



# Rexroth IndraMotion MTX micro – profitability with complete functional range

The market for CNC machine tools is very diverse today and also requires low-cost control and drive solutions for standard turning and milling machines. With Rexroth IndraMotion MTX micro we have developed a universal CNC platform covering this economical range of applications.

IndraMotion MTX micro is the compact, simple, powerful, and nevertheless low-cost CNC solution from Rexroth for standard turning and milling machines. It consists of a powerful CPU, custom HMI interfaces, and compact multi-axis drive controllers.

## Advantages

- ▶ all required hardware and software functions are integrated in a central assembly within the control cabinet
- ▶ the powerful 32-bit processor ensures the shortest CNC and PLC cycle times. This turns IndraMotion MTX micro to the most compact and simultaneously most powerful CNC of its class
- ▶ the approved IndraMotion, IndraLogic and IndraDrive technologies by Rexroth provide for the highest reliability and production precision – and this down to the range of nanometers
- ▶ everything from one source from Rexroth with global support:
  - CNC control
  - servo drives
  - I/O periphery
  - hydraulics
  - pneumatics
  - linear motion technology



◀ **IndraMotion MTX micro is the economical CNC system solution from Control City for standard turning and milling machines – your control technology capital.**

### IndraMotion MTX micro is the universal CNC solution for

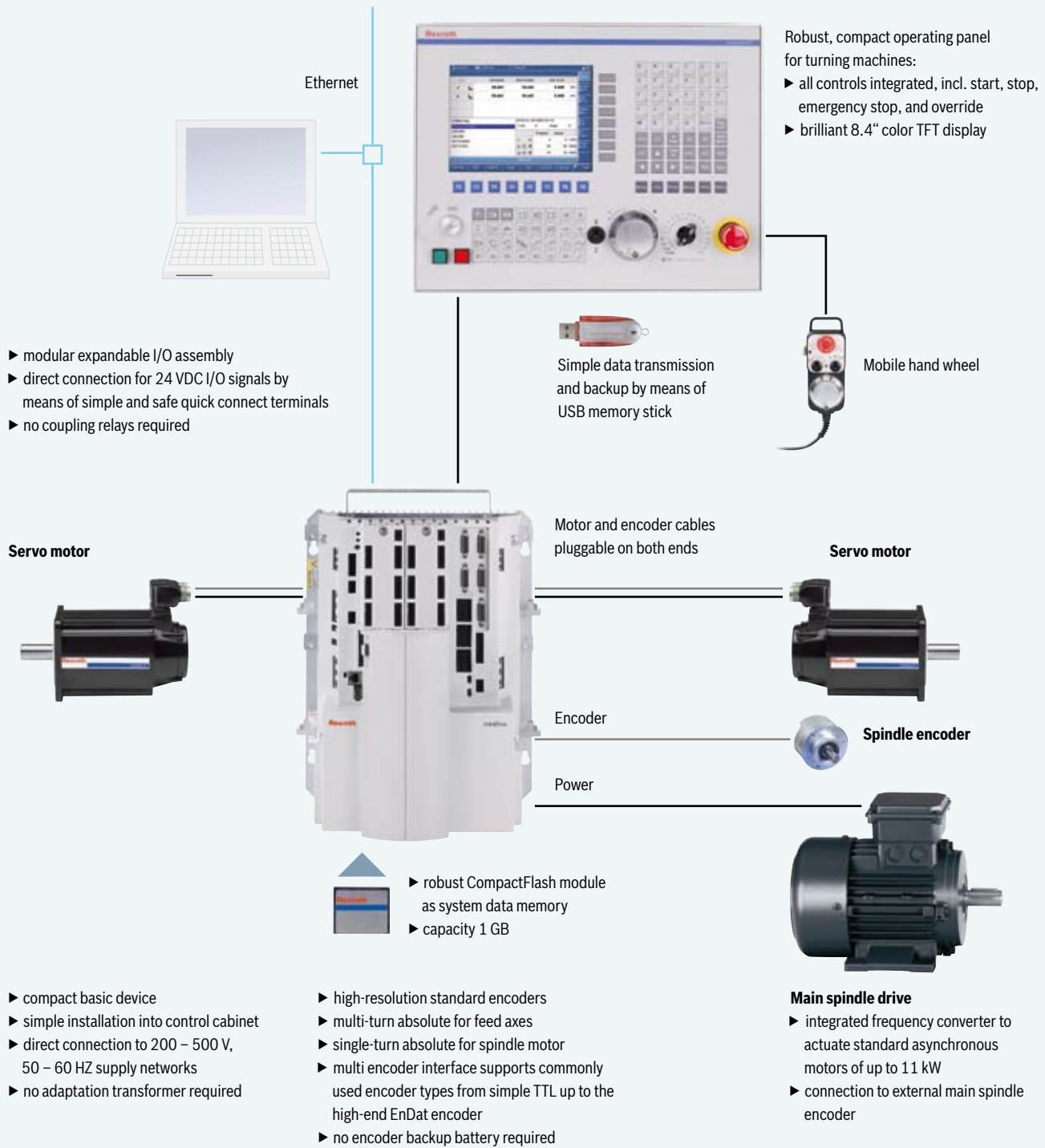
- ▶ turning machines with standard asynchronous main drive
- ▶ turning machines with C axis function
- ▶ turning machines with C axis function and live tools
- ▶ drilling machines
- ▶ milling machines
- ▶ machining centers

### Functional features

- ▶ turn-key solution for turning and milling with integrated PLC program
- ▶ engineering tools for simple commissioning and diagnosis in the shortest time
- ▶ practice-oriented and easy-to-operate HMI software
- ▶ integrated technology cycles for solving challenging machining tasks efficiently
- ▶ compatible with CNC system solutions IndraMotion MTX compact, standard, performance and advanced



# 3 axes variant for simple lathes



**Example configuration – additional configurations also available**

# 4 axes variant for turning centers and milling machines

Ethernet communication as standard interface  
for engineering and DNC operation



Ethernet



Robust, compact operating panel  
for milling machines:

- ▶ all controls integrated, incl. start, stop, emergency stop, and override
- ▶ brilliant 8.4" color TFT display

Turn-key solution:

- ▶ system PLC program
- ▶ immediately ready-to-operate upon activation of operating panel and axes
- ▶ optimized operation for lathes and milling machines



Simple data transmission  
and backup by means of  
USB memory stick



Mobile hand wheel

Servo motor



Motor and encoder cables  
pluggable on both ends

Servo motor



Additional encoder



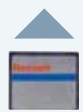
Additional spindle encoder

Encoder

Power



Servo or additional  
spindle motor



- ▶ robust CompactFlash module  
as system data memory
- ▶ capacity 1 GB

- ▶ integrated control with CNC core  
and complete IEC 61131-3 PLC
- ▶ high-end servo functions
- ▶ HMI function

**Main spindle drive**

- ▶ actuation of high-performance spindle  
motors up to 11 kW
- ▶ connection to additional, external main  
spindle encoder

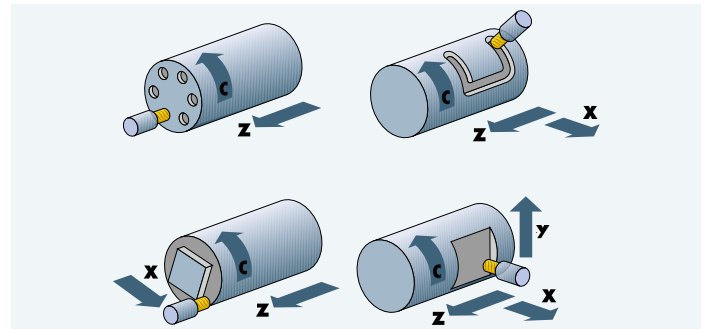
**Example configuration – additional configurations also available**

# Detail functions – technology

## Turning – precise and complete

IndraMotion MTX micro offers all functions and options for the standard turning machine without option list:

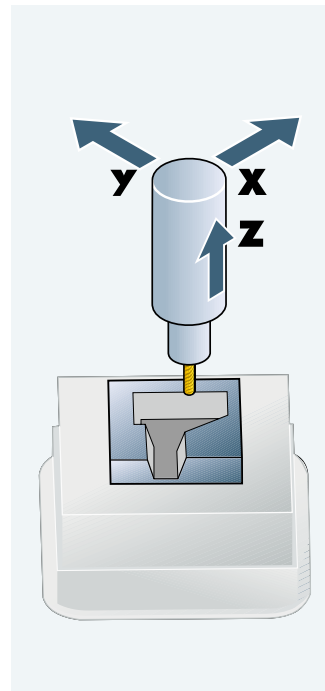
- ▶ constant surface speed
- ▶ tapping with or without compensating chuck
- ▶ spindle turret axis
- ▶ C axis machining with live tools
- ▶ cylinder surface machining
- ▶ C axis machining



## Milling – quick and efficient

IndraMotion MTX micro covers the complete range for the standard milling machine and milling at turning centers:

- ▶ look-ahead function
- ▶ scaling and mirroring of contours
- ▶ circular corner rounding
- ▶ 4 ms NC block cycle time
- ▶ implement comprehensive program directly from the USB stick



## Tool management

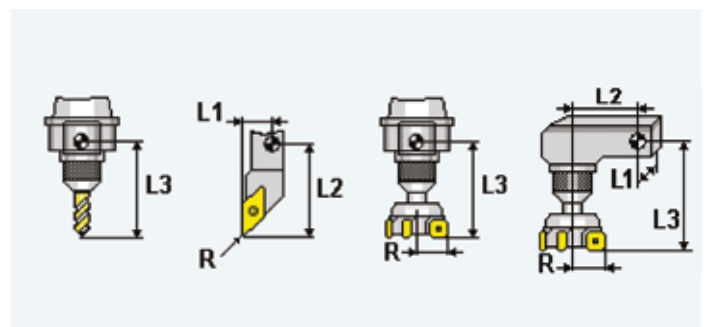
The tool management is easy-to-use and can be adapted flexibly to the machine:

- ▶ up to 999 tools, 2 edges per tool
- ▶ geometry and wear corrections
- ▶ tool life management
- ▶ radius correction and tool edge orientation correction
- ▶ angular head tools
- ▶ fixed and variable tool placement

## Advanced functionality

Many functions are available similarly for all technologies:

- ▶ axis-specific jerk limitation
- ▶ free positioning of the workpiece coordinate system in the space
- ▶ integrated technology cycles: turning, drilling, milling
- ▶ CPL high level language to extend functions in a customized manner



# Detail functions – operating panel

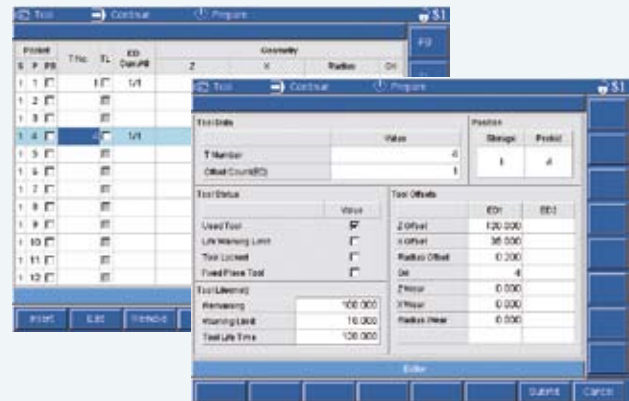
The HMI provides screens for all machine operation situations:

- ▶ set-up the machine
- ▶ prepare the tools
- ▶ develop the NC programs
- ▶ process the program
- ▶ change parameters
- ▶ diagnose problems

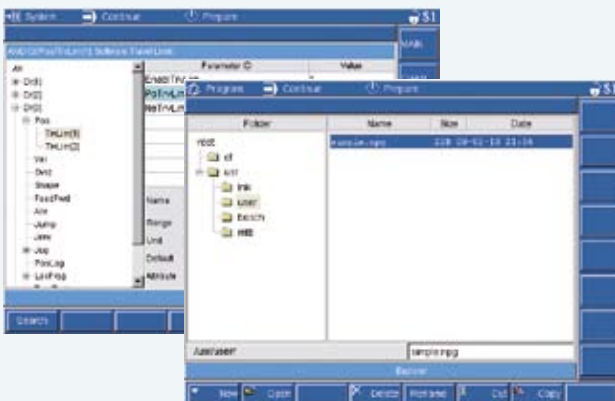
Simple editor functions facilitate the development and the test of the NC program. The HMI software is available in several languages, the language can be switched without having to restart the machine. The integrated user administration prevents expensive standstill times resulting from erroneous operation. Alarms and messages are issued in clear text and recorded in the integrated log file. Programs and parameters can be saved to a USB stick by pushing a button.



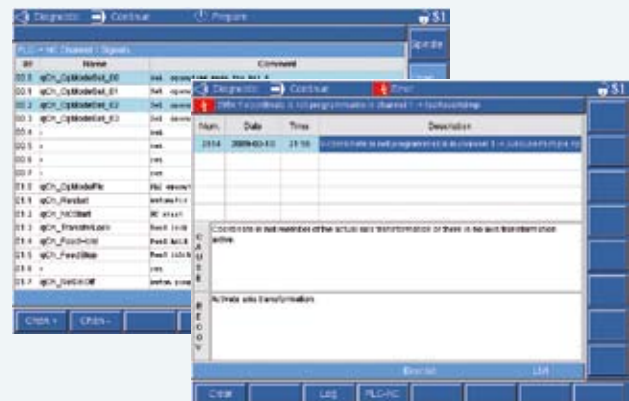
▲ Position and technology displays



▲ Tool list and tool editor



▲ Look-and-feel of a PC-based control



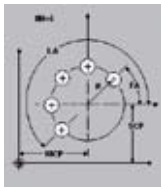
▲ Diagnosis with clear text messages

# Increase your productivity with standard cycles

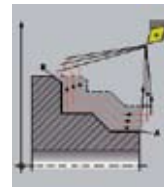
For standard machining procedures the software package IndraMotion MTX micro contains numerous technology cycles. Graphical entry dialogs represent the required parameters and guide the user in entering the data. The application-oriented user guidance increases the efficiency and helps to avoid errors.



◀ **Drilling**



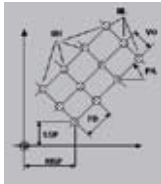
◀ **Drilling on divided circle**



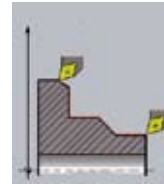
◀ **Contour roughing**



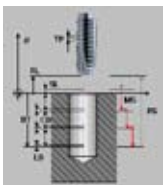
◀ **Reaming**



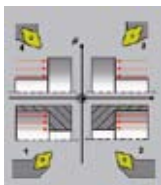
◀ **Drilling matrix**



◀ **Contour smoothing**



◀ **Tapping**



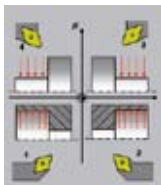
◀ **Long turning**



◀ **Thread milling**



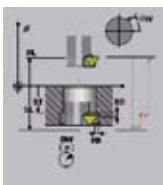
◀ **Cutting threads**



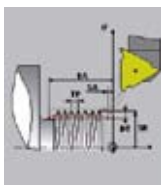
◀ **Plain turning**



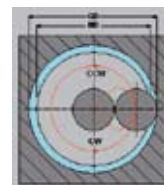
◀ **Thread fraising**



◀ **Back boring**



◀ **Thread cutting**



◀ **Circular milling**



# Technical data

<b>1</b>	<b>Technology</b>		
1.1	Turning		●
1.2	Drilling		●
1.3	Milling		●
<b>2</b>	<b>Axis control</b>		
2.1	Default number of axes	3	●
2.2	Max. number axis	4	○
2.3	Max. number of spindles thereof	2	●
2.4	Default number of independent channels	2	●
2.5	Default number of interpolating axes per channel	4	●
2.6	Spindle/C axis switching		●
2.7	Channel-crossing axis transfer		●
2.8	Software limit		●
<b>3</b>	<b>Interpolation functions</b>		
3.1	Linear interpolation with/without exact stop		●
3.2	Circular interpolation with radius and center-point programming, helical interpolation, tangential entry		●
3.3	Tapping with/without compensating chuck		●
3.4	Thread cutting		●
3.5	NC block preview, look-ahead with jerk limitation		●
3.6	Jogging with active transformation		●
3.7	Nanometer resolution		●
<b>4</b>	<b>Feed function</b>		
4.1	Feed with mm/min or inch/min		●
4.2	Time programming		●
4.3	Feed rate per revolution		●
4.4	Constant surface speed		●
4.5	Feed on positive stop		●
4.6	Torque reduction		●
<b>5</b>	<b>Displacements and corrections</b>		
5.1	Mirroring, scaling, rotating		●
5.2	Zero-point offset		●
5.3	Placements (FRAMES) – coordinate displacement and rotation in the space		●
5.4	2D compensation		●
<b>6</b>	<b>Tool management</b>		
6.1	Integrated tool management with database for up to 999 tools		●
6.2	Tool data entry and organization of tool lists		●
6.3	Tool corrections (length, radius, edge length, user data)		●
6.4	Edges per tool	max. 2	●
6.5	Standstill time management		●
6.6	Access to tool data from PLC and CNC		●

● Standard    ○ Optional

<b>7</b>	<b>CNC programming</b>				
7.1	Parts program development		DIN ISO 66025/RS 274	●	
7.2	High level language CPL (Customer Programming Language)			●	
7.3	CNC memory		64 MB	●	
7.4	Static memory		8 MB	●	
7.5	Max. parts program size		8 MB	●	
7.6	CompactFlash data memory			●	
7.7	Technology cycles for turning, drilling, milling			●	
7.8	Cycles for contour machining			●	
<b>8</b>	<b>Functions</b>				
8.1	Dwell time in seconds			●	
8.2	Acceleration programming, loop gain programming			●	
8.3	Homing through the NC program			●	
8.4	Absolute dimension, relative dimension			●	
8.5	Switching between inch/mm			●	
8.6	Probe, static/on-the-fly measurement			●	
8.7	Roundings and chamfers			●	
8.8	Corner rounding with splines			●	
8.9	NC set command from PLC			●	
8.10	NC programm restart/block search			●	
8.11	Dry run			●	
8.12	Retracting from and returning to the contour			●	
<b>9</b>	<b>PLC functions</b>				
9.1	Integrated PLC: IndraLogic with programming languages IEC 61131-3 (IL, LD, FBD, ST, SFC, CFC)			●	
9.2	PLC program memory		8 MB	●	
9.3	Number of I/O		32 I/16 O	●	
9.4	Max. number of I/O		96 I/48 O	○	
<b>10</b>	<b>Diagnosis and commissioning tools</b>				
10.1	Automatic system diagnoses			●	
10.2	Status and error messages in plaintext (languages: Chinese, English)			●	
10.3	Integrated drive setup tools			●	
10.4	Drive oscilloscope			●	
10.5	Integrated PLC setup tools			●	
10.6	Engineering tool IndraWorks			○	
<b>11</b>	<b>Drive system</b>				
11.1	Mains voltage three phases at the networks TT, TN-C, TN-S, IT		200 ... 500 V ±10 %		
11.2	Mains frequency		50 ... 60 Hz ±2 Hz		
11.3	Mains connection capacity with power choke		30 kVA		
11.4	Rated current		44 A		
<b>12</b>	<b>Servo motors</b>	<b>Axis 1</b>	<b>Axis 2</b>	<b>Axis 3</b>	<b>Axis 4</b>
12.1	Controlled servo drive	–	●	●	●
12.2	Standstill torque $M_0$ [Nm]	–	17	12	12
12.3	Rated current $I_n$ [A]	32	28	17	17
12.4	Maximum current $I_{max}$	55	50	26	26
<b>13</b>	<b>Main spindle</b>				
13.1	Controlled main spindle drive (closed loop)	●	●	–	–
13.2	Standard asynchronous spindle motor (open loop)	●	●	–	–
13.3	Rated capacity $P_n$ [kW]	11	5	–	–
13.4	Connection to external spindle encoder	●	●	–	–

**Bosch Rexroth AG**

Electric Drives and Controls

P.O. Box 13 57

97803 Lohr, Germany

Bgm.-Dr.-Nebel-Str. 2

97816 Lohr, Germany

Phone +49 9352 40-0

Fax +49 9352 40-4885

[www.boschrexroth.com](http://www.boschrexroth.com)

Presented by

