rexroth
A Bosch Company

MTX

Integrated CAD/CAM System for Shape Cutting

Commissioning Manual
R911393320

Edition 01

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Copyright	
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Editorial Department	Engineering automation systems solution integration HMI, NC controls and support, BeZe (MiSc/PiaSt)

Table of Contents

1 About this documentation

1.1 Change record

Editions of this documentation

Edition	Release date	Note
01	2021-04	First edition

Tab. 1-1: Change record

1.2 Purpose

This documentation describes the mode of operation and the area of application of the CAD/CAM nesting software Lantek Expert Inside. The software automates the CNC-Programming of shape cutting machines (laser, plasma, water jet).

1.3 Overview on target groups and product phases

In the following illustration, the framed activities, product phases and target groups refer to the present documentation.

Example: The target group "Commissioning engineer" can "configure" in the product phase "Engineering" using this documentation.

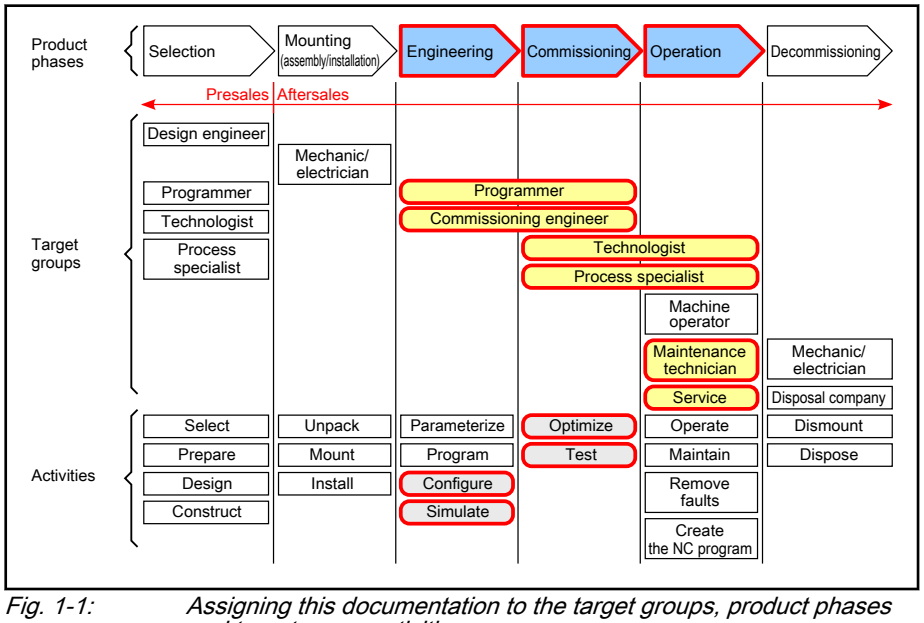

Fig. 1-1: Assigning this documentation to the target groups, product phases and target group activities

1.4 Required and supplementing documentation MTX

1.4.1 Selection/compilation

Documentation titles with type codes and part numbers

MTX 15VRS System Description
DOK-MTX***-SYS*DES*V15-PRRS-EN-P, R911397742
This documentation describes the MTX control. It includes the designs, technical data, interfaces as well as the configuration of the control components.
MTX 15VRS SafeLogic System Overview
DOK-MTX***-SL**SYS*V15-PRRS-EN-P, R911398637
This documentation describes the use of the safety control SafeLogic in the MTX.
IndraControl XM42 Controls
DOK-CONTRL-XM4X*CTRL**-ITRS-EN-P, R911345566
This documentation describes the IndraControl XM42 controls.

RS Corresponding edition

Tab. 1-2: MTX documentation overview - Selecting/composing

1.4.2 Configuration

Documentation titles with type codes and part numbers

MTX 15VRS Machine Parameters
DOK-MTX***-MA*PAR**V15-RERS-EN-P, R911400176
This documentation describes structure and the adjustment of available parameters of the MTX. It also includes the functions of the NC configurator and its operation.
MTX 15VRS PLC Interface
DOK-MTX***-PLC*INT*V15-PRRS-EN-P, R911400172
This documentation describes the interface signals and the program function blocks for the integrated PLC.
MTX 15VRS Functional Description - Basics
DOK-MTX***-NC*F*BA*V15-RERS-EN-P, R911401401
This documentation describes the basic functions of the MTX. The basic commissioning steps and the control functions are provided as description and handling instruction.
MTX 15VRS Functional Description - Extension
DOK-MTX***-NC*F*EX*V15-RERS-EN-P, R911393316
This documentation describes the extended functions of the MTX. The basic commissioning steps and the control functions are provided as description and handling instruction.
MTX 15VRS Functional Description - Special Functions
DOK-MTX***-NC*F*SP*V15-RERS-EN-P, R911393309
This documentation describes the special functions of the MTX. The basic commissioning steps and the control functions are provided as description and handling instruction.

MTX Free Form Surface Milling
DOK-MTX***-FREEFORM***-APRS-EN-P, R911341435
This documentation describes the free form surface milling process wit the MTX control. CNC programs generated by a CAD/CAM system are used as basis for the entire process. Overview over the following topics: Description of the MTX or CNC function for freeform surface milling, strategy during the NC parameterization process, boundary conditions when generating CNC programs with CAM software.
MTX Conversion of MTX Projects
DOK-MTX***-PROCONV****-PRRS-EN-P, R911342484
This documentation provides support during the conversion of MTX 1.x projects to MTX 2G. This project planning manual provides information on how to convert a project and identifies potential difficulties during the conversion.

RS Corresponding edition

Tab. 1-3: MTX documentation overview - Configuring

1.4.3 Commissioning

Documentation titles with type codes and part numbers

MTX 15VRS Commissioning
DOK-MTX***-STARTUP*V15-CORS-EN-P, R911393281
This documentation describes the commissioning of the MTX control. Apart from a complete overview, commissioning and configuration of the axes and the user interface as well as the PLC data are described.
IndraWorks 15VRS Basic Libraries, IndraLogic 2G
DOK-IL*2G*-BASLIB**V15-LIRS-EN-P, R911398633
This documentation describes the system-comprehensive PLC libraries.
IndraWorks 15VRS Field Buses
DOK-IWORKS-FB******V15-APRS-EN-P, R911393284
This documentation describes the field bus and local periphery connections supported by the MLC and MTX systems. The focus of this documentation lies in the configuration, parameterization, commissioning and diagnostics of different periphery connections. It is the basis for the online help.
IndraWorks 14VRS WinStudio 7.4
DOK-IWORKS-WINSTUD*V14-APRS-EN-P, R911341585
This “User Manual and Technical Reference Book” supports the user in achieving the best results with the “Rexroth WinStudio”™ software. The document provides technical information and step-by-step instructions to create web-enabled HMI/SCADA programs.
IndraWorks 15VRS Software Installation
DOK-IWORKS-SOFTINS*V15-CORS-EN-P, R911393450
This documentation describes the IndraWorks installation.
IndraWorks 15VRS Engineering
DOK-IWORKS-ENGINEE*V15-APRS-EN-P, R911393303
This documentation describes the use of IndraWorks in which the Rexroth Engineering tools are integrated. It includes instructions on how to work with IndraWorks and how to operate the oscilloscope function.
IndraWorks 15VRS PLC Programming System IndraLogic 2G
DOK-IWORKS-IL2GPRO*V15-APRS-EN-P, R911396137
This documentation describes the PLC programming tool IndraLogic 2G and its use. The documentation includes the basic use, first steps, visualization, menu items and editors.

IndraWorks 15VRS HMI
DOK-MLC***-HMI*****V15-APRS-EN-P, R911399270
This documentation describes the functions, configuration and operation of the user interfaces IndraWorks HMI Engineering and IndraWorks HMI Operation.
MTX 15VRS Shape Cutting Technology
DOK-MTX***-TECHCUT*V15-CORS-EN-P, R911399147
This documentation describes the shape cutting technology used by the machines to cut materials using an NC-controlled tool head.

RS Corresponding edition

Tab. 1-4: MTX documentation overview - Commissioning

1.4.4 Operation

Documentation titles with type codes and part numbers

MTX 12VRS Block Pre-Run
DOK-MTX***-BLK*RUN*V12-APRS-EN-P, R911334379
This documentation explains to the machine manufacturer how to setup the "Block pre-run" function at the machine for the end user.
MTX 15VRS Programming Manual
DOK-MTX***-NC**PRO*V15-RERS-EN-P, R911393318
This documentation describes the standard programming of the MTX control. Apart from the basics of NC programming, the use of NC functions according to DIN 66025 as well as the NC functions with high-level language syntax and CPL functions are described.
MTX 15VRS Standard NC Operation
DOK-MTX***-NC*OP***V15-APRS-EN-P, R911393314
This documentation describes the operation of the standard user interface of the NC control of the MTX. It includes the operation of the interface, the NC program development as well as the tool management.
MTX 15VRS Multitouch
DOK-MTX***-MULTI***V15-APRS-EN-P, R911393311
The Multitouch user interface of the NC control MTX is described in this documentation.
MTX 15VRS Standard NC Cycles
DOK-MTX***-NC*CYC**V15-PRRS-EN-P, R911394940
This documentation describes the application of the standard cycles of the different technologies for the MTX control.
MTX 15VRS NC Simulation
DOK-MTX***-NC*SIM**V15-APRS-EN-P, R911393273
This documentation describes the NC simulation for the MTX control.
MTX 15VRS Measuring Functions
DOK-MTX***-MES*FUN*V15-APRS-EN-P, R91194938
This documentation describes the measuring cycles of the MTX control.

RS Corresponding edition

Tab. 1-5: MTX documentation overview - Operating

1.4.5 OEM Engineering

Documentation titles with type codes and part numbers

MTX 13VRS Automation Interface
DOK-MTX***-AUT*INT*V13-APRS-EN-P, R911337274
This documentation describes the script-based access to IndraWorks project data via the interface of the Automation Interface. Different objects including code examples are described. The Automation Builder is also described in this manual.
MTX 15VRS OPC Communication
DOK-MTX***-OPC*COM*V15-PRRS-EN-P, R911399272
This documentation describes the syntax and the structure of the items for the communication with Bosch Rexroth devices.
IndraWorks OPC UA Communication
DOK-IWORKS-OPC*UA*****-APRS-EN-P, R911379309
This documentation describes the OPC UA communication of the MLC and MTX control systems.

RS Corresponding edition

Tab. 1-6: MTX documentation overview - OEM engineering

1.4.6 AddOns

Documentation titles with type codes and part numbers

MTX 11VRS Action Recorder
DOK-MTX***-ACR*****V11-APxx-EN-P, R911329943
This documentation describes the MTX action recorder. It includes the installation and commissioning as well as interface signals, application and operation.
MTX 15VRS Efficiency Workbench MTX cta, MTX ega
DOK-MTX***-EWB*****V15-APRS-EN-P, R911400178
This documentation describes the mode of operation and the area of application of the analysis tool MTX cta and MTX ega.
MTX Remote Condition Monitoring
DOK-MTX***-RCM*****V01-APRS-EN-P, R911334383
This documentation describes the operation of the Remote Condition Monitoring System.
MTX visIREC User Documentation
DOK-MTX***-VISIREC*V01-APRS-EN-P, R911344242
This documentation describes the analysis tool visIREC used to optimize the free form surface milling process. 2D or 4D display of path-related data. 2D or 4D display of coordinate-related data. Analysis of critical areas (path and orientation deviation). Comparing the programmed NC blocks to the interpolated NC blocks.

xx / RS Corresponding edition

Tab. 1-7: MTX documentation overview - AddOns

1.5 Information representation

1.5.1 Using safety instructions

Structure of the safety instructions

The safety instructions are structured as follows:

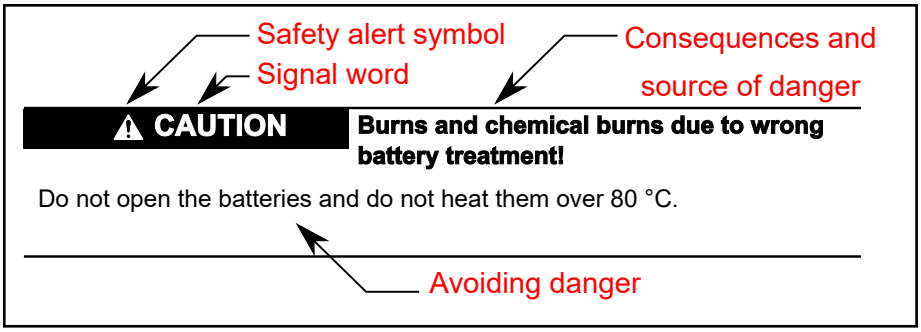

Fig. 1-2: Structure of the safety instructions

Explaining signal words and safety alert symbol

The safety instructions in this documentation contain specific signal words (danger, warning, caution, notice) and, if necessary, a safety alert symbol (according to ANSI Z535.6-2006).

The signal word draws attention to the safety instruction and indicates the risk potential.

The safety alert symbol (triangular safety reflector with exclamation marks), preceding the signal words Danger, Warning, Caution indicates hazards for persons.

⚠ DANGER

In case of non-compliance with this safety instruction, death or serious injury **will** occur.

⚠ WARNING

In case of non-compliance with this safety instruction, death or serious injury **can** occur.

⚠ CAUTION

In case of non-compliance with this safety instruction, minor or moderate injury can occur.

NOTICE

In case of non-compliance with this safety instruction, material damage can occur.

Symbols used

Pointers are displayed as follows:

This is a note.

Tips are displayed as follows:

This is a tip.

Explaining the signal alert symbol on the device

If this symbol is on your device, you have to observe the documentation on the device. The respective documentation informs on the type of hazard as well as the steps required to avoid this hazard.

1.5.2 Names and abbreviations

Term	Explanation
CAD	Computer-aided design
CAM	Computer-aided manufacturing
CNC	Computerized numerical control
DWF	Design web format
DXF	Drawing exchange format
Lantek Expert Inside	CAD/CAM nesting software
MTX	Computerized numerical control

Tab. 1-8: Terms and abbreviations

1.5.3 Customer feedback

Customer requests, comments or suggestions for improvement are of great importance to us. Please email your feedback on the documentations to Feedback.Documentation@boschrexroth.de. Directly insert comments in the electronic PDF document and send the PDF file to Bosch Rexroth.

2 Important instructions on use

2.1 Intended use

2.1.1 Introduction

Bosch Rexroth products are developed and manufactured according to the state-of-the-art. The products are tested prior to delivery to ensure operating safety and reliability.

The products may only be used as intended. If they are not used as intended, situations occur that result in damage to property or injury to persons.

☞ Bosch Rexroth shall not assume any warranty, liability or payment of damages in case of damage resulting from a non-intended use of the products; the user shall solely bear all risks from unintended use of the products.

Before using Bosch Rexroth products, the following requirements have to be met to guarantee the intended use of the products:

- Anyone handling Bosch Rexroth products in any way is obliged to read and consent to the relevant safety instructions and the intended use.
- Hardware products may not be altered and have to remain in their original state; i.e. no structural changes are permitted. It its not permitted to decompile software products or alter source codes.
- Do not install damaged or defective products or use them in operation.
- It has to be ensured that the products have been installed as described in the relevant documentation.

☞ Ensure that the data present in the control or entered or read in by the user is correct before applying it to exclude unwanted axis motion. It can be the following invalid or old data:

- Part programs
- ZO tables
- Compensation tables
- Tool tables
- Permanent CPL variables
- Remanent PLC data
- Permanent system data

2.1.2 Areas of use and application

The MTX control is used to

- program contour and machining technology (path feed, spindle speed, tool change) of a workpiece.
- guide a machining tool along a programmed path.

Feed drives, spindles and auxiliary axes of a machine tool are activated via Sercos interface.

This additionally requires I/O components for the integrated PLC which - together with the actual CNC - control the machining process as a whole and also monitors this process with regard to technical safety.

It may only be operated with the explicitly specified hardware component configurations and combinations and only with the software and firmware specified in the appropriate documentations and functional descriptions.

The CNC system MTX provides the perfect CNC system solution for cutting and forming for the following technologies:

- Rotate
- Milling
- Drilling
- Grinding
- Bending
- Nibbling
- Punching
- Contour cutting
- Handling

2.2 Unintended use

Using the CNC system MTX outside the previously specified areas of application or under operating conditions other than the conditions described in the documentation and the specified technical data, is defined as "unintended use".

The CNC system MTX must not be used if...

- it is subjected to operating conditions not corresponding to the specified ambient conditions. Operation under water, under extreme temperature fluctuations or under extreme maximum temperatures is prohibited.
- Furthermore, the CNC system MTX shall not be used for applications not expressly approved of by Bosch Rexroth. Therefore, please read the information given the general safety instructions!
- The CNC system MTX may not be used in systems or machines connected to the internet via an unsecure network connection. Otherwise, malfunctions or a control failure can result due to unauthorized access.

3 General information

Lantek Expert Inside is a CAD/CAM nesting software to automate CNC programming of shape cutting machines (laser, plasma, water jet).

By means of the software, create new nestings based on DXF, DWF or parametrical files. Moreover, existing nestings can be changed before they are processed.

By means of MTX, the software can be integrated into your user interface.

How to install the software on your control panel:

1. The customer purchases a Rexroth PC with pre-installed application software and Lantek Expert Inside.

In this case, no further intervention to install and license the Lantek software is required.

2. The customer only purchases the **Lanetek Expert Inside** software package from Rexroth. Further steps to install and commission the software are required. These steps are described in the following.

4 Providing the installation package

The software can be purchased from Bosch Rexroth by specifying the required target system information.

Bosch Rexroth provides the license sheet and the customer can download the software from the electronic product catalog.

5 Installation and licensing

Once the installation package has been purchased, the software can be installed.

Installation steps

1. Starting the installation and acknowledging the first box.
2. Accepting the license agreement.
3. If an older Lantek installation is to be updated, search the installation in the browser dialog.
4. Specifying the target directory for the installation.
5. Acknowledge the box to the added program folders.
6. Selecting the basic measuring unit (mm/inch).
7. Confirming the feature selection "Lantek Expert Inside".
8. Selecting a target system (machine type).

☞ In any case, select a machine type. If the machine type you are searching for is not available, select any machine type. Machine-specific characteristics can only be taken into account by a post processor provided by the software producer.

9. Acknowledge the info box for installation settings.

   Subsequently, the software is installed.

10. Acknowledge query to create a desktop link and product registration.

    The following message box is displayed:

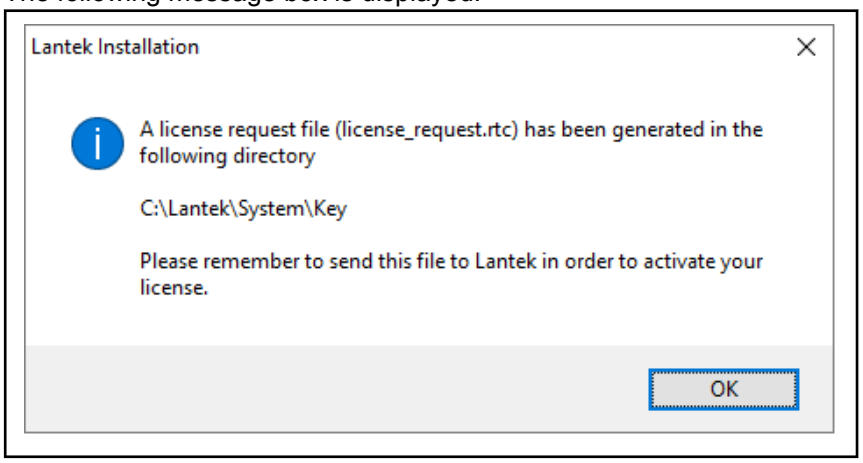

Fig. 5-1: Message box to generate a license file

11. Search the license file "License_request.rtc" in the specified directory and send it to the licensing office of Bosch Rexroth.

☞ Email address: BRC.License@boschrexroth.de

Bosch Rexroth provides a license key ("xxxxxxxx.key") to the customer.

12. Copy the .key file to the specified directory, e.g. C:\Lantek\System\Key.
13. Restart the PC

After the PC startup, the icon for the "Lantek Expert Inside"  file link is displayed on the desktop.

Subsequently, start the Lantek Expert Inside system.

For more information about the Lantek software, refer to the "Lantek Expert Inside User Manual" in the "C:\Lantek\Expert\Help\Manuals" directory.

6 Integrating the Lantek software in the MTX user interface

The following configuration steps are required to integrate the Lantex software into the multitouch user interface of MTX.

Configuring the Lantek Expert Inside - Integration

1. Create a new screen configuration in IndraWorks Engineering below the "Screens" node or via the menu item **New screen...**.

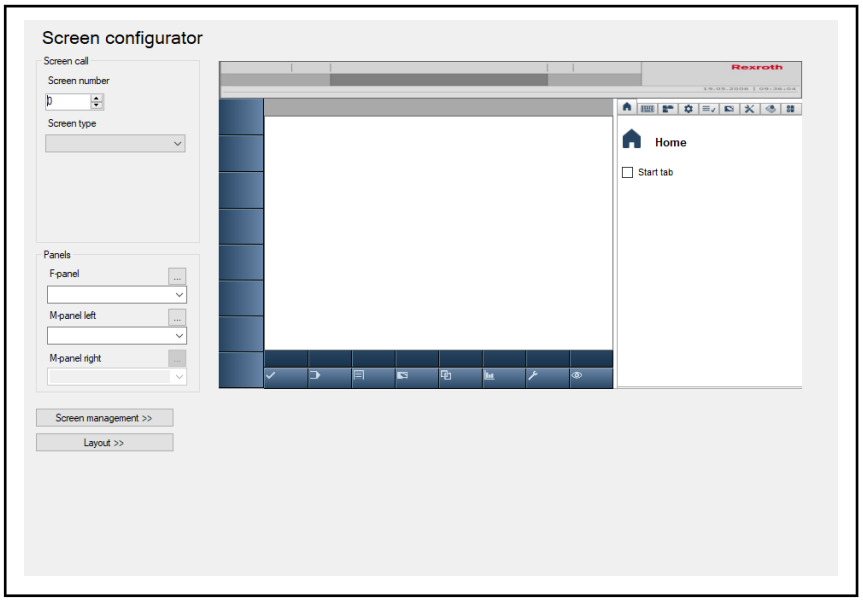

Fig. 6-1: Creating a new screen configuration

2. Screen type definition: "External application".
3. Define the application via the "Configuring the external application".

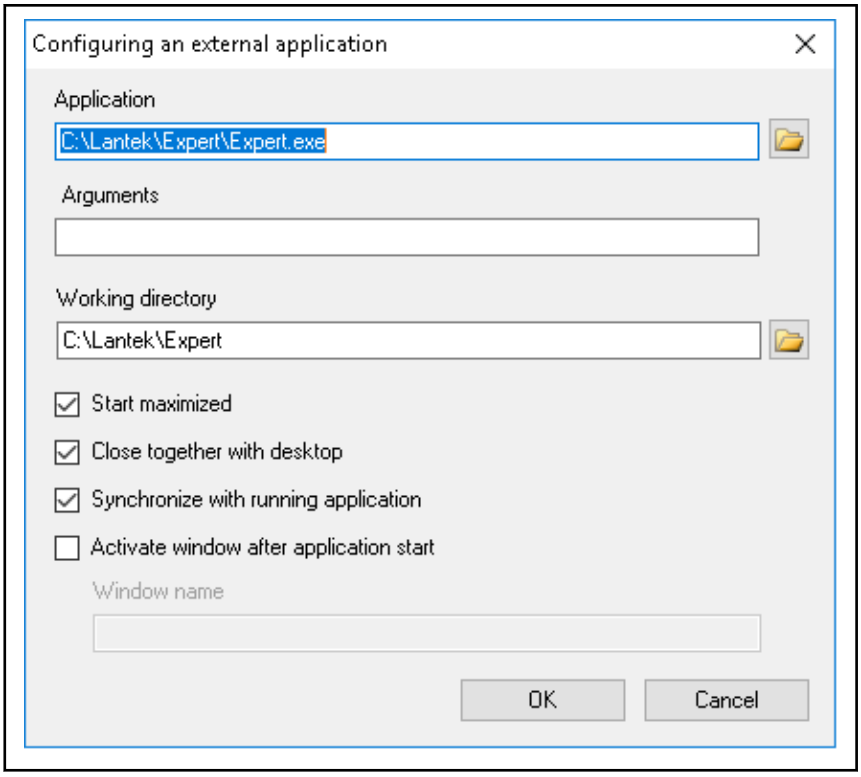

Fig. 6-2: Configuring the external application

4. Assign the screen to an operating area under "Screen management" (e.g. MachineContext).

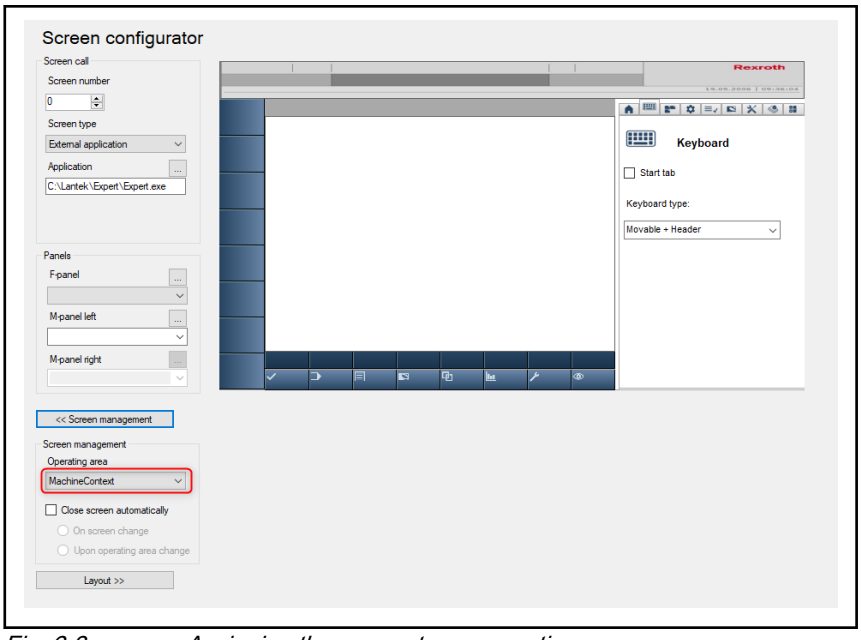

Fig. 6-3: Assigning the screen to an operating area

5. Screen keyboard definition: "Relocatable + Header".

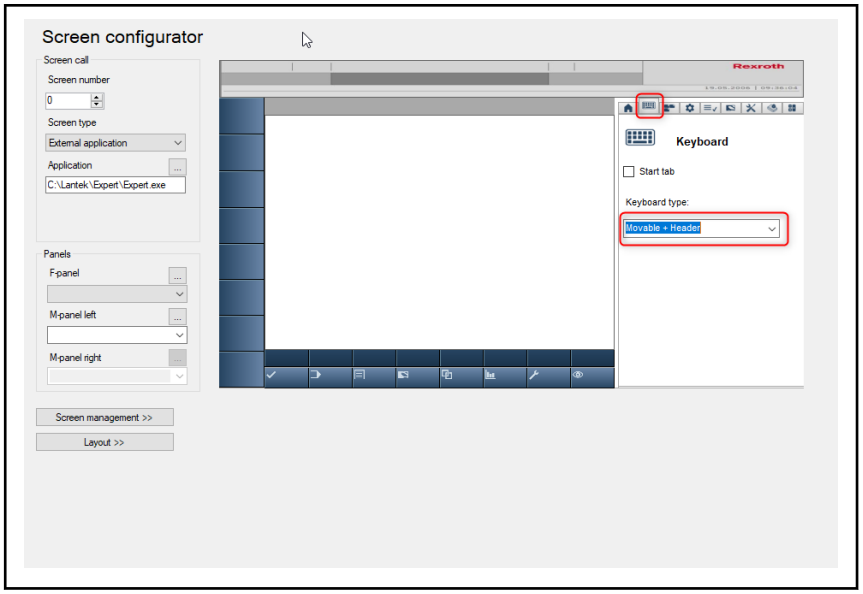

Fig. 6-4: Screen keyboard definition

6. Screen layout definition: Unticked (full screen).

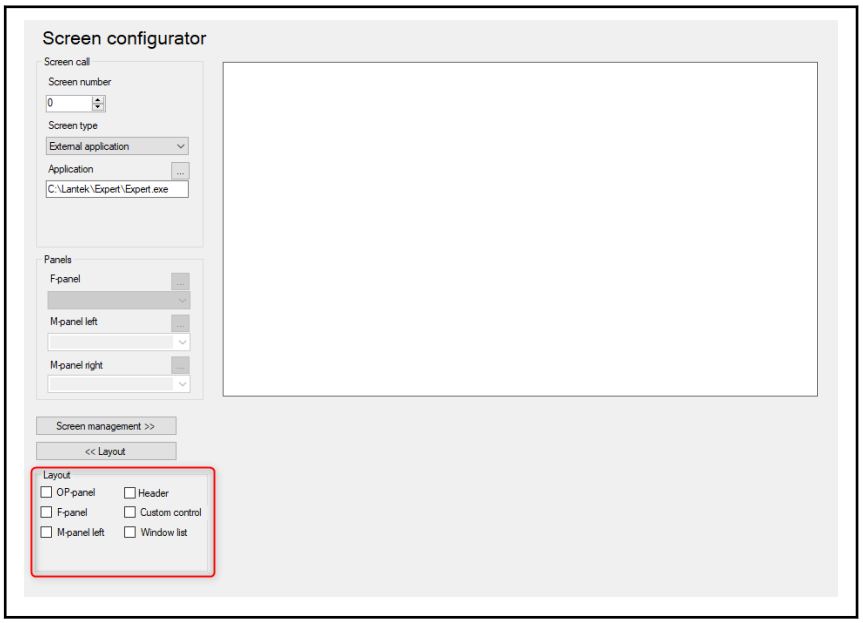

Fig. 6-5: Screen layout definition

7. Exit and save screen configuration.
8. Transfer visualization data via: **Visualization data ▸ Transfer and activate visualization data...**
9. Start IndraWorks Operation.
10. Configure new tile in the Home Control of the additional area to call the Lantek application.

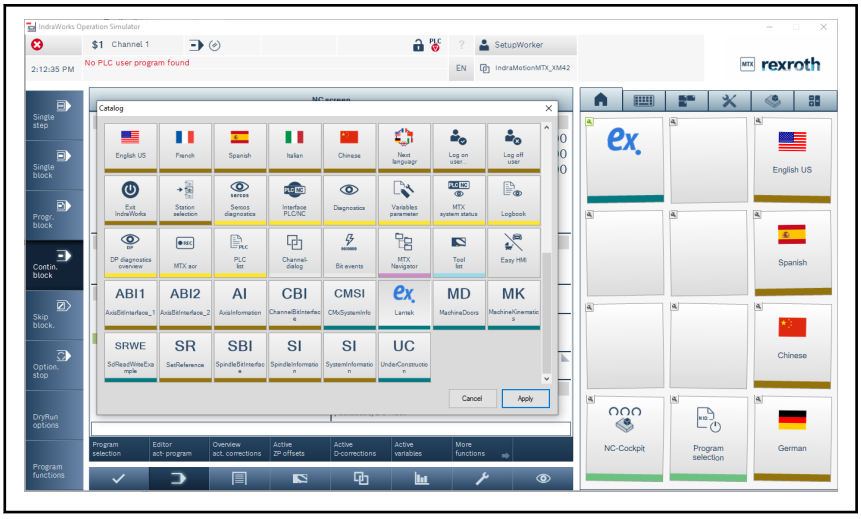

Fig. 6-6: Tile definition in IndraWorks Operation

11. Call the Lantek application via a new tile in the Home Control

    The Lantek application is displayed as full screen application with minimized header and foldable keyboard.

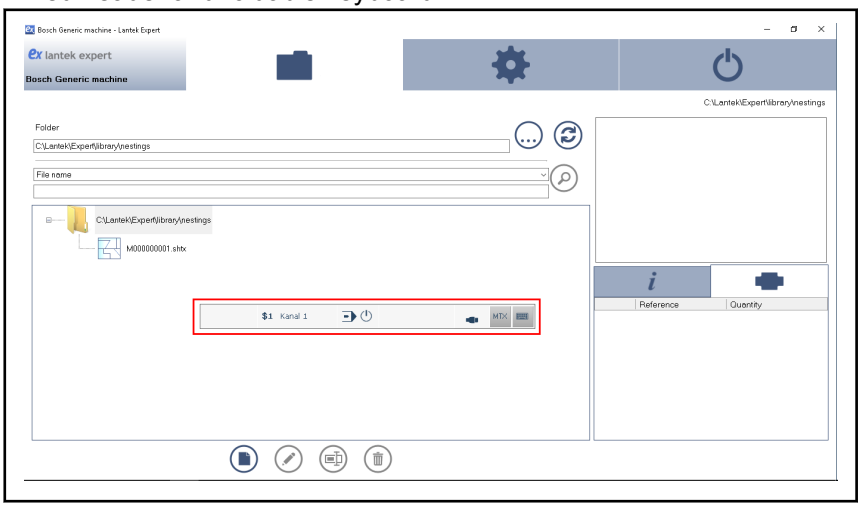

Fig. 6-7: Lantek application as full screen application with header and minimized keyboard

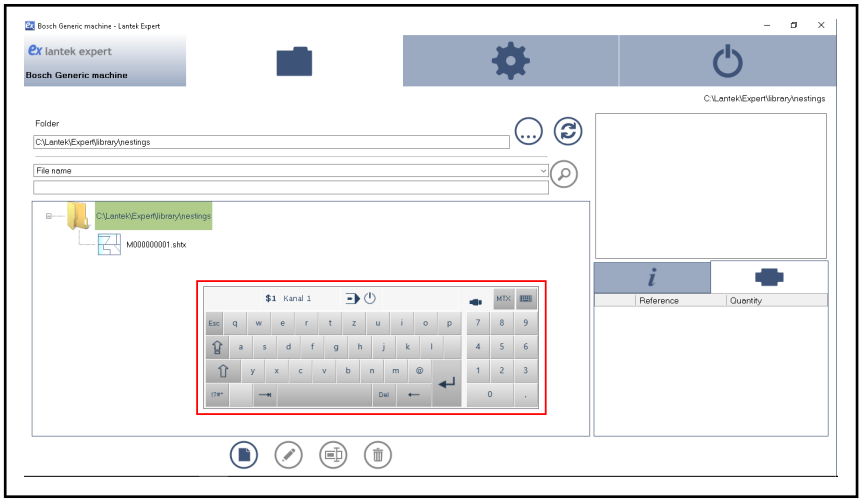

Fig. 6-8: Lantek application as full screen application with header and folded out keyboard

Use the "MTX" interface in the minimized header to go to the MTX user interface.

7 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

Notes

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DOK-MTX***-CAD*TECHCUT-CO01-EN-P