file size. Change the setting “Use text editor from number of characters” to a smaller value. For example, enter the value 150000 instead of 1000000.

## 11.3 Firmware

### 11.3.1 Resolved defects

### IndraWorks MTX / Engineering / Drive

**IWE: Simultaneous downloading of drive firmware in several drives does not work reliably**

**CQ-ID:** Defdb00211038

**Severity:** K2 - serious malfunction

**Description:** The “Firmware management...” dialog in IndraWorks Engineering below the Sercos node provides the option to equip one or several drives with drive firmware. In IndraMotion MTX, this drive firmware can be downloaded to up to 16 drives simultaneously.

This parallel drive firmware download does not work reliably: The drive firmware download to several drives partially failed and the affected IndraDrive drives indicated "FL:F ACC” in the display.

**Fixing:** Use the “Firmware management...” dialog to select any number of drives for the drive firmware download. The selected drives were not simultaneously downloaded anymore but consecutively.

### MLC Firmware / OPC UA

**OPC UA Client: The function block UA_ReadList is inhibited (busy) after the connection was interrupted**

**CQ-ID:** Defdb00211066

**Severity:** K3 - malfunction (no workaround)

**Description:** After an interrupted OPC UA connection, the read function block UA_ReadList is inhibited and permanently reports the state “busy”.

## MTX Firmware / Axis

### Calotte transformation: Invalid traversing motion at NC program start despite 0% override

**CQ-ID:** Defdb00207849

**Severity:** K2 - serious malfunction

**Description:** If the tool position deviates from the calotte surface, an invalid traversing motion (position jump of the tripod axes) could sporadically occur.

## MTX Firmware / Filesystem and Database

### Incorrect file name "mtx42usrfep.pxf" for the “container” file of the “usrfep” file system

**CQ-ID:** Defdb00210957

**Severity:** K2 - serious malfunction

**Description:** The file "mtx42usrfep.pxf” file has to be contained in the “/OEM” directory of the internal NC control file system. This “container” file contains the so-called “usrfep” file sytem (user FEPROM).

However, this container file has an incorrect file name: Instead of “mx42usrfep.pxf”, the file previously had the designation "mtx42usrfep.pxf" (with the character "t" at the second position).

**Fixing:** This error is corrected from MTX 15V16 By default, the file name is now "mx42usrfep.pxf” (without the character “t” at the second position). This change is compatible if the "UFEPNAMEVXFS" entry in the "mtx42boot.ini” file was not changed.

## MTX Firmware / Manual-Mode / Machine-Preparing

### Travel motion in manual input is not processed after jogging in workpiece coordinates

**CQ-ID:** Defdb00211116

**Severity:** K4 - malfunction

**Description:** If a travel motion was specified using manual input after jogging in workpiece coordinates, “Program running” was displayed but no travel motion was executed.

Only following a channel home position, the motion could be executed successfully.

## MTX Firmware / NC-Emulation

### MTX Emulation (sco.exe) crashes upon NC program selection

**CQ-ID:** Defdb00211001

**Severity:** K4 - malfunction

**Description:** From the PLC, MT_MCoDs reads out the path and file name of the main program selected in the NC channel as string (see MCODS(30,...)). Due to an error during the internal processing, the MTX Emulation crashed if path and file name were long.

## MTX Firmware / NC-Interface

### The safety operating mode (iSp_SafOpMode_xx) is not displayed at the bit interface of a spindle

**CQ-ID:** Defdb00211082

**Severity:** K2 - serious malfunction

**Description:** For spindles created behind all axes and spindle/C-axes, the safety operating mode (iSp_SafOpMode_xx) was not displayed at the bit interface.

## MTX Firmware / OPC UA

### OPC UA: "Default Binary" of the tool data has the namespace "ns=30" instead of "ns=0"

**CQ-ID:** Defdb00211133

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of some data types, a NamespaceIndex different from “0” is returned for the BrowseName of “Default Binary”.

**Fixing:** All data types return the OPC UA-compliant NamespaceIndex “0” for the BrowseName for the corresponding “Default Binary”.

### OPC UA: Access to view the file system content for 3rd party NFS server is not possible

**CQ-ID:** Defdb00211110

**Severity:** K3 - malfunction (no workaround)

**Description:** The access via OPC UA to the file system to view the file system content was sporadically not possible in case of a 3rd party NFS server.

### OPC UA: File names are cut off after 30 characters when the file system was accessed.

**CQ-ID:** Defdb00211009

**Severity:** K3 - malfunction (no workaround)

**Description:** When OPC UA was used to access the file system with the directory "/mnt", file names were cut after the 30th character. This caused access and representation problems in the file system view via OPC UA.

### OPC UA: Incorrect data type for "WriteMask" and "UserWriteMask" in the type description of PLC structures

**CQ-ID:** Defdb00210885

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA server returns an “ExtensionObject” in the type description of PLC structures for "WriteMask" and "UserWriteMask”. However, it has to be an object of type "UInt32” with the value “0”.

### OPC UA: The item "ns=27;s=NC.DynamicDataRT" is defined as too small

**CQ-ID:** Defdb00210358

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC UA item "ns=27;s=NC.DynamicDataRT" return NC data in real-time (maximally in the interpolation cycle). In contrast to the previously existing real-time items, the data of different NC channels can be configured. The maximum package size of the recorded data per IPO cycle is limited to 384 bytes.

**Fixing:** The maximum package size of the recorded data per IPO cycle was extended to 1536 bytes.

### MTX Firmware / Sercos

#### Incorrect Sercos address for the double-axis devices IndraDrive MPM causes an incorrect drive parameter archive

**CQ-ID:** Defdb00210878

**Severity:** K2 - serious malfunction

**Description:** Applications - in which several double axis devices (IndraDrive MPM) were used - could have been affected by this problem. Under certain conditions, the second axis of a double axis device was affected by this problem.

The error occurred, as an incorrect IP address was determined by the control for the affected axis. This incorrect IP address was used for the parameter backup in IndraWorks Engineering. If a connection to another double-axis device was set up via the incorrect IP address, the data of the second axis was backed up.

The drive parameters of the wrong axis were in the archive.

#### IndraWorks Operation: Incorrect points of interruption are displayed in the diagnostic image of Sercos

**CQ-ID:** Defdb00210995

**Severity:** K2 - serious malfunction

**Description:** In the “Sercos diagnostics”, the Sercos participants (control, drives, Sercos I/Os) and their Sercos topology are displayed. If the Sercos communication is interrupted, the previous interruptions at this point of the topology are displayed in a tooltip. However, these interruption counters are sporadically displayed at an incorrect position due to an error.

### MTX Firmware / System Data

#### System axis coupling: Enabled error response for division by zero is ineffective

**CQ-ID:** Defdb00210890

**Severity:** K2 - serious malfunction

**Description:** If a formula runtime error occurred in a system axis coupling with formula coupling, an incorrect error bit is internally set (1 bit too high).

This means in case of division by zero, bit 16 instead of bit 17 was set. Bit 17 indicates an FPU overflow. If the error response for division by zero was enabled by setting bit 16 in the "SysAxCoupleCmd[..]/AbortEnable” system date, the error response was ineffective.

## 11.3.2 Functional enhancements

### MTX Firmware / Logic

#### Using the PLC library SysFileAsync results in the fatal system error 4

**CQ-ID:** Defdb00210577

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the SysFileAsync PLC library, system error 4 occurred with error code 69.

### MTX Firmware / OPC UA

#### OPC UA server: The certificate only uses the signature hash algorithm SHA224

**CQ-ID:** Defdb00210958

**Severity:** K3 - malfunction (no workaround)

**Description:** The certificates generated by the server only use the signature hash algorithm SHA224 instead of SHA256.

**Enhancement:** The server generates a new certificate with signature hash algorithm SHA256 if no certificate has been available or if the available certificate (server.der) has been deleted from the private certificate directory (CertificateStore\private).

### 11.3.3 Known issues

#### _Other

**OPC UA: Write access to structure variable possible even though read access should be restricted**

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

```
VAR_GLOBAL
{attribute 'symbol' := 'read'}
stTest: TestStruct;
END_VAR
```

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

#### IndraLogic Firmware / Logic

**Error when accessing "In_Out” structures using the IecVarAccess library**

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

#### MTX Firmware / Block Management

**Re-entry with callchain sporadically results in the error “unable to find abort position in target block”**

**CQ-ID:** Defdb00210556

**Severity:** K2 - serious malfunction

**Description:** In case of part programs with an only incremental coordinate specification or only for coordinates changed upon re-entry, the error “unable to find abort position in target block” can occur when specifying the abort callchain.

**Workaround:** Upon re-entry via callchain, the control executed a block pre-run from the start of the program until the callchain. Thus, the abort state is restored. For program coordinates changed incrementally or only in the adjust program, the absolute reference has to be explicitly specified in block pre-run. The program reference position of the callchain has to be backed up with RERF(). If a coordinate is only changed in the adjustment program, the reference position can also be corrected with RERF(<coord>=<value>). In the block pre-run

(SD.SysSRun.Active<>0), the reference saved with RERF has to be restored at the start of the program. Read the reference position of the callchain out with the CPL instruction SDR(100,<coordindex>,1) and enable the absolute reference with G90 <coord>=<refpos>.

Also refer to the NC functional description "ReEntryRef,

RERF" in the MTX15 Programming Manual, chapter "NC functions with high-level language syntax", subchapter "Saving the programming starting point for re-entry after program interruption".

### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported sporadically.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to "Linking upon program selection".

By default, "Linking at program runtime" is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

## MTX Firmware / Logic

### System error SF 3462 when loading the PLC application or system error SF3464 after the control restart

**CQ-ID:** Defdb00210900

**Severity:** K3 - malfunction (no workaround)

**Description:** If the S20_I_O project node is excluded from the build in an IndraWorks Engineering project with IndraMotion MTX, this results in system error SF 3462 when loading the PLC application or in system error SF3464 following a control restart.

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

### XM42: An online change of the PLC fails in case of a cycle time of 1 ms

**CQ-ID:** Defdb00210965

**Severity:** K2 - serious malfunction

**Description:** If the cycle time of the PLC task is set to 1 ms, changes to the PLC project cannot be applied anymore using online change. This process is canceled with an error.

This known problem can only be avoided by using a higher PLC cycle time. If a PLC cycle time of 1 ms is required, the entire PLC project has to be reloaded following a change. The PLC is stopped during this process.

# 12 MTX 15V14 Patch 1 Firmware and Software

## 12.1 Software

### 12.1.1 Resolved defects

#### IndraWorks MTX / Engineering / HMI

**IndraWorks Operation: Calling the screen keyboard via the M-key is not possible anymore under Windows 10.**

**CQ-ID:** Defdb00210869

**Severity:** K3 - malfunction (no workaround)

**Description:** Calling the screen keyboard via the M-key under Windows 10 is not possible anymore.

#### IndraWorks MTX / Operation / _Other

**IndraWorks Operation: Language selection is triggered twice internally**

**CQ-ID:** Defdb00210559

**Severity:** K2 - serious malfunction

**Description:** If a language is selected in IndraWorks Operation (IWO) via an A F-/M-key or via the "Home Control”, the language selection is executed twice internally. Sporadically, this resulted in a system error SF3464 in the NC kernel.

**IndraWorks Operation: Switching the language to Chinese is not possible**

**CQ-ID:** Defdb00210940

**Severity:** K2 - serious malfunction

**Description:** When switching the “user interface language" for IndraWorks Operation to Chinese, an error occurs and the language is not switched.

**IWO: Drive archive sporadically backs up parameters of wrong axis when using several IndraDrive MPM double axis devices.**

**CQ-ID:** Defdb00210377

**Severity:** K3 - malfunction (no workaround)

**Description:** Applications in which several double axis devices (IndraDrive MPM) are used can be affected by this problem. Under certain conditions, the second axis of a double axis device is affected by this problem.

The error occurs as an incorrect IP address was determined by the control for the affected axis. This incorrect IP address was used for the parameter back-up in IndraWorks Engineering. If a connection to another double-axis device can be established via the incorrect IP address, the data of the second axis are backed up.

**Fixing:** Prior to backing up the drive parameters, it is checked if the IP connection links to the correct axis. If this is not the case, communication via the Sercos service channel is used for the parameter archive in order to back up the correct drive parameters. If a Sercos service channel is slower, the operation took considerably longer for affected axes.

### IndraWorks MTX / Operation / NC Operating

**The NC text editor is sporadically not able to save data correctly anymore.**

**CQ-ID:** Defdb00210919

**Severity:** K2 - serious malfunction

**Description:** The NC editor exhibits incorrect behavior when saving new files in the NC file system if no local mount directory is available. Apart from an error message, the file was read-only and was protected against execution.

However, the file content was saved completely.

**IndraWorks Operation: Some functions in manual mode can only be executed once**

**CQ-ID:** Defdb00210849

**Severity:** K3 - malfunction (no workaround)

**Description:** Some functions in manual mode such as probing the zero point, inclined plane, G230 Swiveling or calibrate probe can only be executed once in IndraWorks Operation. When calling the function a second time, only the message "Opening the application..." is displayed and the selected function cannot be used.

## 12.1.2 Known problems

### IndraWorks ML / Engineering / PLC Programming

**Persistent data: Instance has been incorrect created**

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT

- This global variable list is located in the general module folder

- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

VAR_GLOBAL RETAIN PERSISTENT

RetainVar2 :INT;

END_VAR

After executing the command "Add all instance paths", the PersistenVars says:

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created

.RetainVar2: INT;

END_VAR

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

{attribute 'qualified_only'}

VAR_GLOBAL RETAIN PERSISTENT

RetainVar2 :INT;

END_VAR

Result after executing the command "Add all instance paths":

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created

GVLRetain2.RetainVar2: INT;

END_VAR

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" in IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channels 1…60

- Control 2: NC channels 61…120

- Control 3: NC channels 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the Token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

### IndraWorks MTX / Operation / Diagnosis

#### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** At IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not activated or rather deactivated.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## 12.2 Firmware

### 12.2.1 Resolved defects

### MTX Firmware / _Other

#### The spindle slowly continues to rotate at override 0%

**CQ-ID:** Defdb00210873

**Severity:** K3 - malfunction (no workaround)

**Description:** For spindles with very low acceleration, a command speed of up to 0.1 rpm can be specified for the drive despite override 0%.

## MTX Firmware / Block Management

### Sporadic system error SF 3464 during running machine (task: Sav_Ev1)

**CQ-ID:** Defdb00210776

**Severity:** K2 - serious malfunction

**Description:** Sporadically, the fatal system error 3464 (task: Sav_Ev1) occurred.

## MTX Firmware / Communication

### Sporadic system error SF 3464 during running machine (task: SIP)

**CQ-ID:** Defdb00210711

**Severity:** K3 - malfunction (no workaround)

**Description:** Sporadically, the fatal system error 3464 (task: SIP) occurred when using OPC UA.

### _**_ is displayed instead of the axis name for the axis coordinate system (ACS)

**CQ-ID:** Defdb00210932

**Severity:** K4 - malfunction

**Description:** Under certain conditions, only the string _**_ is displayed for the axis coordinate system (ACS) instead of the configured axis names (ChAxName).

Only after a channel reset has been completed, the correct axis names are returned for the ACS.

## MTX Firmware / Diagnostic Tools

### Sporadic system error SF3464 in case of language selection via IndraWorks Operation

**CQ-ID:** Defdb00210560

**Severity:** K2 - serious malfunction

**Description:** Due to a malfunction in IndraWorks Operation (refer to Defdb00210559), language switching is triggered twice internally. This sporadically resulted in system error SF3464 in the NC kernel.

**Fixing:** The insufficient robustness was removed at this position of the NC kernel. Multiple language switching does not result in system error SF3464 anymore.

## MTX Firmware / Error Announcement

### Fatal drive errors are not reported by the MTX in case of an enabled “Delayed error reaction”.

**CQ-ID:** Defdb00210833

**Severity:** K2 - serious malfunction

**Description:** If the function “Delayed NC error reaction to non-fatal drive errors” is enabled, fatal drive errors were sporadically not reported by the MTX.

- The PLC is notified by setting the iAx_DrvErrClass1 signal.
- The error 1303 "sercos error C1-axis F8022 ..." is not reported.

## MTX Firmware / Inline IO

### IndraControl S20: Operating S20-PWM-2/2 and subsequent modules is not possible anymore

**CQ-ID:** Defdb00210716

**Severity:** K2 - serious malfunction

**Description:** IndraControl S20 modules can be connected to the right of the control. From 15V12, the function modules for pulse width modulation (S20-PWM-2/2) and the subsequent modules cannot be used anymore, if there are more S20 modules (e.g. S20-SGI-2 or S20-DOR-4/2-220-AC) are available to the right of S20-PWM-2/2.

## MTX Firmware / Manual-Mode / Machine-Preparing

### Incremental axis jogging: Warning 2430 or 2431 instead of 2374

**CQ-ID:** Defdb00210817

**Severity:** K3 - malfunction (no workaround)

**Description:** During incremental axis jogging, the warning 2430/2431 “System axis ... positioned on the range limit” is output sporadically when reaching the limit switch.

**Fixing:** Now, the warning 2374, “The selected jog motion (system axis...) would violate the limit switches!” is output.

### Handwheel: Considerable limitation of the command velocity in case of a set qAx_HandwPosMode signal

**CQ-ID:** Defdb00210824

**Severity:** K4 - malfunction

**Description:** If a target position close to the limit switch was specified by quick rotation of the handwheel in case of an active qAx_HandwPosMode signal, MTX limited the axis velocity to a very small value.

After a minor handwheel motion in the opposite direction, the velocity increased.

## MTX Firmware / NC Program / CPL

### Misleading diagnostics when calling an NC program whose file name exceeds 28 characters

**CQ-ID:** Defdb00209314

**Severity:** K3 - malfunction (no workaround)

**Description:** If an NC program is called whose entire file name exceeds 28 characters, the part program error 3502 “File name too long” is reported. However, the diagnostic message did not provide information on the program call of the NC program with the file name that was too long but the name of the calling NC program was displayed.

## MTX Firmware / NC Program / NC-Function

### Fast actions (“fast action”): The element "PathDistToGo" does not work

**CQ-ID:** Defdb00210821

**Severity:** K2 - serious malfunction

**Description:** The "fast action" element “PathDistToGo” does not work.

Due to this reason, the shape cutting functions “LeapFrog” and “FlyCut” cannot be used.

### G151 ignores the orientation angle theta

**CQ-ID:** Defdb00210718

**Severity:** K2 - serious malfunction

**Description:** After a G151 block all WCS coordinates with exception of theta have the value zero. According to the manuals “Programming Manual" and “Functional Description - Basics”, theta also has to have the value zero.

### Fast actions (“fast action”): Block end position element is incorrect

**CQ-ID:** Defdb00210681

**Severity:** K3 - malfunction (no workaround)

**Description:** The "fast action" (fa) element for this block end position returns the command position but not the end position.

### Gantry: Part program error 2407 "Gantry group: Secondary system axis in wrong channel

**CQ-ID:** Defdb00210672

**Severity:** K3 - malfunction (no workaround)

**Description:** Gantry: Part program error 2407 "Gantry group: secondary system axis in incorrect channel” if more than one Gantry group and slave(s) is/are configured.

### The ADS signal is set at the wrong point in time in the test mode

**CQ-ID:** Defdb00210915

**Severity:** K3 - malfunction (no workaround)

**Description:** The function “Programmable distance-depending signal" (ADS) incorrectly uses the test feed instead of the programmed feed to determine the trigger time or the trigger path during enabled test mode (SD.SysChTestMode.Enable = 1). Consequently, the ADS signal was set at the wrong point in time.

### Automatic channel-dependent behavior of an auxiliary function group prevents reading out of auxiliary function value with NCF

**CQ-ID:** Defdb00201139

**Severity:** K5 - non critical problem

**Description:** If the machine parameter "Channel dependency" was set to "Behavior is automatically set" in the auxiliary function group definitions (AUXF/GrDef/Gr[1..64]/GrChDe), reading out of the auxiliary function value via the NCF command did not work anymore.

## MTX Firmware / NC-Interface

### The part program stops at the end of a G0-motion with residual path

**CQ-ID:** Defdb00210886

**Severity:** K3 - malfunction (no workaround)

**Description:** Under certain conditions that only occur very sporadically, the last G0 motion can sporadically not be completed in case of two consecutive G0 motions. The NC program stops in the G0 block with a residual path.

#### "Jog in workpiece coordinate" in positioning mode "Shortest distance" was not possible for endless rotary axis

**CQ-ID:** Defdb00210712

**Severity:** K4 - malfunction

**Description:** Infinite rotary axes can sometimes not be moved using "Jog in workpiece coordinate". The used positioning logic (e.g. shortest path) plays an important role.

### XM42 / Other

#### IndraControl XM42 does not boot anymore due to a corrupt file system

**CQ-ID:** Defdb00210918

**Severity:** K2 - serious malfunction

**Description:** Sporadically, the file system of the control can be damages when switching the control off.

Consequence:

- XM42 does not boot anymore.

- The LED displays DIA3 and DIA4 constantly light up red.

- The control has to be replaces and has to be repaired by out service department.

With this bug fix, the file system is protected when switching off and to prevent such damage.

## 12.2.2 Known problems

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

```
VAR_GLOBAL
{attribute 'symbol' := 'read'}
stTest: TestStruct;
END_VAR
```

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out” structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

## MTX Firmware / Block Management

### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is sporadically reported.

**Workaround:** The MDI problem only occurs when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter “Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur (also refer to Defdb00207492).

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

# 13 MTX 15V14 Firmware and Software

## 13.1 Software

### 13.1.1 Resolved defects

#### IndraWorks MTX / Engineering / _Other

**Descriptions of channels, axes and spindles are not applied**

**CQ-ID:** Defdb00210040

**Severity:** K3 - malfunction (no workaround)

**Description:** All channels, axes and spindles were imported and created when importing the control node data. However, the names of the channels, axes and spindles of the import file have not been applied.

#### IndraWorks MTX / Engineering / HMI

**WinStudio: Using WinStudio elements via "hidden" keys is not possible anymore**

**CQ-ID:** Defdb00210509

**Severity:** K2 - serious malfunction

**Description:** In WinStudio elements, no commands could be triggered via shortcuts if the focus was set to a text input field.

**WinStudio image closes when entering blank spaces**

**CQ-ID:** Defdb00209515

**Severity:** K3 - malfunction (no workaround)

**Description:** If the blank space was pressed during runtime in a WinStudio element in an input field, the last selected control element was also enabled and the relevant commands are executed.

#### IndraWorks MTX / Installation

**The "Communication" installation variant could not be installed (error message PackageManager)**

**CQ-ID:** Defdb00210245

**Severity:** K2 - serious malfunction

**Description:** When installing the variants "Communication - MTX" and "Communication - MLC", a "PackageManager" error was reported upon completion of the installation as required files could not be found. The installation remained incomplete and could not be used.

#### IndraWorks MTX / Operation / _Other

**Block pre-run and NC Editor: Toggle F-keys sporadically show an incorrect switching status**

**CQ-ID:** Defdb00210240

**Severity:** K2 - serious malfunction

**Description:** During block pre-run, the F-key to select “End position of the target block” sporadically does not display the correct setting and switching did not work reliably.

An analog problem occurred in the NC editor in the toggle F-keys “Automatic NC block numbering” and “Automatic CPL block numbering”. Sporadically,

the incorrect state was display and switching could not be completed successfully.

#### IndraWorks Operation: Exception during remote access via UltraVNC

**CQ-ID:** Defdb00210371

**Severity:** K3 - malfunction (no workaround)

**Description:** During remote access via "UltraVNC" (remote access), the embedded IndraWorks Operation (IndraWorks Operation Simulator) caused an exception (System.InvalidCastException).

#### IndraWorks Operation: The image type "BrowserScreen", the websites of the IoT Gateway cannot be displayed

**CQ-ID:** Defdb00210076

**Severity:** K3 - malfunction (no workaround)

**Description:** The image type "BrowserScreen" is used to display HMTL5 websites in IndraWorks Operation. If websites are classified as "unsafe", IoT Gateway pages are not displayed anymore.

#### IWE/IWO: File explorer generates files that cannot be displayed

**CQ-ID:** Defdb00210050

**Severity:** K3 - malfunction (no workaround)

**Description:** If a file was copied in the same folder in the file explorer (in IWE or IWO), the file was assigned a language-dependent extension. In case of Chinese characters in the extension, the file cannot be accessed anymore.

## IndraWorks MTX / Operation / Diagnosis

#### IndraWorks Operation, language selection: Diagnostic screen only available in German and English

**CQ-ID:** Defdb00210534

**Severity:** K2 - serious malfunction

**Description:** Due to missing language files, the diagnostic screen was only displayed in German or English in IndraWorks. Other languages cannot be displayed.

## IndraWorks MTX / Operation / NC Programming

#### Editor type "Text editor": Saving on external mount directory is not possible

**CQ-ID:** Defdb00208458

**Severity:** K2 - serious malfunction

**Description:** Two editors are available in the MTX:

user-friendly "NC program editor"

simple "text editor" (for large files).

Saving data in the "Text editor" is not possible if the storage location is not on a local mount directory.

#### In the block pre-run/block search, the F-Key for the "Search" function is missing

**CQ-ID:** Defdb00210257

**Severity:** K4 - malfunction

**Description:** In the block pre-run/block search, the F-Key [F4] for the "Search" function was missing

## 13.1.2 Known issues

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out" structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been incorrect created

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
```

END_VAR

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are no longer displayed.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channels 1…60

- Control 2: NC channels 61…120

- Control 3: NC channels 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the Token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

### IndraWorks MTX / Operation / Diagnosis

#### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** At IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not activated or rather deactivated.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## 13.2 Firmware

### 13.2.1 Resolved defects

### IndraWorks MTX / Engineering / Drive

#### IndraWorks Engineering: Incorrect Sercos address when restoring a project archive with EFC frequency converters

**CQ-ID:** Defdb00210287

**Severity:** K3 - malfunction (no workaround)

**Description:** When restoring an IndraWorks project archive, all contained frequency converters are not assigned their original Sercos address but Sercos address 1.

### IndraWorks MTX / Operation / NC Operating

#### Shape cutting: After an NC restart, activation of "Re-entry" results in an error

**CQ-ID:** Defdb00210370

**Severity:** K2 - serious malfunction

**Description:** If an NC program was interrupted during shape cutting (SHC2: Shape Cutting Template) and an NC restart was triggered, enabling of "Re-entry" (returning to the point of interruption) results in an error.

### Shape cutting: Height control is unintentionally active in case of re-entry to the point of interruption

**CQ-ID:** Defdb00210369

**Severity:** K2 - serious malfunction

**Description:** When using the basic project for shape cutting (SHC2, Shape Cutting Template), a previously disabled height control unintentionally became active again when returning to the point of interruption (re-entry).

### WinStudio: Some HTML5 websites cannot be displayed via the BoschRexrothWebBrowserControl.

**CQ-ID:** Defdb00210039

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the BoschRexrothWebBrowserControl in a WinStudio image, some websites such as the IoT Gateway homepage could not be displayed. The screen remains blank and white.

## MTX Firmware / _Other

### MTX NC kernel emulation: Performance problem from Windows 10 version 2004 (or newer version)

**CQ-ID:** Defdb00210323

**Severity:** K2 - serious malfunction

**Description:** Microsoft significantly changed the Windows timer resolution in Windows 10 version 2004 (or newer version). This resulted in the Windows emulation of NC kernel (sco.exe) from Windows 10 version 2004 to be slower by factor 3 to 8 in comparison to Windows 10 version 1909.

### The PLC interface signal "iSp_ProgSpReach" is not generated for virtual spindles.

**CQ-ID:** Defdb00210343

**Severity:** K4 - malfunction

**Description:** The PLC interface signal "iSp_ProgSpReach" (speed reached) was only generated for "real" spindles and not for virtual spindles.

**Fixing:** The interface signal "iSp_ProgSpReach" is now also be generated for virtual spindles.

## MTX Firmware / Axis

### G230 Incorrect rotation if RS is not programmed

**CQ-ID:** Defdb00209925

**Severity:** K3 - malfunction (no workaround)

**Description:** If the G230 parameter RS is not programmed, the "ZXZ" setting applied. This deviates from the documentation "Standard NC cycles - Project planning manual", according to which the setting "ZYZ" should apply.

**Fixing:** The actual behavior was adjusted to the documentation. Object of this bugfix is the new cycle file "STC_G230".

- Version 1.1.9
- Date 2021-07-08

## MTX Firmware / NC Program / CPL

### G274 Cycle moves incorrectly

**CQ-ID:** Defdb00206814

**Severity:** K2 - serious malfunction

**Description:** The G230 cycle does not position correctly in some cases. This is implemented of the 5-axis transformation complied with the following condition: The axis position of the reference position (machine parameters RefPosTrafo, 103000130) for affected A- or B-axis is 90° or more or -90° or less.

**Fixing:** Object of this bugfix is the new cycle file "STC_G230".

- Version 1.1.11
- Date 2021-08-13

## MTX Firmware / NC Program / NC-Function

### G61(IPS2) does not change the "In Position" window

**CQ-ID:** Defdb00210385

**Severity:** K2 - serious malfunction

**Description:** Programming of G1 G61 (IPS2) does not change the "In Position" window.

### Limit switch error in case of interruption of an asynchronous subroutine and toggling between G70 and G71

**CQ-ID:** Defdb00210263

**Severity:** K2 - serious malfunction

**Description:** A main program programmed with G70 uses several subroutines programmed with G71. If the main program is interrupted by an asynchronous subroutine at an "unfavorable" position (interruption block G70, restart block G71) and if subsequently this asynchronous subroutine was interrupted by another subroutine, a limit switch error occurred (axis position outside the valid traversing range).

**Fixing:** The defect has been resolved.

### Part program errors 2132 "Access error in file "/usrfep/TCH".-> / usrfep/TCH(42381)"

**CQ-ID:** Defdb00210099

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of the following constellations, the parts program error 2132 “Access error in file...” could occur.

A program containing local subroutines is called at different positions with or without path specification.

Depending on which call was issued first and which link tables already exist, error 2132 occurred.

### Axis transformation LLLAB: PTP activation for theta = 0 results in error 3166

**CQ-ID:** Defdb00210511

**Severity:** K4 - malfunction

**Description:** In case of an active axis transformation LLLAB, a "PointToPoint" traversing motion (PTP) at theta = 0° resulted in the internal software error 3166 "Coordinate error in the axis transformation".

### Disabling an individual ASUP-ASUP interruption disabled all ASUP interruptions

**CQ-ID:** Defdb00210195

**Severity:** K4 - malfunction

**Description:** To disable an individual ASUP-ASUP interruption with ASPDIS(m,n), the permission to interrupt the ASUP n was deleted. The ASUP m was generally disabled.

Only after subsequent programming of ASPENA(m), an existing available permission to interrupt other ASUPs is available again.

**Fixing:** - The ASPENA(m,n) and ASPDIS(m,n) command now enable or disable only the interruption of ASUP n by the ASUP m. The permission to interrupt the main program or another ASUP remains unchanged.

- The ASPDIS(m) command now disabled all interruptions which can be executed by the ASUP m (main programm + all ASUP!).

- By using the combination ASPDIS(m) + ASPENA(m,n), it is now possible to exclusively enable ASUP-ASUP interruptions. The ASUP m must not interrupt the main program anymore.

## MTX Firmware / NC-Interface

### The channel interface signals for G41/G141 and G42/G142 can sporadically be incorrect after "Cancel distance to go"

**CQ-ID:** Defdb00209882

**Severity:** K2 - serious malfunction

**Description:** After a return from an asynchronous subroutine, the level of the interface signals iCh_G41G141Act and iCh_G42G142Act was sporadically incorrect.

## MTX Firmware / OPC UA

### OPC-UA: Writing of an invalid NodeID in the Sercos namespace can result in system error SF 3464

**CQ-ID:** Defdb00210295

**Severity:** K2 - serious malfunction

**Description:** Writing of an invalid NodeID in the Sercos namespace could sporadically result in system error SF 3464.

### OPC-UA / "ns=16;s=DiagnosisLogbook" does not return any events anymore after an NC restart

**CQ-ID:** Defdb00210247

**Severity:** K3 - malfunction (no workaround)

**Description:** Under certain circumstances, "ns=16;s=DiagnosisLogbook" did not return any event subscription for an OPC UA after an NC restart (with diagnostic messages).

### OPC-UA / It is possible to simultaneously subscribe to two realtime items. This is not permitted.

**CQ-ID:** Defdb00210365

**Severity:** K3 - malfunction (no workaround)

**Description:** It is possible to simultaneously subscribe to two realtime items (ns=27;s=NC.AxisPosRT" or "ns=27;s=NC.DataRT" or "ns=27;s=NC.DynamicDataRT"). This is not permitted.

#### OPC-UA: Temporarily, NC.Chan.ActCallChain returns incorrect data

**CQ-ID:** Defdb00210387

**Severity:** K3 - malfunction (no workaround)

**Description:** The OPC-UA item "NC.Chan.ActCallChain" temporarily returned incorrect data when jumping to a subroutine or when returning from a subroutine.

#### OPC-UA: The item "ns=27;s=NC.Chan.BalancedConditionState" does not return any values

**CQ-ID:** Defdb00210246

**Severity:** K3 - malfunction (no workaround)

**Description:** The item "ns=27;s=NC.Chan.BalancedConditionState" provides information if an axis or spindle adjustment takes place. Thus, it is possible to detect if a "Re-entry" takes place.

This item could not be used via OPC UA: The item always returned "0".

## 13.2.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

VAR_GLOBAL

{attribute 'symbol' := 'read'}

stTest: TestStruct;

END_VAR

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

### MTX Firmware / Block Management

#### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is sporadically reported.

**Workaround:** The MDI problem only occurred when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter “Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur. See also Defdb00207492.

# 14 MTX 15V12 Patch 1 Firmware and Software

## 14.1 Software

### 14.1.1 Resolved defects

#### MTX Firmware / _Other

**MTX NC kernel emulation: Performance problem from Windows 10 version 2004 (or newer version)**

**CQ-ID:** Defdb00210326

**Severity:** K2 - serious malfunction

**Description:** Microsoft significantly changed the Windows timer resolution in Windows 10 version 2004 (or newer version). This resulted in the Windows emulation of NC kernel (sco.exe) from Windows 10 version 2004 to be slower by factor 3 to 8 in comparison to Windows 10 version 1909.

## 14.2 Firmware

### 14.2.1 Resolved defects

#### XM42 / _Other

**IndraControl XM42 does not boot anymore due to a corrupt file system**

**CQ-ID:** Defdb00209809

**Severity:** K2 - serious malfunction

**Description:** The IndraControl XM42 control does not boot anymore due to corrupt sectors in the boot partition of the internal data carrier. The diagnostic LEDs DIA3 and DIA4 of the control constantly light up red.

Clearance of the data carrier by the user was not possible. The control did not start up after each restart. The Bosch Rexroth Service had to repair the IndraControl XM42.

# 15 MTX 15V12 Firmware and Software

## 15.1 Software

### 15.1.1 Resolved defects

#### IndraWorks ML / Engineering / HMI

**WinStudio, OPC UA: Variables are not updated**

**CQ-ID:** Defdb00209544

**Severity:** K3 - malfunction (no workaround)

**Description:** If several OPC-UA driver sheets have been configured with WinStudio variables but different OPC-UA items, these variables were not updated anymore after multiple enabling and disabling of the driver sheets.

#### IndraWorks ML / Engineering / PLC Programming

**IndraWorks Engineering: “Unexpected exception" after multiple PLC project comparison**

**CQ-ID:** Defdb00209268

**Severity:** K3 - malfunction (no workaround)

**Description:** If a PLC project is compared several times in a row, an “Unexpected exception” occurred in IndraWorks Engineering (System.OutOfMemoryException).

**PLC project comparison: Assignment of logic device to physical device gets lost**

**CQ-ID:** Defdb00209419

**Severity:** K3 - malfunction (no workaround)

**Description:** Comparing the PLC projects in IndraWorks Engineering can sporadically result in a loss of assignment of the logic device to the physical device on some devices. Consequently, the project cannot be compiled successfully anymore.

#### IndraWorks MTX / Engineering / _Other

**IndraWorks Engineering only responds very slowly after “Save project as..."**

**CQ-ID:** Defdb00209579

**Severity:** K2 - serious malfunction

**Description:** The “Save project as...” command results in slow response times in IndraWorks Engineering in case of projects with a larger number of Sercos drives (e.g. 64 axes).

#### IndraWorks MTX / Engineering / Drive

**IndraWorks Engineering does not react anymore after opening the ctrlX DRIVE property dialog**

**CQ-ID:** Defdb00209770

**Severity:** K2 - serious malfunction

**Description:** When opening the property dialog on the ctrlX DRIVE node, an exception occurred and the application did not respond anymore.

**Fixing:** The error was fixed.

### IndraWorks Engineering: “Unexpected exception” during “online switching” of all drives

**CQ-ID:** Defdb00209578

**Severity:** K2 - serious malfunction

**Description:** When operating IndraMotion MTX with a larger number of Sercos drives (e.g. 64), an exception sporadically occurred if all drives were switched online simultaneously.

## IndraWorks MTX / Engineering / HMI

### IW Operation, Multitouch HMI, virtual machine control panel: Operation virtually via VAM after NC restart not possible

**CQ-ID:** Defdb00209503

**Severity:** K2 - serious malfunction

**Description:** If an NC restart was executed during a running IndraWorks Operation in system status, the virtual VAM remained empty after control startup and could not be operated via the touch screen. This problem only occurs in HMIs in “panel format”, e.g. in case of a vertically mounted VDP21.

### Winstudio variable arTool[13].Edge tool data is not updated

**CQ-ID:** Defdb00209504

**Severity:** K3 - malfunction (no workaround)

**Description:** A WinStudio variable read via an OPC-UA driver sheet was not updated in the WinStudio screen if the corresponding display element is hidden during the update.

## IndraWorks MTX / Engineering / Toolmanagement

### IndraWorks Operation: The tool list is not displayed anymore after an NC restart

**CQ-ID:** Defdb00209502

**Severity:** K4 - malfunction

**Description:** If a tool list has two display areas, the second display area was not displayed anymore after an NC restart during running IndraWorks Operation.

Instead, the message is displayed that the tool list was not found. Subsequently, the content of the first display area is displayed in both display areas. The tool list of the second display area was not displayed anymore.

## IndraWorks MTX / Operation / _Other

### Exception during the start of IndraWorks Operation in with EKS

**CQ-ID:** Defdb00209640

**Severity:** K2 - serious malfunction

**Description:** Upon the IndraWorks Operation start, an exception could occur if the registered user was changed via the PLC during IndraWorks Operation startup.

For example, this is possible via EKS (= electronic access control and management via electronic key system). In this case, a "System.ApplicationException" (exception initializing application IndraWorks.EksLogin) occurred.

### IndraWorks Operation, Multitouch HMI: Distorted and incomplete representation of “Home Control”

**CQ-ID:** Defdb00209641

**Severity:** K2 - serious malfunction

**Description:** Upon the start of IndraWorks Operation, display issues of the so-called “Home Control” could occur. On the Multitouch HMI of IndraMotion MTX, functions and applications are provided as tiles on the “Home Control” tab

If during startup of IndraWorks Operation (IWO), the logged in user was changed via the PLC, the content of the Home Control was distorted and displayed incompletely. Furthermore, the wrong Home Control was displayed. I.e., the Home Control content did not match the registered user.

### IndraWorks MTX / Operation / NC Programming

#### NC editor duplicates or deletes lines after automatic numbering

**CQ-ID:** Defdb00209444

**Severity:** K4 - malfunction

**Description:** Some editing actions in the standard NC program editor (for “regular” file sizes) resulted in errors in the data base which was indicated by missing syntax highlighting and which resulted in text corruption during the subsequent renumbering (NC/CPL block numbers)

**Fixing:** Saving or if required reselecting the NC program precedes renumbering in the NC program editor if there are unsaved changes. Numbering does not take place if the user did not confirm saving or reselection.

The cause of the error is in the data base and errors during numbering are not fixed with MTX 15V12. This error will only be fixed from MTX 15V14.

#### NC editor: Inserted NC program changes are lost when renumbering the NC program lines

**CQ-ID:** Defdb00209727

**Severity:** K4 - malfunction

**Description:** Saving precedes renumbering of the NC program lines in the standard NC program editor (for “regular” file sizes).

However, if new content was inserted in an existing NC program, e.g. via Windows clipboard, renumbering still resulted in a loss of the inserted changes and only the previous content was available.

## 15.1.2 Functional enhancements

### IndraWorks MTX / Engineering / Simulation

#### NC simulation: The tool contours and the workpiece contours were simplified too much

**CQ-ID:** Defdb00209555

**Severity:** K6 - functional enhancement

**Description:** The tool graphic was too inaccurate, resulting form the approximation of the ideal shape by triangular areas. This usually affects small radiuses in relation to the tool dimension. The symmetrical tool forms are displayed as unsymmetrical.

**Enhancement:** The program sequence to process polygons (“meshes”) for tools was improved to avoid loss of information due to conversion.

If the tolerance of the tool graphics could not be influenced by the program, the setting ToolMeshTessellationFactor is provided in the "mwCNCSim.ini” file in the IndraWorks installation folder. This tolerance specification can be enabled by removing the leading "#”.

The tolerance is calculated as follows:

Tolerance = <minimum of bounding box dimensions> / ToolMeshTessellationFactor

Important information: This individual setting is lost again in a following IndraWorks installation.

## 15.1.3 Known issues

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out" structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur.

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been incorrect created

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars only says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
END_VAR
```

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are not longer displayed.

## IndraWorks MTX / Engineering / HMI

### WinStudio image closes when entering blank spaces

**CQ-ID:** Defdb00209515

**Severity:** K3 - malfunction (no workaround)

**Description:** If the blank space is pressed during runtime in a WinStudio image in an input field, other control elements were enabled configured with a shortcut <space bar>.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channels 1…60
- Control 2: NC channels 61…120
- Control 3: NC channels 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other.

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the Token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** At IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not activated or rather deactivated.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Programming

### Editor type "Text editor": Saving on external mount directory is not possible

**CQ-ID:** Defdb00208458

**Severity:** K3 - malfunction (no workaround)

**Description:** There are two different editors available for MTX: The comfortable "NC program editor" and the simplified "text editor" (for large files).

In the case of the "Text editor", saving does not work if the save destination is located on a non-local mount directory.

**Workaround:** File size permitting, use the "NC program editor" instead of the "Text editor". "Selection editor type" can be set in the "Options editor".

## VPB Firmware

### "Open TK" System.AccessViolationException upon IndraWorks Operation start

**CQ-ID:** Defdb00206240

**Severity:** K2 - serious malfunction

**Description:** When starting IndraWorks Operation an exception occurs:

"Open TK" System.AccessViolationException

This error message concerns the year 2019 and is caused by the current Intel graphics drivers (driver version 25.xx.xx.xxxx). The industrial PC (IPC) probably had an internet connection and the graphics driver was updated automatically.

The problem does not occur with the original graphics driver in the state upon delivery.

Driver version in the state upon delivery:

- VPB40.4: 21.xx.xx.xxxx

- PR/VR: 22.xx.xx.xxxx

**Workaround:** To solve the problem, install either the new Intel graphics driver (driver version 26.20.100.7209) or the original graphics driver (state upon delivery).

The state upon delivery may be retrieved via "rollback". The "rollback" procedure is described in the next section.

To avoid this problem it is possible to completely deactivate the automatic driver update via registry script. A description of "Deactivate the automatic driver update" may be found in the first section after next.

"Rollback" of the graphics driver to state upon delivery:

- Disconnect the device from the internet connection

- Close all applications, so that only Windows is running

- Open "Device manager" and select tab "Driver"

- Select “uninstall" and uninstall the driver (enable "Delete the driver software for this device") and restart the program

- Sporadically a black screen appears. In this case wait until the HDD-LED stops displaying activity and then restart the device by disconnecting and restoring the supply voltage

- The device uses "Microsoft basic display driver" after restart

After that reinstall the original driver from the state upon delivery via setup.

The driver data is saved:

VPB40.4: C:\Drivers\Graphic\HD530\setup.exe

PR/VR: On the provided recovery stick under

\Rexroth\Platform Drivers\win64_154602.4729.exe

- Restart the IPC

Deactivate the automatic driver update:

The script "DisableDriverUpdateLTSB2016" for "Deactivate the automatic driver update" is available on the Bosch Rexroth product portal pages of the affected IPC VPB40.4, PR4, VR4 under "downloads". Execute the script with administrator rights.

# 15.2 Firmware

## 15.2.1 Resolved defects

### MTX Firmware / Block Management

#### The CPL command “NCF” returns values in different syntax for “G8” and “G9”.

**CQ-ID:** Defdb00209644

**Severity:** K3 - malfunction (no workaround)

**Description:** The CPL command NCF returns values in different syntax for G8 and G9. For G9, a different syntax than the syntax of the programming manual was returned.

- active G8: NCF(G8): G8
- active G9: NCF(G9): G09

**Fixing:** For the following G-function, the syntax is now returned according to the programming manual (without 0):

- G8
- G9

### MTX Firmware / Logic

#### Sporadic system error SF 3462 in task "IoMgrDiagTask"

**CQ-ID:** Defdb00209643

**Severity:** K3 - malfunction (no workaround)

**Description:** A high system load sporadically resulted in an exception in the NetX connection (ProfiNet) and consequently in the fatal system error SF3462 in the "IoMgrDiagTask” task.

### MTX Firmware / NC Program / NC-Function

#### 3D tool radius correction (G141/G142) with "DCOFFS": Drive error F2037 in straight line to circle transition

**CQ-ID:** Defdb00209666

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of enabled 3D radius correction (G141, G142), the drive error F2037 “Excessive position command value difference” occurred sporadically during the transition from a straight line to an arc, if simultaneously the NC function "DCOFFS" (change rate of contour offset for 3D radius correction) is active.

#### Active axis transformation and calling the NC function "ATFWD” sporadically results in drive error F2037

**CQ-ID:** Defdb00209849

**Severity:** K3 - malfunction (no workaround)

**Description:** If an axis transformation with more than one transformer branch is active, e.g. one of the 5-axis transformations LLLCB, CLLLB, CBLLL, CALLL and if in this state, the NC function ATFWD is programmed, the drive error F2037 “Excessive position command value difference" can occur.

#### Delete distance-to-go in case of active 3D tool radius correction and NC function "DCOFFS" results in NC program error 5526

**CQ-ID:** Defdb00209699

**Severity:** K3 - malfunction (no workaround)

**Description:** When processing an NC program with the NC function "DCOFFS" and an active 3D tool radius correction (G141, G142), the NC program error 5526 "The NC block to continue in the NC program was not found" occurred in connection with the "Delete distance-to-go" command.

#### NC program error 5526 when calling another asup in an asup

**CQ-ID:** Defdb00209078

**Severity:** K3 - malfunction (no workaround)

**Description:** If the NC program is processed in an asynchronous subroutine (asup) and if another asynchronous subroutine is called (asup), the NC parts program error 5526 "The NC block to continue in the NC program was not found" occurred.

#### Sporadic syntax error 387 "Syntax error in '^JACT=0 JDONE=0'"

**CQ-ID:** Defdb00209784

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of automatic program selection, the syntax error 387 "Syntax error in '^JACT=0 JDONE=0'" occurred sporadically after a control startup.

#### The NC command "SSDE" is not active NC block synchronously

**CQ-ID:** Defdb00209732

**Severity:** K4 - malfunction

**Description:** The behavior during writing of a system date by using the "SSDE" command (determining the value during preparation time, assigning the value at runtime) changed unintentionally: The "SSDE" command is not executed synchronously anymore to the NC block.

#### Wobble tripod with calotte transformation and 3D tool radius correction: Drive error F2037

**CQ-ID:** Defdb00209414

**Severity:** K4 - malfunction

**Description:** In case of an active wobble tripod with calotte transformation and 3D tool radius correction (G141, G142), no "non-traversing block" must be programmed. Instead of a corresponding error message, the drive error F2037 "Excessive position command value difference".

## 15.2.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right "read".

Example:

VAR_GLOBAL

{attribute 'symbol' := 'read'}

stTest: TestStruct;

END_VAR

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

## MTX Firmware / Block Management

### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported in some cases.

**Workaround:** The MDI problem only occurred when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter “Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur. See also Defdb00207492.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

# 15.3 Documentation

## 15.3.1 Resolved defects

### IndraWorks MTX / Operation / Tool Management

**Tool management: The start mode setting “Additive” for tool lists does not work**

**CQ-ID:** Defdb00202612

**Severity:** K3 - malfunction (no workaround)

**Description:** In the DBT1 screen properties, select under “StartMode/EditAdditive”, if certain elements can be edited in the “Additive mode". This is possible if the setting “true” is used. The setting "1" does not work.

The commissioning documentation has been supplemented accordingly.

# 16 MTX 15V10 Patch 1 Firmware and Software

## 16.1 Software

### 16.1.1 Resolved defects

#### IndraWorks ML / Engineering / _Other

**German texts in diagnostic tooltips in IndraWorks project tree**

**CQ-ID:** Defdb00209493

**Severity:** K3 - malfunction (no workaround)

**Description:** Even though “English“ was selected as language in IndraWorks Engineering, German “Tool tips” are displayed in the IndraWorks project tree.

#### IndraWorks ML / Engineering / HMI

**WinStudio: Error message upon ‘Start application'**

**CQ-ID:** Defdb00209441

**Severity:** K3 - malfunction (no workaround)

**Description:** When opening a WinStudio project with the “Start application” function, the error message “ISSymbol.ocx could not be registered” was displayed and no preview was displayed.

#### IndraWorks MTX / Engineering / Drive

**Drive double axis module: Sporadically, only one of the two axis is archived**

**CQ-ID:** Defdb00209477

**Severity:** K4 - malfunction

**Description:** Archiving of drive data of a double-axis module at an MTX failed if the drives have been “online” once previously and if they have been switched “offline” again before archiving. In this case, only the data of the first axis of the double axis module is archived.

**Workaround:** When switching all axes “online”, the error does not occur before archiving all axes.

#### IndraWorks MTX / Operation / _Other

**IndraWorks Operation, circle test: The quadrant error correction cannot be used in ctrlX DRIVE**

**CQ-ID:** Defdb00208483

**Severity:** K2 - serious malfunction

**Description:** If a circle test is performed in IndraWorks Operation (IWO) with drives of type ctrlX DRIVE and if subsequently the quadrant error correction is called, no data can be entered in this dialog. All setting options are grayed out.

#### IndraWorks MTX / Operation / Diagnosis

**IAC does not display error texts and the detailed diagnostics in HTML format cannot be used for IndraDrive and IAC**

**CQ-ID:** Defdb00208597

**Severity:** K3 - malfunction (no workaround)

**Description:** IndraDrive and IAC detailed diagnostics were not displayed in HTML format during an MTX workstation installation (IWE + IWO).

## 16.1.2 Known issues

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out" structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and accessed, errors do not occur.

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been incorrect created

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars only says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
```

// Instance path of the persistent variable created

GVLRetain2.RetainVar2: INT;

END_VAR

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are not longer displayed.

## IndraWorks MTX / Engineering / HMI

### WinStudio screen closes when entering blanks

**CQ-ID:** Defdb00209515

**Severity:** K3 - malfunction (no workaround)

**Description:** If the space bar is pressed in an input box in a WinStudio image during runtime, other control elements configured with the <space bar> are enabled.

## IndraWorks MTX / Operation / _Other

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the Token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** At IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not activated or rather deactivated.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Programming

### Editor type "Text editor": Saving on external mount directory is not possible

**CQ-ID:** Defdb00208458

**Severity:** K3 - malfunction (no workaround)

**Description:** There are two different editors available for MTX: The comfortable "NC program editor" and the simplified "text editor" (for large files).

In the case of the "Text editor", saving does not work if the save destination is located on a non-local mount directory.

**Workaround:** File size permitting, use the "NC program editor" instead of the "Text editor". "Selection editor type" can be set in the "Options editor".

## VPB Firmware

### "Open TK" System.AccessViolationException upon IndraWorks Operation start

**CQ-ID:** Defdb00206240

**Severity:** K2 - serious malfunction

**Description:** When starting IndraWorks Operation an exception occurs:

"Open TK" System.AccessViolationException

This error message concerns the year 2019 and is caused by the current Intel graphics drivers (driver version 25.xx.xx.xxxx). The industrial PC (IPC) probably had an internet connection and the graphics driver was updated automatically.

The problem does not occur with the original graphics driver in the state upon delivery.

Driver version in the state upon delivery:

- VPB40.4: 21.xx.xx.xxxx

- PR/VR: 22.xx.xx.xxxx

**Workaround:** To solve the problem, install either the new Intel graphics driver (driver version 26.20.100.7209) or the original graphics driver (state upon delivery).

The state upon delivery may be retrieved via "rollback". The "rollback" procedure is described in the next section.

To avoid this problem it is possible to completely deactivate the automatic driver update via registry script. A description of "Deactivate the automatic driver update" may be found in the first section after next.

"Rollback" of the graphics driver to state upon delivery:

- Disconnect the device from the internet connection

- Close all applications, so that only Windows is running

- Open "Device manager" and select tab "Driver"

- Select “uninstall" and uninstall the driver (enable "Delete the driver software for this device") and restart the program

- Sporadically a black screen appears. In this case wait until the HDD-LED stops displaying activity and then restart the device by disconnecting and restoring the supply voltage

- The device uses "Microsoft basic display driver" after restart

After that reinstall the original driver from the state upon delivery via setup.

The driver data is saved:

VPB 40.4: C: \Drivers\Graphic\HD530\setup.exe

PR/VR: On the provided recovery stick under

\Rexroth\Platform Drivers\win64_154602.4729.exe

- Restart the IPC

Deactivate the automatic driver update:

The script "DisableDriverUpdateLTSB2016" for "Deactivate the automatic driver update" is available on the Bosch Rexroth product portal pages of the

affected IPC VPB40.4, PR4, VR4 under "downloads". Execute the script with administrator rights.

# 16.2 Firmware

## 16.2.1 Resolved defects

### MTX Firmware / OPC UA

**OPC UA server: When using MTX system data and CPL variables, a blockade can occur in the NCS communication**

**CQ-ID:** Defdb00209561

**Severity:** K2 - serious malfunction

**Description:** When using the read/write/subscription operations on MTX system data and CPL variables, a blockage of the NCS communication can occur in case of an existing high NCS communication load. No NCS communication is possible anymore. The problem can only be fixed by a restart.

The error pattern occurs if large-scale OPC UA queries for MTX system data and CPL variables are triggered simultaneously.

### MTX Firmware / Sercos

**Sercos3: automatic “ring healing” does not work**

**CQ-ID:** Defdb00209600

**Severity:** K2 - serious malfunction

**Description:** When using MTX 15V10 (NC kernel 23.10.6.0), the automatic Sercos3 ring healing does not work. Consequently, the “robustness” of the Sercos communication is weakened.

Ring healing means that an interruption of the Sercos3 communication in the network did not result in an interrupted motion or in an impairment of the application. The redundant communication is restored automatically as soon as the cause for the interruption has been fixed.

## 16.2.2 Known issues

### _Other

**OPC UA: Write access to structure variable possible even though read access should be restricted**

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

```
VAR_GLOBAL
{attribute 'symbol' := 'read'}
stTest: TestStruct;
END_VAR
```

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

## MTX Firmware / Block Management

### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported in some cases.

**Workaround:** The MDI problem only occurred when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter “Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur. See also Defdb00207492.

## MTX Firmware / NC Programm / CPL

### Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

# 17 MTX 15V10 Firmware and Software

## 17.1 Software

### 17.1.1 Resolved defects

#### IndraWorks ML / Engineering / HMI

**WinStudio OPC-UA variables are not updated after a longer runtime**

**CQ-ID:** Defdb00208125

**Severity:** K2 - serious malfunction

**Description:** In case of a WinStudio application running in continuous operation, individual OPC-UA variables are sporadically not updated anymore and the previous value is displayed.

**WinStudio: App cannot be started anymore on a VR21 device**

**CQ-ID:** Defdb00209191

**Severity:** K4 - malfunction

**Description:** If a new project is created with version 15V08 and if this project is transmitted to a VR21 device, the application cannot be started and a DOS box containing information is displayed.

#### IndraWorks MTX / Engineering / HMI

**IndraWorks Engineering, process variables: German terms are displayed although English language is set**

**CQ-ID:** Defdb00208705

**Severity:** K3 - malfunction (no workaround)

**Description:** In the context of "process variables" the English translation was missing. Therefore, German words were displayed, although English was set as language for IndraWorks Engineering.

#### IndraWorks MTX / Engineering / NC-Configuration

**Profinet does not work after importing the project data of a complete CMLx5 control into 15VRS (XM42)**

**CQ-ID:** Defdb00207490

**Severity:** K2 - serious malfunction

**Description:** After importing the project data of the complete control node of a CMLx5 to an XM42 control Profibus does not work.

Idices for this are among others:

- The LEDs at the RJ45 connectors XF3 or XF4 of XM42 remain “dark".

- The PLC logger contains error entries with the message that the network card driver is not running.

#### IndraWorks MTX / Engineering / Toolmanagement

**Tool management: The editor configuration for the DBT2 table cannot be created**

**CQ-ID:** Defdb00209152

**Severity:** K3 - malfunction (no workaround)

**Description:** When working with the tool database table 2, the editor configuration could not be created in IndraWorks Engineering. Editing the DBT2 table is thus not possible and is acknowledgd with an error message.

## IndraWorks MTX / Installation

### IndraWorks Engineering, MLD: The project node for the PLC application (logic) cannot be created

**CQ-ID:** Defdb00209159

**Severity:** K2 - serious malfunction

**Description:** Creating the IndraLogic project node below an IndraDrive with MLC is not possible. When creating the PLC application, the error messages that the IndraDrive MLD-2G MPx20 device is not available in the device database is reported.

## IndraWorks MTX / Operation / _Other

### Performance problem 14V22 patch 5: Update of values in WinStudio screens requires much more time than with 14V22 P3.1

**CQ-ID:** Defdb00208905

**Severity:** K2 - serious malfunction

**Description:** The first activation of a WinStudio image sometimes takes up to 15 s until current process values are displayed.

### When IWO is terminated WinStudio is not terminated and causes error messages when IWO is started next time

**CQ-ID:** Defdb00208931

**Severity:** K2 - serious malfunction

**Description:** As "Studio manager" (WinStudio) is not terminated when IndraWorks Operation is closed, two error messages are displayed the next time IndraWorks Operation is started:

- Dialog "Activate visualization data": the runtime project 'C:\ProgramData \Rexroth\IndraWorks\Project' cannot be updated.

- Dialog "Start Rexroth IndraWorks": IndraWorks Operation has detected a problem when starting. Component: HMI.Screen.App.HMIStudioManLoader.

Due to these errors IndraWorks Operation then terminates itself automatically.

### WinStudio screens only show zeros in the decimal places

**CQ-ID:** Defdb00208856

**Severity:** K2 - serious malfunction

**Description:** In case of a display of values with decimal places in WinStudio screens the decimal places are always displayed as "0".

Information: This error does not occur on an English Windows operating system.

### NC simulation in connection with the tool service life count results in an “Out of memory exception”

**CQ-ID:** Defdb00208792

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of an active tool service life count, each change in the remaining service life of the tool in the NC Simulation results in an entry in the tool histo-

ry and in the generation of a new tool graphics. This results in a highly increased memory requirements.

### Action recorder (ACR): The content of the log file is not displayed

**CQ-ID:** Defdb00208732

**Severity:** K3 - malfunction (no workaround)

**Description:** After reinstalling IndraMotion MTX software and commissioning the action recorder according to application manual (action recorder R911329942) it is possible that the "content" window remains empty after selecting a log file for viewing. Nothing is displayed there.

The reason for that are not installed files.

**Workaround:** On the ACR directory of the installed IndraWorks software following files are missing:

- AcrStyle.xslt
- AcrStyleAsia.xslt
- Language.de-DE
- Language.en-US
- Language.zh-CN
- AcrLog20081127.xsd

These files are available on the installation data carrier. If these files are copied from directory "<InstallationPath>\IndraWorks\config" into directory "C:\ProgrammData\Rexroth\IndraWorksSuite\ACR" (corresponds to directory <CommonAppData>\ACR), the display of the contents of log files works.

Additional notice: The directory "C:\ProgrammData\Rexroth\IndraWorksSuite\ACR" is usually hidden and therefore not visible. Accordingly, the view hidden directories and files has to be activated on Windows file explorer to obtain access.

### Aktionsrekorder (ACR): Der Inhalt der Logdateien wird nicht angezeigt

**CQ-ID:** Defdb00208732

**Schwere-Grad:** K3 - Fehlfunktion (Kein Workaround)

**Beschreibung:** Nach einer Neu-Installation der IndraMotion MTX Software und der Inbetriebnahme des Aktionsrekorders entsprechend Anwendungsbeschreibung (Aktionsrekorder, R911329942) ist es möglich, dass nach Auswahl einer zu betrachtenden Logdatei das Fenster „Inhalt“ leer bleibt. Es wird dort nichts angezeigt.

Der Grund dafür sind nicht installierte Dateien.

**Vorläufige Lösung:** Im ACR-Verzeichnis der installierten IndraWorks-Software fehlen die folgenden Dateien:

- AcrStyle.xslt
- AcrStyleAsia.xslt
- Language.de-DE
- Language.en-US
- Language.zh-CN
- AcrLog20081127.xsd

Diese Dateien sind auf dem Installations-Datenträger vorhanden. Werden diese Dateien aus dem Verzeichnis "<Installationspfad>\IndraWorks\config" in das Verzeichnis "C:\ProgrammData\Rexroth\IndraWorksSuite\ACR" kopiert

(entspricht dem Verzeichnis <CommonAppData>\ACR), dann funktioniert die Anzeige des Inhalts von Logdateien.

Ergänzender Hinweis: Das Verzeichnis "C:\ProgrammData\Rexroth\IndraWorksSuite\ACR" ist in der Regel ausgeblendet und somit nicht sichtbar. Dementsprechend muss die Ansicht versteckter Verzeichnisse und Dateien im Windows Datei-Explorer aktiviert werden, um Zugriff zu erlangen.

### IndraWorks MTX / Operation / NC Operating

#### IndraWorks Operation: Error when executing the function “Sample zero point”

**CQ-ID:** Defdb00209256

**Severity:** K2 - serious malfunction

**Description:** IndraWorks Operation, the function “Sample zero point” is available in manual mode under “Prepare”. Despite an available and active zero point table, the error “The zero point bank is not available” occurs during determining and saving. The zero point offset cannot be saved.

#### IndraWorks Operation: Unexpected exception (System.NotImplementedException)

**CQ-ID:** Defdb00209143

**Severity:** K2 - serious malfunction

**Description:** An unexpected exception can sporadically occur when evaluating the SCP item “Plc.State” by the IndraWorks M-Key manager: System.NotImplementedException (IwSCP.SCPItemClass.SyncRead, Rexroth.DDP.MKeyManager).

## 17.1.2 Known issues

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out" structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and accessed, errors do not occur.

### IndraWorks ML / Engineering / PLC Programming

#### Persistent data: Instance has been incorrect created

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

VAR_GLOBAL RETAIN PERSISTENT

RetainVar2 :INT;

END_VAR

After executing the command "Add all instance paths", the PersistenVars only says:

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created

.RetainVar2: INT;

END_VAR

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

{attribute 'qualified_only'}

VAR_GLOBAL RETAIN PERSISTENT

RetainVar2 :INT;

END_VAR

Result after executing the command "Add all instance paths":

{attribute 'qualified_only'}

VAR_GLOBAL PERSISTENT RETAIN

// Instance path of the persistent variable created

GVLRetain2.RetainVar2: INT;

END_VAR

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed in the PLC, ProVi messages are not longer displayed.

## IndraWorks MTX / Installation

### Paralell IndraWorks installation of <= MTX 15V06 and >= MTX 15V08 not possible

**CQ-ID:** Defdb00208008

**Severity:** K3 - malfunction (no workaround)

**Description:** In a "parallel installation", several different MTX release versions can be installed simultaneously on a Windows computer and can be used alternately.

Due to an incompatible change at the interface of MTX process displays at IndraWorks Operation, the parallel installation with older MTX 15VRS release dates does not work from MTX 15V08 onwards. If a MTX 15V08 (or newer) is installed on a Windows computer in addition to an already installed MTX 15V02, MTX 15V04 or MTX 15V06, older release dates <= 15V06 are not going to work any more.

The problem cannot be solved using a repair installation or a re-installation.

**Workaround:** Both dlls:

AxInterop.MTXProcessDisplay.dll

and

Interop.MTXProcessDisplay.dll

have to copied from IndraWorks installation directory of the 15V08/T07 to the IndraWorks installation directory of 15V06. This requires Windows administrator rights.

## IndraWorks MTX / Operation / _Other

### IndraWorks Operation, circle test: The quadrant error correction cannot be used in ctrlX DRIVE

**CQ-ID:** Defdb00208483

**Severity:** K2 - serious malfunction

**Description:** If a circle test is perfromed in IndraWorks Operation (IWO) with drives of type ctrlX DRIVE and if subsequently the quadrant error correction is called, no data can be entered in this dialog. All setting options are grayed out.

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and provides are cascaded display of the NC channels of these controls.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1…60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (token) in the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the Token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they have to be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** At IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not activated or rather deactivated.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

## IndraWorks MTX / Operation / NC Programming

### Editor type "Text editor": Saving on external mount directory is not possible

**CQ-ID:** Defdb00208458

**Severity:** K3 - malfunction (no workaround)

**Description:** There are two different editors available for MTX: The comfortable "NC program editor" and the simplified "text editor" (for large files).

In the case of the "Text editor", saving does not work if the save destination is located on a non-local mount directory.

**Workaround:** File size permitting, use the "NC program editor" instead of the "Text editor". "Selection editor type" can be set in the "Options editor".

## VPB Firmware

### "Open TK" System.AccessViolationException upon IndraWorks Operation start

**CQ-ID:** Defdb00206240

**Severity:** K2 - serious malfunction

**Description:** When starting IndraWorks Operation an exception occurs:

"Open TK" System.AccessViolationException

This error message concerns the year 2019 and is caused by the current Intel graphics drivers (driver version 25.xx.xx.xxxx). The industrial PC (IPC) probably had an internet connection and the graphics driver was updated automatically.

The problem does not occur with the original graphics driver in the state upon delivery.

Driver version in the state upon delivery:

- VPB40.4: 21.xx.xx.xxxx

- PR/VR: 22.xx.xx.xxxx

**Workaround:** To solve the problem, install either the new Intel graphics driver (driver version 26.20.100.7209) or the original graphics driver (state upon delivery).

The state upon delivery may be retrieved via "rollback". The "rollback" procedure is described in the next section.

To avoid this problem it is possible to completely deactivate the automatic driver update via registry script. A description of "Deactivate the automatic driver update" may be found in the first section after next.

"Rollback" of the graphics driver to state upon delivery:

- Disconnect the device from the internet connection

- Close all applications, so that only Windows is running

- Open "Device manager" and select tab "Driver"

- Select “uninstall" and uninstall the driver (enable "Delete the driver software for this device") and restart the program

- Sporadically a black screen appears. In this case wait until the HDD-LED stops displaying activity and then restart the device by disconnecting and restoring the supply voltage

- The device uses "Microsoft basic display driver" after restart

After that reinstall the original driver from the state upon delivery via setup.

The driver data is saved:

VPB 40.4: C: \Drivers\Graphic\HD530\setup.exe

PR/VR: On the provided recovery stick under

\Rexroth\Platform Drivers\win64_154602.4729.exe

- Restart the IPC

Deactivate the automatic driver update:

The script "DisableDriverUpdateLTSB2016" for "Deactivate the automatic driver update" is available on the Bosch Rexroth product portal pages of the affected IPC VPB40.4, PR4, VR4 under "downloads". Execute the script with administrator rights.

# 17.2 Firmware

## 17.2.1 Resolved defects

### IndraWorks MTX / Engineering / PLC Libraries

#### Fatal system error 5613 in the context of the "Shape Cutting Project Template" and the "MT_Technology" PLC library

**CQ-ID:** Defdb00209156

**Severity:** K2 - serious malfunction

**Description:** Due to an error in the PLC library “MT_Technology” (version 15.8.0.1), a fatal system error 5613 occurs after a runtime of approx. 1 hour: "Exception in critical IO section of plc task ‘tskFastIO‘, Task SchedException".

**Fixing:** This error is fixed in the PLC library "MT_Technology” from version 15.8.0.6 (and newer).

### MTX Firmware / Block Management

#### Interruption of the NC functions SPV/SSD due to a ASUP may cause ZK1-error

**CQ-ID:** Defdb00208574

**Severity:** K3 - malfunction (no workaround)

**Description:** If a ASUP is triggered in case of an active SPV/SSD it may cause state class-1 error (excessive command value specification).

#### Error 5498 "Axis configuration change forbidden at channel restart!"

**CQ-ID:** Defdb00208913

**Severity:** K4 - malfunction

**Description:** If a transformer is switched on manual data input (MDI) via CRD(1) and after that switched off with CRD(0) and subsequently changes to automatic mode and starts program error 5498 ("Axis configuration change forbidden at channel restart!") is output in the event of a channel restart (MCOPS(11) or MT_ChanRestart).

### MTX Firmware / Machine Parameters

#### Punching/punching parameters: Default settings of machine parameters are not applied

**CQ-ID:** Defdb00209208

**Severity:** K3 - malfunction (no workaround)

**Description:** The values for punching parameters stroke delay/triggering set in the machine parameters are only applied as default setting to the first axis.

### MTX Firmware / NC Program / NC-Function

#### Incorrect velocity profile in hermite splines with SBC

**CQ-ID:** Defdb00209196

**Severity:** K3 - malfunction (no workaround)

**Description:** When using SBC() "StartBoundaryCondition" for circle-like hermite splines, an unexpected velocity profile occurs. The velocity is reduced to zero in the first programmed hermite spline point even though this is not necessary due to the geometry.

### System error 1514 “Internal software error: CAD shrink: unreleased blocks found" in connection with LCTS and ASUP

**CQ-ID:** Defdb00208777

**Severity:** K3 - malfunction (no workaround)

**Description:** When processing an NC program with "LCTS" (G592 spline interpolation), which is interrupted by calling an asynchronous subroutine (ASUP), the fatal system error 1514 "Internal software error: CAD shrink: unreleased blocks found” can occur.

## MTX Firmware / OPC UA

### In case of a high communication load, no resources are available for data exchange

**CQ-ID:** Defdb00209297

**Severity:** K2 - serious malfunction

**Description:** In case of a high communication load of the control (e.g. due to several connected devices or due to many simultaneously active services, exchanging data with the control), certain resources for data exchange run out. This affects the communication buffers of data widths of 64 bytes and 1024 bytes.

The loss of resources can have several impacts such as e.g. unsuccessful online switching of the PLC, connection issues in external devices, unsuccessful reading out of the firmware version/type/series number, unsuccessful internal/external access to machine parameters, system data, ... and many more.

**Fixing:** The problem was solved by drastically increasing the number of communication buffers of data widths of 64 bytes and 1024 bytes.

### OPC UA: "CreateMonitoredItem" with very high sampling rate results in system error SF984

**CQ-ID:** Defdb00209236

**Severity:** K2 - serious malfunction

**Description:** When trying to read an OPC UA item very fast and cyclically, e.g. by using a samplig interval of only one nanoseconds, system error SF984 occurred.

### OPC UA: "DiagnosticInfo" of NC.DbTable.Load method is incomplete

**CQ-ID:** Defdb00209200

**Severity:** K3 - malfunction (no workaround)

**Description:** When an error occurs when reading in an XML file, the "DiagnosticInfo” of the method is insufficient. The information in which line of the file the error has been detected is missing.

**Fixing:** If an error occurs, NC.DbTable.Load now returns an XML string including the line number in which the error occurs in the "DiagnosticInfo" under AdditionalInfo.

Example: <Err><Line>25</Line></Err>

### Oscilloscope multi-device measurement: In case of an external trigger, the slave axis is not triggered by the trigger axis

**CQ-ID:** Defdb00209223

**Severity:** K6 - functional enhancement

**Description:** Without using the Engineering oscilloscope, the user does not have the option to specify the trigger axis and the slave axis.

Thus, it is not possible to execute measurements externally or automized.

**Fixing:** The defect has been resolved.

### MTX Firmware / Sercos

#### Sercos phase 4: Activating the power supply of a Sercos III I/O devices can result in a CoSeMa error 3905

**CQ-ID:** Defdb00208936

**Severity:** K2 - serious malfunction

**Description:** If the power supply is activated at a SERCOS III I/O device (e.g. VAM), the Sercos bus falls back from phase 4 to phase 0 and the CoSeMa error 3905 is generated.

### MTX Firmware / _Other

#### MTX error 3504 when referencing gantry

**CQ-ID:** Defdb00208825

**Severity:** K3 - malfunction (no workaround)

**Beschreibung:** At a real control without real dirve/Sercos ring the referencing of a gantry axis results in error 3504.

## 17.2.2 Known issues

### _Other

#### OPC UA: Write access to structure variable possible even though read access should be restricted

**CQ-ID:** Defdb00209264

**Severity:** K3 - malfunction (no workaround)

**Description:** Via symbol configuration, a structure is assigned to the access right “read”.

Example:

```
VAR_GLOBAL
{attribute 'symbol' := 'read'}
stTest: TestStruct;
END_VAR
```

When using OPC UA, this access restriction is not active. Write access to individual structure elements is still possible.

### MTX Firmware / Block Management

#### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported in some cases.

**Workaround:** The MDI problem only occurred when machine parameter "Linking type process" was changed to “Linking upon program selection".

By default, “Linking at program runtime” is specified. With this default setting, the error does not occur.

Machine parameter “Linking type" (KindOfLinking):

- Specifies the linking type for each channel Ch[k]

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

### MTX Firmware / Logic

**The access to PLC variables of type VAR_IN_OUT does not work via OPC UA**

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Access via OPC DA is possible.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and is accessed, these errors do not occur. See also Defdb00207492.

### MTX Firmware / NC Programm / CPL

**Using macros with inverted commas (") results in a communication breakdown (control does not repond anymore)**

**CQ-ID:** Defdb00205466

**Severity:** K3 - malfunction (no workaround)

**Description:** CPL macros with inverted commas (") in the replacement text or in the programmed NC block results in a communication breakdown with the control, i.e., the control does not respond anymore.

**Workaround:** When using the "CALL" command, the following should be noted:

1.) Do not use CALL statement in CPL macros. Only use DIN macros for a subroutine call.

2.) No more statements before the CALL command; i.e. the CALL statement can only be at the start of a real, programmed CPL line.

# 17.3 Documentation

## 17.3.1 Known issues

### IndraWorks MTX / Operation / Tool Management

**Tool management: The start mode setting “Additive” for tool lists does not work**

**CQ-ID:** Defdb00202612

**Severity:** K3 - malfunction (no workaround)

**Description:** In the DBT1 screen properties, select under “StartMode/EditAdditive”, if certain elements can be edited in the “Additive mode". This is possible if the setting “true” is used. The setting "1" does not work.

# 18 MTX 15V08 Patch 2 Firmware and Software

## 18.1 Software

### 18.1.1 Resolved defects

#### IndraWorks MTX / Installation

**IndraWorks Engineering, MLD: The project node for the PLC application (Logic) cannot be created**

**CQ-ID:** Defdb00209159

**Severity:** K2 - serious malfunction

**Description:** Creating the IndraLogic project node below an IndraDrive with MLD does not work. When creating the PLC application, an error message is displayed that the IndraDrive MLD-2G MPx20 device is not available in the device database.

**Fixing:** Required MLD support packages were included

# 19 MTX 15V08 Firmware and Software

## 19.1 Software

### 19.1.1 Resolved defects

#### IndraWorks ML / Engineering / HMI

**WinStudio: Error message "CEServer.exe" was not found**

**CQ-ID:** Defdb00208035

**Severity:** K4 - malfunction

**Description:** On HMI devices with Windows CE 6.0 the remote agent does not work. Error message "'CEServer' (or one of its components) were not found" is output.

#### IndraWorks ML / Engineering / PLC Programming

**PLCOpen import adds the GVL/POU to the "Common module folder" instead of to a folder below the PLC application**

**CQ-ID:** Defdb00206030

**Severity:** K3 - malfunction (no workaround)

**Description:** When importing elements created on the basis of PLCOpen, the contained elements are sporadically not inserted in the corresponding node in the IndraWorks project tree.

**Workaround:** After the import of objects created in PLCOpen format, please verify if the objects have been inserted in the IndraWorks project tree as expected. If this is not the case, the objects can be moved manually.

Optionally, data can be exported/imported on the basis of the "Standardexportfile".

#### IndraWorks ML / Engineering / Version Control System

**In case of IndraWorks WinStudio errors occur during export and version control**

**CQ-ID:** Defdb00206782

**Severity:** K2 - serious malfunction

**Description:** If Winstudio project contains elements with invalid file reference an error occurs during export and versioning.

**Workaround:** In the folder "temporary project directory\<HmiName>\user\config\web\Resources" incorrect elements are marked with a warning icon. To fix this error these elements have to be deleted and added again.

#### IndraWorks MTX / _Other

**Automation Interface: Unexpected exception when opening the project**

**CQ-ID:** Defdb00207171

**Severity:** K3 - malfunction (no workaround)

**Description:** If a IndraWorks project is created with version 15VRS and opened via automation interface (AI) an unexpected exception occurs: System.Exception: Project requires a conversion. The project is not converted automatically in AI mode. Due to the error the project is not opened.

## IndraWorks MTX / Engineering / _Other

### IndraWorks Engineering: Creating new projects from a project template does not work

**CQ-ID:** Defdb00207830

**Severity:** K2 - serious malfunction

**Description:** Creating a new project via IndraWorks Engineering 15V06 Patch1 and using a project from the templates for this purpose results in an error (Assertion Failed) and IndraWorks Engineering has to be terminated.

Due to this error template projects (e.g. ShapeCuttingProject, MtxBasicProject) may not be used directly.

**Workaround:** Do not select the desired template project via "File => New => Project…" etc. but via "Project => Import". In case of error terminate IndraWorks Engineering, restart and repeat the import process.

### IndraWorks Operation: Restarting control does not work in the MTX system status

**CQ-ID:** Defdb00207423

**Severity:** K2 - serious malfunction

**Description:** Restarting control (XM42) via the MTX system status on IndraWorks Operation does not work properly. Only PLC is stopped but the restart is not carried out.

**Workaround:** Restarting control (XM42) works within IndraWorks Engineering.

### IndraWorks Engineering: Invalid IP address entry on the time synchronization dialog

**CQ-ID:** Defdb00206842

**Severity:** K3 - malfunction (no workaround)

**Description:** When entering the IP address of the time server an error occurred if the device was located in the IndraWorks Engineering project tree with this IP address: In this case the entry was automatically added to the device name and is therefore invalid.

**Fixing:** Additionally to the IP address also the name of the HMI device is displayed. However, for communication only the IP address is required.

### Wrong behavior during screen configuration of VEP devices

**CQ-ID:** Defdb00207703

**Severity:** K3 - malfunction (no workaround)

**Description:** The configuration elements for screen control are missing in the screen configurator for VEP15 devices.

### Error in case of project archiving: Login to control <IP-Adresse> failed!

**CQ-ID:** Defdb00208475

**Severity:** K4 - malfunction

**Description:** Executing a project archive of IndraWorks with standard settings (i.e. all options) a message is reported stating that errors occurred during archiving:

Error: [<Control name>] - Advanced Data

Error: Login to control '192.168.1.1' failed!

The error occurs as a result of the failure to back up the user partition of the CF card (CF_User). If the option for backing up the user partition is deselected the error does not occur.

## IndraWorks MTX / Engineering / Drive

### IndraWorks Engineering took a very long time for switching online, archiving and oscilloscope measurements

**CQ-ID:** Defdb00206635

**Severity:** K3 - malfunction (no workaround)

**Description:** If third-party drives were used in a project online switching process required a very long time due to the verification of non-existent parameters. This behavior became evident when switching third-party drives online, archiving drive parameters and during the oscilloscope function.

## IndraWorks MTX / Engineering / HMI

### Worksheet error in WinStudio database: Object reference not set to an instance of an object

**CQ-ID:** Defdb00208380

**Severity:** K2 - serious malfunction

**Description:** A worksheet from WinStudio database had been used to enter data into a table. Sporadically, if a variable had been used to trigger the insertion of data into a table, error message "Object reference not set to an instance of an object" (Objektreferenz nicht auf eine Instanz des Objekts gesetzt) was reported.

### Active NC channel of the HMI sporadically is transmitted with "0" in the PLC

**CQ-ID:** Defdb00207027

**Severity:** K3 - malfunction (no workaround)

**Description:** When writing the active NC channel number from the HMI into a PLC variable, a "0" is sporadically transmitted in the PLC variable.

### HMI: Multi touch operating screens - standard structures for operating keys are missing

**CQ-ID:** Defdb00202569

**Severity:** K3 - malfunction (no workaround)

**Description:** Standard structures for the operating screen is activated. Nevertheless, the integrated operating keys were not assigned with variables of the standard structures!

### IndraWorks Operation: Neither export nor import application settings for e.g. NC editor and navigator is possible

**CQ-ID:** Defdb00207243

**Severity:** K3 - malfunction (no workaround)

**Description:** On IndraWorks Operation there are some application settings that may not be exported and are not part of a project archive. As a result there was no mechanism to import or restore these settings.

Examples:

- NC editor: [Option editor], e.g. setting for *.bak files.

- MTX navigator: [Navigator settings], e.g. directory and file filter

- Configuration of circle test

- Zeroing: [axis selection, reference position, zeroing], as well as there [properties] (view, axis filter)

**Fixing:** It is now possible to export and import these IndraWorks application settings. For the respective function go to IndraWorks Operation menu bar and select [Extras] - [Settings]

### Multi touch VDP21 - virtual screen keyboard is displayed in the foreground

**CQ-ID:** Defdb00203292

**Severity:** K3 - malfunction (no workaround)

**Description:** If a displayed screen uses the entire screen (hiding all additional controls), the additional control for the screen keyboard sporadically was still displayed in the foreground.

### Station name are not displayed correctly in the two-channel display

**CQ-ID:** Defdb00207026

**Severity:** K3 - malfunction (no workaround)

**Description:** In the channel selection of the two-channel display only the name of the first 12 channels were displayed correctly.

### "MDI editor locked" when channel switching and switching of the operating area

**CQ-ID:** Defdb00207029

**Severity:** K4 - malfunction

**Description:** If the MDI operating mode was active, the MDI editor was locked (message: "MDI editor locked") if another NC channel and temporarily also another operation mode had been selected.

**Workaround:** Selecting another display element (e.g. mouse click on the axis position or the technology display) reactivates the MDI editor.

### If the project contains a "VR4x15" visualization device an unexpected exception occurred when starting IndraWorks Operation

**CQ-ID:** Defdb00207576

**Severity:** K4 - malfunction

**Description:** When starting a older IndraWorks project that contains a "VR4x15" visualization device an unhandled unexpected exception occurs at IndraWorks Operation. The reason for this is that "VR4x15” device type does not exist anymore. The new device type is "PR/VR4x15".

### NC editor for large files: The "replace" function does not work smoothly

**CQ-ID:** Defdb00207395

**Severity:** K4 - malfunction

**Description:** On the NC editor for large files the function for "replacing" a search text to a new text did not work smoothly. The incorrect behavior was dependent on the content of the search and replace text and occurred if the search text appeared also in the replacement text.

When replacing "upwards", i.e. towards the beginning of the file, the search text of the first occurrence in the text was not replaced and the same line was displayed again and again as another found position. Thus, the "search and replace" towards the beginning of the file did not find an automatic end.

## IndraWorks MTX / Engineering / PLC Libraries

### PID controller does not work properly in case of 0.5ms

**CQ-ID:** Defdb00207252

**Severity:** K4 - malfunction

**Description:** PID controller could not work with cycle times below a millisecond.

**Fixing:** The affected function blocks work now with a resolution of 1us.

An eventually available output "ActScanTime" always shows 0 at cycle times < 1ms for compatibility reasons! However, in order to determine the correct cycle time in this case an additional property "ActScanTime_us" was inserted, which outputs the cycle time in µs.

## IndraWorks MTX / Engineering / PLC Programming

### Incorrect status display of structure variables in case of sequence control and NOT

**CQ-ID:** Defdb00207812

**Severity:** K3 - malfunction (no workaround)

**Description:** When the sequence control is switched on, the variable status of a boolean structure variable is no longer displayed with "TRUE", but with "FALSE" if an NOT was programmed before.

### Unexpected exception after calling the online comparison

**CQ-ID:** Defdb00205825

**Severity:** K3 - malfunction (no workaround)

**Description:** After calling the online comparison a unexpected exception was displayed. In the technical details the specified error is "mscorlib" and in the description it is detailed: "The process cannot" access "the file".

**Fixing:** After calling the online comparison its execution is not started until all data required for the execution had been loaded into control. This is displayed in the status bar of IndraWorks Engineering with the text "Transfer of OnlineData completed".

**Workaround:** Online comparison may only be started if the text "Transfer of OnlineData completed" is displayed in the status bar in IndraWorks Engineering.

## IndraWorks MTX / Engineering / Simulation

### "Virtual VAM": Self-defined imported icons are not display at runtime

**CQ-ID:** Defdb00208457

**Severity:** K3 - malfunction (no workaround)

**Description:** When using xiwp-projects, own bitmaps for the buttons of a virtual operating panel might be imported and projected. However, these bitmaps are not displayed when the virtual operator panel is used later.

## IndraWorks MTX / Engineering / Version Control System

### VCS: Unexpected exception in case of comparison of versions status

**CQ-ID:** Defdb00208310

**Severity:** K2 - serious malfunction

**Description:** The VCS comparison of version status and the export of an entire project resulted in error messages if several visualization devices were created in the project.

## IndraWorks MTX / Operation / _Other

### MultiTouch HMI: Safe M keys do not function correctly when using different operating devices

**CQ-ID:** Defdb00208566

**Severity:** K2 - serious malfunction

**Description:** The MkeyManager is not initialized correctly at the MultiTouch HMI and uses always the first PLC FB instance found. As a consequence conflicts occur if several operating devices are communicating with control as all HMI are using the same FB instance.

### Unexpected exception during IndraWorks Operation start if the button "Home Control" is faded out

**CQ-ID:** Defdb00207118

**Severity:** K2 - serious malfunction

**Description:** If in the file CustomCtrlConfiguration.xml the "Home Control" had been commented an error occurred when opening IndraWorks Operation:

IndraWorks - An unexpected exception occurred.

Object is not set to an instance of an object.

### HMI-WebBrowser control cannot establish a connection

**CQ-ID:** Defdb00207820

**Severity:** K3 - malfunction (no workaround)

**Description:** The "HMI.WebBrowserCtrl.dll" is not working properly and therefore cannot display web pages.

### NC Simulation: No display of tools at the ToolDisplay (tool revolver)

**CQ-ID:** Defdb00208541

**Severity:** K3 - malfunction (no workaround)

**Description:** On machine tools with a tool revolver, the tool display in the tool editor remained blank.

### NC Simulation: Wrong collision detection in case of non-moving, third-party axis in the kinematics tree

**CQ-ID:** Defdb00208542

**Severity:** K3 - malfunction (no workaround)

**Description:** Under certain circumstances a unexpected collision detection in case of a non-moving axis occurs:

- There have to be several NC channels available that simultaneously machine a workpiece.

- Processing in NC channels is carried out independently of each other in terms of time.

- Processing in NC channels changes between feed and rapid traverse.

- In the kinematics tree of NC simulation there must be an axis that carries the workpiece and is itself at rest.

In this case a collision has been detected as soon as the channel belonging to this axis traverses in rapid traverse and the other channel is machining in feed.

A pausing axis should never trigger a collision zone.

## IndraWorks MTX / Operation / Diagnosis

### Diagnostic message "ProVi-Sfc diagnostic messages are loaded" remain pending continuously

**CQ-ID:** Defdb00207200

**Severity:** K2 - serious malfunction

**Description:** After the second start of IndraWorks Operation following message was displayed permanently: "ProVi-Sfc diagnostic messages are loaded". At the "header" of the IndraWorks Operation neither ProVi messages nor other messages were displayed.

### No display of diagnostics and ProVi messages in the MTX header of IndraWorks Operation

**CQ-ID:** Defdb00204082

**Severity:** K3 - malfunction (no workaround)

**Description:** In the MTX header of IndraWorks Operation no diagnostic messages and no ProVi messages are displayed if IndraWorks Engineering is started first and subsequently IndraWorks Operation.

**Workaround:** If both, IndraWorks Engineering and IndraWorks Operation are used, start IndraWorks Operation first. Subsequently, start IndraWorks Engineering.

## IndraWorks MTX / Operation / NC Operating

### HMI: "HMI.WebBrowserCtrl.dll" cannot display IoT dashboard

**CQ-ID:** Defdb00207043

**Severity:** K3 - malfunction (no workaround)

**Description:** The "HMI.WebBrowserCtrl.dll" currently installed in the 15VRS cannot display pages of the IoT Getway (e.g. the dashboard). The reason for that is that the pages of IoT Gateway are classified as "insecure" by all browsers (see e.g. "IE.png" for IE). On control this causes a security exception which is why the pages are not loaded. Thus, no pages of the IoT Gateway may be displayed on the browser ctrl in WinStudio or in WebBrowser screens (from 15v04).

### NC simulation: Tool representation is hidden sporadically in the simulation

**CQ-ID:** Defdb00202643

**Severity:** K3 - malfunction (no workaround)

**Description:** After a specific number of simulated tool changes the simulation does neither display a tool nor a stock removal anymore.

### MTX NC editor sporadically creates corrupt ".bak" files

**CQ-ID:** Defdb00207030

**Severity:** K4 - malfunction

**Description:** Although the function to create ".bak" files was deactivated in the option dialog the NC editor created ".bak" files. Sometimes these *.bak files were corrupt and could not be deleted anymore.

**Fixing:** The MTX NC editor requires temporarily files. These temporarily *.bak files are saved in the hidden folder /mnt/.NcEdTemp. This folder is emptied each time a connection is made to control.

## IndraWorks MTX / Operation / NC Programming

### Instead of the NC program editor for small files the NC program editor for large files was always executed

**CQ-ID:** Defdb00206709

**Severity:** K2 - serious malfunction

**Description:** Although in the configuration dialog of the NC program editor the editor for small files is configured the NC program editor for large files has always been executed. Due to a (further) error at the NC program editor for large files lines were deleted if characters were inserted at the beginning of file.

**Fixing:** According to configuration the right NC program editor is called. And also the error at the NC program editor for large files has been eliminated.

**Workaround:** Directly after an entry (and the unintentional deletion of a line) the entry of characters at the beginning of a file may be undone using the key combination [Ctrl]-[Z].

### NC editor: When editing a line of the NC program the line is displayed very small after the first entry

**CQ-ID:** Defdb00207801

**Severity:** K2 - serious malfunction

**Description:** At the NC program editor the text under the bar cursor might be represented reduced in size. Therefore, the screen scaling has to be other than 100% (96 dpi).

### Using the input mask of the swiveling cycle G230 resulted in a syntax error

**CQ-ID:** Defdb00207363

**Severity:** K2 - serious malfunction

**Description:** NC program editor: Correcting the call of the cycle G230 with the cycle mask and using variables as parameter value resulted in a syntax error.

**Workaround:** Enter the corresponding parameters in "square brackets" [ ].

### NC editor: Positioning to syntax error does not work correctly

**CQ-ID:** Defdb00207456

**Severity:** K3 - malfunction (no workaround)

**Description:** On IndraWorks Operation there are two editors to edit NC programs and simple text files: The "Standard NC program editor" (with e.g. syntax highlighting) and the simplified "Editor for large files".

On both editors the positioning on syntax errors does not work correctly.

The default editor positioned incorrectly for "Editor active program" or for syntax errors, including the "Go to next/last error" function, if the line break in the file consists of two characters (0D 0A).

The editor for large files contained an error in the "Go to next/last error" function.

### After changing the active NC program with the editor for large files automatic program reselection does not work

**CQ-ID:** Defdb00206452

**Severity:** K4 - malfunction

**Description:** After changing the active NC program with the editor for large files automatic program reselection does not work. The program reselection resulted in a syntax error.

### IndraWorks MTX / Operation / Tool Management

#### Tool management: User-defined screen as start screen at the operating area OP5 generates an error

**CQ-ID:** Defdb00207104

**Severity:** K3 - malfunction (no workaround)

**Description:** If in the operating area tool (OP5) a user-defined screen is defined as start screen an error occurred and subsequently the tool management does not work.

#### Calling a DBT2 list blocks the subsequent call of a tool list

**CQ-ID:** Defdb00207241

**Severity:** K4 - malfunction

**Description:** If a data list of the DBT2 database, e.g. in the operating area production data (OP 7), is determined as the start screen and called, the tool list of the DBT1 database may no longer be started.

### MTX Firmware / Logic

#### In the MT_Base one function block and two interface signals are missing

**CQ-ID:** Defdb00207556

**Severity:** K2 - serious malfunction

**Description:** In the library MT_Base version 15.6.0.0 function block "MT_DiagTextW-STRING_Data" and interface signal "qAx_HomeSwitch" and "qSp_Home-Switch" are missing.

## 19.1.2 Known issues

### IndraLogic Firmware / Logic

#### Error when accessing "In_Out" structures using the IecVarAccess library

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions return errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and accessed, errors do not occur.

### IndraWorks ML / Engineering / HMI

#### WinStudio OPC-UA variables are not updated after longer runtime

**CQ-ID:** Defdb00208125

**Severity:** K2 - serious malfunction

**Description:** With a WinStudio application running in continuous operation it may happen that after several days individual OPC-UA variables are not updated anymore and the old value is displayed.

**Workaround:** The problem only occurs if in the OPC-UA driver sheet a "root node" is specified. Deleting the entry in the "root node" field the problem does not occur.

## IndraWorks ML / Engineering / PLC Programming

### Persistent data: Instance has been incorrect created

**CQ-ID:** Defdb00207814

**Severity:** K4 - malfunction

**Description:** Under the following conditions, the instance paths are not correctly inserted into the PersistentVars when the "Add all instance paths" command is executed:

- The variable is defined in a global variable list (GVL) with VAR_GLOBAL RETAIN PERSISTENT
- This global variable list is located in the general module folder
- This GVL is not provided with {attribute 'qualified_only'}

Example:

Definition in the general module folder:

```
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

After executing the command "Add all instance paths", the PersistenVars only says:

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
.RetainVar2: INT;
END_VAR
```

**Workaround:** Add {attribute 'qualified_only'} to the beginning of the global variable list.

```
{attribute 'qualified_only'}
VAR_GLOBAL RETAIN PERSISTENT
RetainVar2 :INT;
END_VAR
```

Result after executing the command "Add all instance paths":

```
{attribute 'qualified_only'}
VAR_GLOBAL PERSISTENT RETAIN
// Instance path of the persistent variable created
GVLRetain2.RetainVar2: INT;
END_VAR
```

## IndraWorks MTX / Engineering / _Other

### ProVi messages are not displayed after PLC "online change" at IndraWorks Engineering

**CQ-ID:** Defdb00205929

**Severity:** K3 - malfunction (no workaround)

**Description:** ProVi messages are correctly displayed at runtime. However, if an "online change" is executed at PLC ProVi messages are not longer displayed.

## IndraWorks MTX / Engineering / HMI

### IndraWorks Engineering, process variables: German terms are displayed although English language is set

**CQ-ID:** Defdb00208705

**Severity:** K3 - malfunction (no workaround)

**Description:** In the context of "process variables" the English translation was missing. Therefore, German words were displayed, although English was set as language for IndraWorks Engineering.

### IndraWorks Operation, operating area diagnostics: Problem with the mouse operation in all logbook selection dialogs

**CQ-ID:** Defdb00207242

**Severity:** K4 - malfunction

**Description:** If more than one logbook is defined in an IndrdWorks project the "Select logbook" dialog box opens when "Logbook" is called up in the "diagnostics" operating area. This dialog is not operable by mouse at first. However, an operation with keyboard is possible.

**Workaround:** Move the dialog box "Select logbook" on the screen (e.g. in the dialog title bar, keep the mouse button pressed and move the dialog on the screen with the mouse), to operate the dialog correctly with the mouse.

## IndraWorks MTX / Engineering / NC-Configuration

### Profinet does not work after importing the project data of a complete CMLx5 control into 15VRS (XM42)

**CQ-ID:** Defdb00207490

**Severity:** K2 - serious malfunction

**Description:** After importing the project data of the complete control node of a CMLx5 to a XM42 control Profibus does not work.

Idices for this are among others:

- The LEDs on the XF3 or XF4 RJ45 sockets of XM42 remain "dark".

- The PLC logger contains error entries with the message that the network card driver is not running.

**Workaround:** Do not import the control node but import step by step single elements of the control (e.g. PLC application)

## IndraWorks MTX / Installation

### Paralell IndraWorks installation of (<= MTX 15V06) and (>= MTX 15V08) not possible

**CQ-ID:** Defdb00208008

**Severity:** K3 - malfunction (no workaround)

**Description:** In a "parallel installation" several different MTX releases might be installed simultaneously on a Windows computer and used alternately.

Due to an incompatible change at the interface of MTX process displays at IndraWorks Operation, the parallel installation with older MTX 15VRS release dates does not work from MTX 15V08 onwards. If a MTX 15V08 (or newer) is installed on a Windows computer in addition to an already installed MTX 15V02, MTX 15V04 or MTX 15V06, older release dates (<= 15V06) are not going to work any more.

Neither a repair installation nor a new installation may help here.

**Workaround:** Both dll's:

AxInterop.MTXProcessDisplay.dll

and

Interop.MTXProcessDisplay.dll

have to copied from IndraWorks installation directory of the 15V08/T07 to the IndraWorks installation directory of 15V06. This requires Windows administrator rights.

## IndraWorks MTX / Operation / _Other

### When IndraWorks Operation is terminated WinStudio is not terminated and causes error messages when IWO is started next time

**CQ-ID:** Defdb00208931

**Severity:** K2 - serious malfunction

**Description:** As "Studio manager" (WinStudio) is not terminated when IndraWorks Operation is closed, two error messages are displayed the next time IndraWorks Operation is started:

- Dialog "Activate visualization data": "Runtime project 'C:\ProgramData\Rexroth\IndraWorks\Project' cannot be updated".

- Dialog "Start Rexroth IndraWorks": IndraWorks Operation has detected a problem when starting. Component: HMI.Screen.App.HMIStudioManLoader.

Due to these errors IndraWorks Operation then terminates itself automatically.

**Workaround:** After terminating the IndraWorks operation, close the "Studio Manager.exe (32 bit)" process in the Windows task manager.

### Action recorder (ACR): The content of the log file is not displayed

**CQ-ID:** Defdb00208732

**Severity:** K3 - malfunction (no workaround)

**Description:** After reinstalling IndraMotion MTX software and commissioning the action recorder according to application manual (action recorder R911329942) it is possible that the "content" window remains empty after selecting a log file for viewing. Nothing is displayed there.

The reason for that are not installed files.

**Workaround:** On the ACR directory of the installed IndraWorks software following files are missing:

- AcrStyle.xslt
- AcrStyleAsia.xslt
- Language.de-DE
- Language.en-US
- Language.zh-CN
- AcrLog20081127.xsd

These files are available on the installation data carrier. If these files are copied from directory "<InstallationPath>\IndraWorks\config" into directory "C:\ProgrammData\Rexroth\IndraWorksSuite\ACR" (corresponds to directory <CommonAppData>\ACR), the display of the contents of log files works.

Additional notice: The directory "C:\ProgrammData\Rexroth\IndraWorksSuite\ACR" is usually hidden and therefore not visible. Accordingly, the view hidden directories and files has to be activated on Windows file explorer to obtain access.

### The name assignment for NC channels does not work with cascaded control

**CQ-ID:** Defdb00207926

**Severity:** K3 - malfunction (no workaround)

**Description:** The control system IndraMotion MTX provides the option of combining several controls and displaying the NC channels of these controls in cascade.

When cascading the NC channels 60 NC channels are permanently assigned to each control:

- Control 1: NC channel 1...60

- Control 2: NC channel 61…120

- Control 3: NC channel 121…180

Etc.

The configuration of the channel names at IndraWorks Operation functions only for one control. The channel name set applies for all available controls. Therefore, NC channels of several controls cannot be given names independently of each other

Example: The channel name for NC channel 61 is also used for NC channel 1 and NC channel 121.

**Workaround:** To configure channel names IndraWorks project file "MTXChannels.ini" and "MTXCHANNELS_xx.txt" have to be modified manually. To avoid access conflicts terminate IndraWorks Operation and IndraWorks Engineering before configuring the channel names.

The file "MTXChannels.ini" contains the assignment of the channel numbers to the identifier (Token) on the language file "MTXCHANNELS_xx.txt".

The channel numbers are specified as follows:

[ChannelNames]

CHaaaa = bbbb

- aaaa is the channel number, which is composed as follows:

CH + (control number * 60) + channel number

The control number counts from 0...x, the channel number from 1...60.

- bbbb is the Token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

Controls are specified as follows:

[DeviceName]

DNa = bbbb

- a is the control number. The first control has no number.

- bbbb is the token, that is linked to the channel name in the language file.

This token may be contained only once in the language file.

In order for the changed visualization data to become active they must be transferred to the visualization device in IndraWorks Engineering via "Transfer and activate visualization data".

## IndraWorks MTX / Operation / Diagnosis

### IAC does not display any error text and detail diagnosis in HTML-format does not work for IndraDrive and IAC

**CQ-ID:** Defdb00208597

**Severity:** K3 - malfunction (no workaround)

**Description:** In the case of a MTX Workstation installation (IWE + IWO) detail diagnosis were not displayed in HTML-format for IndraDrive and IAC.

### Message "ProVi SFC diagnostic messages are read" from control although ProVi is not active or deactivated

**CQ-ID:** Defdb00207811

**Severity:** K3 - malfunction (no workaround)

**Description:** At IndraWorks Operation the message "ProVi SFC diagnostic messages are read from the control" is reported, although ProVi is not activated or rather deactivated.

**Workaround:** - Save IndraWorks project and terminate IndraWorks Engineering.

- Rename the corresponding project file (*.xiwp) in *.zip.

- Open project with an appropriate *.zip program (e.g. WinZIP or 7Zip).

- Delete the folder "Download" (\Project\CMx\Download).

- In the folder \Project\CMx delete following four files:

- CMx.diag

- CMx.ILD.di

- CMx.ILD.dix

- CMx.ILD.ld

- Save the modified *.zip file and rename the file back to the original file name (*.xiwp).

HMI: Transmit visualization data.

- Start IndraWorks Operation.

### IndraWorks Operation, operating area diagnostics: Problem with the mouse operation in all logbook selection dialogs

**CQ-ID:** Defdb00207038

**Severity:** K4 - malfunction

**Description:** If more than one logbook has been defined in an IndraWorks project, the "Select logbook" dialog box opens when "Logbook" is called in the "Diagnostics" operating area. This dialog cannot be operated with mouse. Nevertheless, an operation with the keyboard is possible.

**Workaround:** Move the dialog box "Select logbook" on the screen (e.g. in the dialog title bar, keep the mouse button pressed and move the dialog on the screen with the mouse), to operate the dialog correctly with the mouse.

## IndraWorks MTX / Operation / NC Programming

### Editor type "Text editor": Saving on external mount directory is not possible

**CQ-ID:** Defdb00208458

**Severity:** K3 - malfunction (no workaround)

**Description:** There are two different editors available for MTX: The comfortable "NC program editor" and the simplified "text editor" (for large files).

In the case of the "Text editor", saving does not work if the save destination is located on a non-local mount directory.

**Workaround:** As far as the file size allows the process: Use the "NC program editor" instead of the "Text editor". The selection "Selection editor type" is available in the "Options editor".

## VPB Firmware

### "Open TK" System.AccessViolationException upon IndraWorks Operation start

**CQ-ID:** Defdb00206240

**Severity:** K2 - serious malfunction

**Description:** When starting IndraWorks Operation an unexpected exception occurs:

"Open TK" System.AccessViolationException

This error message concerns the year 2019 and is caused by the current Intel graphics drivers (driver version 25.xx.xx.xxxx). The industrial PC (IPC) probably had an internet connection and the graphics driver was updated automatically.

The problem does not occur with the original graphics driver in the state upon delivery.

Driver version in the state upon delivery:

- VPB40.4: 21.xx.xx.xxxx

- PR/VR: 22.xx.xx.xxxx

**Workaround:** To solve the problem, install either the new Intel graphics driver (driver version 26.20.100.7209) or the original graphics driver (state upon delivery).

The state upon delivery may be retrieved via "rollback". The "rollback" procedure is described in the next section.

To avoid this problem it is possible to completely deactivate the automatic driver update via registry script. A description of "Deactivate the automatic driver update" may be found in the first section after next.

"Rollback" of the graphics driver to state upon delivery:

- Disconnect the device from the internet connection

- Close all application, so that only Windows is running

- Open "Device manager" and select tab "Driver"

- Select function "uninstall" and uninstall the driver ("Delete the driver software for this device") and restart

- Sporadically a black screen appears. In this case wait until the HDD-LED stops displaying activity and then restart the device by disconnecting and restoring the supply voltage.

- The device uses "Microsoft basic display driver" after restart

After that reinstall the original driver from the state upon delivery via setup.

The driver data is saved:

VPB 40.4: C: \Drivers\Graphic\HD530\setup.exe

PR/VR: On the provided recovery stick under

\Rexroth\Platform Drivers\win64_154602.4729.exe

- Restart the IPC

Deactivate the automatic driver update:

The script "DisableDriverUpdateLTSB2016" for "Deactivate the automatic driver update" is available on Bosch Rexroth product portal pages of the af-

fected IPC VPB40.4, PR4, VR4 under "downloads". To execute the script administrator rights are required.

# 19.2 Firmware

## 19.2.1 Resolved defects

### IndraWorks MTX / _Other

#### The SCP-Item "System.MessageStore" returns incorrect data type

**CQ-ID:** Defdb00208039

**Severity:** K2 - serious malfunction

**Description:** The SCP-Item "System.MessageStore" returns incorrect data type "integer/string". Instead, data type "long" should be signaled.

### IndraWorks MTX / Operation / NC Operating

#### MTX process displays: Increasing memory space in program nesting display (NcPrcNestingCtrl)

**CQ-ID:** Defdb00207182

**Severity:** K2 - serious malfunction

**Description:** An error in the program nesting display of the NC screen resulted in a steadily increasing memory space.

### MTX Firmware / _Other

#### Warning 3715 "Task SDLPSrv has reached stack limit"

**CQ-ID:** Defdb00207145

**Severity:** K2 - serious malfunction

**Description:** For complex applications the warning 3715 "Task SDLPSrv has reached stack limit" was reported sporadically.

Except for the warning, no other effect had been observed.

An internal monitoring had identified that an increase of the task memory (task stack) is necessary for the above mentioned internal task, as otherwise the memory of another task is destroyed.

#### Limit switch error for A0 B0 and active placement

**CQ-ID:** Defdb00208015

**Severity:** K3 - malfunction (no workaround)

**Description:** If the tool orientation vector remains constant at (0,0,1), the orientation angle is constant at theta = 90° and the orientation angle Phi is undetermined. Although Phi is undetermined, it should remain constant. Due to rounding errors, however, a varying orientation angle Phi was calculated, which resulted in varying rotary axis positions in the axis transformation. This behavior did not change the position and orientation of the tool tip, but triggered the limit switch error for rotary axes.

**Workaround:** If orientation is set slightly beside the north pole, the error does not occur.

### MTX Firmware / Axis

#### Error 1515 "Bsa: NurbsCurveKnotInsertion failed" in program with B-spline approximation

**CQ-ID:** Defdb00207450

**Severity:** K2 - serious malfunction

**Description:** During the B-spline approximation (SplineDef(4233)) the internal FW error 1515 "Bsa: NurbsCurveKnotInsertion failed" occurred. Instead of error F1515 discontinuous path characteristics may also occur.

### Error 1515 "Bsa: NurbsCurveKnotInsertion failed" in program with B-spline approximation

**CQ-ID:** Defdb00207795

**Severity:** K2 - serious malfunction

**Description:** During B-spline approximation (SplineDef(4233)) internal FW error 1515 „Bsa: NurbsCurveKnotInsertion failed" occurs. Instead of error F1515 discontinuous path characteristics may also occur.

### FFWA (feed forward for asynchronous axis) causes a "blokade" in NC part program

**CQ-ID:** Defdb00208272

**Severity:** K3 - malfunction (no workaround)

**Description:** Sporadically the asynchronous axis could not be included in a channel after switching feed forward with FFWA. The blockade occurred as GAX and WAX were freezed.

### In case of G63 tapping without compensating chuck, C-axis mode with opposite spindle travels into minus

**CQ-ID:** Defdb00207449

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of tapping without compensating chuck (G63) the C-axis travelled in the negative direction on Z with the opposite spindle and fixed tool, instead of in the positive direction as when drilling. The opposite spindle is turned due to a change in the direction of rotation in S-0-0043.

**Fixing:** The new system date "/SysSpCmdData[<Sp>]/ReverseRotation" was implemented. This date has the effect of a machine parameter and only applies during control startup.

By setting the system date 'ReverseRotation' to value 1 the direction of rotation of the spindle is inverted for M3/M4 and G63.

### Internal software error F1515 "GeoFunc: Way > WayIpoMax" in case of very short spline blocks

**CQ-ID:** Defdb00208003

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of very short NC blocks, sporadically, the spline calculation interpolates over its block limits. This behavior is reported by an internal error.

**Fixing:** The defect has been resolved.

## MTX Firmware / Block Management

### File access error 2132 when calling a subroutine

**CQ-ID:** Defdb00207856

**Severity:** K2 - serious malfunction

**Description:** If "Link background" was active and different programs were alternately selected and started in one channel runtime error 2132 occurred sporadically. The error only occurred when jumping from a CPL case into a subprogram and intermediate results of the linker task were incorporated when jumping back.

### Parser error 1278 - Number of parameters in NC block too large after parameter %s

**CQ-ID:** Defdb00207000

**Severity:** K2 - serious malfunction

**Description:** Sporadically parser error 1278 might occur during program execution. These circumstances are: Use of local subroutines and a program section with several hundred lines of similar NC codes of the same type "N10 X[VALUE] Y...". The local subroutine has to be called prior to the section with the NC code of the same type and implemented after that section.

**Workaround:** Swap the order of the local subroutines - move the area with the NC code of the same type behind the other local subroutines. Alternatively the area with the NC code of the same type may be interrupted - e.g. by a comment in a separate code line.

### System error SF1830

**CQ-ID:** Defdb00208345

**Severity:** K2 - serious malfunction

**Description:** When the function "Real-time coordinates in the axis coordinate system (ACS)" is active, a system error occurs when rotary axes are moved incrementally in one direction for a very long time using modular calculation.

**Fixing:** Use the function "Real time coordinates in the axis coordinate system (ACS) with modulo calculation”. See release notes, new functions from 15V08, chapter 3.2.x Real time coordinates in the axis coordinate system (ACS) with modulo calculation.

### Critical system error 1835 "Spline block inserted by SCOL is deleted" (SCOL)

**CQ-ID:** Defdb00204723

**Severity:** K3 - malfunction (no workaround)

**Description:** If the command SCOL with splines was used in the operation mode single block system error 1835 could sporadically be reported. In other operation modes, the programs were executed without errors.

### Repositioning to the contour: Part program error 5526 at LCTS and ASUP if SD.SysReentry.FeedHold is used

**CQ-ID:** Defdb00206816

**Severity:** K3 - malfunction (no workaround)

**Description:** LCTS (spline interpolation): If an NC contour program is interrupted by an asynchronous subroutine (ASUP), system error 5526 occurs when the contour were returned again. This happens if SD.SysReentry.FeedHold = 1 (feed hold after returning to contour) was preventing the continuation of the part program.

### Servo error in case of the 5-axis transformation LLLAB with standard vector orientation

**CQ-ID:** Defdb00203659

**Severity:** K3 - malfunction (no workaround)

**Description:** In a 5-axis transformation LLLAB with standard vector orientation, a servo error occurred.

**Workaround:** This error does not occur anymore if the orientation motion was executed once together with a Cartesian motion.

### Sporadically error 4977 occurs during measuring on the contour with MOC

**CQ-ID:** Defdb00207305

**Severity:** K3 - malfunction (no workaround)

**Description:** When measuring with several axes the NC function MOC "Measuring on a contour" sporadically reports error state 4977 "At least one of the drives to be measured has not respond". "At least one of the drives that were to be measured had not triggered."

## MTX Firmware / Communication

### OPC.DA/SCP: Item NC.CplPermVariable shows wrong data

**CQ-ID:** Defdb00208568

**Severity:** K2 - serious malfunction

**Description:** When writing permanent CPL variables with boolean arrays via NC.CplPermVariable SCP item incorrect data is written. This happens if more than one value is written simultaneously. When writing a single value the error does not occur.

**Workaround:** Use single writing access instead of writing the complete array.

### IndraLogic login is not possible: All available communication channels are assigned

**CQ-ID:** Defdb00207809

**Severity:** K4 - malfunction

**Description:** If all communication channels to IndraLogic on a machine are assigned by control panels (IndraWorks Operation, Virtual operating panel,...), no one could log in to IndraLogic via IndraWorks Engineering.

**Fixing:** The defect has been resolved.

## MTX Firmware / Diagnostic Tools

### Diagnostic messages for FPU errors of the PLC are incorrect

**CQ-ID:** Defdb00208005

**Severity:** K3 - malfunction (no workaround)

**Description:** The diagnostic messages for FPU errors of the PLC (e.g. error 3664 “Floating point underflow in task with Id... at address ...") displayed incorrect causes and recovery texts.

## MTX Firmware / Error Announcement

### With active SCARA transformation - online correction does not work

**CQ-ID:** Defdb00206994

**Severity:** K2 - serious malfunction

**Description:** With active SCARA transformation (types 2103011 and 3113011) no online correction could be specified for the coordinates X, Y, (Z) and PHI. For example, when selecting a coordinate for online correction, warning 2927 "The selected axis transformation does not allow online correction for coordinate Y in channel 3" was output.

## MTX Firmware / Logic

### After importing an NC archive system error 3464 occurs sporadically when the control is restarted

**CQ-ID:** Defdb00206813

**Severity:** K2 - serious malfunction

**Description:** After importing an NC archive (file *.tar) from the previous release, system error SF3464 occurs sporadically if control is started up. The cause of the problem is the access to PLC to still missing data in the directory "/usrfep".

**Workaround:** When importing the NC archive, use startup mode 1 to prevent the PLC from starting in the meantime and to load the NC archive completely.

### NC function G75.2: Travelling against second touch probe does not work

**CQ-ID:** Defdb00207902

**Severity:** K2 - serious malfunction

**Description:** "Travelling against touch probe" (G75) worked with IndraControl XM42 only for the first touch probe (G75.1). Travelling against second touch probe (G75.2) does not work.

## MTX Firmware / Machine Parameters

### MTX advanced: NC configurator reports error "Macoda edit not possible - error 31"

**CQ-ID:** Defdb00206990

**Severity:** K2 - serious malfunction

**Description:** If there is a large number of channels (more than 30) and after changing a number of channel-specific parameters with a large number of individual entries and changing these individual entries in each channel, an error "Macoda edit not possible - error 31" sporadically is reported in the NC configurator. No further changes are possible after this point in time.

Critical machine parameters are e.g Macoda-IDs 600500020 (/GUI/PosDisp/Ord/Ch[i]/AddWin/AddAx/Dr[i]/ModeAddAx and /GUI/PosDisp/Ord/Ch[i]/AddWin/AddAx/Dr[i]/PrioAddAx) as well as 600500022 (/GUI/PosDisp/Ord/Ch[i]/ChWin/Dr[i]/ModeAxChWin and /GUI/PosDisp/Ord/Ch[i]/ChWin/Dr[i]/PrioAxChWin).

**Fixing:** The internal area for Macoda parameter changes has been enlarged.

If the described problem still occurs the area may be increased additionally by a variable offset.

For this purpose, the file startup.xml (template at feprom-directory) has to be extended by the optional entry "<AdditionalMacodaParaDatasets>...</AdditionalMacodaParaDatasets>". It is advisable to increase the offset value in small steps as this implies less memory space for the rest of the system. Start with a value of 10,000 and increase in steps of 5,000 if required.

For these changes to become active in startup.xml, a startup with startup mode 6 (reset to default) has to be performed!

## MTX Firmware / Manual-Mode / Machine-Preparing

### System reset freezes sporadically

**CQ-ID:** Defdb00206713

**Severity:** K2 - serious malfunction

**Description:** Due to command KVP () in the init-string and/or in init-program the system reset freezes sporadically.

### System reset freezes sporadically due to access problems to machine parameter management

**CQ-ID:** Defdb00206171

**Severity:** K2 - serious malfunction

**Description:** In case of a system reset an access problem to machine parameter management sporadically caused a freezing. As a consequence no NC programs could be selected. Only a NC restart solved the problem.

**Fixing:** The defect has been resolved.

## MTX Firmware / NC Program / CPL

### Possible misinterpretation of IF queries (CPL) when using logical links

**CQ-ID:** Defdb00201143

**Severity:** K2 - serious malfunction

**Description:** In a CPL program line a misinterpretation of the conditions of IF queries with logical links sporadically occurs, if e.g. two conditions are linked with AND and these conditions are not both enclosed in brackets.

**Fixing:** If required brackets are missing when linking conditions, this results in part program error 684 "'THEN missing".

IF BED1? = FALSE AND (BED2%<> 0) THEN was evaluated incorrectly before the error was corrected. Now results in part program error 684

correct is: IF (BED1? = FALSE) AND (BED2%<> 0) THEN

Following instructions now result in part program error. Before these instructions were permitted and correctly assessed

IF BQ2% AND 1 <> 0 THEN

has to be written as follows:

IF (BQ2% AND 1) <> 0 THEN

**Workaround:** Always enclose conditions of IF queries in brackets.

### Beam cutting: The "Freeze" function should not completely deactivate the height control

**CQ-ID:** Defdb00208073

**Severity:** K3 - malfunction (no workaround)

**Description:** The previous "Freeze" function of the height control was too restrictive: The processing height of the cutting head was completely "frozen", which could result in a collision between the cutting head and the material if the distance between the cutting head and the material became too small.

**Fixing:** If the "Freeze" function of height control is activated on shape cutting machines, the processing height of cutting head is "frozen" in the direction of material, i.e. height control no longer corrects downwards in direction of material. If, however, even though the "freeze" function is switched on, material is detected and the distance between cutting head and material becomes smaller, the height control moves the cutting head upwards to avoid a possible pending collision.

### Error when calling local subroutines with numbers as program name

**CQ-ID:** Defdb00203085

**Severity:** K3 - malfunction (no workaround)

**Description:** If the program name of a local subroutine is a number (e.g. 4) and the block number contains the identical number (e.g. N504 LPS 4) a part program error occurs.

**Workaround:** Change program name or block number so that the program name is not part of the block number.

### Nc cycle "LeapFrog": Calling LeapFrog with tool radius correction enabled causes an error

**CQ-ID:** Defdb00208072

**Severity:** K3 - malfunction (no workaround)

**Description:** Due to the usage of NC command "WAIT" at "LeapFrog"-cycle calling this cycle causes an error if the tool radius correction is active. Calling LeapFrog is only possible if the tool radius correction is deactivated and then reactivated before each call of LeapFrog cycle. The internal corrective calculations have a negative effect on processing time of NC program, i.e. processing time becomes longer.

## MTX Firmware / NC Program / NC-Function

### Contour error during B-spline approximation with G592

**CQ-ID:** Defdb00208317

**Severity:** K1 - safety relevant function

**Description:** When processing an NC program with B-spline approximation (SplineDef(4233) and/or G592) a visible contour error sporadically occurred. The error was dependent on the programmed contour and is reproducible with the same contour and parameters.

### Calibration error after block pre-run with active axis transformation

**CQ-ID:** Defdb00204741

**Severity:** K2 - serious malfunction

**Description:** If after a block pre-run with active axis transformation a tool change has been executed in the synchronization program, runtime error 2616 "Coordinates may not be programmed in one block together with switching of a transformation" is reported.

### Combining LCTS, Asup and G77 causes an error

**CQ-ID:** Defdb00206284

**Severity:** K2 - serious malfunction

**Description:** When spline approximation filtering is active, e.g. when LCTS (linear circular to spline) is switched on, an active NC program is interrupted by an Asup (asynchronous subroutine). If the adjustment positions within the Asup are kept changing, e.g. by G77, an error occurred when returning to the contour.

**Fixing:** The logic for returning to the contour of the spline approximation filtering now takes into account the changes in the adjustment positions of the coordinates in an asynchronous subroutine.

### Error "1515 internal software error: Nurbs: point error" at B-spline approximation with G592

**CQ-ID:** Defdb00208044

**Severity:** K2 - serious malfunction

**Description:** In case of the B-spline approximation (SplineDef(4233)) and/or G592 error "1515 internal software error: Nurbs: point error" occurred.

**Fixing:** There were many causes for this problem which were all solved (Defdb00208044 and Defdb00208091).

### Specifications of the start tangent not possible for Hermite splines

**CQ-ID:** Defdb00207989

**Severity:** K2 - serious malfunction

**Description:** When using Hermite splines, the start tangent of the first set is automatically set to zero. This caused velocity drops on contour.

**Fixing:** The defect has been resolved.

### The functions "Jog in workpiece coordinates" and "Handwheel in workpiece coordinates" do not support the "phi" coordinate

**CQ-ID:** Defdb00207789

**Severity:** K2 - serious malfunction

**Description:** During active axis transformation with linear orientation (e.g. 323101) the orientation coordinate phi could not traverse by jogging in the workpiece coordinates.

### The input assistance "Mirror" might not be applied to the orientation vector

**CQ-ID:** Defdb00208063

**Severity:** K2 - serious malfunction

**Description:** The input assistance "Mirror" might not be applied to the orientation vector.

**Fixing:** The mirror(O(...)) command now also reflects single elements of the orientation vector. During an recursive activation the reflections remains also active.

### Velocity drops with active transformation and active jerk limitation (JKC)

**CQ-ID:** Defdb00208013

**Severity:** K2 - serious malfunction

**Description:** If a circle was traversed with active transformation 3033001 and active jerk limitation (JKC), the path velocity dropped at various points.

### After lowering the rapid traverse velocity via AVE jog velocities are too low

**CQ-ID:** Defdb00208590

**Severity:** K3 - malfunction (no workaround)

**Description:** Lowering the rapid traverse velocity with NC function AVE (AxVel) reduces the jog velocity by the same ratio. However, what is expected is the limitation of the jog velocity to the lowered rapid traverse velocity.

### Diagnostic option for failure FastAction cycle missing

**CQ-ID:** Defdb00207537

**Severity:** K3 - malfunction (no workaround)

**Description:** The FastAction task failed to execute several Sercos cycles. The number of missed cycles was previously only determined internally, but was not passed on to the outside.

**Fixing:** The defect has been resolved.

### Error "1515 internal software error: Bsf: Error in NurbsBasisfunc" during B-spline approximation with G592

**CQ-ID:** Defdb00207786

**Severity:** K3 - malfunction (no workaround)

**Description:** During B-spline approximation (SplineDef(4233)) or G592 error "1515 internal software error: Error in NurbsBasisfunc" occurred sporadically.

### Error "1515 internal software error: Bsf: InitControlPoints error" during B-spline approximation with G592

**CQ-ID:** Defdb00207535

**Severity:** K3 - malfunction (no workaround)

**Description:** During B-spline approximation (SplineDef(4233)) or G592 error "1515 Internal software error: Bsf: InitControlPoints error" sporadically occurred.

### Error "1515 internal software error: Bsf: knot init error" during B-spline approximation with G592

**CQ-ID:** Defdb00208397

**Severity:** K3 - malfunction (no workaround)

**Description:** During B-spline approximation (SplineDef(4233)) or G592 error "1515 internal software error: Bsf: Knot init error" sporadically occurred.

### Error "1515 internal software error: Bsf: Midpoint error" during B-spline approximation with G592

**CQ-ID:** Defdb00208412

**Severity:** K3 - malfunction (no workaround)

**Description:** During B-spline approximation (SplineDef(4233)) or G592 error "1515 internal software error: Bsf: Midpoint error" sporadically occurred.

### Error 4852 - PREP may not be programmed in an ASUP

**CQ-ID:** Defdb00207784

**Severity:** K3 - malfunction (no workaround)

**Description:** If a part program, that contains the command PREP is interrupted by a subroutine (ASUP), error 4852 is reported sporadically at the end of a synchronous subroutine.

### Extreme drop of path velocity at A0 B0 with applicable implemented trafo LLLBA

**CQ-ID:** Defdb00208374

**Severity:** K3 - malfunction (no workaround)

**Description:** The problem occurs at every 5-axis transformation. If the tool orientation vector is constant at (0,01) the velocity control is not optional. This is particularly noticeable when the path curve of the tool tip has some digits in the space coordinates x, y, z and the control has to reduce considerably the velocity programmed as F value. As a result this reduced velocity also limits the velocity at the digits where travelling could be faster.

**Fixing:** If the tool orientation vector remains constant, which now also includes the orientation (0,01), the velocity control of the path curve is based exclusively on the tool tip in the world coordinate x.. y.. z. The reduction of the velocity programmed as F-value only affects those digits on the path curve where the reduction of the velocity is crucial.

**Workaround:** If the orientation is placed next to the north pole by more than the value set by machine parameter 103000160 the error will not occur. If a smaller value as 0,001 is set, value 0,0001 applies. Setting MP 103000160 = 0.0 therefore has no effect.

### G592, B-spline approximation: Part program errors 5775 "BSA: Tolerance exceeded by a factor x.x"

**CQ-ID:** Defdb00208415

**Severity:** K3 - malfunction (no workaround)

**Description:** When executing an NC program with B-spline approximation (SplineDef(4233) or G592) part program error 5775 "BSA: Tolerance violation by factor x.x" occurred.

NC programs, that have a unregularly curse of the contour or "disturbing" interruptions of the contour, favor the occurrence of this problem.

**Fixing:** There were many causes for this problem which were all solved: Defdb00208415, Defdb00208413, Defdb00208422, Defdb00208456, Defdb00208468 and Defdb00208469.

### G63 (tapping without compensating chuck) cannot be used in MDI mode

**CQ-ID:** Defdb00204648

**Severity:** K3 - malfunction (no workaround)

**Description:** If two tapping blocks (G63) were entered consecutively in the "Manual Data Input" (MDI) operating mode, error message 1444 with an incorrect cause text and remedy text would appear after entering the second block. It was identified that no block preview could be performed due to exhausted memory space resources.

**Fixing:** In this case, part program error 5768 "Tapping: No block preview could be executed." with the cause text "Active channel operating mode prevents subsequent NC block from being read in." is reported.

### Invalid cancelation of a selective coordinate coupling due to a channel reset

**CQ-ID:** Defdb00208617

**Severity:** K3 - malfunction (no workaround)

**Description:** A channel reset at the target channel cancels all coordinate coupling of this channel.

The NC functions concerned are:

- SCCT Selective additive coordinate coupling with tables
- SCC Selective additive coordinate coupling

### Invalid command value jump during resetting by active 5-axis transformation

**CQ-ID:** Defdb00206721

**Severity:** K3 - malfunction (no workaround)

**Description:** When G6 is active and tool orientation vector Theta = -90° or orientation vector = (0,0,-1) a command value jump sporadically occurs.

**Workaround:** Placing the orientation next to the south pole, for example at Theta = 179.99° this value jump does not occur.

### Orientation coordinate phi does not traverse when jogging in workpiece coordinates

**CQ-ID:** Defdb00201140

**Severity:** K3 - malfunction (no workaround)

**Description:** During active axis transformation with linear orientation (e.g. 323101) the orientation coordinate phi could not traverse by jogging in the workpiece coordinates.

### Part program is waiting for INPOS

**CQ-ID:** Defdb00206999

**Severity:** K3 - malfunction (no workaround)

**Description:** A part program stopped with "Wait for INPOS", although no motion was programmed in the channel for any of the channel axes. However, one of the channel axes was moved by the system coupling axis.

**Fixing:** Slave-axes of the system coupling no longer generate run command iAx_TrvCmd, which is also responsible for INPOS formation for real axes. For LSEC compensation, however, iAx_TrvDirNeg is still formed.

### Singularity problems when B-spline approximation is active

**CQ-ID:** Defdb00208372

**Severity:** K3 - malfunction (no workaround)

**Description:** When B-spline approximation is active unwanted traversing motion of unprogramed orientation coordinate may occur in the singularity of a 5-axis transformation.

### Spline approximation: Runtime error 1515 "Internal software error: Gef: u[kl] !=SL"

**CQ-ID:** Defdb00204716

**Severity:** K3 - malfunction (no workaround)

**Description:** In case of B-spline approximation (SplineDef(4233) or cycle G592) an internal logic error has occurred.

### When jogging coordinates in WCS error 5118 occurs

**CQ-ID:** Defdb00205486

**Severity:** K3 - malfunction (no workaround)

**Description:** If the function "Jog in WCS (workpiece coordinate system)" with active axis transformation is used, error 5118 sporadically occurs.

### Error 5378 Inconsistent circle programing with center point parameters

**CQ-ID:** Defdb00206530

**Severity:** K4 - malfunction

**Description:** From MTX release 14V20 Patch2, 14V22 Patch2 and 15V04 onwards, executing NC programs, that ran without errors in earlier versions (e.g. 13V16 patch10), now resulted in error 5378 "Inconsistent circle programming: Invalid center point programmed!" for circles with circle programing and large radii.

**Fixing:** Create a channel specific system date SD.SysCtTolCtPrg of type float_t to avoid error 5378. Possible is "permanent" and "volatile".

If the system date is defined as "permanent" the entry in the system data definition file is (e.g. SDDefUsr.xml):

<?xml version="1.0" encoding="UTF-8"?>

<SDDef>

...

<Variable Dimension="Channel" Storage="permanent">

<Name>SysCtTolCtPrg</Name>

<Type>Float_t</Type>

<Comment>Maximum permissible circle center point shift</Comment>

</Variable>

...

</SDDef>

If the system date is defined as "volatile" the entry in the system data definition file (e.g. DDefUsr.xml) is:

<?xml version="1.0" encoding="UTF-8"?>

<SDDef>

...

<Variable Dimension="Channel" Storage="volatile">

<Name>SysCtTolCtPrg</Name>

<Type>Float_t</Type>

<Comment>Maximum permissible circle center point shift</Comment>

</Variable>

...

</SDDef>

After a system date has been created a restart is required.

Error 5378 is always presided by 1531 warnings. These warnings contain the required center point shift. This is required to obtain a valid circular arc. If the center point shift is not a NC programing error, the system date has to be set to a slightly higher value than the value of the center point shift and after that trigger the channel and system reset.

If the system date "volatile" has been defined, the current value of SD.SysCtTolCtPrg has to be copied in a user system data initialization file (e.g. SDDatUsr.xml) before control is shutdown. For example in SDDatMTB.xml. These entries could be e.g.:

<SD>

...

<SysCtTolCtPrg Dimension="1">12.345</SysCtTolCtPrg>

<SysCtTolCtPrg Dimension="2">12.345</SysCtTolCtPrg>

<SysCtTolCtPrg Dimension="3">12.345</SysCtTolCtPrg>

<SysCtTolCtPrg Dimension="4">12.345</SysCtTolCtPrg>

...

</SD>

If SD variable SD.SysCtTolCtPrg is "volatile" the variable uses the value saved in this file at each startup.

If the SD variable SD.SysCtTolCtPrg is "permanent" the variable uses the value saved in this file only at the first startup. After that the control uses the current value.

**Workaround:** Inaccurate circle center point when programming a center point. Increasing the value set in machine parameter MP 705000020 is not recommended. The reason for that is that this machine parameter has a double meaning. The difference between the two distances, starting point center and end point center, must be smaller than the value set by machine parameter MP 705000020. If the system date does not exist, the center shift must be less than twice the value set by machine parameter MP 705000020. It may sporadically occur that the difference is less than a micrometer but the displacement is more than one millimeter.

## MTX Firmware / NC-Emulation

### System error 4 when logging into PLC with emulation

**CQ-ID:** Defdb00208485

**Severity:** K2 - serious malfunction

**Description:** Depending of the configuration of the used IndraLogic project a system error 4 occurred when logging into PLC with emulated MTX.

### MTX emulation: Archiving does not work if "Fast NC program execution" is set

**CQ-ID:** Defdb00208344

**Severity:** K3 - malfunction (no workaround)

**Description:** With the MTX emulation the setting "Fast NC program execution" ("Sco.exe -sprint") the archiving process ended with errors and no machine parameters, system data and database were saved.

## MTX Firmware / OPC UA

### OPC UA: PLC structures are displayed incorrectly or even not displayed after a restart

**CQ-ID:** Defdb00207794

**Severity:** K2 - serious malfunction

**Description:** After loading the PLC application via IndraWorks Engineering the PLC structures may be written and read normally with UaExpert.

Error: After restarting control with the previously loaded PLC program, no more structures may be read. The determination of data type of structure variable seems to be incorrect. No valid data type is displayed for the structure.

Workaround: Reload PLC application via IndraWorks Engineering (e.g. after warm reset). The error could only be observed at an MTX but not at an MLC/ XLC.

### OPC UA server reports incorrect data type when browsing

**CQ-ID:** Defdb00206594

**Severity:** K3 - malfunction (no workaround)

**Description:** When browsing the file system the data type "FileDirectoryType" (ns=0; i=13353) was provided for directories.

**Fixing:** Directories in the MTX are displayed with the data type "AutomationFileDirectoryType" (ns=29;i=70930) when browsing.

### OPC-UA: "Timeout" error after repeated call of NC.DbTableQuery

**CQ-ID:** Defdb00208567

**Severity:** K3 - malfunction (no workaround)

**Description:** If "NC.DbTableQuery” item is queried several times in succession all OPC UA items with internal Ncs communication subsequently only return "timeout" errors.

Items without Ncs communication, as e.g. items for PLC and Sercos access are still working.

### OPC UA: Problems in connection with WinStudio

**CQ-ID:** Defdb00208651

**Severity:** K4 - malfunction

**Description:** WinStudio driver sheets with OPC UA items are configured.

In this specific case e.g. ns=27; s=NC.SystemData,/SysToolInsert/Hd/IKQ1

The elements are configured with scan=screen and subscription to 1, i.e. the data has to be "subscribed" if the corresponding screen is visible.

After corresponding screen had been displayed in IndraWorks Operation, IndraWorks Operation was terminated.

Subsequently it is not possible to access to PCC UA data anymore, that is read internally in the OPC UA server via Ncs functions.

After that, the control has to be restarted.

**Workaround:** On the WinStudio driver sheet: Usage of scan=always and a corresponding variable for "disable".

### OPC-UA: Diagnostic item extension returns an incorrect data type

**CQ-ID:** Defdb00206291

**Severity:** K4 - malfunction

**Description:** The diagnostic item "ns=16;s=DiagnosisLogbook" was extended with version MTX 14V22 Patch2. Text numbers are returned so that irrespective of the set language in the diagnostic server of control, the message texts can be generated.

However, the text numbers were not returned as UInt32 but as Int32, as described in the documentation.

## MTX Firmware / PROFINET IO

### SF3464 if MTX was used as ProfiNet-IO device

**CQ-ID:** Defdb00206710

**Severity:** K2 - serious malfunction

**Description:** If an IndraWorks Engineering project planning was executed using a MTX CML as ProfiNet_IO_Device after ...

- Loading tarfile in startup phase 4

... or ...

- PLC download

... error SF3464 could occur.

## MTX Firmware / Sercos

### Watchdog error 1859, 1860, 2093 and drive error F4001 during Sercos startup of MTX

**CQ-ID:** Defdb00207998

**Severity:** K2 - serious malfunction

**Description:** The error occurs with a "mixed" use of real and virtual Sercos axes if at least one real axis is present in Sercos ring and at least one real axis is missing compared to the configuration in Sercos ring. This causes a watchdog error (1859, 1860, 2093) during Sercos startup and consequently also drive error F4001 occurs.

### MTX Firmware / System Data

#### Error message no. 1514 "Internal software error: schema sdcta.xsd exists multiple times"

**CQ-ID:** Defdb00206625

**Severity:** K4 - malfunction

**Description:** When this message occurs, an outdated, incompatible schema file had been detected in /usrfep/schemas/.

This incompatible schema file probably has been uploaded to control when opening an older NC archive.

**Fixing:** The incompatible schema file change cannot be corrected.

Thus, the outdated, incompatible schema file has to be replaced manually by a compatible schema file.

**Workaround:** The problem with the outdated, incompatible schema file may be solved as follows:

1. Delete the obsolete, incompatible schema file from /usrfep/schemas/ directory.

2. Copy the compatible schema file from /schemas/ directory to /usrfep/schemas/ directory.

3. Delete the compatible schema file from /schemas/ directory.

Subsequently, if required, an updated NC archive may be generated containing the correct schema file.

## 19.2.2 Known issues

### MTX Firmware / Block Management

#### Syntax error during subroutine call with parameter transfer in MDI

**CQ-ID:** Defdb00201203

**Severity:** K2 - serious malfunction

**Description:** If a subroutine is called in MDI mode (e.g. T[26], T is the subroutine and 26 is the tool number), a syntax error is reported in some cases.

**Workaround:** The MDI problem only occurred when machine parameter "Linking type process" was changed to "Linking at program selection".

By default, "Linking at program runtime" is specified. With this default setting, the error does not occur.

Machine parameter "Linking type" (KindOfLinking):

- Specifies the linking type for each channel (Ch[k])

- Path: NCO/FileOrg/ChFileOrg/Ch[k]/KindOfLinking

Value range:

- Linking at program runtime

- Linking at program selection

Pre-assignment: Linking at program runtime

## MTX Firmware / Logic

### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Via OPC DA the access works as required.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and accessed errors do not occur. See also Defdb00207492.

# 20 MTX 15V06 Patch 1 Firmware and Software

## 20.1 Software

### 20.1.1 Resolved defects

#### IndraWorks ML / Engineering / PLC Programming

**PLCOpen import adds the GVL/POU to the "Common Function Block" instead of to a folder below the PLC application**

**CQ-ID:** Defdb00206030

**Severity:** K3 - malfunction (no workaround)

**Description:** When importing elements created on the basis of PLCOpen, the contained elements are sporadically not inserted in the corresponding node in the IndraWorks project tree.

**Workaround:** After the import of objects created in PLCOpen format, please verify if the objects have been inserted in the IndraWorks project tree as expected. If this is not the case, the objects can be moved manually.

Optionally, data can be exported/imported on the basis of the "Standardexportfile".

### 20.1.2 Known issues

#### IndraWorks MTX / Engineering / _Other

**IndraWorks Engineering: Creating new projects from a project template does not work properly**

**CQ-ID:** Defdb00207830

**Severity:** K2 - serious malfunction

**Description:** If you create a new project with IndraWorks Engineering 15V06 Patch1 and use a project from the template, an error occurs (Assertion Failed) and IndraWorks Engineering hast to be terminated.

Due to this error template projects (e.g. ShapeCuttingProject, MtxBasicProject) may not be used directly.

**Workaround:** Do not select the desired template project via "File => New => Project…" etc. but via "Project => import". In case of error terminate IndraWorks Engineering, restart and repeat the import process.

The templates are availabel in the path: <Installation>\IndraWorksSuite\Templates\Projects\MTX*.iwz.

#### IndraLogic Firmware / Logic

**Error when accessing "In_Out" structures using the IecVarAccess library**

**CQ-ID:** Defdb00207492

**Severity:** K4 - malfunction

**Description:** When using IecVarAccess to access structures declared as VAR_IN_OUT, some functions returned errors.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and accessed, errors do not occur.

## IndraWorks MTX / Engineering / PLC Programming

### Error when generating data for online comparison

**CQ-ID:** Defdb00205825

**Severity:** K3 - malfunction (no workaround)

**Description:** Error is caused by a call of the online comparison before all project data was loaded into the control.

**Workaround:** Online comparison may only be started if the text "Transfer of OnlineData completed" is displayed in the status bar in IndraWorks Engineering.

### Message of PLC login: "The application has been changed since the last download is always reported, what do you want to do”?

**CQ-ID:** Defdb00206587

**Severity:** K2 - serious malfunction

**Description:** After restarting IndraWorks Engineering the message "The application has been changed since the last download, what do you want to do?” is always reported when logging into the PLC although nothing has been changed. Persistent data was displayed as delta.

**Fixing:** The reason for this problem is error "Defdb00206587 Switch PLC online after restarting the IWE" is always queried with online change. This error is fixed from MTX 14V10 Patch 1.

However, the problem still affects old IndraWorks projects that have been updated to MTX 15V06. When projects of this category are processed the error still occurs.

**Workaround:** For the projects affected by the problem, the "Persistent Global Variable List" contained in the project must be recreated.

1. Important: It is important to note the precise name of the "Persistent Global Variable List".

2. Save the contents of the "Persistent Global Variable List" to an extern text file.

3. Delete the existing "Persistent Global Variable List".

4. Add a new "Global Persistent Variable List...", with the name as mentioned in point 1.

5. Overwrite the content of the new "Persistent Global Variable List" with the saved content from point 2.

6. Save all.

7. Reload PLC: Cleanup – Translate – Login – Download – Start – Save all.

## IndraWorks MTX / Operation / Diagnosis

### OPD2: Logbook selection dialog paralyses mouse operation and leads to unusual operating effects

**CQ-ID:** Defdb00207038

**Severity:** K4 - malfunction

**Description:** If more than one logbook has been defined in an IndraWorks project, the "Select logbook" dialog box opens when "Logbook" is called in the "Diagnostics" operating area. This dialog cannot be operated with mouse. Nevertheless, an operation with the mouse is possible.

**Workaround:** If you move the dialog box "Select logbook" on the screen (mouse click in the dialog title bar, keep the mouse button pressed and move the dialog with the

mouse on the screen), the dialog can then be operated correctly with the mouse.

### No display of diagnostics and ProVi messages in the MTX header of IndraWorks Operation

**CQ-ID:** Defdb00204082

**Severity:** K3 - malfunction (no workaround)

**Description:** In the MTX header of IndraWorks Operation, no diagnostic messages and no ProVi messages are displayed if IndraWorks Engineering is started first and subsequently IndraWorks Operation.

**Workaround:** If IndraWorks Engineering and IndraWorks Operation are used at the same time, IndraWorks Operation has to be started first. Subsequently, start IndraWorks Engineering.

## VPB Firmware

### "Open TK" System.AccessViolationException upon IndraWorks Operation start

**CQ-ID:** Defdb00206240

**Severity:** K2 - serious malfunction

**Description:** When starting IndraWorks Operation an exception occurs:

"Open TK" System.AccessViolationException

This error message concerns the year 2019 and is caused by the current Intel graphics drivers (driver version 25.xx.xx.xxxx). The industrial PC (IPC) probably had an internet connection and the graphics driver was updated automatically.

The problem does not occur with the original graphics driver in the state upon delivery.

Driver version in the state upon delivery:

- VPB40.4: 21.xx.xx.xxxx

- PR/VR: 22.xx.xx.xxxx

**Workaround:** To solve the problem, install either the new Intel graphics driver (driver version 26.20.100.7209) or the original graphics driver (state upon delivery).

The state upon delivery may be retrieved via "rollback". The "rollback" procedure is described in the next section.

To avoid this problem it is possible to completely deactivate the automatic driver update via registry script. A description of "Deactivate the automatic driver update" may be found in the first section after next.

"Rollback" of the graphics driver to state upon delivery:

- Disconnect the device from the internet connection

- Close all application, so that only Windows is running

- Open "Device manager" and select tab "Driver"

- Select function "uninstall" and uninstall the driver ("Delete the driver software for this device") and restart

- Sporadically a black screen appears. In this case wait until the HDD-LED stops displaying activity and then restart the device by disconnecting and restoring the supply voltage.

- The device uses "Microsoft basic display driver" after restart

After that reinstall the original driver from the state upon delivery via setup.

The driver data is saved:

VPB 40.4: C: \Drivers\Graphic\HD530\setup.exe

PR/VR: On the provided recovery stick under

\Rexroth\Platform Drivers\win64_154602.4729.exe

- Restart the IPC

Deactivate the automatic driver update:

The script "DisableDriverUpdateLTSB2016" for "Deactivate the automatic driver update" is available on the Bosch Rexroth product portal pages of the affected IPC VPB40.4, PR4, VR4 under "Downloads". Please note that administrator rights are required to run the script.

# 20.2 Firmware

## 20.2.1 Resolved defects

### MTX Firmware / Filesystem and Database

#### IndraLogic: Log in does not work properly, IndraLogic message "FTP communication error: 550"

**CQ-ID:** Defdb00207324

**Severity:** K3 - malfunction (no workaround)

**Description:** If the CF card of control contains the hidden Windows system directory "$RECYCLE.BIN", "Log in" to IndraLogic may be denied and error message "FTP communication error: 550 no files found or invalid directory or permission problem" may occur.

The hidden, protected folder "$Recylce.Bin" is created on a drive partition whenever a file or directory on that drive is deleted by Microsoft Windows.

The folder "$Recylce.Bin" is hidden by default. Two settings are required in Windows Explorer to make this folder visible:

- Enable "Show hidden files, folders, and drives".

- Deactivate "Hide protected operating system files (recommended)" setting.

Now the folder "$Recycle.Bin" is displayed.

**Fixing:** After power-on (in a very early startup phase) it is verified whether the "$Recycle.Bin" folder is located on the partitions "System", "OEM" and/or "User". If this is the case this folder is automatically deleted.

**Workaround:** Delete all "$Recylce.Bin" folders available on the CF card.

## 20.2.2 Known issues

### MTX Firmware / Logic

#### G75.2: Travelling against second touch probe does not work

**CQ-ID:** Defdb00204344

**Severity:** K2 - serious malfunction

**Description:** "Travelling against touch probe" (G75) worked with IndraControl XM42 only for the first touch probe (G75.1). Travelling against second touch probe (G75.2) does not work.

#### The access to PLC variables of type VAR_IN_OUT does not work via OPC UA

**CQ-ID:** Defdb00205750

**Severity:** K4 - malfunction

**Description:** Variable types that are e.g. declared as VAR_IN_OUT in function blocks may not be accessed via OPC UA. Via OPC DA this works as required.

**Workaround:** If the structure on the VAR_IN_OUT input is assigned directly in the symbol configuration and accessed, errors do not occur. See also Defdb00207492.

# 21 MTX 15V06 Firmware and Software

## 21.1 Software

### 21.1.1 Resolved defects

#### Engineering / PLC Libraries

**PID controller does not work properly in case of 0.5ms**

**CQ-ID:** Defdb00207252

**Severity:** K4 - malfunction

**Description:** PID controller could not work with cycle times below a millisecond.

**Fixing:** The affected function blocks work now with a resolution of 1us.

A possibly available output "ActScanTime" always shows 0 for cycle times <1ms for compatibility reasons! In order to determine the correct cycle time in this case, an additional property "ActScanTime_us" was included which outputs the cycle time in us.

#### Engineering / PLC Programming

**Multilingual PLC comments are not displayed in the PLC localization table.**

**CQ-ID:** Defdb00202674

**Severity:** K3 - malfunction (no workaround)

**Description:** Multilingual PLC comments are not displayed in the PLC localization table. The PLC localization table remains completely empty.

#### Operation / NC Operating

**NC simulation: Tool display sporadically disappears in the simulation**

**CQ-ID:** Defdb00202643

**Severity:** K3 - malfunction (no workaround)

**Description:** For very long machining programs (e.g. by cyclic recall with the according tool changes), the tool display disappeared from the simulation.

The material removal was not displayed anymore, only the toolpath.

#### Operation / NC Programming

**NC editor: Error when editing files**

**CQ-ID:** Defdb00206709

**Severity:** K2 - serious malfunction

**Description:** Errors occurred when selecting the correct editor variant according to editor options as well as when inserting lines for large files.

### 21.1.2 Known issues

#### VPB Firmware

**"Open TK" System.AccessViolationException upon IndraWorks Operation start**

**CQ-ID:** Defdb00206240

**Severity:** K2 - serious malfunction

**Description:** When starting IndraWorks Operation the following exception error appears:

"Open TK" System.AccessViolationException

This error message concerns the year 2019 and is caused by the current Intel graphics drivers (driver version 25.xx.xx.xxxx). Probably the industrial PC (IPC) had an Internet connection and the graphics driver was updated automatically.

The problem does not occur with the original factory default graphics driver.

Driver version in state of delivery:

- VPB40.4: 21.xx.xx.xxxx

- PR/VR: 22.xx.xx.xxxx

**Workaround:** To solve the problem, install either the new Intel graphics driver (driver version 26.20.100.7209) or the original graphics driver (state of delivery).

The state of delivery may be retrieved via "rollback". The "rollback" procedure is described in the next section.

To avoid this problem it is possible to completely deactivate the automatic driver update via registry script. How to "Deactivate the automatic driver update" is described in the first section after next.

"Rollback" of the graphics driver to state of delivery:

- Disconnect the device from the Internet connection

- Close all applications so that only Windows is running

- Open "Device manager" and select tab "Driver"

- Uninstall the driver via "Uninstall" (select "Delete the driver software for this device") and restart

- Sporadically a black screen appears. In this case wait until the HDD-LED stops displaying activity and then restart the device by disconnecting and restoring the supply voltage.

- The device uses "Microsoft basic display driver" after restart

- Reinstall the original driver from the state of delivery via setup.

The driver data is saved:

VPB 40.4 C:\Drivers\Graphic\HD530\setup.exe

PR/VR: On the provided recovery stick under

\Rexroth\Platform Drivers\win64_154602.4729.exe

- Restart the IPC

Deactivate the automatic driver update:

The script "DisableDriverUpdateLTSB2016" for “Deactivate the automatic driver update" is available on the Bosch Rexroth product portal pages of the affected IPC VPB40.4, PR4, VR4 under “downloads". Please note, that administrator rights are required to run the script.

## Engineering / HMI

### Process variable browser does not display any symbols anymore as soon as a driver sheet is opened

**CQ-ID:** Defdb00204430

**Severity:** K3 - malfunction (no workaround)

**Description:** Documentation about the configuration of the OPC-UA connection together with the WinStudio process variable browser is missing.

## Engineering / PLC Programming

### Error when generating data for online comparison

**CQ-ID:** Defdb00205825

**Severity:** K3 - malfunction (no workaround)

**Description:** Error was caused by a call of the online comparison before all project data was loaded into the control.

**Workaround:** Online comparison may only be started if the text "Transfer of OnlineData completed" is displayed in the status bar in IndraWorks Engineering.

### Message of PLC login: "The application has been changed since the last download is always reported, what do you want to do”?

**CQ-ID:** Defdb00206587

**Severity:** K2 - serious malfunction

**Description:** After restarting IndraWorks Engineering the message "The application has been changed since the last download, what do you want to do?” is always reported when logging into the PLC although nothing has been changed. Persistent data was displayed as delta.

**Fixing:** The reason for this problem is error "Defdb00206587 Switch PLC online after restarting the IWE" is always queried with online change. This error is fixed from MTX 14V10 Patch 1.

However, the problem still affects old IndraWorks projects that have been updated to MTX 15V06. When projects of this category are processed the error still occurs.

**Workaround:** For the projects affected by the problem, the "Persistent Global Variable List" contained in the project must be recreated.

1. Important: It is important to note the precise name of the "Persistent Global Variable List".

2. Save the contents of the "Persistent Global Variable List" to an extern text file.

3. Delete the existing "Persistent Global Variable List".

4. Add a new "Global Persistent Variable List...", with the name as mentioned in point 1.

5. Overwrite the content of the new "Persistent Global Variable List" with the saved content from point 2.

6. Save all.

7. Reload PLC: Cleanup – Translate – Login – Download – Start – Save all.

## Operation / Diagnosis

### No display of diagnostics and ProVi messages in the MTX header of IndraWorks Operation

**CQ-ID:** Defdb00204082

**Severity:** K3 - malfunction (no workaround)

**Description:** In the MTX header of IndraWorks Operation, no diagnostic messages and no ProVi messages are displayed if IndraWorks Engineering is started first and subsequently IndraWorks Operation.

**Workaround:** If IndraWorks Engineering and IndraWorks Operation are used, IndraWorks Operation has to be started first. Subsequently, start IndraWorks Engineering.

### Logic

#### One function block and two interface signals are missing in the library MT_Base

**CQ-ID:** Defdb00207556

**Severity:** K2 - serious malfunction

**Description:** In the library MT_Base Version 15.6.0.0 the function block "MT_DiagTextW-STRING_Data" and the interface signals qAx_HomeSwitch and qSp_Home-Switch are missing.

**Workaround:** Create project in compatibility mode 15V04.

## 21.2 Firmware

### 21.2.1 Resolved defects

### _Other

#### Warning 3715 "Task SDLPSrv has reached stack limit".

**CQ-ID:** Defdb00207145

**Severity:** K2 - serious malfunction

**Description:** Sporadically warning 3715 "Task SDLPSrv has reached stack limit" is reported. Except for the warning, no other effect was evident. The internal monitoring had identified that an increase of the task memory (task stack) is necessary for the above-mentioned task, as otherwise the memory of another task is destroyed.

#### PLC function block MT_ScsData returns partially incorrect diagnostic codes

**CQ-ID:** Defdb00204736

**Severity:** K3 - malfunction (no workaround)

**Description:** MT_ScsData returns partially incorrect diagnostic codes. In the present case, drive reported error 0x700A (data is write-protected, as configured cyclically). Function block reports error code 30 (incorrect attribute received).

**Fixing:** Drive errors affecting the operating data are rearranged to avoid ambiguities. New codes are 109 to 119.

22: Data transmission too short

23: Data transmission too long

24: Element cannot be changed

25: Element cannot be changed at this time (incorrect phase)

26: Data smaller than minimum value

27: Data bigger than maximum value

28: Operating data invalid (e.g. bit combination)

109: Element is password-protected

110: Element is transferred cyclically

112: Element cannot be changed

114: Element cannot be changed at this time (PM)

115: Element cannot be changed at this time (OM)

117: Command cannot be interrupted

118: Command cannot be started

119: Command cannot be executed

### Logic

#### When tar-file is loaded, SF3464 error occurs

**CQ-ID:** Defdb00206813

**Severity:** K2 - serious malfunction

**Description:** If a channel error occurred during startup of the control so that the affected channel did not start correctly, a subsequently implemented reset led to system error 3464.

#### XM42: During a "Watchdog" error, the Profibus I/Os are not reset

**CQ-ID:** Defdb00206767

**Severity:** K2 - serious malfunction

**Description:** If a "Watchdog Error" had occured, the outputs of the Profibus bus coupler were not reset.

### Machine Parameters

#### MTX advanced: NC configurator reports error "Macoda Edit not possible - error 31".

**CQ-ID:** Defdb00206990

**Severity:** K2 - serious malfunction

**Description:** If there is a large number of channels (more than 30) and after changing a number of channel-specific parameters with a large number of individual entries and changing these individual entries in each channel, an error "Macoda Edit not possible - error 31" sporadically is reported in the NC configurator. No further changes are possible after this point in time.

Critical machine parameters are e.g Macoda-IDs 600500020 (/GUI/PosDisp/Ord/Ch[i]/AddWin/AddAx/Dr[i]/ModeAddAx and /GUI/PosDisp/Ord/Ch[i]/AddWin/AddAx/Dr[i]/PrioAddAx) as well as 600500022 (/GUI/PosDisp/Ord/Ch[i]/ChWin/Dr[i]/ModeAxChWin and /GUI/PosDisp/Ord/Ch[i]/ChWin/Dr[i]/PrioAxChWin).

**Fixing:** The defect has been resolved.

## 21.2.2 Known issues

### Block Management

#### Parser error 1278 - Number of parameters in NC block too large after parameter %s

**CQ-ID:** Defdb00207000

**Severity:** K2 - serious malfunction

**Description:** Sporadically parser error 1278 might occur during program execution. These circumstances are: Use of local subroutines and a program section with several hundred lines of NC code of the same type "N10 X[VALUE] Y...". The local subroutine has to be called before the section with the NC code of the same type and implemented after that section.

**Workaround:** Swap the order of the local subroutines - move the area with the NC code of the same type behind the other local subroutines. Alternatively the area with the NC code of the same type may be interrupted - e.g. by a comment in a separate code line.

### Part program error 5526 at LCTS + Asup if SD.SysReentry.FeedHold is used

**CQ-ID:** Defdb00206816

**Severity:** K3 - malfunction (no workaround)

**Description:** When activating FeedHold via system data SD.SysReentry.FeedHold during start-up after an asynchronous subroutine, a channel error 5526 occurs if LCTS or a type 4 spline interpolation (B spline approximation) is active.

# 22 MTX 15V04 Firmware and Software

## 22.1 Software

### 22.1.1 Resolved defects

#### IndraWorks ML / Engineering / _Other

**Sercos: Import error during Sercos I/O module import.**

**CQ-ID:** Defdb00203872

**Severity:** K2 - serious malfunction

**Description:** When importing an export file created with 14V20/14V16, not all files could be imported. The error "Object reference not set to an instance of an object" is reported.

**Fixing:** The error message has now been adjusted to “The corresponding device description file was not found!”.

Caution: The 'WRxF' & 'WRxQ” Sercos devices are displayed in the device library.

However, the corresponding ID (64_IFBF2_0) differs to the ID (64_IACF2_0) saved in the export file.

#### IndraWorks ML / Engineering / HMI

**WinStudio project import deletes the variable list during saving**

**CQ-ID:** Defdb00203821

**Severity:** K3 - malfunction (no workaround)

**Description:** When exporting a visualization device of type "VR3x" or "VR4x" all WinStudio variables are deleted.

#### IndraWorks ML / Engineering / PLC Programming

**Symbol configuration: Changed rights are not saved (type editor)**

**CQ-ID:** Defdb00205547

**Severity:** K2 - serious malfunction

**Description:** In certain cases, the configured access rights were not saved in the symbol configurator and were lost again after reopening.

**Opening of the symbol configuration already results in a project change**

**CQ-ID:** Defdb00205546

**Severity:** K3 - malfunction (no workaround)

**Description:** If the data type configuration of the symbol configuration has been opened, the project has already been flagged as “changed”.

#### IndraWorks MTX / Engineering / _Other

**Error message "LoadLibrary failed (WIN32 code = 0)"**

**CQ-ID:** Defdb00206028

**Severity:** K3 - malfunction (no workaround)

**Description:** Creating a visualization device (e.g. VDP15) in IndraWorks Engineering results in an error message "LoadLibrary failed (WIN32 code = 0)” if version 14V22 was installed in addition to IndraWorks 15V02.

## IndraWorks MTX / Engineering / HMI

### MTX Multitouch HMI crash when calling the NC Cockpit/NC Simulation

**CQ-ID:** Defdb00205649

**Severity:** K2 - serious malfunction

**Description:** High memory utilization is caused by programs with very long runtimes; typically found in free form surface machining However, there is only limited memory space. The increasing complexity of the workpiece also causes a higher processor utilization which in turn increases again in case of a large display surface such as the Cockpit.

The memory utilization can be reduced in the Simulation options by selecting the following settings:

Optimizing

<CollisionDetection>NoMachiningHistory</CollisionDetection> (New!)

View

<ToolpathEnabled>None</ToolpathEnabled>

<HighQualityZooming>None</HighQualityZooming>

### NC Cockpit error: BadResourceUnavailable

**CQ-ID:** Defdb00206074

**Severity:** K2 - serious malfunction

**Description:** Due to a time out interval that is too long in the OPC UA real-time item, the “NC Cockpit error: BadResourceUnavailable” was sporadically reported. The simulation does not reflect the current state, but does not crash and the interface does not freeze.

### Channel name in Ch24 and Ch36 cannot be changed

**CQ-ID:** Defdb00202980

**Severity:** K3 - malfunction (no workaround)

**Description:** The channel name for channel number 24 and 36 are entered in the configurator but is not displayed in the header.

### NC-Cockpit: Two read diagonals are displayed instead of the NC Simulation

**CQ-ID:** Defdb00205651

**Severity:** K3 - malfunction (no workaround)

**Description:** The processor load and the memory requirement for the NC Simulation depends on the workpiece as well as on the machining time for this workpiece. Proportionally to the increasing NC program runtime and the increasing workpiece complexity, the processor load and the memory consumption increase.

## IndraWorks MTX / Engineering / Project Handling

### Applying the project to 15V02: WinStudio cannot start the OpcDa server

**CQ-ID:** Defdb00205911

**Severity:** K2 - serious malfunction

**Description:** When trying to connect WinStudio to an OPC Da server, an error occurred and the connection could not be established.

#### Error message after the update of the VEP15.6 device version from 14V22P1 to 15V02

**CQ-ID:** Defdb00205912

**Severity:** K3 - malfunction (no workaround)

**Description:** When updating the device version from 14V22 to 15V02 for Multitouch visualization devices, an error message occurred.

## IndraWorks MTX / Operation / _Other

#### IndraWorks Operation loses the control assignment after a project export/import

**CQ-ID:** Defdb00205024

**Severity:** K2 - serious malfunction

**Description:** If a project that is ready to run is exported and subsequently imported again, the following error message was displayed upon the IndraWorks Operation startup: “No control assigned to the visualization device” and the connection interruption screen was displayed.

#### Mtx Multitouch: Sliding keyboard results in an exception

**CQ-ID:** Defdb00205636

**Severity:** K3 - malfunction (no workaround)

**Description:** When using the slidable keyboard in a screen with external application, an error message was reported.

#### The NC Simulation sporadically did not start after an IndraWorks Operation restart

**CQ-ID:** Defdb00206448

**Severity:** K4 - malfunction

**Description:** After the IndraWorks Operation start, the Simulation sporadically did not start and the current tool was not displayed graphically. The reason was a reached timeout during startup as OPC UA could not be operated properly due to a high PC load.

## IndraWorks MTX / Operation / NC Operating

#### NC Simulation: No license available for Virtual Machine Simulation

**CQ-ID:** Defdb00206479

**Severity:** K2 - serious malfunction

**Description:** Despite a valid license, no machine model is visible and the STL file import failed.

## IndraWorks MTX / Operation / Tool Management

#### Tool management: A screen change is not possible anymore in OP5 (tool management)

**CQ-ID:** Defdb00204872

**Severity:** K3 - malfunction (no workaround)

**Description:** 1. No screen change possible anymore in tool management. An empty user screen was displayed. Subsequently, several exceptions are reported.

2. If the OP 5 is started with a 2 table display, the tab for tool preview was not displayed anymore in the additional control. Subsequently, the tool preview was generally not displayed anymore.

**Fixing:** Screen change is possible again, tool preview is displayed in several tool screens.

## 22.1.2 Known issues

### IndraWorks ML / Engineering / HMI

#### OPC_UA: Process variable browser does not display any symbols anymore as soon as a driver sheet is opened

**CQ-ID:** Defdb00204430

**Severity:** K3 - malfunction (no workaround)

**Description:** Documentation about the configuration of the OPC-UA connection together with the WinStudio process variable browser.

### IndraWorks MTX / Engineering / PLC Programming

#### XM42: When updating to MTX 15V04, all defined S20 I/O modules of the local S20 bus are lost

**CQ-ID:** Defdb00206775

**Severity:** K3 - malfunction (no workaround)

**Description:** When opening an MTX 15V02 project with IndraWorks Engineering of MTX 15V04 and when changing the project version settings (refer to the following list) to 15V04, all defined S20 I/O modules (and their I/O mapping) of the local S20 bus are lost.

- IndraWorks Engineering => Project => Change compatibility mode...

- IndraWorks Engineering => Project => SPS compiler version…

- IndraWorks Engineering => right-click on the MTX control device (with the subnode “Motion“ and “Logic“) => Properties => Table sheet Configuration => Firmware release

- IndraWorks Engineering => right-click on the visualization device => Properties => Table sheet General information => Device version

... changing to 15V04, all defined S20 I/O modules (and their I/O mapping) of the local S20 bus are lost.

**Workaround:** Export the S20 node in IndraWorks Engineering before a SW/FW update.

If S20 I/O modules were lost after the update: Re-import the saved S20 I/O configuration.

### IndraWorks MTX / Operation / Diagnosis

#### No display of diagnostic and ProVi messages in the MTX header of IndraWorks Operation

**CQ-ID:** Defdb00204082

**Severity:** K3 - malfunction (no workaround)

**Description:** In the MTX header of IndraWorks Operation, no diagnostic messages and no ProVi messages are displayed if first IndraWorks Engineering and subsequently IndraWorks Operation is started.

**Workaround:** If IndraWorks Engineering as well as IndraWorks Operation are used, first start IndraWorks Operation. Subsequently, IndraWorks Engineering can be started.

# 22.2 Firmware

## 22.2.1 Resolved defects

### MTX Firmware / _Other

#### Some XM42A and XM42P devices show the same behavior as the XM42S device

**CQ-ID:** Defdb00206120

**Severity:** K2 - serious malfunction

**Description:** Due to an error in the firmware of the NC kernel of MTX 15V02, all XM42 control devices with a different part number than the following devices, are equipped with the minimum configuration of an MTXS:

- R911394335 XM4203.21-21-31-63-301-NN-NNNN-MTXSNNNNN XM42 standard
- R911394336 XM4203.21-21-31-63-301-NN-NNNN-MTXPNNNNN XM42 performance
- R911394337 XM4203.21-21-31-63-301-NN-NNNN-MTXANNNNN XM42 advanced

These controls are not affected by the problem and behave correctly.

The following XM42 control devices are affected by the problem:

- R911394741 XM4203.21-21-31-63-301-NN-NNNN-MTXANNNNN XM42 advanced
- R911394742 XM4203.21-21-31-63-301-NN-NNNN-MTXPNNNNN XM42 performance

These controls behave like an XM42 standard device.

### MTX Firmware / OPC UA

#### System error 3464 in task tsk_OPCUANcsManagerStack

**CQ-ID:** Defdb00206049

**Severity:** K2 - serious malfunction

**Description:** When accessing a bit interface item per OPC UA subscription, the control crashed.

#### OPC-UA: Number of valid “Monitoried items” is insufficient for NC.BitInterface

**CQ-ID:** Defdb00205900

**Severity:** K3 - malfunction (no workaround)

**Description:** The number of valid “Monitored items” for the NC.BitInterface was limited to 2 items. I.e., only 2 NC.BitInterface items (axis interface, channel interface or spindle bit interface) could be created in the server. More items were rejected with "BadResourceUnavailable”.

**Fixing:** The number of valid “Monitoried items” for the NC.BitInterface was increased to 32.

#### OPC-UA: Diagnostic item extension returns an incorrect data type

**CQ-ID:** Defdb00206291

**Severity:** K4 - malfunction

**Description:** The diagnostic item "ns=16;s=DiagnosisLogbook" was extended with version MTX 14V22 Patch2.

Text numbers are returned so that irrespective of the set language in the diagnostic server of the control, the message texts can be generated.

However, the text numbers were not returned as UInt32 but as Int32, as described in the documentation.

### MTX Firmware / System Data

#### Error message no. 1514 “Internal software error: schema sdcta.xsd exists multiple times“

**CQ-ID:** Defdb00206625

**Severity:** K4 - malfunction

**Description:** When this message occurs, an outdated, incompatible schema file was detected in /usrfep/schemas/.

This incompatible schema file was probably uploaded to the control when opening an older NC archive.

**Fixing:** The incompatible schema file change cannot be corrected.

Thus, the outdated, incompatible schema file has to be replaced manually by a compatible schema file.

**Workaround:** The problem with the outdated, incompatible schema file can be solved as follows:

1. Delete the outdated, incompatible schema file from the /usrfep/schemas/ directory.
2. Delete the outdated, incompatible schema file from the /usrfep/schemas/ directory.
3. Delete the compatible schema file from the /schemas/ directory. Subsequently, generated an updated NC archive, if required, containing the correct schema file.

## 22.2.2 Functional enhancements

### MTX Firmware / Machine Parameters

#### Pre-assignment of the machine parameter PlcMemIL (minimum size PLC user program memory) is too small

**CQ-ID:** Defdb00202493

**Severity:** K4 - malfunction

**Description:** The machine parameter PlcMemIL (minimum size, PLC user program memory, Macoda-ID: 2060 00210) is used to calculate the reserved memory size for the entire PLC. The previous pre-assignment value of 1.000 kBytes was not sufficient anymore for MTX15 applications. It was thus increased.

**Enhancement:** From MTX 15V02, the pre-assignment value of the machine parameter PlcMemIL was increased to 3.000 kBytes. When loading control archives with machine parameters not containing any entry for the Macoda ID 2060 00210, the new pre-assignment value is applied.

## 22.2.3 Known issues

### IndraWorks ML / Engineering / PLC Programming

#### SPS-Lokalisierung: Kommentare der SFC-POU Implementierung werden alle mit Position 1 exportiert

**CQ-ID:** Defdb00202674

**Severity:** K3 - malfunction (no workaround)

**Description:** When exporting from SFC-POUs, the comments are correct, but the path is number 1 everywhere.

Therefore a clear assignment after translation is very difficult.

## MTX Firmware / Logic

### XM42: During a "Watchdog" error, the Profibus I/Os are not reset

**CQ-ID:** Defdb00206767

**Severity:** K2 - serious malfunction

**Description:** If a watchdog error occurs on the control, the outputs of the Profibus bus coupler are not reset.

# 23 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts offer you advice and assistance should you have any queries. You can contact us **24/7**.

**Service Germany**

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

| | |
|---|---|
| Phone: | **+49 9352 40 5060** |
| Fax: | **+49 9352 18 4941** |
| E-mail: | service.svc@boschrexroth.de |
| Internet: | http://www.boschrexroth.com |

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

**Service worldwide**

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

**Preparing information**

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

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# Notes

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