Rexroth
Bosch Group

Automation Systems and Control Components

Consistent, intelligent and future-proof

Bosch Rexroth is the worldwide leader in all relevant drive, control and motion technologies – with industry-specific automation systems and innovative control components.

Content

Rexroth Automation House – Simply Smart

The Rexroth Automation House now provides an entirely new automation system. This unique modular system increases the capacity, flexibility and, above all, the economic efficiency of your production facilities. The ideal interplay of motion, logic and visualization allows you to access tomorrow's machine automation – in the following industries:

- **Machine tool manufacture**
- **Food processing and packaging industries**
- **Handling and assembly**
- **Forming technology**

Uniform engineering software for all solutions

IndraWorks now allows you to solve all of your tasks with one single software – from project planning and programming to visualization and diagnostics. Its innovative feature: IndraWorks is consistently available in all of our automation systems as a uniform engineering software – will profit from the fast access to all functions and data of the control components and from the increased transparency of your automation solution.

Consistent PLC logic according to IEC 61131-3

Using the PLC runtime system IndraLogic in all of your automation solutions, you will be able to standardize your application programs in conformity with IEC 61131-3. With its user-friendly handling, this programming system that is fully integrated in IndraWorks facilitates the creation of modularized and object-oriented applications.

Maximum flexibility with integrated motion logic

The family of open system software combines all components of the Automation House to provide consistent solutions with motion and logic control. Using IndraMotion, you can implement all of your centralized and distributed control designs, customized to your industry-specific requirements.

Scalable platforms for all control topologies

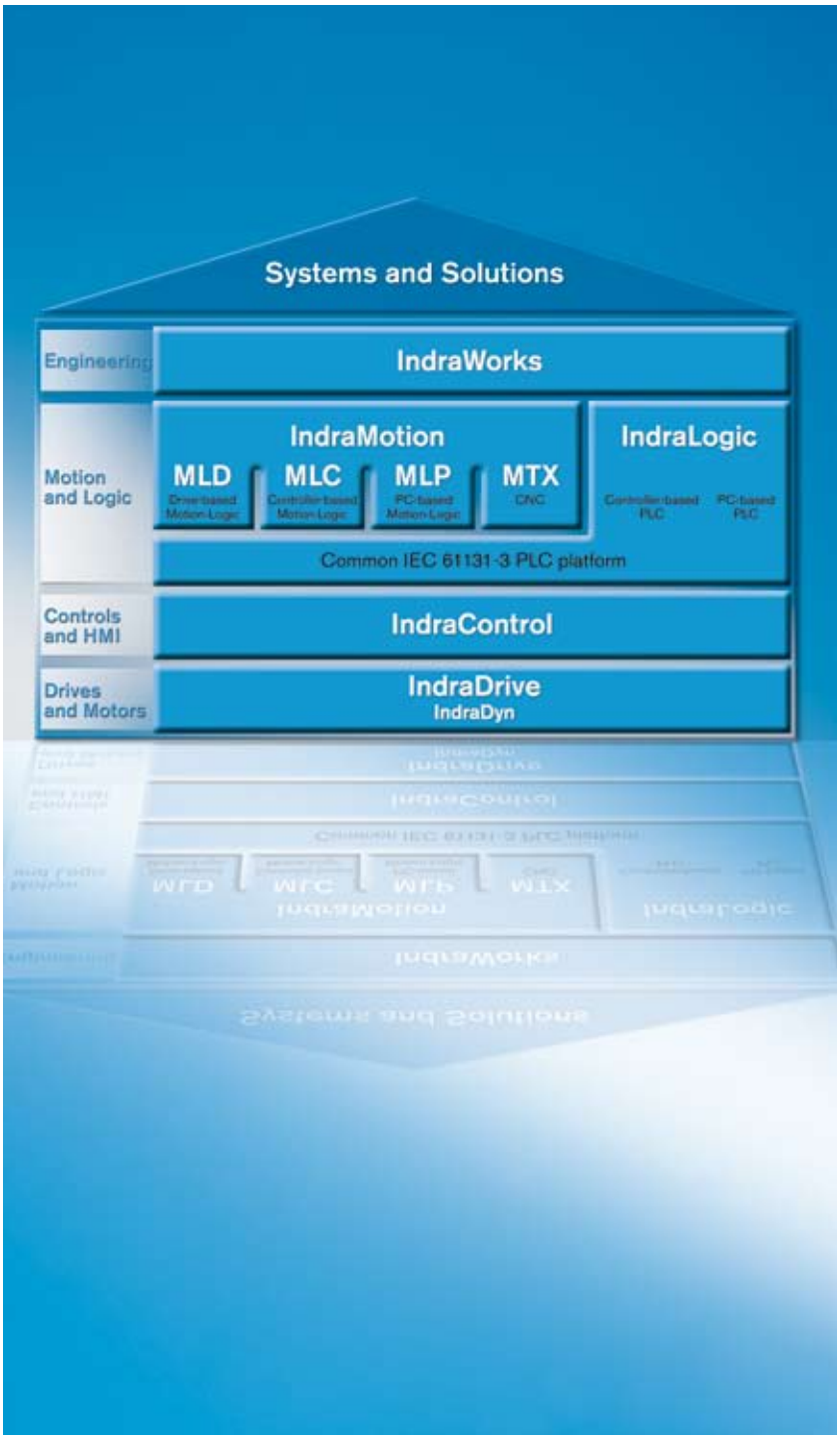
The scalable control, visualization and I/O hardware platforms allow easy, flexible and consistent automation of your applications. Combined with open communication interfaces, these hardware platforms provide automation solutions that are also reliable in the future and allow factory automation with any degree of freedom.

Safety on board – certified integrated safety system

The internal drive safety system "safety on board" provides reliable personnel protection for all motion applications. With the IndraDrive family, the "safety on board" system, certified according to DIN 954-1, provides comprehensive safety functions which you can easily integrate in your applications by simple parameterization.

SERCOS III – Ethernet-based communication

The 3rd generation SERCOS interface meets all requirements for a forward-looking machine network – open, consistent and fast. From drives and controls to I/O peripherals, all automation components are easily combined to form a transparent and capable overall system. With real-time and innovative features, SERCOS III provides maximum performance and flexibility in all applications.



IndraWorks
Consistent engineering tool for project planning, programming, visualization and diagnostics

IndraMotion
Scalable system software for highly productive motion control applications

IndraLogic
IEC-conforming PLC solution for intelligent automation

IndraControl
Scalable control platform for more transparency in manufacture

IndraDrive and IndraDyn
Intelligent drive solution and comprehensive motor range for optimum dynamics

Our Automation House, which forms a unique modular system, accommodates all constituents for successful automation designs – from drives and controls to a capable framework for uniform engineering and user-friendly operation. This innovative system opens up all choices of modern automation technology – consistent, intelligent and future-proof.

Automation Systems for Your Industry

Our innovative automation systems have set milestones in focused industries. These best-in-class solutions from the Rexroth Automation House present the decisive added value: absolute user-orientation, leading technology and worldwide usability – with the only goal of optimizing the economic utilization of machines and plants.

IndraLogic
Open PLC systems for universal use

IndraMotion MLD
Drive-based automation solution for single-axis and multi-axis applications

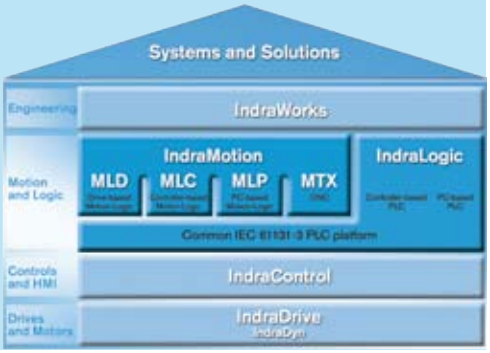
IndraMotion MLC
Controller-based motion-logic solution for all multi-axis applications

IndraMotion MTX
Highly productive CNC solution for all machine tools

IndraMotion for Metal Forming
Scalable automation system for material transport in the forming industry

IndraMotion for Handling
Turnkey automation system for handling, assembly and robotics

IndraMotion for Packaging
Flexible automation system for food processing and packaging machines



Control Components for Your Automation System

With IndraControl, the Rexroth Automation House offers all control platforms for your preferred automation solutions. Irrespective of the system you selected, you will profit from consistent and harmonized hardware architectures – versatile, sturdy and modular.

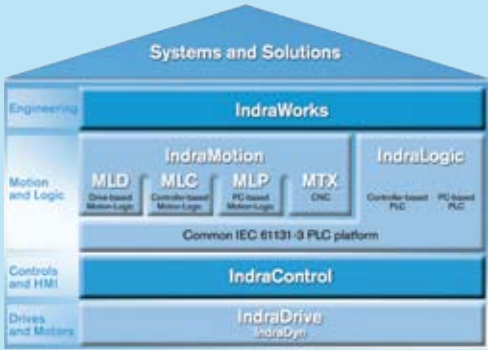
IndraControl L
Rack-based controls

IndraControl V
Human-Machine Interface (HMI) devices and industrial PCs

Inline
Cabinet-mount (IP20) I/O technology

Fieldline
Machine-mount (IP67) I/O technology

IndraWorks
Engineering framework



Automation System and Control Components at a Glance

IndraMotion MLD
Drive-based motion-logic system

IndraMotion MLC
Controller-based motion-logic system

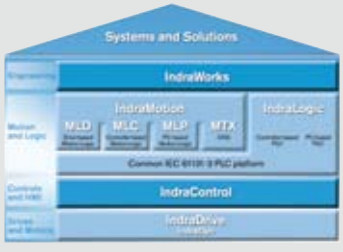
IndraWorks

IndraControl V

IndraControl L

Inline/Fieldline

IndraDrive



Ethernet

VPP21 | VPP | VPB | VSP

Industrial PC

L10 | L15 | L20 | L40

Controller-based control

Fieldbus

Bus coupler PROFIBUS | Bus coupler DeviceNet | I/O block Digital | I/O block Analog

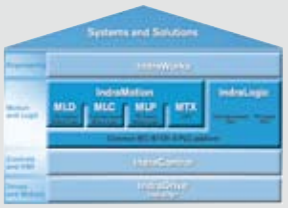
Input/output modules

IndraDrive C | IndraDrive M

Drives

IndraMotion MTX
CNC systems

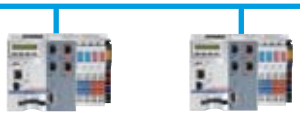
IndraLogic
PLC systems



Engineering

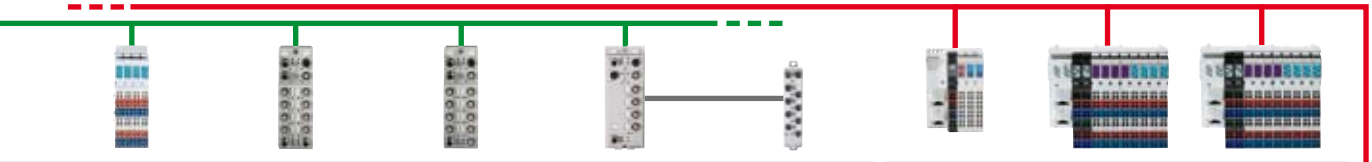
VSB VDP | VAK VAM | VEP VEH | VCP VCH

Control panels/keyboards | Embedded PC | Controller



L45 L65

SERCOS interface



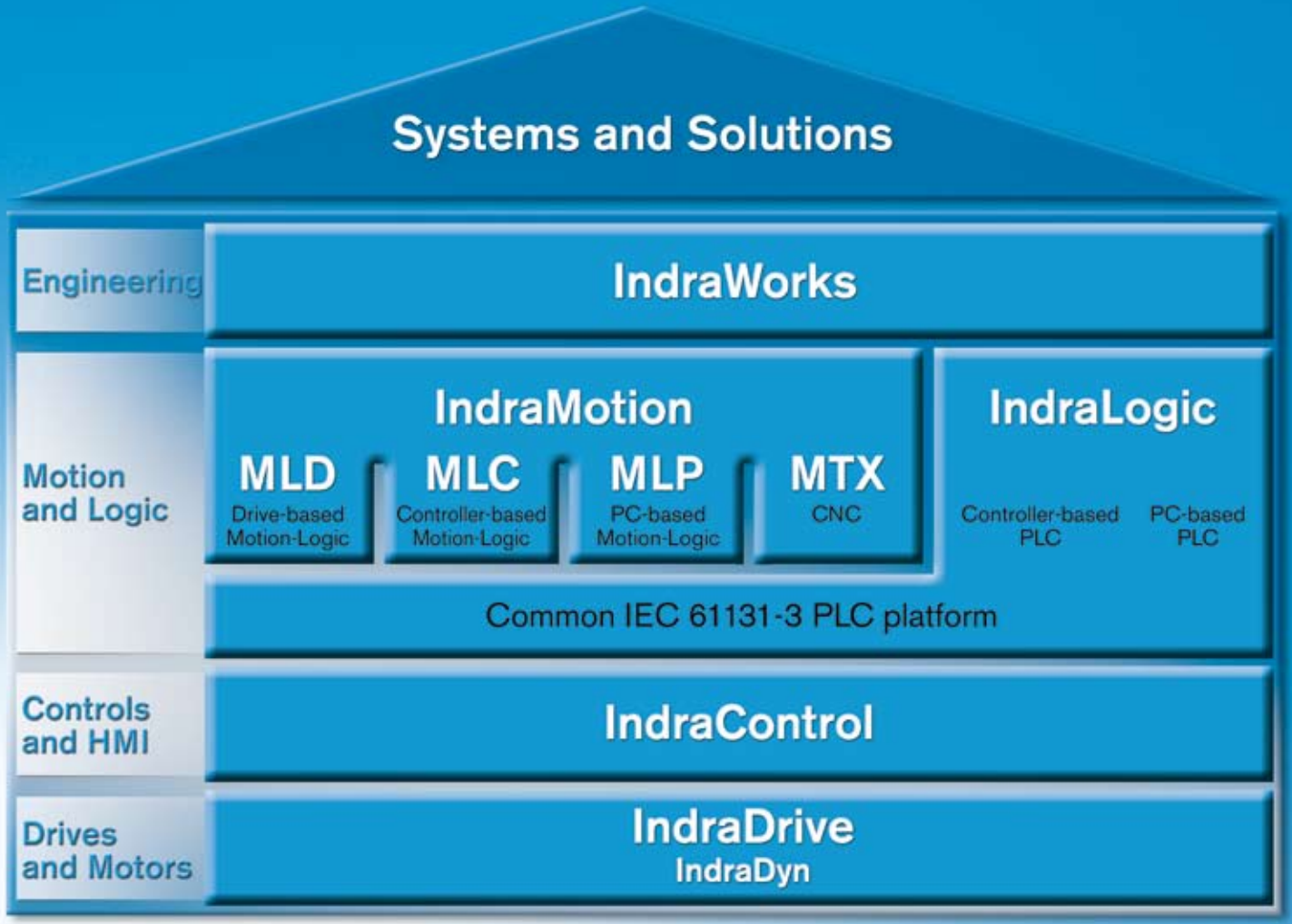
Modular Inline bus terminal | Fieldline M12 PROFIBUS | Fieldline M12 DeviceNet | Fieldline M12 PROFIBUS bus coupler | Fieldline M8 | Bus coupler SERCOS III | I/O block Digital SERCOS III | I/O block Analog SERCOS III

Input/output modules

IndraDrive C IndraDrive M

Drives

Automation Systems – CNC, PLC and Motion Control



IndraLogic – Open PLC Systems for Universal Use

The Rexroth IndraLogic PLC system sets new standards for open automation with a consistent control, programming and communication design. Whether PC, controller or drive, IndraLogic provides a uniform platform for any configuration while being fully compatible with the IEC 61131-3 standard.

On various platforms, the capacity and functionality of IndraLogic can be customized precisely to your centralized and distributed automation architecture:

- Controller-based PLC systems
  - IndraLogic L10
  - IndraLogic L15
  - IndraLogic L20
  - IndraLogic L40
- PC-based PLC systems
  - IndraLogic VE
  - IndraLogic VS
  - IndraLogic VP

Your benefits

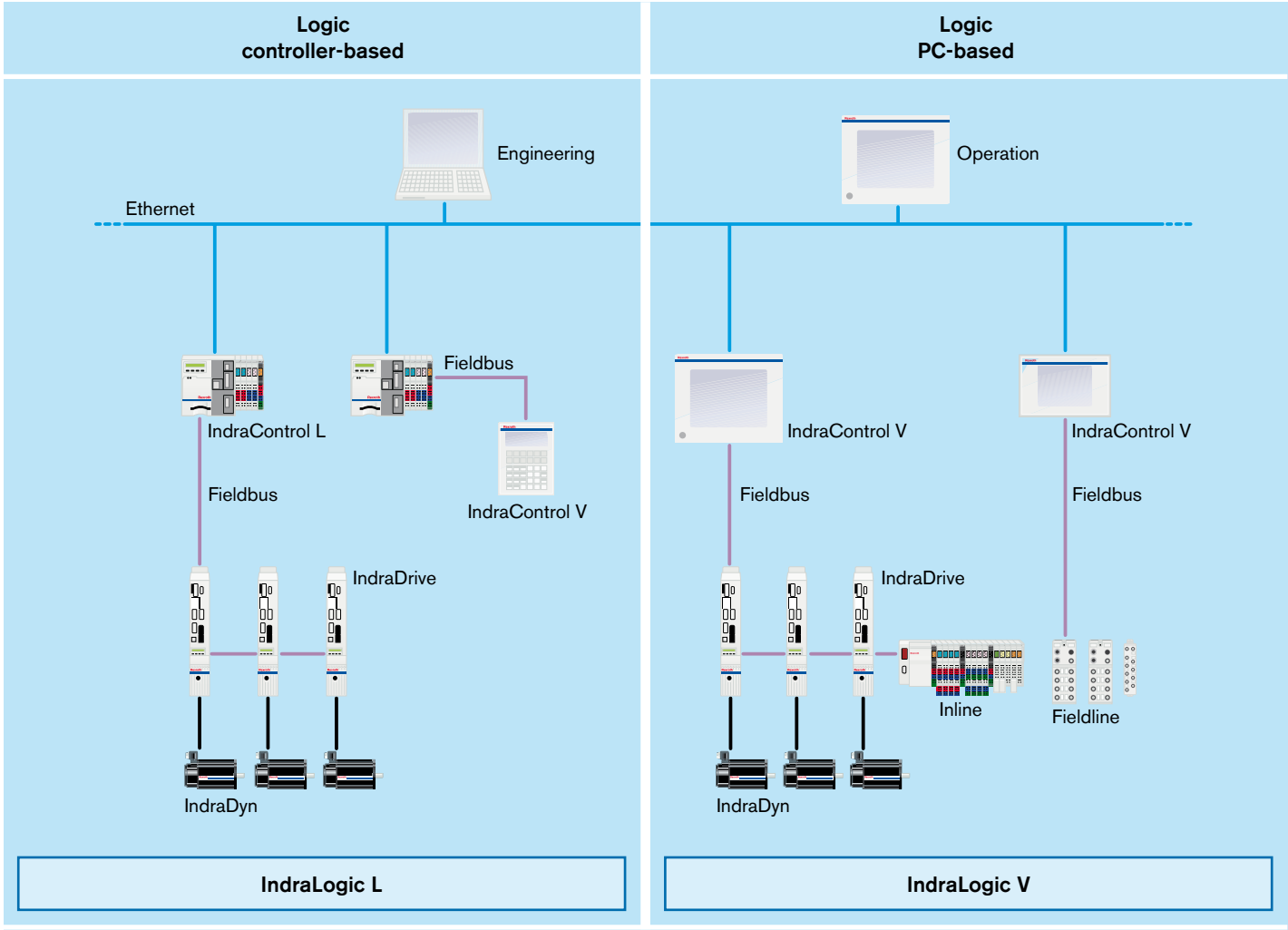
- High performance through innovative control platform
- All degrees of freedom for centralized and distributed automation
- Highest performance and functionality
- Scalable PLC solution according to IEC 61131-3
- Open standardized communication interfaces
- Comprehensive libraries and function blocks for motion control according to PLCopen
- Consistent PLC runtime system in all automation solutions
- Quick expansion and easy connection of I/O and function modules
- Integrated or easy connection of HMI solutions
- Intuitive engineering and diagnostics with IndraWorks

Rexroth IndraLogic is the complete PLC solution from the future-oriented Automation House for successful automation designs – efficient, scalable and standardized.

Efficient and standardized

- Consistent automation solution
- Comprehensive functions and numerous interfaces
- Uniform engineering and convenient operation

Your benefit



IndraLogic – the PLC solution in the controller or in the PC can always be customized precisely to your centralized and distributed automation architectures.

Additional information		
Control hardware	IndraControl L10, L15, L20, L40	Chapter 3.1
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.3
Distributed input/output modules in IP67	Fieldline	Chapter 3.4
Visualization devices, controller-based	IndraControl VCP	Chapter 3.2
Visualization devices, embedded PC	IndraControl VEP	Chapter 3.2
Visualization devices, standard industrial PC	IndraControl VSP, VSB	Chapter 3.2
Visualization devices, high-end industrial PC	IndraControl VPP, VPB	Chapter 3.2
Drive family	IndraDrive	IndraDrive and IndraDyn product catalog
Engineering framework	IndraWorks	Chapter 3.5

IndraLogic L10 and L15

Technical data	IndraLogic L10 and L15
	
Hardware platform	IndraControl L10 and L15
User memory (code/data)	3 MB (1/2 MB)
Retentive memory	16 kB
Number of tasks	4
Types of task	Time-controlled, cyclic, periodic, free-running, controlled by external event
Processing time	Typically 300 µsec (1,000 instructions in IL, bit and word commands)
I/O	128 I/Os (centralized), 300, 8 In/4 Out on board
Programming system	IndraWorks
Programming languages (IEC 61131-3)	ST, IL, LD, SFC, FBD, CFC
Programming interface	Ethernet
Functions for program test	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change
Supplied libraries	IEC 61131-3 standard, communication
Communication interfaces	Ethernet TCP/IP, EtherNet/IP Adapter (Slave), PROFInet Slave (L10/L15), SERCOS III Easy I/O (L15)

Ordering data	
Order code	**Description**
FWA-CML10-IL*-xxVRS-DO-0003	IndraLogic L10 firmware
FWA-CML15-IL*-xxVRS-DO-0003	IndraLogic L15 firmware

Ordering data for accessories	
Order code	**Description**
SWA-IWORKS-IL*-xxVRS-DO-CD650	Engineering framework IndraWorks

Documentations	
Order code	**Description**
in preparation	

xx = software/firmware version

IndraLogic L20

Technical data	IndraLogic L20
	
Hardware platform	IndraControl L20
User memory (code/data)	3 MB (1/2 MB)
Retentive memory	32 kB
Number of tasks	8
Types of task	Time-controlled, cyclic, periodic, free-running, controlled by external event
Processing time	Typically 150 µsec (1,000 instructions in IL, bit and word commands)
I/O	256 I/Os (centralized), distributed via PROFIBUS DP interface (max. 126 users with 9 kB I/O each), 8 In/8 Out on board
Programming system	IndraWorks
Programming languages (IEC 61131-3)	ST, IL, LD, SFC, FBD, CFC
Programming interface	Ethernet, RS232
Functions for program test	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change
Supplied libraries	PLCopen, IEC 61131-3 standard, communication
Communication interfaces	RS232, Ethernet TCP/IP, EtherNet/IP Adapter (slave), PROFIBUS DP

Ordering data	
Order code	**Description**
FWA-CML20*-IL*-xxVRS-DO-0003	IndraLogic L20 firmware

Ordering data for accessories	
Order code	**Description**
SWA-IWORKS-IL*-xxVRS-DO-CD650	Engineering framework IndraWorks

Documentations	
Order code	**Description**
DOK-CONTRL-IL**PRO*Vxx-AWxx-DE-P	PLC program development with IndraLogic (German)
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	PLC program development with IndraLogic (English)
DOK-CONTRL-IC*L20*****-AWxx-DE-P	IndraLogic L20 PLC system description, operating and programming instructions (German)
DOK-CONTRL-IC*L20*****-AWxx-EN-P	IndraLogic L20 PLC system description, operating and programming instructions (English)

xx = software/firmware version

IndraLogic L40

Technical data	IndraLogic L40
	
Hardware platform	IndraControl L40
User memory (code/data)	8 MB (4/4 MB)
Retentive memory	64 kB
Number of tasks	16
Types of task	Time-controlled, cyclic, periodic, free-running, controlled by external event
Processing time	Typically 70 µsec (1,000 instructions in IL, bit and word commands)
I/O	512 I/Os (centralized), extension via PROFIBUS DP (max. 126 users with 8 kB I/O each), 8 In/8 Out on board
Programming system	IndraWorks
Programming languages (IEC 61131-3)	ST, IL, LD, SFC, FBD, CFC
Programming interface	Ethernet, RS232
Functions for program test	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change
Supplied libraries	PLCopen, IEC 61131-3 standard, communication
Communication interfaces	RS232, Ethernet TCP/IP, EtherNet/IP Adapter (Slave), PROFIBUS DP

Ordering data	
Order code	**Description**
FWA-CML40*-IL*-xxVRS-DO-0008	IndraLogic L40 firmware

Ordering data for accessories	
Order code	**Description**
SWA-IWORKS-IL*-xxVRS-DO-CD650	Engineering framework IndraWorks

Documentations	
Order code	**Description**
DOK-CONTRL-IL**PRO*Vxx-AWxx-DE-P	PLC program development with IndraLogic (German)
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	PLC program development with IndraLogic (English)
DOK-CONTRL-IL**IC*L40*****-AWxx-DE-P	IndraLogic L40 PLC system description, operating and programming instructions (German)
DOK-CONTRL-IL**IC*L40*****-AWxx-EN-P	IndraLogic L40 PLC system description, operating and programming instructions (English)

xx = software/firmware version

IndraLogic VP

Technical data	IndraLogic VPP 21	IndraLogic VP
		
Hardware platform	IndraControl VPP 21	IndraControl VPP, VPB
Operating systems	Windows XP	Windows XP/Windows 2000
Realtime	VxWorks/VxWin	VxWorks/VxWin
Runtime system	IndraLogic	IndraLogic
User memory (code/data)	24 MB (8/16 MB)	24 MB (8/16 MB)
Retentive memory	2 MB, battery-buffered	2 MB on HD (with UPS)
Number of tasks	32	32
Types of task	Time-controlled, cyclic, free-running, event-controlled	Time-controlled, cyclic, free-running, event-controlled
Processing time	Typically 50 µsec (1,000 instructions in IL, bit and word commands)	Typically 30 µsec (1,000 instructions in IL, bit and word commands)
I/O	Distributed via PROFIBUS DP (max. 126 users, with 7 kB I/O each)	Distributed via PROFIBUS DP (max. 126 users, with 7 kB I/O each)
Programming system	IndraWorks	IndraWorks
Programming languages (IEC 61131-3)	ST, IL, LD, SFC, FBD, CFC	ST, IL, LD, SFC, FBD, CFC
Programming interfaces	Ethernet, RS232 or directly on target hardware	Ethernet, RS232 or directly on target hardware
Supplied libraries	PLCopen, IEC 61131-3 standard, communication	PLCopen, IEC 61131-3 standard, communication
Communication interfaces	RS232, USB, Ethernet TCP/IP, EtherNet/IP Adapter (Slave)	RS232, USB, Ethernet TCP/IP, EtherNet/IP Adapter (Slave)
Functions for program test	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change

Ordering data	
Type code	**Description**
FWA-VPP21*-IL*-xxVRS-D0-0032	IndraLogic VPP 21 firmware
FWA-VPXVSX-IL*-xxVRS-D0-0024	IndraLogic VP firmware

Ordering data for accessories	
Type code	**Description**
SWA-IWORKS-IL*-xxVRS-D0-CD650	Engineering framework IndraWorks

Documentations	
Type code	**Description**
DOK-CONTRL-IL**PRO*Vxx-AWxx-DE-P	PLC program development with IndraLogic (German)
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	PLC program development with IndraLogic (English)
DOK-CONTRL-IL*VPP*21*****-AWxx-DE-P	IndraLogic VPP 21 system description (German)
DOK-CONTRL-IL*VPP*21*****-AWxx-EN-P	IndraLogic VPP 21 system description (English)
DOK-CONTRL-IL*V*******-AWxx-DE-P	IndraLogic V system description (German)
DOK-CONTRL-IL*V*******-AWxx-EN-P	IndraLogic V system description (English)

xx = software/firmware version

IndraLogic VS

Technical data	IndraLogic VS
	
Hardware platform	IndraControl VSP, VSB
Operating systems	Windows XP
Realtime	VxWorks/VxWin
Runtime system	IndraLogic
User memory (code/data)	24 MB (8/16 MB)
Retentive memory	2 MB on HD (with UPS)
Number of tasks	32
Types of task	Time-controlled, cyclic, free-running, event-controlled
Processing time	Typically 50 µsec (1,000 instructions in IL, bit and word commands)
I/O	Distributed via PROFIBUS DP (max. 126 users, with 7 kB I/O each)
Programming system	IndraWorks
Programming languages (IEC 61131-3)	ST, IL, LD, SFC, FBD, CFC
Programming interfaces	Ethernet, RS232 or directly on target hardware
Supplied libraries	PLCopen, IEC 61131-3 standard, communication
Communication interfaces	RS232, Ethernet TCP/IP, EtherNet/IP Adapter (Slave), PROFIBUS DP
Functions for program test	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change

Ordering data	
Type code	**Description**
FWA-VPXVSX-IL*-xxVRS-D0-0024	IndraLogic VS firmware

Ordering data for accessories	
Type code	**Description**
SWA-IWORKS-IL*xxVRS-D0-CD650	Engineering framework IndraWorks

Documentations	
Type code	**Description**
DOK-CONTRL-IL**PRO*Vxx-AWxx-DE-P	PLC program development with IndraLogic (German)
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	PLC program development with IndraLogic (English)
DOK-CONTRL-IL*V******-AWxx-DE-P	IndraLogic VP/VS system description (German)
DOK-CONTRL-IL*V******-AWxx-EN-P	IndraLogic VP/VS system description (English)

xx = software/firmware version

IndraLogic VE

Technical data	IndraLogic VE
	
Hardware platform	IndraControl VEP
Operating systems	Windows CE .Net 4.2
Realtime	Windows CE .Net 4.2
Runtime system	IndraLogic
User memory (code/data)	12 MB (4/8 MB)
Retentive memory	256 kB on flash
Number of tasks	16
Types of task	Time-controlled, periodic, free-running, event-controlled
Processing time	Typically 100 µsec (1,000 instructions in IL, bit and word commands)
I/O	Distributed via PROFIBUS DP (max. 126 users, with 7 kB I/O each)
Programming system	IndraWorks
Programming interface	Ethernet
Programming languages (IEC 61131-3)	ST, IL, LD, SFC, FBD, CFC
Functions for program test	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change
Supplied libraries	PLCopen, IEC 61131-3 standard, communication
Communication interfaces	RS232, Ethernet TCP/IP, EtherNet/IP Adapter (Slave), field buses

Ordering data	
Type code	**Description**
SWL-VE**01-ILC-xxVRS-NN	IndraLogic VE firmware

Ordering data for accessories	
Type code	**Description**
SWA-IWORKS-IL*-xxVRS-D0-CD650	Engineering framework IndraWorks

Documentations	
Type code	**Description**
DOK-CONTRL-IL**PRO*Vxx-AWxx-DE-P	PLC program development with IndraLogic (German)
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	PLC program development with IndraLogic (English)
DOK-CONTRL-IL*VEP*****-AWxx-DE-P	IndraLogic VE system description (German)
DOK-CONTRL-IL*VEP*****-AWxx-EN-P	IndraLogic VE system description (English)

xx = software/firmware version

IndraMotion MLD – Drive-Based Automation Solution for Single-Axis and Multi-Axis Applications

IndraMotion MLD combines motion and PLC functions to form a modern open automation platform for modular machine designs. The decentralized control architecture establishes a compact motion-logic system, based on the scalable IndraDrive platform, so that higher-order controls are no longer necessary.

This drive-based solution is available as a single-axis control for simple applications as well as a multi-axis control for applications with a maximum of 8 axes. Ready-to-use function libraries simplify the use of intelligent drive functions of our IndraDrives. In addition, PLCopen-conforming function blocks provide access to standardized motion-control functions. The open technology and communication interfaces facilitate integration of IndraMotion MLD in your automation design.

Your benefits

- Compact system for modular distributed architectures
- Scalable as single-axis or multi-axis control
- Electronic synchronization of up to 8 servo-axes
- Ready-to-use function libraries according to PLCopen
- Intelligent drive functions already integrated
- Optional technology and communication interfaces
- Drive-integrated motion-control and PLC runtime system according to IEC 61131-3
- Integrated Safe Motion system according to EN 954-1, Cat. 3
- Intuitive engineering with the IndraWorks software framework
- Additional software options with function libraries, technology packages and turnkey solutions

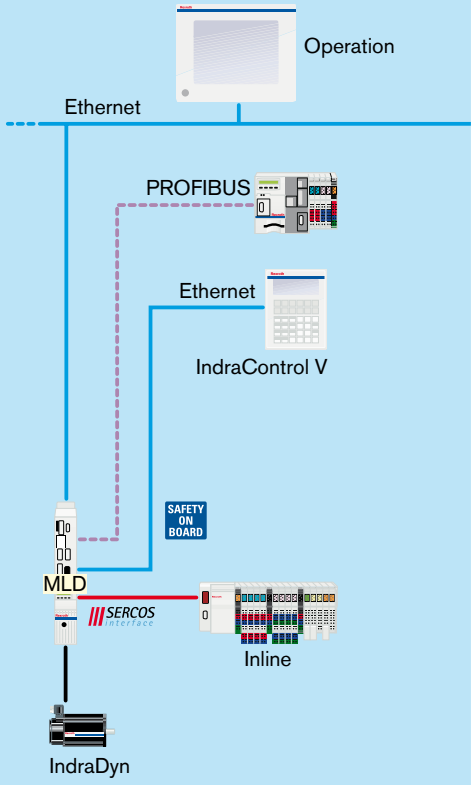
IndraMotion MLD from Rexroth helps you to integrate your valuable know-how directly in the drive, thus ensuring your competitive edge.

Compact, intelligent and economic

- Very cost effective solution for single-axis and multi-axis applications without any additional hardware
- Minimized engineering through conformity with IEC and PLCopen
- Faster implementation of your system solution through predefined technology packages

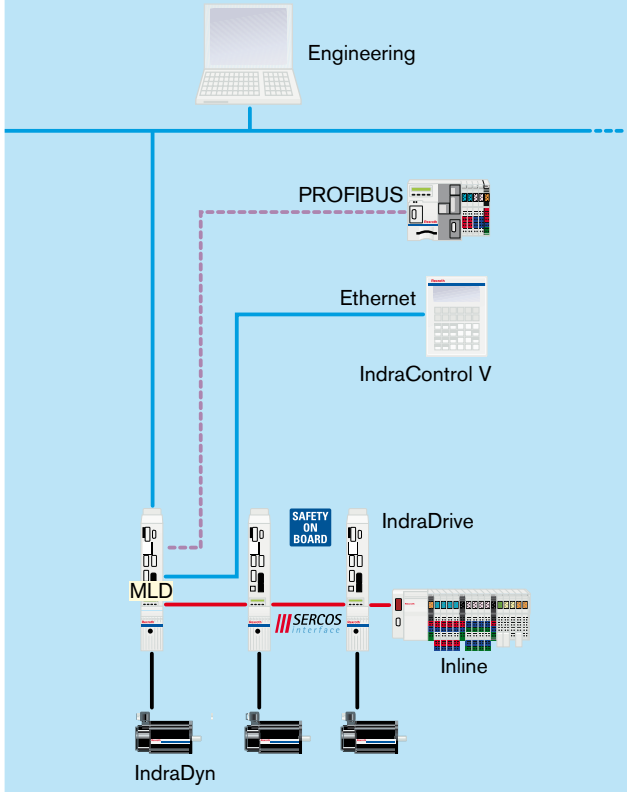
Your benefit

Motion-Logic drive-based



IndraMotion MLD-S

Motion-Logic drive-based



IndraMotion MLD-M

IndraMotion MLD combines high-capacity motion and PLC functions to form an efficient motion-logic system.

Additional information		
Drive platform	IndraDrive	IndraDrive and IndraDyn product catalog
Visualization devices, controller-based	IndraControl VCP	Chapter 3.2
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.3
Distributed input/output modules in IP67	Fieldline	Chapter 3.4
Engineering framework	IndraWorks	Chapter 3.5

IndraMotion MLD

Technical data	MLD-S BASIC	MLD-S ADVANCED	MLD-M ADVANCED
Number of axes	1	1	up to 8
Hardware requirements (Master)	BASIC control unit CSB	ADVANCED control unit CSH	CSH control units with optional CCD
Optional firmware	TF	ML	ML
Performance			
	Depending on the utilization of the BASIC drive	100 µs per 1,000 instructions in IL with bit and word processing	
Tasks			
Number of tasks	4		
Types of task	Time-controlled, periodic, free-running or event-controlled		
Cycle time	2 ms	1 ms	1 ms
Program memory			
Firmware 03VRS	192 kB		–
Firmware 04VRS	Typically 350 kB		
Programming			
Programming system	IndraWorks		
Programming languages	Instruction List (IL), Structured Text (ST), Ladder Diagram (LD), Sequential Function Chart (SFC), Function Block Diagram (FBD), Continuous Flow Chart (CFC)		
Programming interfaces	RS232, Ethernet		
Functions for program test	Break point, single step, singly cycle, write/force, monitoring, sampling trace, simulation, online change		
Supplied libraries	System-specific, drive-specific and PLCopen		
Master communication			
	SERCOS interface, PROFIBUS, PROFInet IO, DeviceNet, CANopen, parallel interface, analog interface, analog/digital for OPEN LOOP operation, IndraMotion MLD		
Digital inputs and outputs			
Inputs	5[1)]	7	Depending on the number and type of control units and options used
Inputs/outputs (any adjustment)	3[1)]	4	
MD1 option	–	12 I/8 O	
MD2 option	–	16 I/16 O	
Parallel interface	16 I/16 O	16 I/16 O	
Analog inputs and outputs			
From control unit	–[1)]	1 I/2 O	Depending on the number and type of control units and options used
With MA1 option	2 I/2 O	2 I/2 O	

[1)] with control unit CSB01.1C

Ordering data for firmware and software	
Type code	**Description**
Firmware for IndraMotion MLD	
FWA-INDRV*-MPB-xxVRS-xx-x-xxx-TF	IndraDrive BASIC firmware with TF option
FWA-INDRV*-MPH-xxVRS-xx-x-xxx-ML	IndraDrive ADVANCED firmware with ML option
IndraWorks software	
SWA-IWORKS-D*-xxVRS-DO-CD650	Engineering framework IndraWorks
SWS-IWORKS-CAM-xxVRS-DO	License for CamBuilder option

xx = IndraDrive configuration or software/firmware version

IndraMotion MLC – Controller-Based Solution with Integrated Motion Logic

The compact motion-logic system IndraMotion MLC from Rexroth gives you any freedom you wish for your consistent and modern machine automation. Innovative software and firmware functions with simple engineering and open system interfaces provide maximum flexibility in all motion applications with real-time.

By combining motion-control, PLC and technology functions, you can synchronize multi-axis applications very easily – freely scalable for centralized or distributed solutions with a flexible control platform. Motion functions, such as Master axes, electronic gears and cams, can be used quickly and transparently. The PLCopen-conforming user interface with its standardized function blocks according to IEC 61131-3 facilitates integration in various machine designs.

Your benefits

- Quick integration in various processes, machines and plants
- Scalable for centralized and distributed architectures with maximum performance
- Integrated runtime system with motion, logic and robot control as well as innovative technology function blocks
- Function block libraries conforming to IEC 61131-3 and PLCopen
- Compact control platform IndraControl L with flexible expansion capability
- Open interfaces for communication and technology functions
- Intuitive framework IndraWorks for all engineering tasks

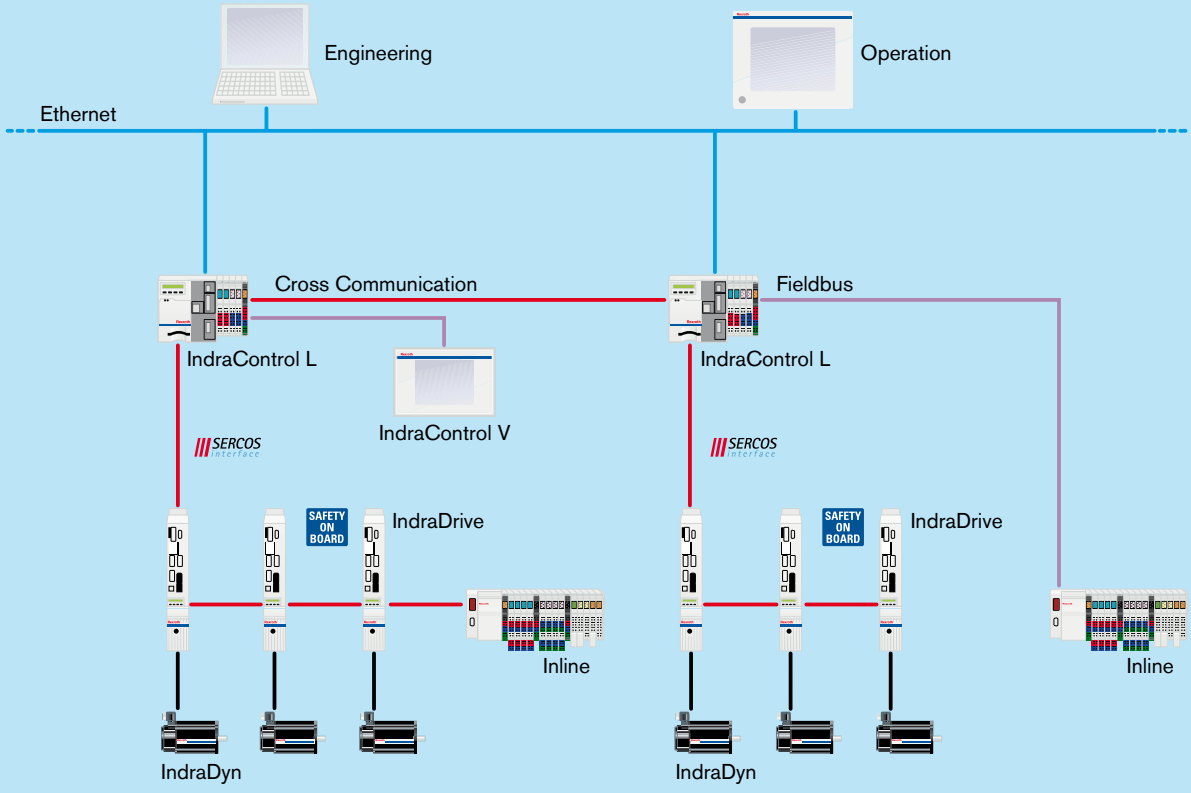
IndraMotion MLC is the integrated controller-based system solution from the Rexroth Automation House. Ready-to-use technology functions accelerate engineering, for example in packaging and handling applications.

Simple, open and flexible

- Overall solution with integrated motion logic
- Simple in use and scalable in performance and function
- Optimum performance for all mechatronic solutions

Your benefit

Motion-Logic controller-based



IndraMotion MLC

Centralized or distributed – IndraMotion MLC reduces expenditure and expense for integration, test, diagnostics and maintenance in the overall automation of your machines and systems.

Additional information		
Control hardware	IndraControl L40	Chapter 3.1
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.3
Distributed input/output modules in IP67	Fieldline	Chapter 3.4
Visualization devices, controller-based	IndraControl VCP	Chapter 3.2
Visualization devices, embedded PC	IndraControl VEP	Chapter 3.2
Visualization devices, standard industrial PC	IndraControl VSP	Chapter 3.2
Drive family	IndraDrive	IndraDrive and IndraDyn product catalog
Engineering framework	IndraWorks	Chapter 3.5

IndraMotion MLC

1	**Drives**		
1.1	IndraDrive	BASIC and ADVANCED with MPB/MPH firmware	●
		Dual-axis control units with MPD firmware	●
1.2	IndraDrive Mi		●
1.3	EcoDrive Cs		●
1.4	SERCOS Pack Profile		●
1.5	HNC100	Hydraulic drive	●
1.6	Master communication		
1.6.1	SERCOS interface		●
1.6.2	SERCOS III		●
1.6.3	Min. SERCOS cycle time		1 ms
2	**IndraControl L40 control**		
2.1	Interfaces		
2.1.1	SERCOS interface	On board	●
2.1.2	SERCOS III	Function module	○
2.1.3	Cross-communication of Master axes (ELS)	SERCOS interface function module	○
2.1.4	PROFIBUS Master	On board	●
2.1.5	PROFIBUS Slave	On board	●
2.1.6	PROFIBUS Master	Function module	○
2.1.7	DeviceNet Master	Function module	○
2.1.8	RS232	On board	●
2.1.9	Ethernet 10/100 Mpbs	On board	●
2.1.10	Cam controller	Function module	○
2.1.11	Master axis encoder	Function module	▼
2.1.12	SRAM	Function module for robot control	○
2.2	On-board-diagnostics and settings		
2.2.1	Status display (boot, SERCOS, test)	Display	●
2.2.2	Errors, warnings, messages, system reset	Display, keys	●
2.2.3	Ethernet settings (IP address)	Display, keys	●
2.2.4	Voltage monitoring, watchdog		●
2.2.5	Relay output ready for operation		●
3	**Inputs and outputs**		
3.1	On board		
3.1.1	High-speed digital inputs	Interrupt capability, typically 50 µs	8
3.1.2	High-speed digital outputs	0.5 A, typically 500 µs	8
3.2	Local		
3.2.1	FAST I/O function module – high-speed digital inputs	Interrupt capability, typically 40 µs	8/16
3.2.2	FAST I/O function module – high-speed digital outputs	Max. 0.5 A, typically 70 µs	8/16
3.2.3	Inline (digital, analog, relay, technology)	64 bytes, max. 512 I/O	○
3.3	Distributed via fieldbus		
3.3.1	Inline (IP20)		
3.3.1.1	PROFIBUS	On board	○
3.3.1.2	DeviceNet	Function module	○
3.3.2	Fieldline (IP67)		
3.3.2.1	PROFIBUS	On board	○
3.3.2.2	DeviceNet	Function module	○

● = default
○ = optional
▼ = in preparation

4	**HMI**		
4.1	IndraControl VCP (controller-based)	PROFIBUS	○
		DeviceNet	○
		Ethernet	●
4.2	IndraControl VEP (embedded PC)	Ethernet, OPC	○
4.3	IndraControl VSP, VPP (industrial PC)	Ethernet, OPC	○
5	**Communication interfaces**		
5.1	SERCOS interface	Real-time motion bus	●
5.2	SERCOS III	Real-time Ethernet bus	○
5.3	Master axis grouping	SERCOS interface	○
		SERCOS III (C2C)	○
5.4	Control grouping	Ethernet TCP/UDP/IP	●
5.5	PROFIBUS DP-V1 Master	e. g. peripherals, HMI	●/○
5.6	PROFIBUS DP-V1 Slave		●
5.7	DeviceNet-Master (explicit/implicit messaging)	e. g. peripherals, HMI	○
5.8	RS232		●
5.9	Ethernet	TCP/IP (e. g. HMI, engineering)	●
		EtherNet/IP Adapter (Slave)	●
6	**Firmware functions**		
6.1	General		
6.1.1	Runtime system	Integrated motion-logic system	●
6.2	Logic control		
6.2.1	IndraLogic kernel according to IEC 61131-3		●
6.2.2	Freely configurable tasks	Time-controlled, cyclic, free-runing, event-controlled	8
6.2.3	External event tasks	Synchronously with SERCOS cycle	1
		System-specific (e. g. error reaction)	1
6.2.4	Status/setting of cycle times	e. g. SERCOS cycle (1/2/4/8 ms)	●
6.2.5	Program organization	According to IEC 61131-3	●
6.2.6	Motion commands according to PLCopen (choice)	MC_MoveAbsolute	●
		MC_MoveRelative	●
		MC_MoveVelocity	●
		MC_Home	●
		MC_CamIn, MC_CamOut	●
		MC_GearIn, MC_GearOut	●
6.2.7	Extended motion commands (choice)	MB_ReadListParameter	●
		MB_WriteListParameter	●
		MB_GearInPos	●
		ML_PhasingSlave	●
		MB_ClearAxisError	●
		MB_ClearSystemError	●
6.3	Motion control		
6.3.1	Number of axes	Virtual, real, encoder, grouping	32
6.3.2	Synchronization (ELS – electronic line shaft)	Multi-axes	
6.3.2.1	Virtual axes	Virtual masters	●
6.3.2.2	Encoder axes	Real masters	●
6.3.2.3	Real axes	Servo drives	●

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6	Firmware functions		
6.3.2.4	Grouped axes	Cross-communication	●
6.3.2.5	Dynamic synchronization		●
6.3.2.6	Master axis grouping		●
6.3.2.7	Master axis cascading		●
6.3.3	Positioning	Single-axis	●
6.3.4	Electronic gears		●
6.3.5	Electronic cams		
6.3.5.1	In the drive	Max. 1,024 intermediate points	4
6.3.5.2	In the control	Profiles per axis with up to 16 segments	2
6.3.6	Diagnostics	Status, warnings, errors	
6.3.6.1	Function blocks	Software	●
6.3.6.2	Parameter access to diagnostics memory	Software	●
6.3.6.3	Locally via display	Control hardware	●
6.3.6.4	Axis monitoring	e. g. utilization, encoders, limit values	●
6.3.6.5	Diagnostics memory	64 kB, max. 999 messages	●
6.4	Robot control		
6.4.1	Number of interpolation axes		6
6.4.2	Sequential motion programming		●
6.4.3	Multi-axis kinematics		●
6.4.4	Kinematics transformations		●
6.4.5	LINEAR, CIRCULAR, PTP types of interpolation		●
6.4.6	Block transitions		●
6.4.7	Override		●
6.4.8	Teach-in function		●
6.4.9	Approximate positioning		●
6.4.10	Belt synchronization		●
6.4.11	Speed limitation	For path and axes	●
6.4.12	Acceleration limitation	For path and axes	●
6.4.13	Safety zones		
6.5	Technology (choice)		
6.5.1	Register control		●
6.5.2	Flying cut-off		●
6.5.3	Measuring wheel		●
6.5.4	Probe		●
6.5.5	Cam control		●
6.5.6	Cross cutter		●
6.5.7	Sag control		●
6.5.8	Winder		●
6.5.9	Tension control		●

● = default
○ = optional
▼ = in preparation

Ordering data for firmware and software	
Type code	**Description**
FWA-CML40*-ML*-xxVRS-D0	Firmware IndraMotion MLC (for IndraControl L40)
IndraWorks software	
SWA-IWORKS-ML*-xxVRS-D0-CD650	Engineering framework
SWS-IWORKS-CAM-xxVRS-D0	License for CamBuilder option

Ordering data for control hardware	
Type code	**Description**
CML40.2-SP-330-NA-NNNN-NW	IndraControl L40 assembly
Accessories for IndraControl L40	
CAL01.1-F1	Fan
R-IB IL CML S01-PLSET	Connector set
R-IB IL FIELD 2	Labeling field
Function modules for IndraControl L40	
CFL01-V1	DeviceNet Master
CFL01-P1	PROFIBUS Master
CFL01-Q2	Maser axis grouping SERCOS interface
CFL01-R3	SERCOS III
CFL01-N1	Cam controller
CFL01-E2	Fast I/O
CFL01-Y1	SRAM

xx = software/firmware/hardware version

IndraMotion MTX – Highly Productive CNC Solution for All Machine Tools

Rexroth IndraMotion MTX is the individually scalable CNC platform with integrated PLC for successful machining and forming designs. Excellent performance data and comprehensive technology functions open new horizons for maximum productivity and flexibility.

Wether you control a standard machine or a fully automated production system – IndraMotion MTX always ensures highly dynamic processing with minimized down times in your application. The following system versions are available:

- IndraMotion MTX compact – space-saving rack version for distributed control technology
- IndraMotion MTX standard – plug-in control in a sturdy industrial PC
- IndraMotion MTX performance – high-capacity plug-in control in a special high-end industrial PC

Your benefits

- Advanced technology functions for turning, milling, drilling, grinding, bending, nibbling, punching and laser cutting
- Open system platform with modular configuration
- Uniform operational design for easy programming
- Performance and function individually scalable
- Innovative CNC kernel with comprehensive technology functions and libraries
- Shortest CNC cycle times, even for high-speed machining
- Minimum PLC processing times
- Flexibly configurable user interface
- Particular machine-specific functions
- Open standards for easy connection of higher-order ERP systems

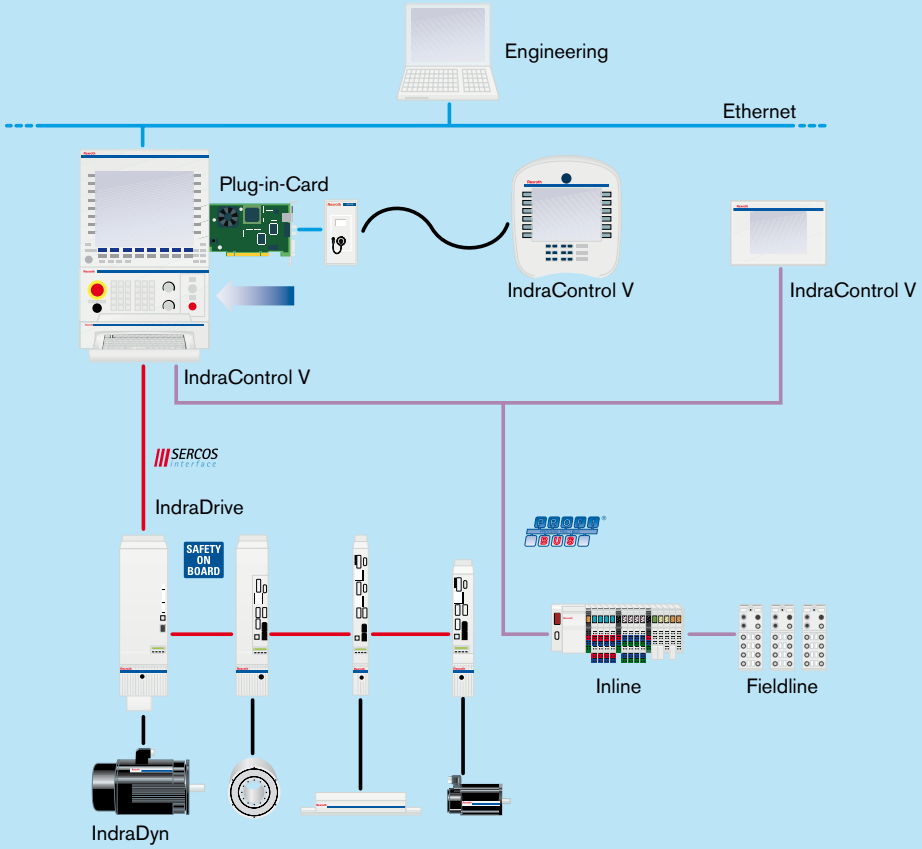
IndraMotion MTX is the customized CNC solution for turning, milling, drilling, grinding, bending, nibbling, punching and laser cutting.

Open, complete and efficient

- Highest manufacturing precision down to the nanometer range
- Modern CNC solution for excellent performance
- Shortest CNC and PLC cycle times for dynamic machining

Your benefit

CNC
PC-based



IndraMotion MTX

With its modular system design, its open control structure and its international standard interfaces, IndraMotion MTX solves any machining task in CNC technology with utmost dynamics and precision.

Additional information		
Visualization devices, high-end industrial PC	IndraControl VPP	Chapter 3.2
Visualization devices, standard industrial PC	IndraControl VSP	Chapter 3.2
Visualization devices, displays	IndraControl VDP	Chapter 3.2
Visualization devices, embedded PC	IndraControl VEP, VEH	Chapter 3.2
Visualization devices, controller-based	IndraControl VCP	Chapter 3.2
Visualization devices, machine control panels	IndraControl VAM	Chapter 3.2
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.3
Distributed input/output modules in IP67	Fieldline	Chapter 3.4
Drive family	IndraDrive	IndraDrive and IndraDyn product catalog
Engineering framework	IndraWorks	Chapter 3.5

IndraMotion MTX

1	Machining technologies	MTX compact	MTX standard	MTX performance
1.1	Turning	●	●	●
1.2	Milling	●	●	●
1.3	Drilling	●	●	●
1.4	Grinding	–	●	●
1.5	Nibbling, laser cutting	–	●	●
1.6	Reforming	–	●	●
2	**Axis control**	**MTX compact**	**MTX standard**	**MTX performance**
2.1	Default number of axes	8 ●	8 ●	8 ●
2.2	Max. number of axes	8 ●	8 ●	64 ○
2.3	Max. number of spindles thereof	2 ●	2 ●	32 ○
2.4	Default number of independent channels	2 ●	2 ●	3 ●
2.5	Max. number of independent channels	2 ●	2 ●	12 ○
2.6	Default number of interpolating axes per channel	4 ●	4 ●	4 ●
2.7	Max. number of interpolating axes per channel	4 ●	4 ●	8* ○
2.8	Linear axes	●	●	●
2.9	Rotary axes	●	●	●
2.10	Endlessly turning rotary axis	●	●	●
2.11	Hirth axes	●	●	●
2.12	Spindle/C-axis switching	●	●	●
2.13	Max. number of gantry axes per channel	4 ② ○	4 ② ○	8 ② ③ ○
2.14	Max. number of synchronous groups per channel	4 ① ② ○	4 ① ② ○	8 ① ② ③ ○
2.15	Channel-crossing axis transfer	●	●	●
2.16	Cams	●	●	●
2.17	Software limit	●	●	●
2.18	Main spindle synchronization	① ② ○	① ② ○	① ② ③ ○
2.19	Integrated safety system of Cat. 3 according to DIN 954-1 (safe stop, safely reduced speed, safe end positions)	□	□	□
3	**Interpolation functions**	**MTX compact**	**MTX standard**	**MTX performance**
3.1	Linear interpolation	●	●	●
3.2	Linear interpolation with/without exact stop	●	●	●
3.3	Circular interpolation with radius and center-point programming, helical interpolation	●	●	●
3.4	Circular interpolation with tangential entry	●	●	●
3.5	Rigid tapping cycle	●	●	●
3.6	Thread cutting	●	●	●
3.7	NC block preview, look-ahead with jerk limitation	Max. 30 blocks ●	Max. 30 blocks ●	Max. 1,000 blocks ○
3.8	5/6 axis transformation with TCP programming	–	–	③ ○
3.9	Jogging with active transformation	–	–	③ ○
3.10	Spline interpolation, C1 + C2, continuous cubic splines, B-splines, NURBS	① ② ○	① ② ○	① ② ③ ○
3.11	Nanometer resolution	●	●	●

● Default
○ Optional
■ Optional in connection with a PC
□ Optional with IndraDrive

① "Turning 1" technology package
② "Milling 1" technology package
③ "Milling 2" technology package
④ "Turning" shop programming
⑤ "Milling" shop programming

* Option requiring official approval for export according to Part I C of the Export List (EG-VO), Pos. 2D002

4	Feed functions	MTX compact		MTX standard		MTX performance	
4.1	Feed in mm/min or inch/min		●		●		●
4.2	Time programming		●		●		●
4.3	Feedrate per revolution		●		●		●
4.4	Constant cutting speed	①	○	①	○	①	○
4.5	Feed on positive stop		●		●		●
4.6	Torque reduction		●		●		●
5	**Shifts and compensations**	**MTX compact**		**MTX standard**		**MTX performance**	
5.1	Mirroring, scaling, rotating		●		●		●
5.2	Zero offsets		●		●		●
5.3	Compensations and zero offsets programmable through PLC		●		●		●
5.4	Compensations and zero offsets programmable through CPL		●		●		●
5.5	Placements (FRAMES)	②	○	②	○	② ③	○
5.6	2D compensation		●		●		●
5.7	3D cutter radius compensation		–		–	③	○
5.8	Compensation with plane switching		●		●		●
5.9	Tangential tool guidance		●		●		●
6	**Tool management**	**MTX compact**		**MTX standard**		**MTX performance**	
6.1	Integrated flexible tool management		●		●		●
6.2	Configurable tool database		●		●		●
6.3	Freely definable tool compensation (length, radius, cutting position compensation, user data)		●		●		●
6.4	Additive tool compensations (D-compensations)		●		●		●
6.5	Access to tool data from PLC		●		●		●
6.6	Access to tool data from CNC		●		●		●
7	**CNC programming**	**MTX compact**		**MTX standard**		**MTX performance**	
7.1	Creation of parts program	DIN 66025/RS427	●	DIN 66025/RS427	●	DIN 66025/RS427	●
7.2	High-level language programming, CPL (customer programming language)		●		●		●
7.3	Graphical NC programming	④ ⑤	■	④ ⑤	○	④ ⑤	○
7.4	Graphical NC simulation	④ ⑤	■	④ ⑤	○	④ ⑤	
7.5	CNC user memory	64 MB		64 MB		64 MB	
7.6	Static memory	8 MB		8 MB		8 MB	
7.7	Max. size of parts program	8 MB PC hard disk (network file system)	■	PC hard disk (network file system)		PC hard disk (network file system)	
8	**Technology cycles**	**MTX compact**		**MTX standard**		**MTX performance**	
8.1	Drilling	① ②	■	① ②	○	① ② ③	○
8.2	Turning	① ④	■	① ④	○	① ④	○
8.3	Milling	② ⑤	■	② ⑤	○	② ⑤ ③	○

● Default
○ Optional
■ Optional in connection with a PC
☐ Optional with IndraDrive

① “Turning 1” technology package
② “Milling 1” technology package
③ “Milling 2” technology package

④ “Turning” shop programming
⑤ “Milling” shop programming

IndraMotion MTX

9	Functions	MTX compact	MTX standard	MTX performance
9.1	Dwell time in seconds	●	●	●
9.2	Acceleration programming, loop gain programming	●	●	●
9.3	Homing through NC program	●	●	●
9.4	Absolute dimension, relative dimension	●	●	●
9.5	Switching between inch and mm	●	●	●
9.6	Probe, static/on-the-fly measurement	●	●	●
9.7	Read process and drive data through SERCOS interface	●	●	●
9.8	Roundings and chamfers	●	●	●
9.9	Laser power control	●	●	●
9.10	Digitizing	●	●	●
9.11	NC block defined by PLC	●	●	●
10	**Support for control elements**	**MTX compact**	**MTX standard**	**MTX performance**
10.1	Configurable operator screens	■	●	●
10.2	Cycle header/input support, OEM cycles	■	●	●
10.3	NC program restart/block search	●	●	●
10.4	Dry run	●	●	●
10.5	Retracting from and returning to the contour	●	●	●
11	**PLC programming**	**MTX compact**	**MTX standard**	**MTX performance**
11.1	Integrated PLC: IndraLogic	●	●	●
11.2	Programming languages according to IEC 61131-3 (IL, LD, CFC, ST, SFC, FBD)	●	●	●
11.3	PLC program memory	8 MB	8 MB	8 MB
11.4	Number of high-speed inputs/outputs	–	8/8 ○	8/8 ○
11.5	Number of fieldbus inputs/outputs in bytes	8,192/8,192	8,192/8,192	8,192/8,192
11.6	Multitasking	●	●	●
11.7	Max. number of PLC tasks	16	16	16
12	**Diagnostic and startup tools**	**MTX compact**	**MTX standard**	**MTX performance**
12.1	Integrated, system-crossing engineering framework IndraWorks	■	●	●
12.2	Automatic system monitoring units	●	●	●
12.3	Instructions and error messages in plaintext	■	●	●
12.4	Integrated drive project planning	■	●	●
12.5	Drive oscilloscope	■	●	●
12.6	Integrated PLC project planning	■	●	●
12.7	Logic analyzer	■	●	●
12.8	Remote diagnostics I-Remote	○	○	○
13	**Open architecture**	**MTX compact**	**MTX standard**	**MTX performance**
13.1	Configurable user interface with all standard functions	■	●	●
13.2	Projectable user-specific operator screens	■	●	●
13.3	Adaptation and integration through standardized interfaces (OPC, XML, ActiveX, .NET)	■	●	●

● Default
○ Optional
■ Optional in connection with a PC
□ Optional with IndraDrive

14	Control hardware and interfaces	MTX compact		MTX standard		MTX performance	
14.1	CPU	IndraControl L40		Plug-in card		Plug-in card	
14.2	Digital drive interface SERCOS interface	2 to 16 Mbauds	●	2 to 16 Mbauds	●	2 to 16 Mbauds	●
14.3	PROFIBUS DP Master	12 Mbauds	●	12 Mbauds	●	12 Mbauds	●
14.4	Ethernet	100 Mbits	●	100 Mbits	●	100 Mbits	●
14.5	Ethernet/IP Adapter (Slave)		○		–		○
14.6	DeviceNet Scanner (Master)		○		–		○
15	**Software and hardware**	**MTX compact**		**MTX standard**		**MTX performance**	
15.1	Operating system Windows XP						
15.2	Panel PC IndraControl VSP 16/40 - CPU: Celeron, 2 GHz - RAM: 512 MB - Hard disk: min. 30 GB - TFT display: 12"/15" - TFT resolution: 800 x 600/1,024 x 768 - Floppy disk (USB): 1.44 MB - DVD-RW/DVD-ROM drive - Ethernet, 100 Mbits, 2 COM, 1 LPT, keyboard, mouse - USB interface/IP65: 2/1 - 16 machine control keys		○		○		○
15.3	Panel PC IndraControl VPP 16/40 - CPU: Celeron M, 1.3 GHz - RAM: 512 MB/1 GB - Shock-proof hard disk: min. 20 GB - TFT display: 12"/15" - TFT resolution: 800 x 600/1,024 x 768 - Floppy disk (USB): 1.44 MB - DVD-RW/DVD-ROM drive - Ethernet, 100 Mbits, 2 COM, 1 LPT, keyboard, mouse - USB interface/IP65: 2/1 - USV port (optional batteries) - 16 machine control keys - Integrated temperature and fan monitoring		○		–		○
15.4	Industrial PC IndraControl VSB 40 - CPU: Celeron, 2 GHz - RAM: 512 MB - Hard disk: min. 30 GB - Floppy disk (USB): 1.44 MB - DVD-RW/DVD-ROM drive - Ethernet, 100 Mbits, 2 COM, 1 LPT, keyboard, mouse - USB interface/IP65: 2/0 - 16 machine control keys		○		○		○
15.5	Industrial PC IndraControl VPB 40 - CPU: Celeron M, 1.3 GHz - RAM: 512 MB/1 GB - Shock-proof hard disk: min. 20 GB - Floppy disk (USB): 1.44 MB - DVD-RW/DVD-ROM drive - Ethernet, 100 Mbits, 2 COM, 1 LPT, keyboard, mouse - USB interface/IP65: 2/0 - USV port (optional batteries) - Integrated temperature and fan monitoring		○		–		○

● Default
○ Optional
■ Optional in connection with a PC
☐ Optional with IndraDrive

IndraMotion MTX compact

Ordering data for control hardware	
Order code	**Description**
CML40.2-SP-330-NA-NN-NN-NW	IndraControl L40 with SERCOS interface, PROFIBUS interface

Ordering data for firmware and software	
Order code	**Description**
FWA-CML40*-MTX-xxVRS-NN	Firmware for IndraMotion MTX compact
SWA-IWORKS-MTX-xxVRS-D0-CD650-SIMULATOR	IndraWorks for IndraMotion MTX-CNC systems, offline and remote programming, MTX simulator (DE/EN)

Ordering data for accessories	
Order code	**Description**
SWS-MTX***-RUN-NNVRS-D0-TUR1	Technology package – turning 1
SWS-MTX***-RUN-NNVRS-D0-SFPT	Shop programming – turning (DE/EN)
SWS-MTX***-RUN-NNVRS-D0-BAZ1	Technology package – milling 1 (DE/EN)
SWA-MTX***-SED-xxVRS-IT-CD650	Language extension, Italian
SWA-MTX***-SED-xxVRS-FR-CD650	Language extension, French
SWA-MTX***-SED-xxVRS-CS-CD650	Language extension, Czech
SWA-MTX***-SED-xxVRS-RU-CD650	Language extension, Russian
SWA-MTX***-SED-xxVRS-PT-CD650	Language extension, Portuguese
SWA-MTX***-SED-xxVRS-SV-CD650	Language extension, Swedish

Documentations	
Order code	**Description**
DOK-MTX***-SYS*DES*Vxx-PRxx-EN-P	System description, project planning
DOK-MTX***-SOFTINS*Vxx-IBxx-EN-P	Software installation
DOK-MTX***-PLC*INT*Vxx-PRxx-EN-P	PLC interface, project planning
DOK-MTX***-MA*PAR**Vxx-PAxx-EN-P	Machine parameters, parameter description
DOK-MTX***-NC*OP***Vxx-AWxx-EN-P	IndraMotion standard NC operation
DOK-MTX***-NC*FUNC*Vxx-FKxx-EN-P	Functional description
DOK-MTX***-NC**PRO*Vxx-AWxx-EN-P	Programming manual, application description
DOK-MTX***-SF*PROG*Vxx-AWxx-EN-P	Turning and milling shop programming, operating and programming instructions
DOK-MTX***-DIAGMES*Vxx-IFxx-EN-P	Diagnosis messages
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	IndraLogic programming manual
DOK-MTX***-OPC*INT*Vxx-PRxx-EN-P	OPC interface, project planning
DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P	I-Remote maintenance software, application description

xx = software/firmware version

IndraMotion MTX standard

Ordering data for control hardware	
Order code	**Description**
CFG-VSN01E1-H-NN-NN-NN-NN-NN	IndraControl VS basic device with IndraControl P40 plug-in card
CFG-VSN01E1-H-IC-NN-NN-NN-NN	IndraControl VS basic device with IndraControl P40 plug-in card and high-speed I/O interface (8 In/8 Out)

Ordering data for firmware and software	
Order code	**Description**
FWA-CMP40*-MTX-xxVRS-NN	Firmware for IndraMotion MTX standard
SWA-IWORKS-MTX-xxVRS-D0-CD650-OPDENG	Standard CNC operating and programming software (operation and engineering) incl. WinStudio Lite Runtime and Editor (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-OPD	Standard CNC operating software (operation) incl. WinStudio Lite Runtime (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-COM	Communication interface for customer-specific user interfaces (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-SIMULATOR	IndraWorks for IndraMotion MTX-CNC systems, offline and remote programming, MTX simulator (DE/EN)

Ordering data for accessories	
Order code	**Description**
SWS-MTX***-RUN-NNVRS-D0-TUR1	Technology package – turning 1
SWS-MTX***-RUN-NNVRS-D0-SFPT	Shop programming – turning (DE/EN)
SWS-MTX***-RUN-NNVRS-D0-BAZ1	Technology package – milling 1 (DE/EN)
SWA-MTX***-SED-xxVRS-IT-CD650	Language extension, Italian
SWA-MTX***-SED-xxVRS-FR-CD650	Language extension, French
SWA-MTX***-SED-xxVRS-CS-CD650	Language extension, Czech
SWA-MTX***-SED-xxVRS-RU-CD650	Language extension, Russian
SWA-MTX***-SED-xxVRS-PT-CD650	Language extension, Portuguese
SWA-MTX***-SED-xxVRS-SV-CD650	Language extension, Swedish

Documentations	
Order code	**Description**
DOK-MTX***-SYS*DES*Vxx-PRxx-EN-P	System description, project planning
DOK-MTX***-SOFTINS*Vxx-IBxx-EN-P	Software installation
DOK-MTX***-PLC*INT*Vxx-PRxx-EN-P	PLC interface, project planning
DOK-MTX***-MA*PAR**Vxx-PAxx-EN-P	Machine parameters, parameter description
DOK-MTX***-NC*OP***Vxx-AWxx-EN-P	IndraMotion standard NC operation
DOK-MTX***-NC*FUNC*Vxx-FKxx-EN-P	Functional description
DOK-MTX***-NC**PRO*Vxx-AWxx-EN-P	Programming manual, application description
DOK-MTX***-SF*PROG*Vxx-AWxx-EN-P	Turning and milling shop programming, operating and programming instructions
DOK-MTX***-DIAGMES*Vxx-IFxx-EN-P	Diagnosis messages
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	IndraLogic programming manual
DOK-MTX***-OPC*INT*Vxx-PRxx-EN-P	OPC interface, project planning
DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P	I-Remote maintenance software, application description

xx = software/firmware version

IndraMotion MTX performance

Ordering data for control hardware	
Order code	**Description**
CFG-VSN01E1-GC-NN-NN-NN-NN-NN	IndraControl VS basic device with IndraControl P60 plug-in card
CFG-VSN01E1-GC-IC-NN-NN-NN-NN	IndraControl VS basic device with IndraControl P60 plug-in card and high-speed I/O interface (8 In/8 Out)
CFG-VPN01A1-GC-NN-NN	IndraControl VP basic device with IndraControl P60 plug-in card
CFG-VPN01A1-GC-IC-NN	IndraControl VP basic device with IndraControl P60 plug-in card and high-speed I/O interface (8 In/8 Out)
CFG-VPN01A1-V1-GC-NN	IndraControl VP basic device with IndraControl P60 plug-in card and DeviceNet scanner (Master)
CFG-VPN01A1-V1-GC-IC	IndraControl VP basic device with IndraControl P60 plug-in card, DeviceNet scanner (Master) and high-speed I/O interface (8 In/8 Out)

Ordering data for firmware and software	
Order code	**Description**
FWA-CMP60*-MTX-xxVRS-NN	Firmware for IndraMotion MTX performance
SWA-IWORKS-MTX-xxVRS-D0-CD650-OPDENG	Standard CNC operating and programming software (operation and engineering) incl. WinStudio Lite Runtime and Editor (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-OPD	Standard CNC operating software (operation) incl. WinStudio Lite Runtime (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-COM	Communication interface for customer-specific user interfaces (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-SIMULATOR	IndraWorks for IndraMotion MTX-CNC systems, offline and remote programming, MTX simulator (DE/EN)

Ordering data for accessories	
Order code	**Description**
SWW-IWORKS-MTX-xxVRS-D0-CD650	Extended functions – interpolation groups with more than 4 axes for path control
SWS-MTX***-RUN-NNVRS-D0-08A02C	License for additional 8 axes and 2 CNC channels, multiple use for up to max. 64 axes and/or 12 channels
SWS-MTX***-RUN-NNVRS-D0-TUR1	Technology package – turning 1
SWS-MTX***-RUN-NNVRS-D0-SFPT	Shop programming – turning (DE/EN)
SWS-MTX***-RUN-NNVRS-D0-BAZ1	Technology package – milling 1
SWS-MTX***-RUN-NNVRS-D0-BAZ2	Technology package – milling 2
SWS-MTX***-RUN-NNVRS-D0-SFPM	Shop programming – milling (DE/EN)
SWA-MTX***-SED-xxVRS-IT-CD650	Language extension, Italian
SWA-MTX***-SED-xxVRS-FR-CD650	Language extension, French
SWA-MTX***-SED-xxVRS-CS-CD650	Language extension, Czech
SWA-MTX***-SED-xxVRS-RU-CD650	Language extension, Russian
SWA-MTX***-SED-xxVRS-PT-CD650	Language extension, Portuguese
SWA-MTX***-SED-xxVRS-SV-CD650	Language extension, Swedish

xx = software/firmware version

Documentations	
Order code	**Description**
DOK-MTX***-SYS*DES*Vxx-PRxx-EN-P	System description, project planning
DOK-MTX***-SOFTINS*Vxx-IBxx-EN-P	Software installation
DOK-MTX***-PLC*INT*Vxx-PRxx-EN-P	PLC interface, project planning
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DOK-MTX***-NC*FUNC*Vxx-FKxx-EN-P	Functional description
DOK-MTX***-NC**PRO*Vxx-AWxx-EN-P	Programming manual, application description
DOK-MTX***-SF*PROG*Vxx-AWxx-EN-P	Turning and milling shop programming, operating and programming instructions
DOK-MTX***-DIAGMES*Vxx-IFxx-EN-P	Diagnosis messages
DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P	IndraLogic programming manual
DOK-MTX***-OPC*INT*Vxx-PRxx-EN-P	OPC interface, project planning
DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P	I-Remote maintenance software, application description

xx = software/firmware version

IndraMotion for Metal Forming – Individual Automation System for Material Transport

IndraMotion for Metal Forming is the modular and scalable system solution for cost effective single-axis and multi-axis applications in belt systems and parallel running separation equipment. Preprogrammed controls, compact control units and intelligent drives with a wide range of rotational and linear motors ensure maximum productivity and highest product quality.

The customized automation design is based on the IndraMotion MLD and IndraMotion MLC system solutions. With its integrated and branch-specific extended technology functions, it is exactly tailored to the requirements of modern production plants. Whether the material to be machined is metal, plastic, paper or wood – IndraMotion for Metal Forming solves any and all synchronization and positioning tasks with cost effective efficiency. To meet the various requirements in your production plant, IndraMotion for Metal Forming is available in the following versions:

- Single-axis applications with IndraMotion MLD-S
  - Roll feeds
  - Feed straighteners
  - Flying cut-off
  - Cross cutter
  - Unwinder
  - Straightener

- Multi-axis applications with MLD-M and MLC
  - Belt systems
  - Parallel running separation equipment
  - Profiling systems
  - Profiling presses
  - Zigzag feed

Your benefits

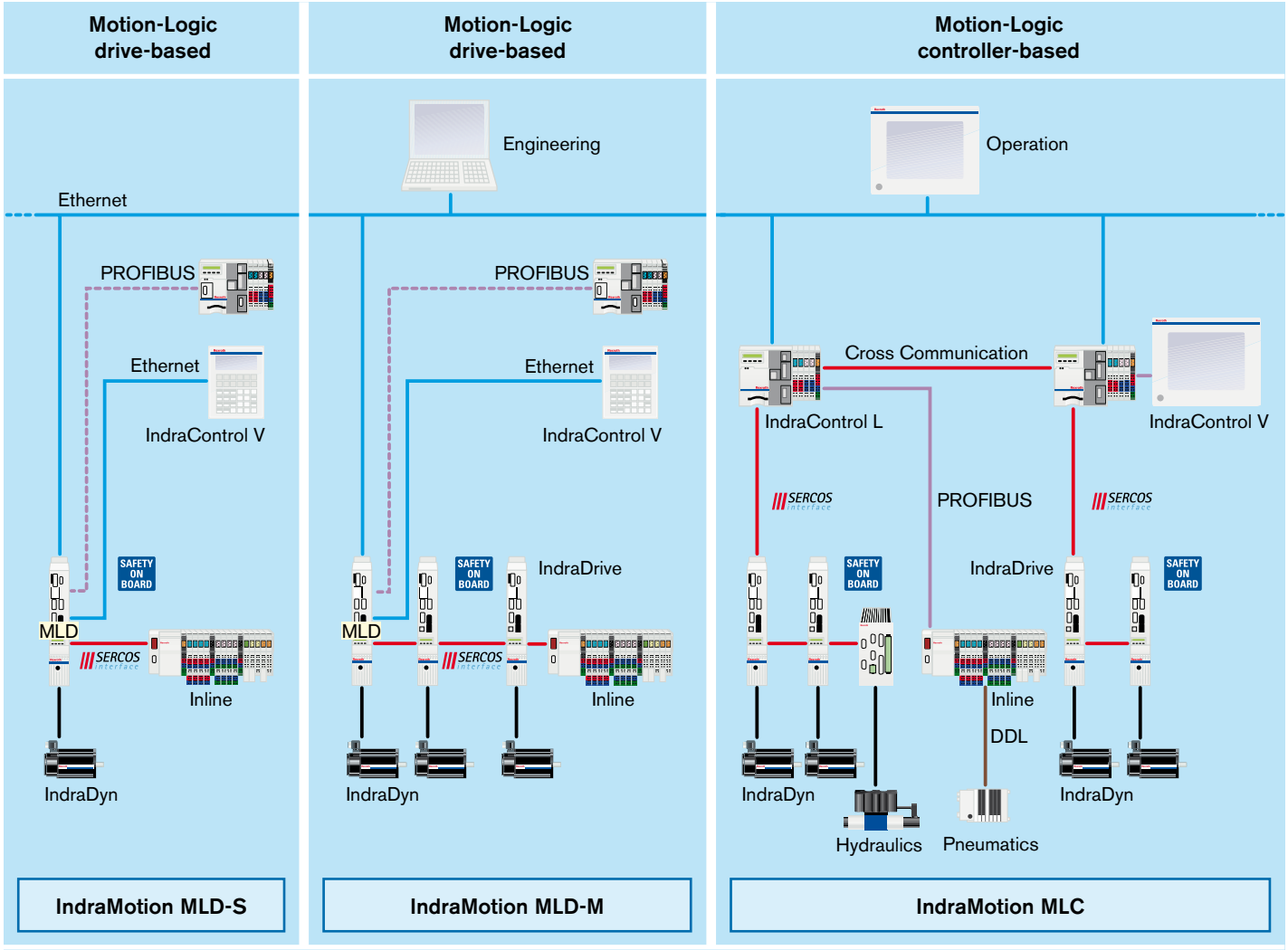
- Scalable drive platforms with highly dynamic motors
- Standardized programming tools according to IEC 61131-3 and PLCopen
- Drive-integrated technical safety system, certified according to EN 954-1, Cat. 3
- Intuitive engineering with the IndraWorks software framework
- Low assembly and installation requirements as well as fast startup through matching and pre-configured system components
- Exact synchronization between press and feeding equipment
- Optional technology and communication interfaces
- Ready technology functions for branch-specific “ready-to-apply” solutions
- Easy incorporation of distributed drive solutions in existing or new control designs
- Easy implementation of process functions

IndraMotion for Metal Forming – modular and scalable system solution for perfect and economic material transport

Complete, perfect and economic

- Innovative function blocks, such as function libraries, user libraries, technology packages and user programs
- Saving of external peripheral components
- Longer machine life through reduced mechanical wear

Your benefit



Whether drive-based or rack-based, whether single-axis or multi-axis application, IndraMotion for Metal Forming is a modular and scalable system that will always provide the proper solution.

Additional information		
Automation system	IndraMotion MLD	Chapter 2.2
Automation system	IndraMotion MLC	Chapter 2.3
Control hardware	IndraControl L	Chapter 3.1
Visualization devices, controller-based	IndraControl VCP	Chapter 3.2
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.3
Distributed input/output modules in IP67	Fieldline	Chapter 3.4
Drive family	IndraDrive	IndraDrive and IndraDyn product catalog
Engineering framework	IndraWorks	Chapter 3.5

IndraMotion for Handling – Turnkey Automation Solution for All Handling Tasks

IndraMotion for Handling is the system solution for efficient coordination of axis movements in fully automated production. This intelligent design is based on uniform control and drive platforms and on international software standards. The precisely matching components allow you to implement your handling applications in any configuration you desire.

The essential highlights of IndraMotion for Handling are: easy operation, teaching and programming of time-optimized motion sequences to ensure highest product quality. This turnkey automation solution with open-source software facilitates engineering and maximizes the flexibility in your individual application.

Based on the IndraLogic and IndraMotion MLC systems, this solution has been optimized to meet the requirements of handling, assembly, palletizing and pick-and-place applications as well as of machine tools.

Your benefits

- Maximum performance and functionality through innovative control platform
- Free PLC functionality according to IEC 61131-3
- Open standardized communication interfaces
- Flexible scalability for various HMI devices
- Easy teaching, defining and programming of motion sequences through HMI, PC or PLC
- Turnkey open-source solution with PLC basic program
- Complete PLC library and PLCopen function blocks
- Multiple kinematics for various applications
- Quick expansion and easy connection of I/O and function modules
- Drive-integrated technical safety system, certified according to EN 954-1, Cat. 3
- Intuitive engineering with IndraWorks

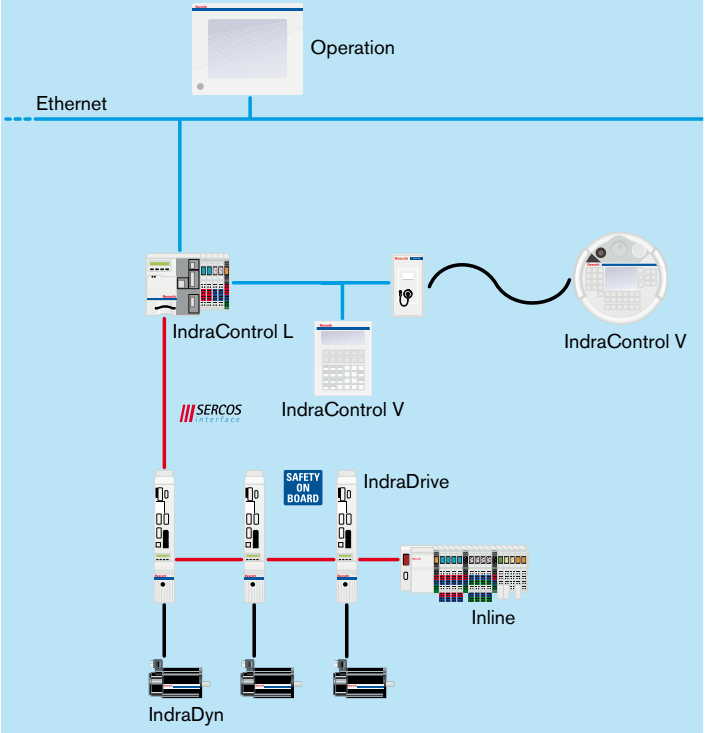
IndraMotion for Handling – the perfect automation design for time-optimized multi-axis movements in handling and assembly applications.

Turnkey, flexible and efficient

- Exact positioning with highest precision accuracy
- Easy operation and programming
- Time-optimized motion sequencing for minimum cycle times

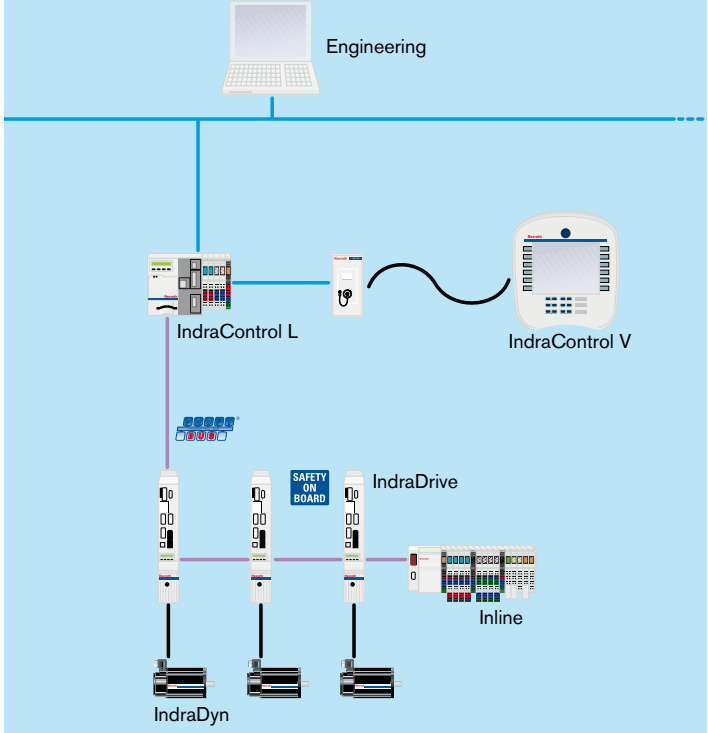
Your benefit

Motion-Logic controller-based



IndraMotion MLC

Logic controller-based



IndraLogic L

IndraMotion for Handling provides all degrees of freedom for centralized and distributed automation, with numerous options for control and visualization devices.

Additional information		
Automation system	IndraLogic L	Chapter 2.1
Automation system	IndraMotion MLC	Chapter 2.3
Control hardware	IndraControl L	Chapter 3.1
Visualization devices, embedded PC	IndraControl VEH	Chapter 3.2
Visualization devices, controller-based	IndraControl VCP, VCH	Chapter 3.2
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.3
Drive family	IndraDrive	IndraDrive and IndraDyn product catalog
Engineering framework	IndraWorks	Chapter 3.5

IndraMotion for Packaging – Flexible Automation Systems for the Food Processing and Packaging Industries

IndraMotion for Packaging ensures shorter cycle times and quicker format change, with simultaneous increased precision. This system allows you to automate your processes more easily, flexibly and quickly – covering the entire range from the single machine to the linked production system. Scalable control platforms and international software standards allow you to implement your various applications in any configuration you desire.

IndraMotion for Packaging will always provide the technically and economically optimal system solution for your application – according to your control architecture and functional requirements:

- IndraMotion MLD – for drive-based topologies with up to 8 axes, e.g. for carton erectors, labelers
- IndraMotion MLC – for controller-based topologies with up to 32 axes, e.g. for cartoning systems, vertical tubular bag machines
- IndraMotion MLP – for PC-based topologies with up to 32 axes, e.g. for palletizing machines, pick-and-place applications or flow wrappers

Your benefits

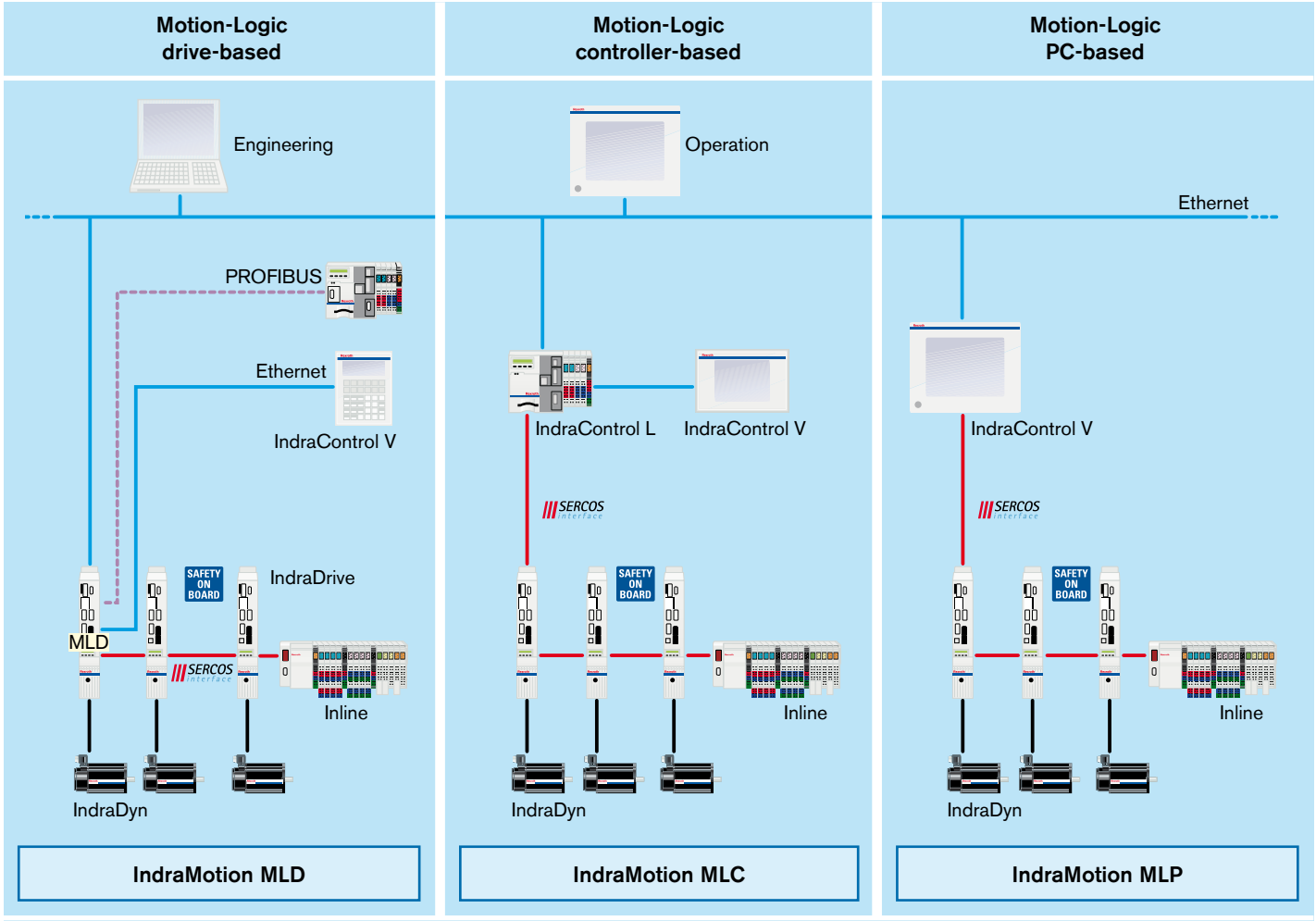
- Scalable controls on various platforms
- Integrated motion logic functions, standardized according to IEC 61131-3 and PLCopen
- Time-saving engineering through process-specific technology functions and comprehensive software libraries
- Wide range of HMI devices and I/O components
- Scalable drive platforms with highly dynamic motors
- Flexible through various technology functions
- Intuitive software tools for engineering and operation
- Open and scalable architectures with standardized communication interfaces
- Drive-integrated technical safety system, certified according to EN 954-1, Cat. 3

IndraMotion for Packaging – open and scalable complete solution for successful automation designs in the food processing and packaging industries.

Flexible, open and intelligent

- Universal solution for all types of machines
- Standardized interfaces for use worldwide
- Innovative solution for shorter cycle times and faster format changes

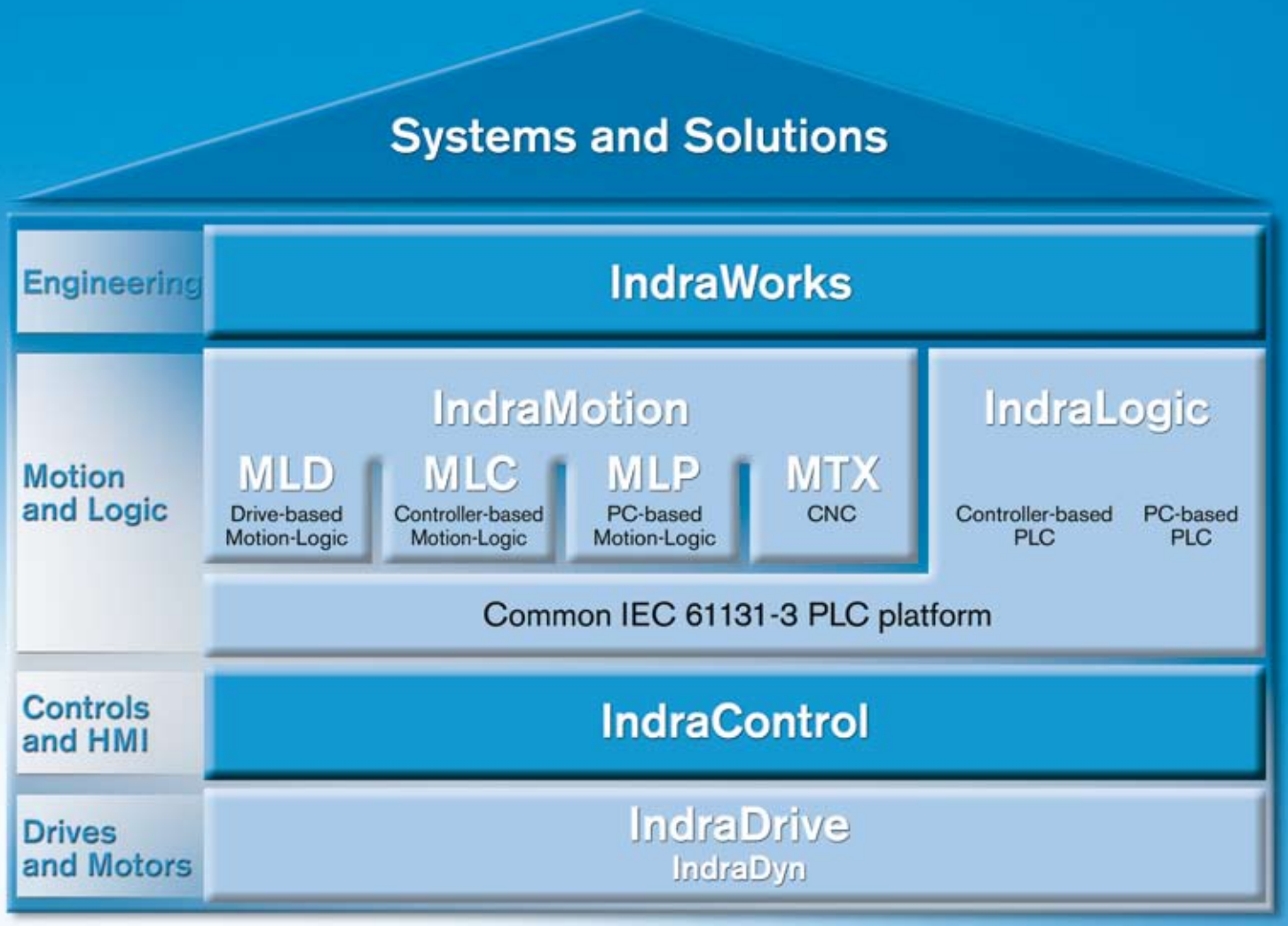
Your benefits



IndraMotion for Packaging, the flexible automation system with scalable control structure is tailored to perfectly meet the requirements of the food processing and packaging industries.

Additional information		
Automation system	IndraMotion MLD	Chapter 2.2
Automation system	IndraMotion MLC	Chapter 2.3
Automation system	IndraMotion MLP	In preparation
Control hardware	IndraControl L	Chapter 3.1
Visualization devices, high-end industrial PC	IndraControl VPP	Chapter 3.2
Visualization devices, standard industrial PC	IndraControl VSP	Chapter 3.2
Visualization devices, controller-based	IndraControl VCP	Chapter 3.2
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.3
Distributed input/output modules in IP67	Fieldline	Chapter 3.4
Drive family	IndraDrive	IndraDrive and IndraDyn product catalog
Engineering framework	IndraWorks	Chapter 3.5

Control Components – Components, Peripherals and Software



IndraControl L – Controller-Based Control Components

IndraControl L the controller-based platform from Rexroth allows easy and consistent automation for all centralized and distributed architectures. This technically and economically optimized control design offers a great number of benefits, both for the machine manufacturer and the end user.

IndraControl L is the flexibly configurable hardware platform for open control architectures. Whether you intend to implement a motion-control, a CNC or a PLC application – it is always the same hardware you use. Your application is only defined by the software. To ensure that it matches your application in the best way possible, our control platform is available in various performance classes. Its open architecture, in combination with many different function modules, facilitates integration in heterogeneous system topologies. Configurable fieldbus interfaces allows the imigration as master and/or slave, depending on the needs of the system.

- Scalable hardware platform
- Standardized communication interfaces
- Optional expansion through function and technology modules
- Ideal for centralized and distributed control topologies
- Individually expandable with high-grade Human-Machine Interface (HMI) components
- Modular I/O units

IndraControl L – modular and controller-based control hardware allowing any factory automation desired, which will also be reliable in the future.

Scalable, future-proof and flexible

- Individual control platform for any topology
- Standardized communication interfaces
- Scalable performance and function

Your benefit

IndraControl L – compact control platform

Rexroth IndraControl L is the space-saving control platform for easy DIN-rail mounting, requiring less wiring work. It is available in various performance classes with many expansion options. In combination with our PLC system IndraLogic or our motion-control solution IndraMotion, IndraControl L provides a maximum of flexibility and openness for the most varying system designs.

- Uniform hardware platform for all controller-based Rexroth controls
- Performance and function with flexible scalability
- Individual expansion capability through Human-Machine Interface (HMI) and I/O components
- Quick assembly and installation without any tools
- Open through standardized communication interfaces

IndraControl L – function modules

A range of function modules (fieldbus interfaces and technologie modules) are available to integrate the IndraControl L into heterogeneous control topologies. The modules use the high-speed system bus to communicate with the control processor – this ensures that the high requirements for performance and functionality are met. Partitial implementation of functions into the modules reduce the load on the controller CPU.

- Easy expansion of the functions of the IndraControl L controls
- Many communication and technology interfaces
- Flexible combination options
- Ergonomic design

IndraControl L10

Technical data	IndraControl L10
	
CPU	SH4 compatible
RAM	16 MB
Retentive memory	16 kB
Removable storage medium	CF Card/128 MB
Diagnostics	Temperature monitoring, watchdog, powerfail
Real-time clock	–
Display	–
Degree of protection	IP20
Dimensions (H x W x D)	121 x 123 x 63 mm
Interfaces	
I/O modules	Inline interface
Communication interfaces	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)
Inputs/outputs (digital)	8 DC-isolated inputs (with interrupt capability) 4 DC-isolated outputs
I/O expansion	Up to 63 Inline I/O modules with up to 128 I/O (16 bytes)
Function modules	–
Power supply	
Rated value	24 V DC
Tolerance	–15/+20 % (without residual ripple)
Residual ripple	±5 %
U_{max}	30 V DC
U_{min}	19.2 V DC
Power consumption from U_{LS}	max. 1.25 A
Power consumption from $U_M + U_S$	max. 8 A
Environmental conditions	
Ambient temperature (operation)	+5 to +55 °C
Ambient temperature (transport/storage)	–25 to +70 °C
Relative humidity	RH-2; 5 % to 95 % acc. to DIN EN 61131-2, no dewing
Atmospheric pressure (operation)	Up to 2,700 m above sea level acc. to DIN 60204
Atmospheric pressure (transport/storage)	Up to 3,000 m above sea level acc. to DIN 60204
Mechanical strength	
Vibration/shock resistance	Tested according to EN 60068-2-6/EN 60068-2-27
EMC immunity	Tested according to EN 61000-6-2/EN 61000-6-4/EN 61131-2
Availability	
Automation system	IndraLogic

Ordering data	
Type code	**Description**
CML10.1-NN-110-NB-NNNN-NW	IndraControl L10 hardware (in preparation)

IndraControl L15

Technical data	IndraControl L15
	
CPU	SH4-compatible
RAM	16 MB
Retentive memory	16 kB
Removable storage medium	CF Card/128 MB
Diagnostics	Temperature monitoring, watchdog, powerfail
Real-time clock	–
Display	–
Degree of protection	IP20
Dimensions (H x W x D)	121 x 123 x 63 mm
Interfaces	
I/O modules	Inline interface
Communication interfaces	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)
	1 x SERCOS III-Easy I/O
Inputs/outputs (digital)	8 DC-isolated inputs (with interrupt capability) 4 DC-isolated outputs
I/O expansion	Up to 63 Inline I/O modules with up to 129 I/O (16 bytes)
Function modules	–
Power supply	
Rated value	24 V DC
Tolerance	–15/+20 % (without residual ripple)
Residual ripple	±5 %
U_{max}	30 V DC
U_{min}	19.2 V DC
Power consumption from U_{LS}	max. 1.25 A
Power consumption from $U_M + U_S$	max. 8 A
Environmental conditions	
Ambient temperature (operation)	+5 to +55 °C
Ambient temperature (transport/storage)	–25 to +70 °C
Relative humidity	RH–2; 5 % to 95 % acc. to DIN EN 61131-2, no dewing
Atmospheric pressure (operation)	Up to 2,700 m above sea level acc. to DIN 60204
Atmospheric pressure (transport/storage)	Up to 3,000 m above sea level acc. to DIN 60204
Mechanical strength	
Vibration/shock resistance	Tested according to EN 60068-2-6/EN 60068-2-27
EMC immunity	Tested according to EN 61000-6-2/EN 61000-6-4/EN 61131-2
Availability	
Automation system	IndraLogic

Ordering data	
Type code	**Description**
CML15.1-NS-110-NB-NNNN-NW	IndraControl L15 hardware with SERCOS III-Easy I/O (in preparation)

IndraControl L20

Technical data	IndraControl L20
	
CPU	SH4-compatible
RAM	16 MB
Retentive memory	64 kB
Removable storage medium	CF Card/128 MB
Diagnostics	Temperature monitoring, watchdog, powerfail
Real-time clock	Integrated
Display	1 line, 4 operator keys
Degree of protection	IP20
Dimensions (H x W x D)	120 x 175 x 76 mm
Interfaces	
I/O modules	Inline interface
Communication interfaces	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)
	1 x RS232
	1 x PROFIBUS DP-Master/Slave interface
Inputs/outputs (digital)	8 DC-isolated inputs (with interrupt capability), 8 DC-isolated outputs
I/O expansion	Up to 63 Inline I/O modules with up to 256 I/O (32 bytes)
Function modules	–
Power supply	
Rated value	24 V DC
Tolerance	–15/+20 % (without residual ripple)
Residual ripple	±5 %
U_{max}	30 V DC
U_{min}	19.2 V DC
Power consumption from U_{LS}	max. 3 A
Power consumption from $U_M + U_S$	max. 8 A

Environmental conditions	
Ambient temperature (operation)	+5 to +55 °C
Ambient temperature (transport/storage)	–25 to +70 °C
Relative humidity	RH–2; 5 % to 95 % acc. to DIN EN 61131-2, no dewing
Atmospheric pressure (operation)	Up to 2,700 m above sea level acc. to DIN 60204
Atmospheric pressure (transport/storage)	Up to 3,000 m above sea level acc. to DIN 60204
Mechanical strength	
Vibration/shock resistance	Tested according to EN 60068-2-6/EN 60068-2-27
EMC immunity	Tested according to EN 61000-6-2/EN 61000-6-4/EN 61131-2
Availability	
Automation system	IndraLogic

Ordering data	
Type code	**Description**
CML20.1-NN-120-NA-NNNN-NW	IndraControl L20 hardware
CML20.1-NP-120-NA-NNNN-NW	IndraControl L20 hardware with PROFIBUS interface

IndraControl L40

Technical data	IndraControl L40
	
CPU	x86-compatible, L40.1 266 MHz/L40.2 500 MHz
RAM	L40.1 32 MB/L40.2 64 MB
Retentive memory	L40.1 64 kB/L40.2 128 kB
Removable storage medium	CF Card/128 MB
Real-time clock	Integrated
Display	1 line, 4 operator keys
Degree of protection	IP20
Dimensions (H x W x D)	120 x 175 x 76 mm
Interfaces	
Function modules	Yes
I/O modules	Inline interface
Communication interfaces (standard)	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)
	1 x serial RS232 interface
Communication interfaces (optional)	1 x SERCOS interface
	1 x PROFIBUS DP master/slave interface
	1 x single-pole ready contact
Inputs/outputs (digital)	8 DC-isolated inputs (with interrupt capability), 8 DC-isolated outputs
I/O expansion	Up to 63 Inline I/O modules with up to 512 I/O (64 bytes)
Function modules	Up to 4
Power supply	
Rated value	24 V DC
Tolerance	–15/+20 % (without residual ripple)
Residual ripple	±5 %
U_{max}	30 V DC
U_{min}	19.2 V DC
Power consumption from U_{LS}	max. 3 A
Power consumption from $U_M + U_S$	max. 8 A

Environmental conditions	
Ambient temperature (operation)	+5 to +55 °C; if the ambient temperature exceeds 45 °C, the optional fan must be installed
Ambient temperature (transport/storage)	–25 to +70 °C
Relative humidity	RH–2; 5 to 95 % acc. to DIN EN 61131-2, no dewing
Atmospheric pressure (operation)	Up to 2,700 m above sea level acc. to DIN 60204
Atmospheric pressure (transport/storage)	Up to 3,000 m above sea level acc. to DIN 60204
Mechanical strength	
Vibration/shock resistance	Tested according to EN 60068-2-6/EN 60068-2-27
EMC immunity	Tested according to EN 61000-6-2/EN 61000-6-4/EN 61131-2
Availability	
Automation system	IndraLogic, IndraMotion MLC, IndraMotion MTX compact

Ordering data	
Type code	**Description**
CML40.1-NP-220-NA-NNNN-NW	Hardware IndraControl L40, PROFIBUS interface, 32 MB RAM, 64 kB NvRAM, CPU 266 MHz x86-compatible
CML40.1-SP-220-NA-NNNN-NW	Hardware IndraControl L40 with SERCOS interface, PROFIBUS interface, 32 MB RAM, 64 kB NvRAM, CPU 266 MHz x86-compatible
CML40.2-NP-330-NA-NNNN-NW	Hardware IndraControl L40, PROFIBUS interface, 64 MB RAM, 128 kB NvRAM, CPU 500 MHz x86-compatible
CML40.2-SP-330-NA-NNNN-NW	Hardware IndraControl L40 with SERCOS interface, PROFIBUS interface, 64 MB RAM, 128 kB NvRAM, CPU 500 MHz x86-compatible

IndraControl L45

Technical data	IndraControl L45
	
CPU	x86-compatible/500 MHz
RAM	min. 256 MB
Retentive memory	min. 128 kB
Removable storage medium	CF Card/128 MB
Real-time clock	Integrated
Display	1 line, 4 operator keys
Degree of protection	IP20
Dimensions (H x W x D)	120 x 175 x 97.5 mm
Interfaces	
Function modules	Yes
I/O modules	Inline interface
Communication interfaces (standard)	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)
	1 x single-pole ready contact
Communication interfaces (optional)	1 x SERCOS III interface (2 x RJ45)
	1 x PROFInet I/O master or slave (2 x RJ45)
	1 x PROFIBUS DP master or slave interface
	1 x EtherNet/IP scanner (master) or adapter (slave) (2 x RJ45)
	1 x DeviceNet master or slave
Inputs/outputs (digital)	8 DC-isolated inputs
	8 DC-isolated outputs
I/O expansion	Up to 63 Inline I/O modules with up to 512 I/O (64 bytes)
Function modules	Up to 4
Power supply	
Rated value	24 V DC
Tolerance	–15/+20 % (without residual ripple)
Residual ripple	±5 %
U_{max}	30 V DC
U_{min}	19.2 V DC
Power consumption from U_{LS}	max. 3 A
Power consumption from $U_M + U_S$	max. 8 A

Environmental conditions	
Ambient temperature (operation)	+5 to +55 °C
Ambient temperature (transport/storage)	–25 to +70 °C
Relative humidity	RH–2; 5 % to 95 % acc. to DIN EN 61131-2, no dewing
Atmospheric pressure (operation)	Up to 2,700 m above sea level acc. to DIN 60204
Atmospheric pressure (transport/storage)	Up to 3,000 m above sea level acc. to DIN 60204
Mechanical strength	
Vibration/shock resistance	Tested according to EN 60068-2-6/EN 60068-2-27
EMC immunity	Tested according to EN 61000-6-2/EN 61000-6-4/EN 61131-2
Availability	
Automation system	IndraLogic, IndraMotion MLC, IndraMotion MTX compact

Ordering data	
Type code	**Description**
CML45.1-xx-xxx-NA-NNNN-NW	IndraControl L45 hardware (in preparation)

IndraControl L65

Technical data	IndraControl L65
	
CPU	x86-compatible/1,000 MHz
RAM	min. 512 MB
Retentive memory	min. 128 kB
Removable storage medium	CF Card/128 MB
Real-time clock	Integrated
Display	1 line, 4 operator keys
Degree of protection	IP20
Dimensions (H x W x D)	120 x 175 x 97.5 mm
Interfaces	
Function modules	Yes
I/O modules	Inline interface
Communication interfaces (standard)	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)
	1 x single-pole ready contact
Communication interfaces (optional)	1 x SERCOS III interface (2 x RJ45)
	1 x PROFInet I/O master or slave (2 x RJ45)
	1 x PROFIBUS DP master or slave interface
	1 x EtherNet/IP scanner (master) or adapter (slave) (2 x RJ45)
	1 x DeviceNet master or slave
Inputs/outputs (digital)	8 DC-isolated inputs
	8 DC-isolated outputs
I/O expansion	Up to 63 Inline I/O modules with up to 512 I/O (64 bytes)
Function modules	Up to 4
Power supply	
Rated value	24 V DC
Tolerance	–15/+20 % (without residual ripple)
Residual ripple	±5 %
U_{max}	30 V DC
U_{min}	19.2 V DC
Power consumption from U_{LS}	max. 3 A
Power consumption from $U_M + U_S$	max. 8 A

Environmental conditions	
Ambient temperature (operation)	+5 to +55 °C
Ambient temperature (transport/storage)	–25 to +70 °C
Relative humidity	RH–2; 5 % to 95 % acc. to DIN EN 61131-2, no dewing
Atmospheric pressure (operation)	Up to 2,700 m above sea level acc. to DIN 60204
Atmospheric pressure (transport/storage)	Up to 3,000 m above sea level acc. to DIN 60204
Mechanical strength	
Vibration/shock resistance	Tested according to EN 60068-2-6/EN 60068-2-27
EMC immunity	Tested according to EN 61000-6-2/EN 61000-6-4/EN 61131-2
Availability	
Automation system	IndraLogic, IndraMotion MLC

Ordering data	
Type code	**Description**
CML65.1-xx-xxx-NA-NNNN-NW	IndraControl L65 hardware (in preparation)

IndraControl L – Function Modules

PROFIBUS DP master

Additional PROFIBUS DP master communication interface

SERCOS III

Communication interface SERCOS III

For implementation of the Ethernet-based real-time communication interface SERCOS III, as interface to drives and I/O peripherals

DeviceNet master

Communication interface DeviceNet master

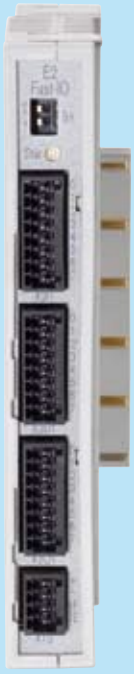
Cross-communication

Cross-communication module for IndraControl L

For implementation of high-speed data exchange between motion-control controls, based on SERCOS interface with Fiber Optics

Master axis encoder

1 x EnDat interface
(in preparation)



Fast I/O

Function interface, high-speed inputs and outputs for short reaction times

For implementation of I/O with very short reaction times; 8 inputs, 8 outputs and 8 user configurable inputs or outputs

Cam controller

Function interface, cam controller with 16 high-speed outputs

For implementation of high-speed cams for motion-control applications

SRAM module

Memory module with 8 Mbytes SRAM, battery-buffered

For implementation of additional storage capacity for CNC and motion-control applications

IndraControl L – Function Modules

Technical data		PROFIBUS DP master	DeviceNet master	SERCOS III	Cross-communication
Degree of protection		IP20	IP20	IP20	IP20
Dimensions (H x W x D)	mm	120 x 20 x 70	120 x 20 x 70	120 x 20 x 70	120 x 20 x 70
Adjustable ring cycle time	ms	–	–	–	2, 4, 8
max. number of slaves		–	–	–	15, 31, 63
Power supply					
Internal		System bus	System bus	System bus	System bus
Internal power consumption	W	1.65	1.4	2.05	2.3
External	V DC	–	24 (DeviceNet voltage)	–	–
External power consumption	W	–	1.4	–	–
Environmental conditions					
Ambient temperature (operation)	°C	+5 to +55			
Ambient temperature (transport/storage)	°C	–25 to +70			
Relative humidity		RH–2; 5 % to 95 % acc. to DIN EN 61131-2, no dewing			
Atmospheric pressure (operation)		Up to 2,700 m above sea level acc. to DIN 60204			
Atmospheric pressure (transport/storage)		Up to 3,000 m above sea level acc. to DIN 60204			
Mechanical strength					
Vibration/shock resistance		Tested according to EN 60068-2-6, EN 60068-2-27			
EMC immunity		Tested according to EN 61000-6-2, EN 61000-6-4			
Availability					
Automation system		IndraMotion MLC, IndraLogic	IndraMotion MLC, IndraLogic, IndraMotion MTX	IndraMotion MLC	IndraMotion MLC
Type code		CFL01.1-P1	CFL01.1-V1	CFL01.1-R3	CFL01.1-Q2

Technical data		Cam controller	Fast I/O	SRAM
Degree of protection		IP20	IP20	IP20
Dimensions (H x W x D)	mm	120 x 20 x 70	120 x 20 x 70	120 x 20 x 70
Memory	MB	–	–	8 (SRAM)
Buffer time		–	–	min. 4 years
Battery type		–	–	CR2450 3 V Lithium battery (CAP01.1-B2)
Power supply				
Internal		System bus	System bus	System bus
Internal power consumption	W	2.8	0.3	1.0
External	V DC	24	24	–
Tolerance (without residual ripple)	%	–15/+20	–15/+20	–
Residual ripple	%	±5	±5	–
U_{max}	V	30	30	–
U_{min}	V	19.2	19.2	–
Power consumption (max.)	A	4	4	–
Digital inputs				
Number		–	max. 16 (of which 8 are fixed and 8 can be bitwise configured as input or output)	–
Connection method		–	1-wire	–
Potential isolated from logic voltage		–	Yes	–
Reverse polarity protection		–	Yes	–
Input voltage at “0”/”1”	V DC	–	–3 to +5/+11 to +30	–
Sensor supply	V DC	–	24	–
Digital outputs				
Number		16	max. 16 (of which 8 are fixed and 8 can be bitwise configured as input or output)	–
Connection method		1-wire	1-wire	–
Output type		Semiconductor, no retaining	Semiconductor, no retaining	–
Output voltage, nominal value	V	24	24	–
Rated output current	A	0.5	0.5	–
Lamp load at 8 Hz	W	5	5	–
Inductive load at 1 Hz	W	6.2 (SG 1)	6.2 (SG 1)	–
Environmental conditions				
Ambient temperature (operation)	°C	+5 to +55		
Ambient temperature (transport/storage)	°C	–25 to +70		
Relative humidity		RH–2; 5 % to 95 % acc. to DIN EN 61131-2, no dewing		
Atmospheric pressure (operation)		Up to 2,700 m above sea level acc. to DIN 60204		
Atmospheric pressure (transport/storage)		Up to 3,000 m above sea level acc. to DIN 60204		
Mechanical strength				
Vibration/shock resistance		Tested according to EN 60068-2-6, EN 60068-2-27		
EMC immunity		Tested according to EN 61000-6-2, EN 61000-6-4		
Availability				
Automation system		IndraMotion MLC	IndraMotion MLC	IndraMotion MLC, IndraMotion MTX
Type code		CFL01.1-N1	CFL01.1-E2	CFL01.1-Y1

Note: The various function modules are not entirely supported by every system. For information on which function modules are supported by the system version used, please refer to the appropriate system-specific manual.

IndraControl L – Function Modules

Ordering data	
Type code	**Description**
Fieldbus interfaces	
CFL01.1-P1	PROFIBUS DP master
CFL01.1-V1	DeviceNet master
Communication interfaces	
CFL01.1-R3	SERCOS III
CFL01.1-Q2	Cross-communication (SERCOS interface with FO)
Function interfaces	
CFL01.1-N1	Cam controller with 16 high-speed outputs
CFL01.1-E2	High-speed inputs/outputs, 8 inputs, 8 outputs, 8 freely configurable I/O
CFL01.1-Y1	8 Mbyte SRAM, battery-buffered
CFL01.1-G1 (in preparation)	Master axis encoder interface, 1 x EnDat interface
Additional accessories	
CAL01.1-F1	Fan
CAP01.1-B2	Spare battery for SRAM module CFL01.1-Y1
R-IB IL CML S01-PLSET	Connector set for IndraControl L20, L40, L45, L65
R-IB IL FIELD 2	Labeling field, narrow
R-IB IL FIELD 8	Labeling field, wide
I/O expansion	
See Inline modules	Chapter 3.3
Ethernet cable sets	
RKB0007	Crosslink Cat 5; 2-pair, shielded, RJ45/IP20, RJ45/IP20
RKB0008	Patch cable Cat 5; 2-pair, shielded, RJ45/IP20, RJ45/IP20
RS232 cable sets	
RKB0009	RS232 cable, D-SUB, D-SUB

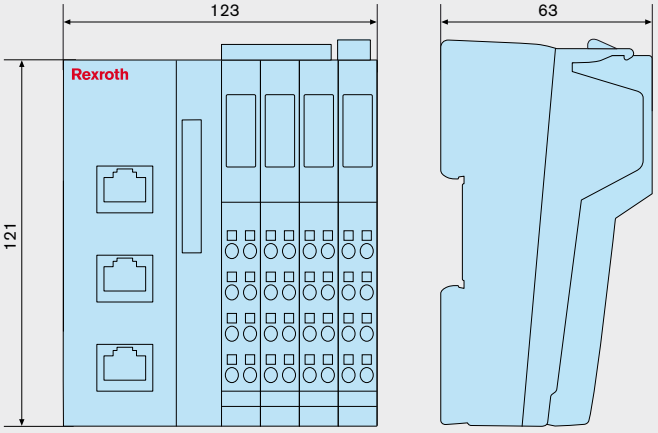
Documentations	
Type code	**Description**
DOK-CONTRL-IC*L40*****-PRxx-EN-P	Project planning for IndraControl L40 and L40 with SERCOS interface
DOK-CONTRL-IC*L20*****-PRxx-EN-P	Project planning for IndraControl L20
Advanced documentations	
DOK-CONTRL-R-IL*PBSSYS-AWxx-EN-P	Inline PROFIBUS DP, application description
DOK-CONTRL-R-IL*PB*-BK-FKxx-EN-P	Inline PROFIBUS DP terminal and module supply, functional description

xx = software/firmware version

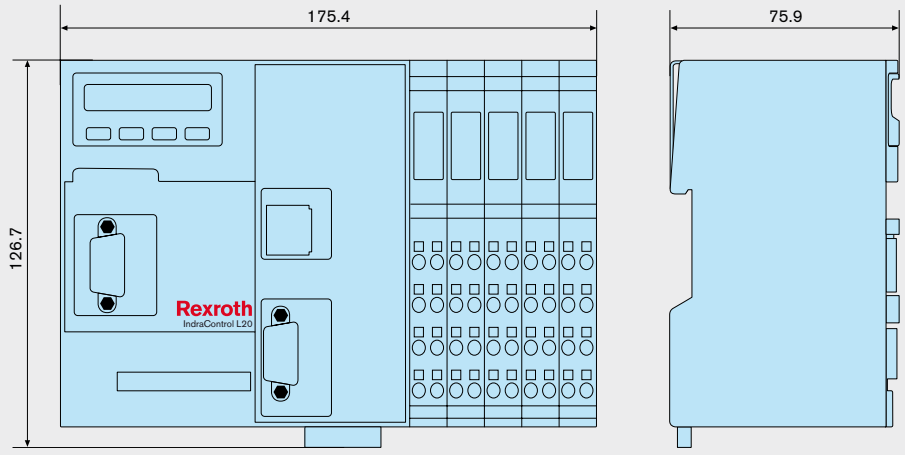

5 RUN
Rexroth

IndraControl L10, L15 and L20

IndraControl L10 and L15

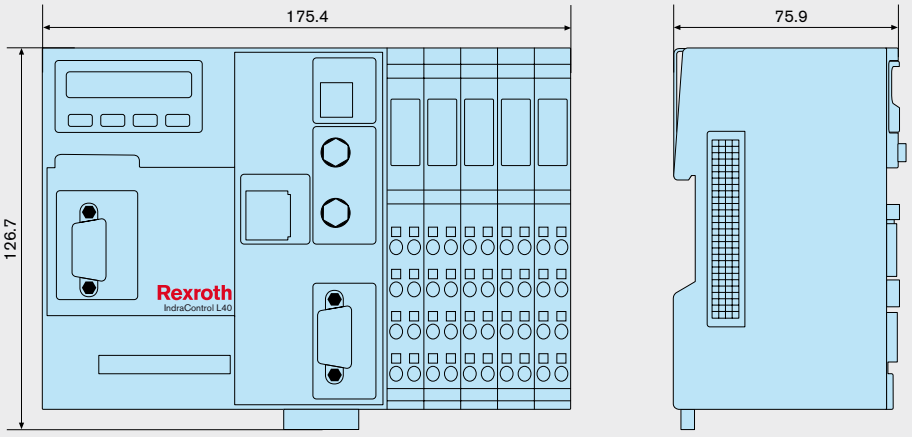


IndraControl L20

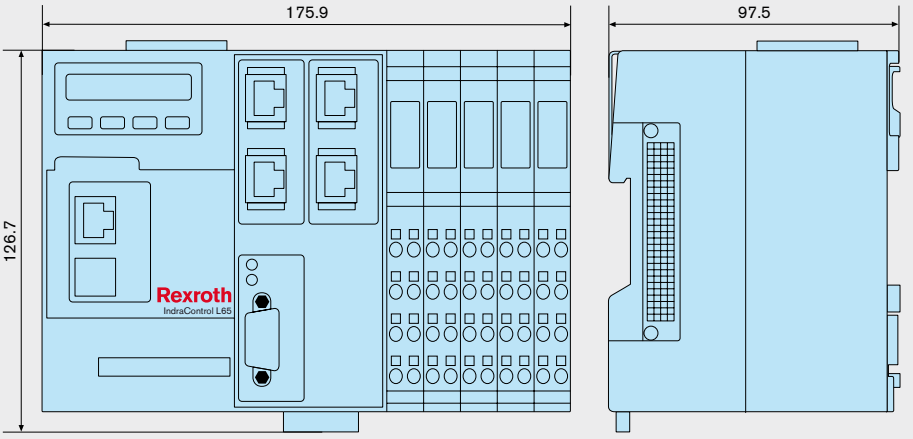


IndraControl L40, L45 and L65

IndraControl L40



IndraControl L45 and L65



IndraControl V – Trend-Setting Human-Machine Interface (HMI) Devices and Industrial PCs

Rexroth IndraControl V is the comprehensive HMI system range for individual control, operation and visualization in all industries. The program range covers controller-based devices, compact embedded PCs and high-performance industrial PCs. With its scalable hardware and software, IndraControl V can be precisely adapted to your machine-specific requirements.

IndraControl V integrates all functions required for cost effective automation – from convenient operation and clearly organized visualization to integrated controls and diagnostics. When combined with the proven system solutions from Rexroth, IndraControl V provides you with a complete automation solution for:

- Machine tools
- Transfer machines
- Printing presses and processing machines
- Food processing and packaging machines
- Forming machines
- Wood processing machines
- Textile machines
- Handling and assembly systems

IndraControl V is available in the following versions:

- Controller-based
  - IndraControl VCP
  - IndraControl VCH
- Embedded-PC-based
  - IndraControl VEP
  - IndraControl VEH
- PC-based
  - IndraControl VSP
  - IndraControl VPP
  - IndraControl VDP
  - IndraControl VPB
  - IndraControl VSB
- Additional components
  - IndraControl VAK
  - IndraControl VAM

IndraControl V – the comprehensive product range for individual control, operation and visualization in all industries.

Versatile, sturdy and modular

- Consistent range for control, operation and visualization
- Reliable system technology, even in hostile industrial environments
- Reliable in the future through modern PC technology

Your benefit

IndraControl VCP – controller-based compact operator terminals

These controller-based compact operator terminals allow you to edit your production data simply by pressing a key or touching the screen. The system versions cover a range from simple small graphics displays to touchscreens with full graphics capabilities – with the number of function keys depending on the system design. The comprehensive interface range fulfills almost all of your communication wishes, whether Ethernet, fieldbus or serial.

- Inexpensive operation and visualization
- Compact dimensions
- Easy configuration of the system visualization
- Comprehensive functions with the visualization software VI-Composer
- Support of Asian characters sets

IndraControl VCH – compact manual operator panel for mobile use

Irrespective of the particular location – IndraControl VCH 08 allows operation, setup, parameterization and diagnostics via Ethernet TCP/IP. During connection and disconnection, the stop function is overridden automatically, thus ensuring smooth work. Together with the optimal design, the low weight allows fatigue-free work and high operator convenience. The integrated 3-step enabling button and the 2-circuit stop button are looped in through the junction box VAC 30, thus ensuring maximum safety.

- Safety functions for man and machine
- Handles with integrated enabling and stop buttons
- Sturdy structure for industrial use
- Optimum ergonomics for reliable fatigue-free handling
- Brilliant 3.8“ graphics display and universal-use touch panel for convenient operation and visualization

IndraControl VEP – embedded-PC-based operator terminals

These terminals allow you to operate your machine easily and conveniently via a touchscreen or a virtual keyboard. These “almost a PC” devices only use embedded components to maximize reliability. Through the multitude of interfaces and slots, the IndraControl VEP devices can be optimally adapted to comply with machine and system requirements. This flexibility allows you to use the devices only for visualization, or to expand them with our soft PLC solution IndraLogic.

- Compact system design for attachment in control cabinet or to pendants
- Hardware without hard disk or rotating media
- Control and visualization in a single device
- Integrated short-time UPS
- Visualization, operation and observation with the common WinStudio visualization software

IndraControl VEH – manual operator panel for mobile use

Irrespective of the particular location – IndraControl VEH 30 allows operation, setup, parameterization and diagnostics via Ethernet TCP/IP. The hot-plug principle facilitates trouble-free connection and disconnection during running operation, while the stop function is reliably overridden. To ensure fatigue-free handling, highest operator convenience and ergonomics were the key factors in the design development. The integrated 3-step enabling button and the 2-circuit stop button are looped in through the junction box VAC 30, thus ensuring maximum safety.

- Flexible use through hot-plug principle
- Safety functions for man and machine
- Handles with integrated enabling and stop buttons
- Sturdy structure for industrial use
- Optimum ergonomics for reliable fatigue-free handling
- Brilliant 8.4“ touchscreen for convenient operation and visualization

IndraControl VSP – cost-effective PC technology for industrial use

The operator terminals of the IndraControl VSP series integrate PC, operator and visualization to form one compact unit. This device allows you to control, operate and visualize single machines or stations and even complex production lines – economically and with maximum transparency in your production. This makes IndraControl VSP the ideal platform for all tasks in PC-based automation.

- Highest performance through latest PC technology
- High investment protection through standardized hardware and software
- Open and flexible for customer-specific solutions
- High production reliability through EMC-certified design
- Operator- and service-friendly system construction
- Complete traceability of all modifications over the entire service life
- Ensured service capability, at least 3 years

IndraControl VPP – PC solution for high-end industrial requirements

Owing to their mechanic and electric design, the compact PC operator terminals IndraControl VPP are designed for use in extreme industrial environments. They are specifically characterized by an integrated UPS and a shock-mounted hard disk. The optimized cooling system and temperature monitoring unit additionally ensure highest reliability. The devices and software packages, which are available for an extended time, offer maximum investment protection in the design and production of your machines.

- Best industry compatibility through the use of reliable hardware components
- Vibration resistance up to 1 g during operation
- Shock loading capacity up to 15 g
- Low heat losses through optimized cooling system
- Components, such as processors, motherboards, etc. available over the long term
- Complete traceability of all modifications over the entire service life
- Ensured service capability, at least 5 years

IndraControl VPP 21 – complete PC control units for pendant mounting

IndraControl VPP 21 integrates PC, control, visualization and operating elements in a single ergonomic housing. Precisely matching components, minimized weight and passive cooling design optimize this control unit for pendant mounting. All interfaces for control, programming and networking are already on board. For various applications, it is available with touchscreen or with integrated machine control panel.

- Complete solution for control, operation and visualization
- Optimized cooling system for maintenance-free use
- Start, stop and E-stop buttons already integrated
- Large brilliant 14“ display
- Operator- and service-friendly structure
- Internal buffering of retentive data

IndraControl VSB, VPB and VDP – ideal PC solution for distributed architecture

IndraControl VSB, VPB and VDP provide a professional solution for applications where PC and control unit have to be separated. While the industrial PC is safely kept in the control cabinet, the sturdy and extremely thin operator display can be attached directly to the machine. To meet various industrial requirements, both the PCs and the displays are available in different versions.

- Cost-effective cabinet PC (VSB) with latest technology for standard applications
- Extreme duty cabinet PC (VPB) with special hardware for hostile industrial environments
- Thin displays (VDP), with optional keys or touchscreen
- Open and flexible for customer-specific requirements
- Individual solution for distributed operating and control designs

IndraControl VAK and VAM – ergonomic industrial keyboards and machine control panels

The compact industrial keyboards and the comfortable machine control panels allow you to configure a perfect and individual control and visualization design of your machine. These additional components are precisely matched to our IndraControl V devices and, with the industry-compatible design, ensure reliable and safe operation.

Slide-out keyboards VAK
- Alphanumeric keyboard and integrated mouse
- Protection to IP65 both when closed and when open

Touch panels VAK
- Robust complete keyboard with configurable keys and separate number pad
- Protection to IP65
- Low installation depth

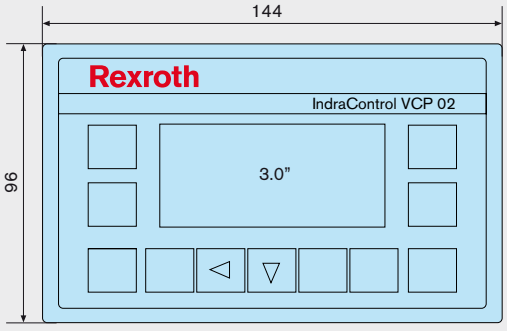
Machine control panels VAM
- Optimized control design for standard machine tools and automated production
- Protection to IP54

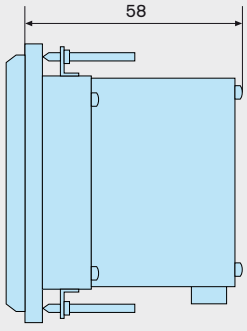
IndraControl VCP

Technical data	VCP 02	VCP 05	VCP 08	VCP 11	VCP 20	VCP 25
						
Display	FSTN			FSTN-touch	FSTN	STN-color touch
	With graphics capability					With full graphics capability
	5 grey tones					125 colors
	3.0“	3.0“	3.8“	3.8“	5.7“	5.7“
Resolution	160 x 80	160 x 80	320 x 240	320 x 240	320 x 240	320 x 240, 1/4 VGA
Keyboard/touch	Membrane keys			Touchscreen	Membrane keys	Touchscreen
Function keys/ system keys	4/ 7 (2 with LED)	6/ 24 (3 with LED)	15 (12 with LED)/ 22 (3 with LED)	–	16 (8 with LED)/ 8	–
Application memory	3 MB					
Flash memory	16 MB					
Slot for expansions	1					
Line voltage	24 V DC					
Interfaces	1 x Ethernet, 2 x USB host, optional: 1 RS232/RS485 module					
Fieldbus	PROFIBUS DP slave, DeviceNet (optional)					
Approvals	CE/UL/CSA					
Front protection degree	IP65					
Temperature	5 to 45 °C					
Dimensions (W x H x D)	144 x 96 x 58 mm	120 x 168 x 55 mm	155 x 205 x 55 mm	130 x 96 x 55 mm	300 x 160 x 55 mm	203 x 147 x 66 mm
Availability						
Automation system	IndraMotion MLD, IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)					

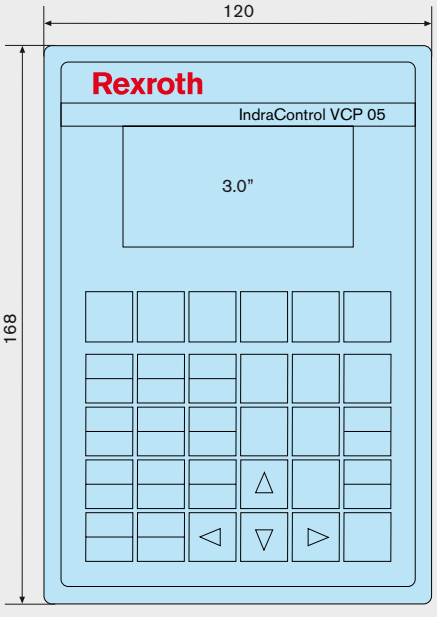
IndraControl VCP 02 and VCP 05

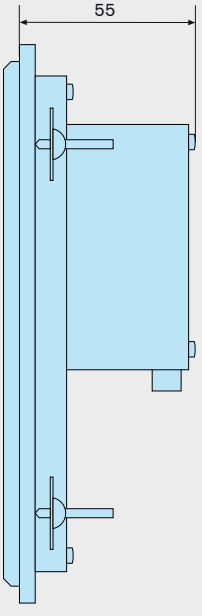
IndraControl VCP 02





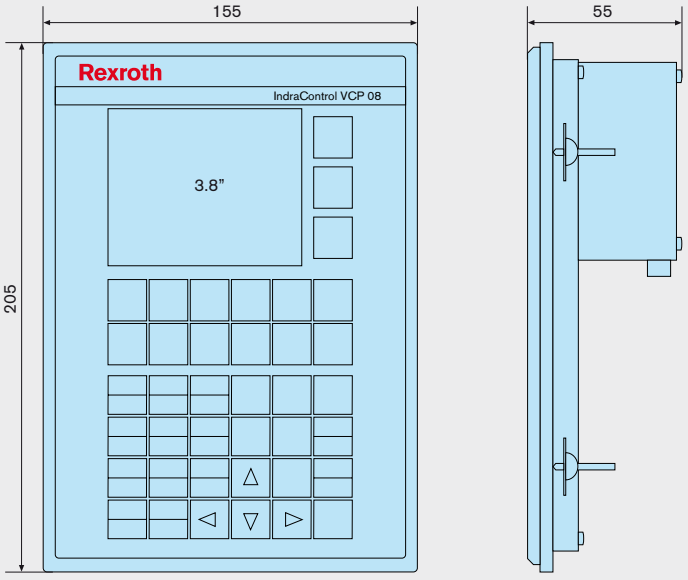
IndraControl VCP 05



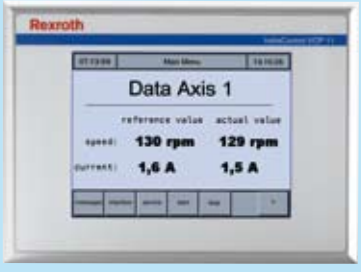


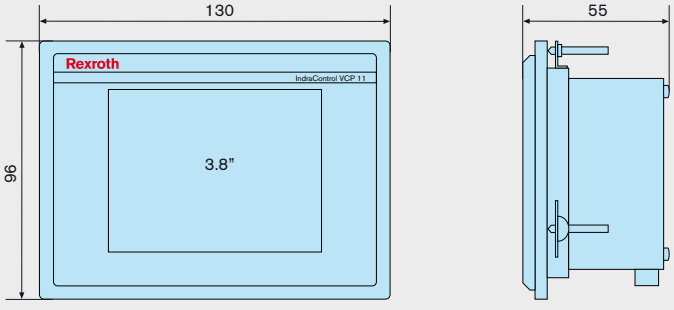
IndraControl VCP 08 and VCP 11

IndraControl VCP 08



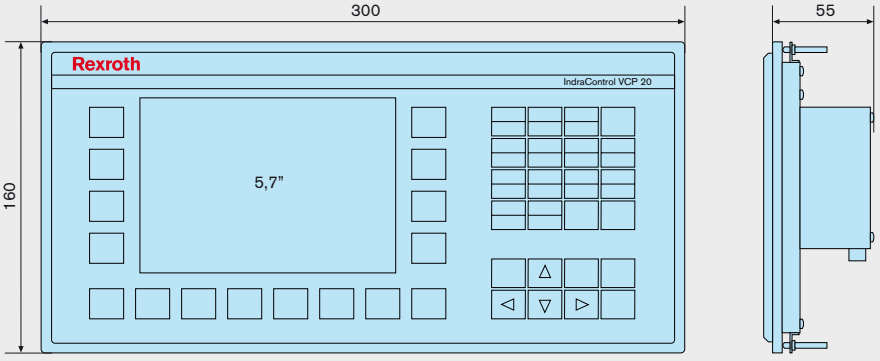
IndraControl VCP 11



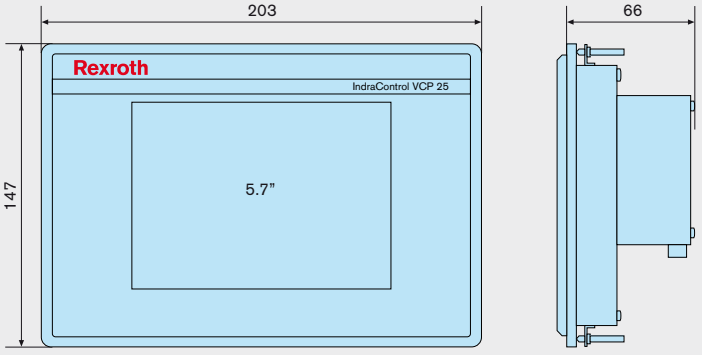


IndraControl VCP 20 and VCP 25

IndraControl VCP 20



IndraControl VCP 25



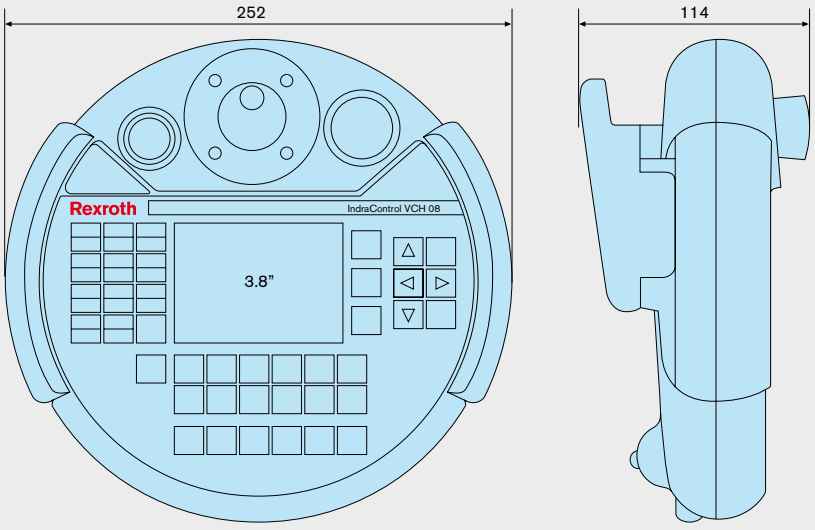
IndraControl VCH

Technical data	VCH 08
	
Display	3,8" grey tones
Resolution	320 x 240
Touchscreen	–
Keyboard	40 membrane keys
Function keys	18 freely definable function keys
Stop button	●
Enabling button	2 two-circuit, three-step buttons
Override potentiometer	○
Handwheel	○
Processor	XScale
RAM	64 MB
Compact flash	64 MB
Line voltage	24 V DC
Human-Machine Interface (HMI)	VI-Composer
Approvals	UL 508, UL 1740, SIBE
Degree of protection	IP65
Temperature	5 – 45 °C
Dimensions (W x H x D)	Diameter 250 x 55 & 37 handle
Weight	1.1 kg
Max. height of fall	1.5 m
Cable length	8 m
Availability	
Automation system	IndraMotion MLD, IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)

Accessories	
Connection unit	VAC 30 (interfaces: RJ45, Ethernet, terminals for stop and enabling buttons)
Wall-mounted holder	VAS 01.1-002

● Default
○ Optional

IndraControl VCH 08



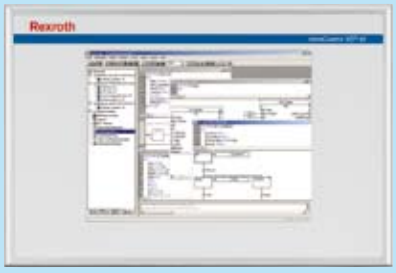
IndraControl VEP

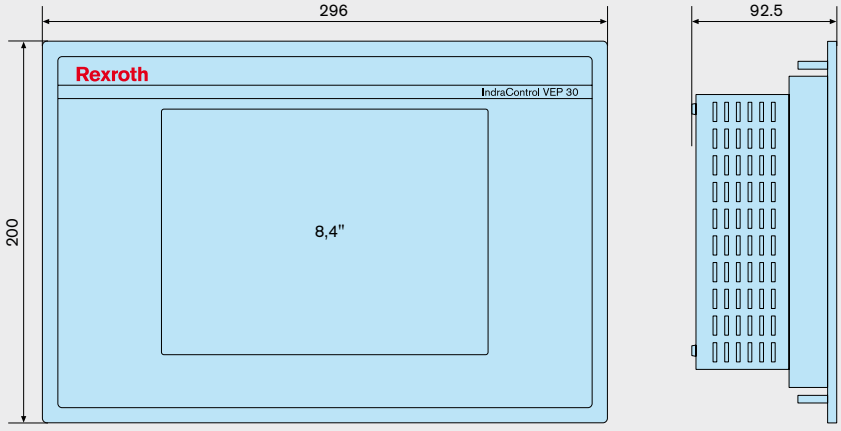
Technical data	VEP 30	VEP 40	VEP 50	VEP 30 CG
				
Display	8.4" TFT	12.1" TFT	15" TFT	8.4" TFT
Resolution	800 x 600, SVGA	800 x 600, SVGA	1,024 x 768, XGA	800 x 600, SVGA
Touch screen	●			
Keyboard	Through virtual keyboard			
	–			5 additional keys
Processor	Celeron 400 MHz			
RAM	128 MB			
Compact flash	128 MB			
Module slots	2			1
Line voltage	24 V DC			
Interfaces	RS232, VGA, PS/2, 2 x USB, Ethernet			
Fieldbus	Fieldbus module (PROFIBUS DP master) occupies 1 slot			
UPS	Short-time UPS for data backup (512 kB) to compact flash			
Operating system	Windows CE			
Approvals	CE/UL/CSA			
Front protection degree	IP65			Front IP64/overall IP40
Temperature	5 to 45 °C			
Dimensions of 1 slot (W x H x D)	296 x 200 x 72 mm	350 x 290 x 78 mm	407 x 370 x 82 mm	306 x 241 x 90 mm
Dimensions of 2 slots (W x H x D)	296 x 200 x 92 mm	350 x 290 x 98 mm	407 x 370 x 103 mm	–
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			
Accessories				
Keybord expansion	–			VAS 02

● Default

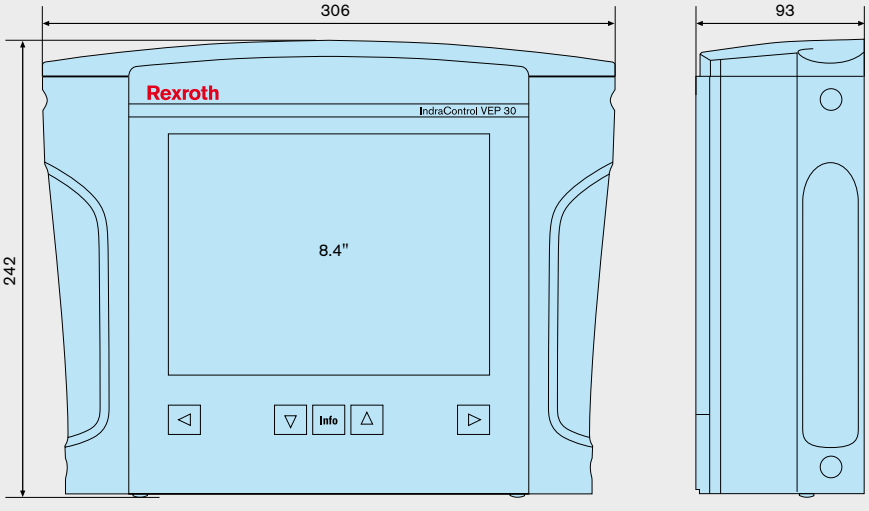
IndraControl VEP 30 and VEP 30CG

IndraControl VEP 30



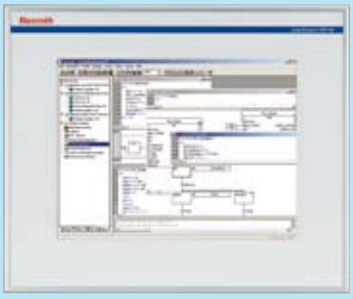


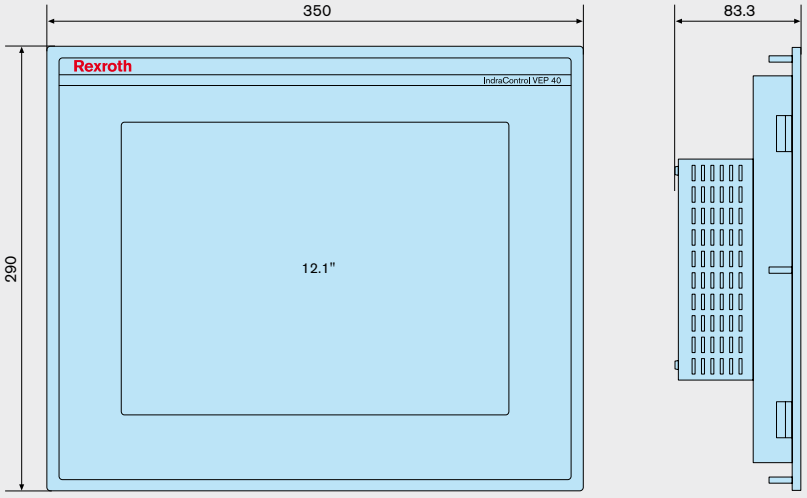
IndraControl VEP 30CG



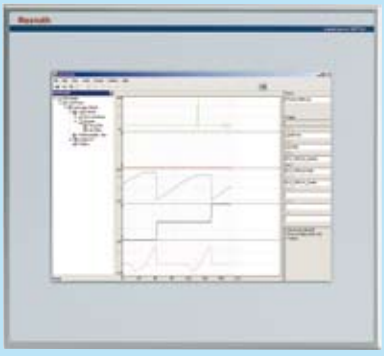
IndraControl VEP 40 and VEP 50

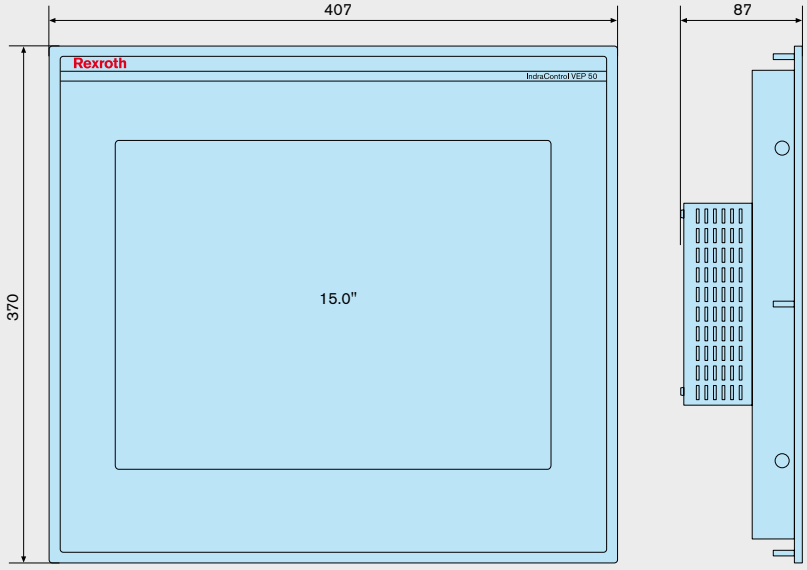
IndraControl VEP 40





IndraControl VEP 50






Rexroth
Rexroth
C1
C2
Rexroth

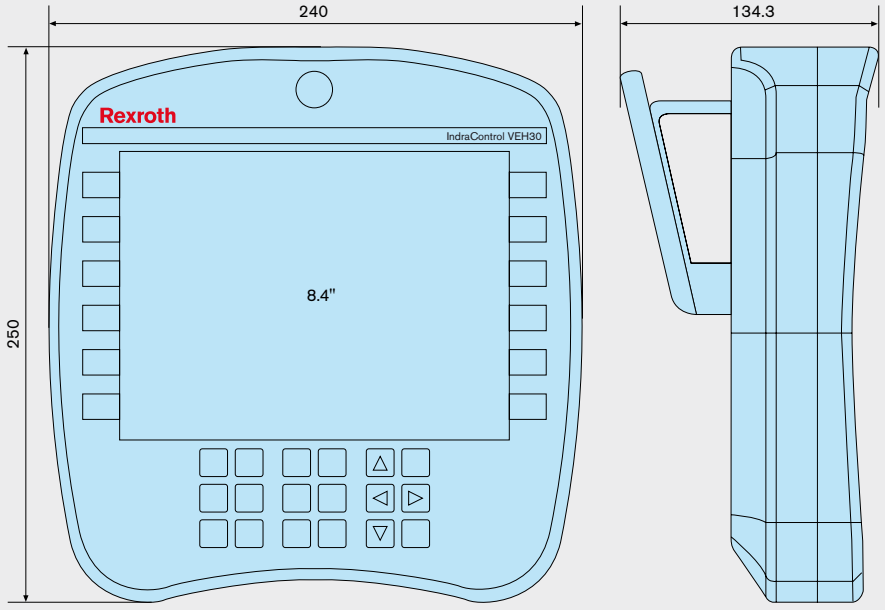
IndraControl VEH

Technical data	VEH 30
	
Display	8.4" TFT
Resolution	800 x 600 SVGA
Touchscreen	●
Keyboard	Through virtual keyboard
Function keys	34 membrane keys: 2 x 6 jog keys; 2 x 8 free definable; 4 navigation keys; 1 x OK key; 1 x ESC key
Stop button	2-circuit button
Enabling button	2 two-circuit, three-step buttons (optional)
Override potentiometer	O
Handwheel	O
Processor	300 MHz, Intel-based
RAM	128 MB
Compact flash	128 MB
Line voltage	24 V DC
Operating system	Windows CE
Approvals	CE/UL/CSA/BG approval
Degree of protection	IP65
Temperature	5 to 45 °C
Dimensions (W x H x D)	240 x 250 x 80 + 55 mm handle
Weight	1.6 kg
Max. height of fall	1 m
Cable length	8 m
Availability	
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)

Accessories	Connection unit	Wall-mounted holder
	VAC 30	VAS 01
		
Interfaces	RJ45, Ethernet, series terminals for stop and enabling buttons	

● Default
O Optional

IndraControl VEH



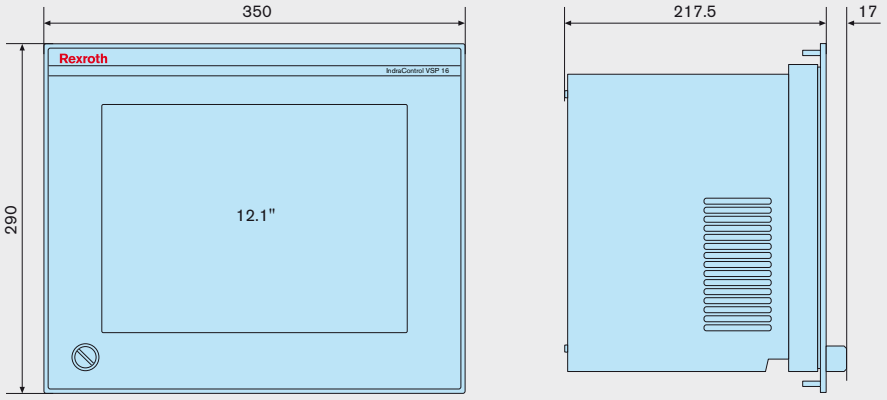
IndraControl VSP

Technical data	VSP 16	VSP 16	VSP 40	VSP 40
				
Display	12" TFT		15" TFT	
Resolution	800 x 600, SVGA		1,024 x 768, XGA	
Touchscreen	●	–	●	–
Machine/function/additional keys	–	16/16/14	–	16/16/14
Alphanumeric keyboard	Additional components VAK			
Front USB (protection degree IP65)	1			
Processor/RAM	Celeron 2 GHz/512 MB			
Slots (PCI/combined)	6/0			
Line voltage	90 – 264 V AC, alternatively 24 V DC			
Hard disk > 30 GB	●			
DVD-ROM/DVD-RW	○			
Interfaces	PS/2 mouse, PS/2 keyboard, VGA, LPT, COM, 2 x USB (2.0), 1 x Ethernet			
Status LED	Voltage, hard disk			
UPS	External			
Operating system	Windows XP			
Approvals	CE/UL/CSA			
Front protection degree	IP65			
Vibration/shock	0.25 g/5 g			
Temperature	5 to 45 °C			
Dimensions (W x H x D)	350 x 290 x 210 mm	350 x 290 x 210 mm	407 x 370 x 210 mm	407 x 370 x 210 mm
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

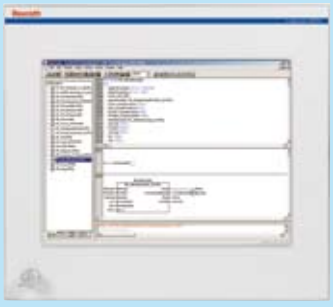
● Basic equipment
○ Optional

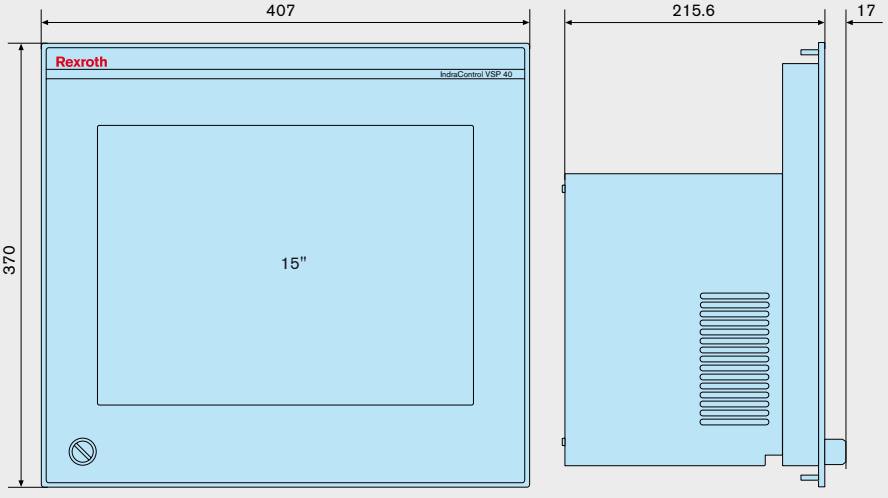
IndraControl VSP 16 and VSP 40

IndraControl VSP 16



IndraControl VSP 40





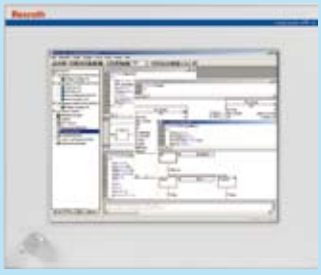
IndraControl VPP

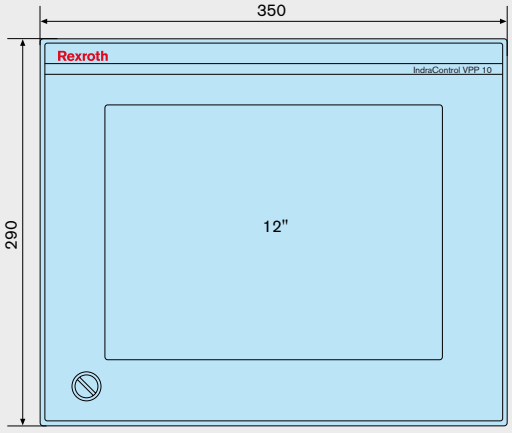
Technical data	VPP 16	VPP 16	VPP 40	VPP 40
				
Display	12" TFT		15" TFT	
Resolution	800 x 600, SVGA		1,024 x 768, SVGA	
Touchscreen	●	–	●	–
Machine/function/additional keys	–	16/16/14	–	16/16/14
Alphanumeric keyboard	Additional components VAK			
Front USB (protection degree IP65)	1			
Processor/RAM	Celeron M 1.3 GHz/at least 512 MB			
Slots (PCI/combined)	2/1 or 3/1			
Line voltage	85 – 264 V AC, alternatively 24 V DC			
Hard disk > 20 GB, vibration-damped	●			
DVD-ROM/DVD-RW	○			
Interfaces	PS/2 mouse, PS/2 keyboard, VGA, LPT, COM, 2 x USB, 1 x Ethernet			
UPS	Integrated electronics, external battery			
Monitoring software	Voltage, UPS battery voltage, temperature and fan			
Status LED	Voltage, hard disk, UPS and temperature			
Operating system	Windows XP			
Approvals	CE/UL/CSA			
Front protection degree	IP65			
Vibration/shock	1 g/15 g			
Temperature	5 to 45 ° C			
Dimensions of 3 slots (W x H x D)	350 x 290 x 146 mm	350 x 290 x 146 mm	407 x 370 x 146 mm	407 x 370 x 146 mm
Dimensions of 4 slots (W x H x D)	350 x 290 x 166 mm	350 x 290 x 166 mm	407 x 370 x 166 mm	407 x 370 x 166 mm
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

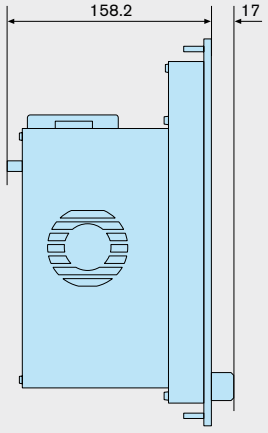
● Default
○ Optional

IndraControl VPP 16 and VPP 40

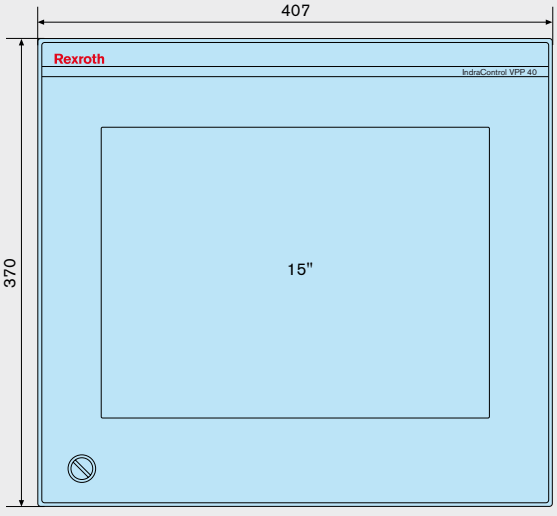
IndraControl VPP 16

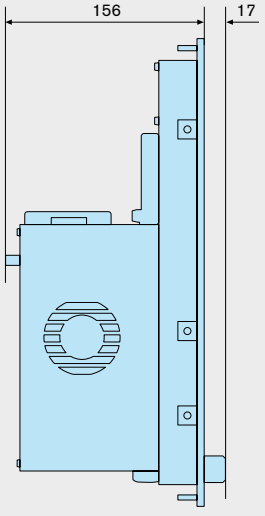






IndraControl VPP 40



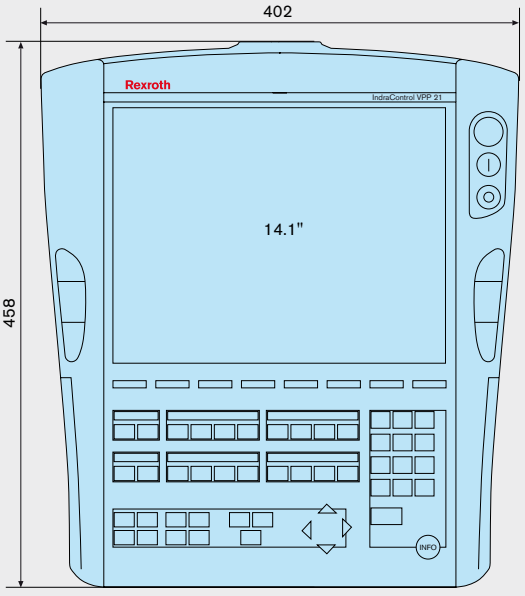


IndraControl VPP 21

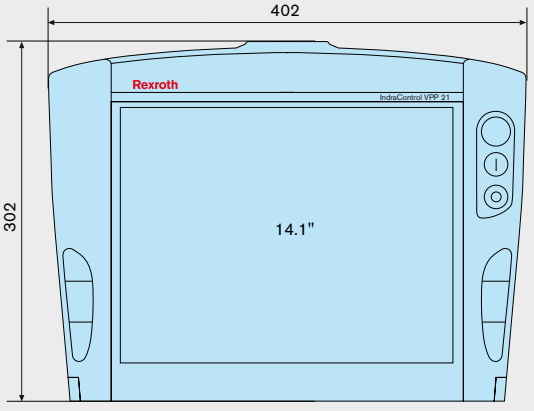
Technical data	VPP 21	VPP 21
		
Display	14.1" TFT	
Resolution	1,024 x 768, XGA	
Touchscreen	●	–
Machine/function/additional keys	3 pushbuttons (start, stop, E-stop) /-/ 6 navigation keys	3 pushbuttons (start, stop, E-stop) /12 function buttons/ 6 navigation, 16 operating, 8 special keys, numeric block, cursor keys with button mouse
Processor/RAM	Pentium III 700 MHz/512 MB	
Slots (PCI)	1	
Line voltage	24 V DC	
Hard disk > 20 GB	●	
Compact flash, external	○	
Interfaces	PS/2 mouse, PS/2 keyboard, VGA, LPT, COM, 1 x USB, 2 x Ethernet	
Fieldbus master	PROFIBUS DP	
UPS	External	
Monitoring functions	Status LED, PC box: voltage, hard disk, battery SRAM and temperature	
Operating system	Windows XP	
Approvals	CE/UL/CSA	
Degree of protection (front/overall)	IP64/40	
Vibration/shock	0.25 g/5 g	
Temperature	5 to 45° C	
Dimensions (W x H x D)	402 x 302 x 140 mm	402 x 468 x 140 mm
Availability		
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)	

● Default
○ Optional

IndraControl VPP 21



IndraControl VPP 21



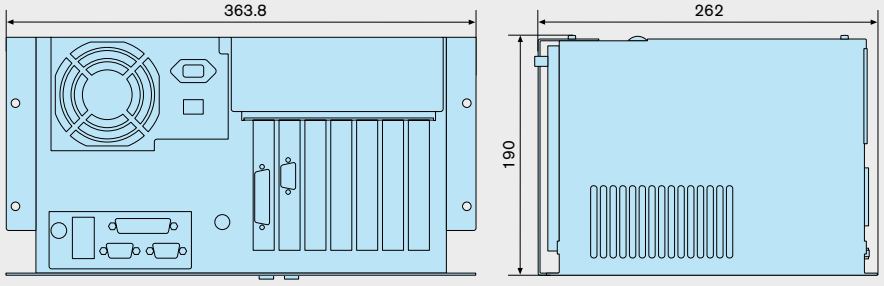
IndraControl VSB, VPB and VDP

Technical data	VSB 40	VPB 40	VDP 16	VDP 40
				
Display	–		12" TFT	15" TFT
Resolution	–		800 x 600, SVGA	1,024 x 768, SVGA
Touchscreen	–		●	
Machine/function/additional keys	–		As alternative for touch 16/16/14	
Alphanumeric keyboard	–		Additional components VAK	
Front USB (protection degree IP65)	–		1	
Processor/RAM	Celeron 2 GHz/512 MB	Celeron 1.3 GHz/512 MB	–	
Slots (PCI/combined)	6/0	2/1 or 3/1	–	
Line voltage	90 to 264 V AC	85 to 264 V AC	Via VPB/VSB	
Line voltage, alternative	–	24 V DC	–	
Hard disk > 30 GB, permanently installed	●	–	–	
Hard disk > 20 GB, vibration-damped	○	●	–	
DVD-ROM/DVD-RW	○		–	
Interfaces	PS/2 mouse, PS/2 keyboard, VGA, LPT, COM, 2 x USB, 1 x Ethernet		PS/2 mouse, PS/2 keyboard, 4 x USB, PROFIBUS DP slave machine keys (optional)	
PC-VDP connection	G4	G1/G3/G4	G4	
UPS	External	Integrated electronics, external battery	–	
Status LED	–	Voltage HDD, UPS, temperature	Display of all LEDs same as with VPP/VSP	
Operating system	Windows XP		–	
Approvals	CE/UL/CSA		CE/UL/CSA	
Degree of protection	IP20		Front IP65	
Vibration/shock	0.25 g/5 g	1 g/15 g	1 g/15 g	
Temperature	5 to 45° C		5 to 45 °C	
Dimensions (W x H x D)	See below	See below	350 x 290 x 65 mm	407 x 370 x 69 mm
Dimensions, 3 slots	–	364 x 130 x 214 mm	–	
Dimensions, 4 slots	–	364 x 130 x 214 mm	–	
Dimensions, 6 slots	360 x 260 x 190 mm	–	–	
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

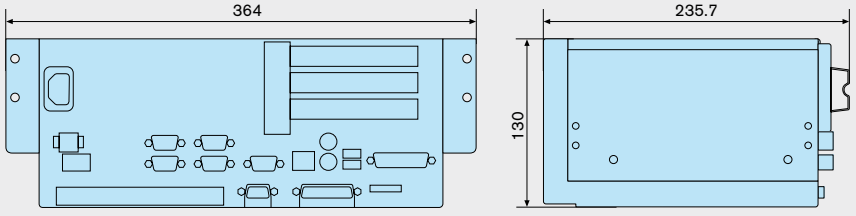
● Default
○ Optional

IndraControl VSB 40 and VPB 40

IndraControl VSB 40

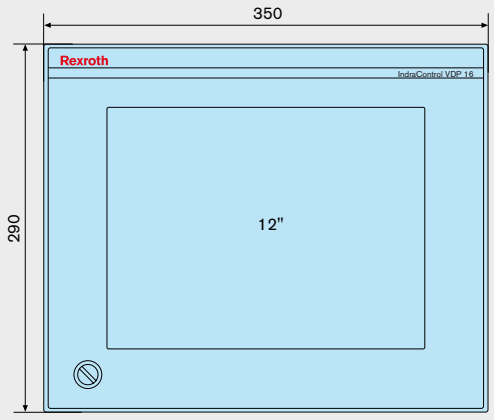


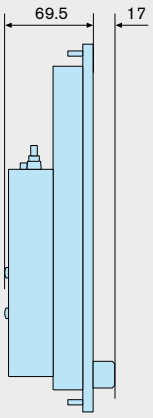
IndraControl VPB 40



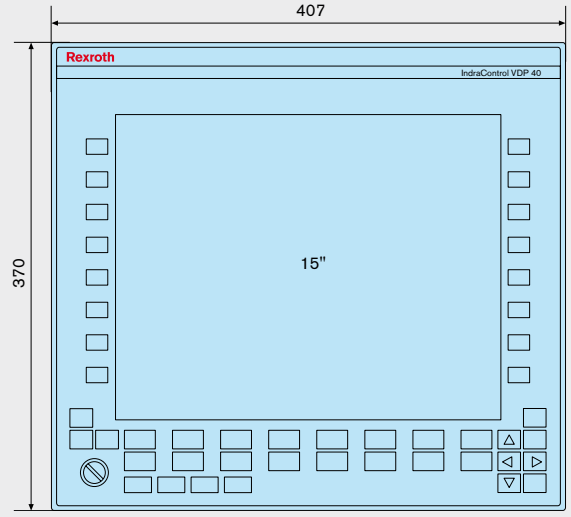
IndraControl VDP 16 and VDP 40

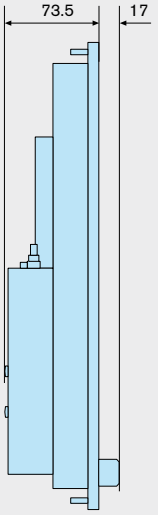
IndraControl VDP 16





IndraControl VDP 40





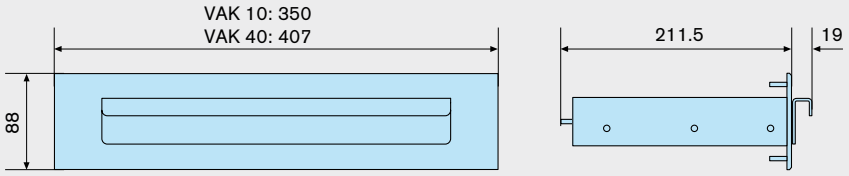

Rexroth

IndraControl VAK and VAM

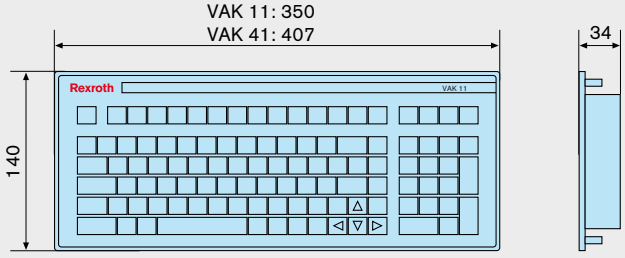
Technical data	VAK 10/40	VAK 11/41	VAM 10/40	VAM 11/41
				
Type	Slide-out keyboard (full keyboard)	Touch panel (full keyboard)	Machine control panel for standard machine tools	Machine control panel for automated production
Keyboard	Short-stroke keys		–	
Function and additional keys	86 keys, alphanumeric block, integrated mouse pointer	106 keys, alphanumeric block, 4 variable keys, keyboard mouse	–	–
Illuminated pushbutton	–		2 x 15 short-stroke buttons	3 x 5 short-stroke buttons
E-stop pushbutton	–	–	2 break contacts	
Override	–		Feed and spindle	
Flexible module field	–		VAM 40	VAM 41
Key switch	–		4-step switch with forced and DC-isolated contacts	
Pre-cutouts, 22.5 mm in diameter	–		–	7 ea/8 ea
Fieldbus	–		PROFIBUS DP slave	
Logic supply U_L	–		24 V DC (19.2 ... 30 V), PELV	
Power consumption from U_L	–		max. 0.5	
Input/output supply U_Q	–		24 V DC (19.2 ... 30 V), PELV	
Power consumption	0.01 A	0.01 A	max. 1.7 A	max. 1.7 A
Line voltage	5 V DC (via PS/2)		24 V DC	
Interface	PS/2		Interface for external handwheel, 16/8 digital I/O, 24 V DC	
Approvals	CE/UL/CSA			
Front protection degree	IP65		IP54	
Temperature	5 to 45 °C			
Dimensions (W x H x D)	350/407 x 88 x 200 mm	350/407 x 140 x 40 mm	350/407 x 169 x 102 mm	350/407 x 210 x 102 mm
Panel cutout (W x H)	324 x 58/376 x 58 mm	318 x 108/375 x 108 mm	318 x 137/375 x 137 mm	318 x 178/375 x 178 mm
Power cord	1 m		–	
Weight in kg	typ. 2.5/2.6	typ. 1.3/1.4	typ. 1.17/1.38	typ. 1.17/1.38
Color	Light grey RAL 7035			
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

IndraControl VAK 10, VAK 11, VAK 40 and VAK 41

IndraControl VAK 10, VAK 40

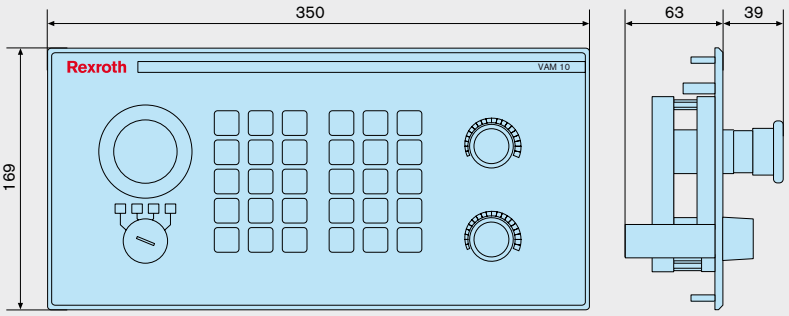


IndraControl VAK 11, VAK 41

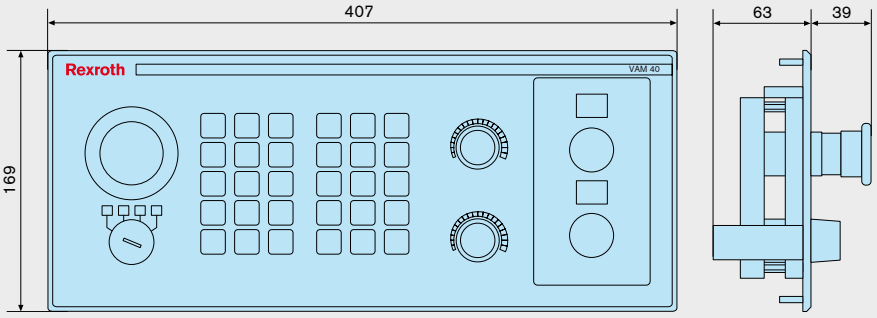


IndraControl VAM 10 and VAM 40

IndraControl VAM 10

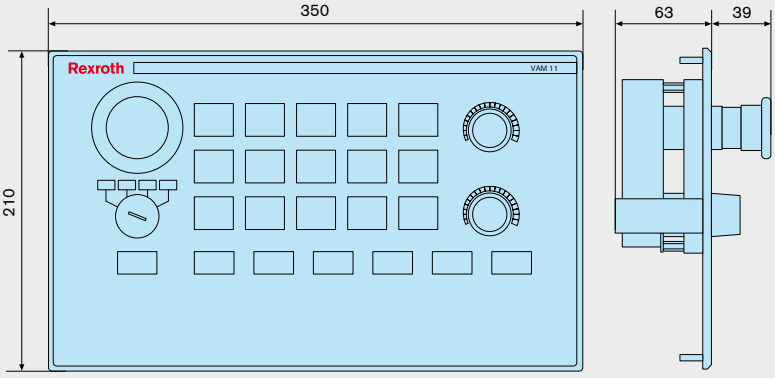


IndraControl VAM 40

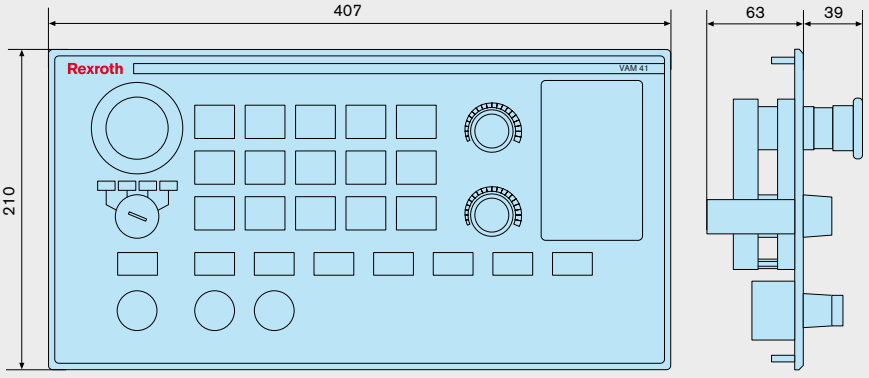


IndraControl VAM 11 and VAM 41

IndraControl VAM 11



IndraControl VAM 41



Inline – Compact I/O Technology in the Control Cabinet

Rexroth Inline is the flexibly scalable modular I/O system with IP20 protection for time-saving installation in a control cabinet – whether locally at the IndraControl L or as a distributed I/O station.

Rexroth Inline is available for all current fieldbus systems in the following two versions:

- Inline-Modular – finely scalable modular I/O system for individual configuration
- Inline-Block – bus coupler with integrated I/O as an ideal solution for nodes with limited I/O scope

Fieldbus coupler

Fieldbus couplers form the first module in an Inline station and are the interface to the fieldbus system. The various I/O modules can be directly connected to these fieldbus couplers.

Analog modules

Analog I/O modules allow the measurement and output of analog signals from standard sensors and analog actuators with 16-bit resolution.

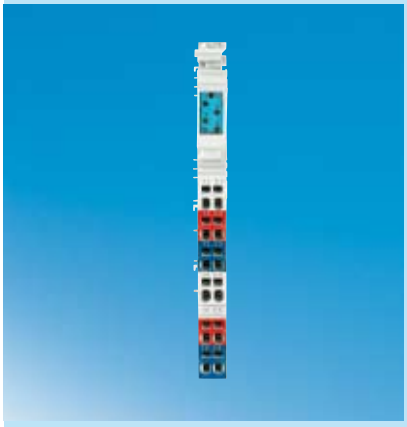
Rexroth Inline – the flexible I/O system for centralized and distributed system architectures.

Compact, modular and simple

- Space-saving I/O technology for attachment to standard rails
- Individually combinable modules
- Well-considered assembly and installation design

Your benefit

Digital modules

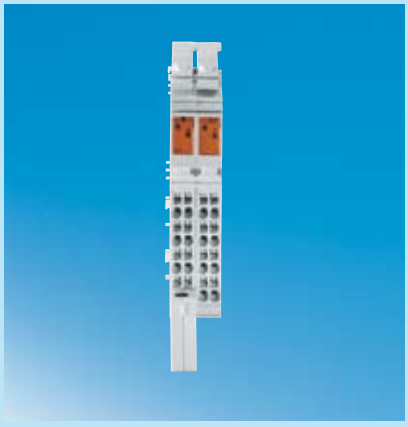


Digital I/O modules – for connection of digital signals, from pushbuttons, limit switches or proximity switches.

Power supply/segment modules

Power supply/segment modules allow the insertion of logic voltage or to isolate segments in Inline stations.

Function modules



Function modules can be used to read relative or absolute positions or angular positions.

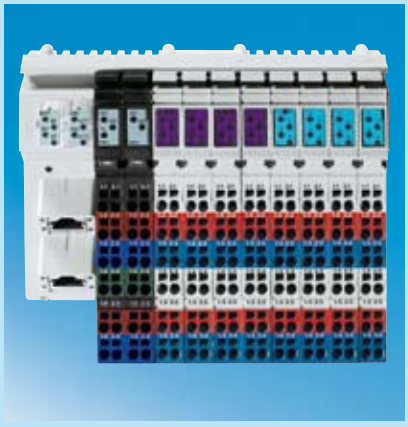
Relay modules

Relay modules allow switching of an isolated voltage of up to 230 V AC.

DDL master modules

DDL master modules allow easy connectivity to pneumatic valves.

Block I/O modules



Rexroth Inline Block is the ideal solution for low complexity applications with limited I/O requirements. The bus couplers have built-in inputs and outputs. The compact design saves space and gives you additional options when you develop your automation solution.

Bus couplers

Technical data		R-IL PB BK DI8 DO4-PAC	R-IL S3 BK DI8 DO4-PAC
Interfaces		PROFIBUS DP	SERCOS III
		Local bus	Local bus
System data			
Number of users per station		max. 63 (including 2 users at the bus coupler)	max. 63 (including 2 users at the bus coupler)
Total of all I/O data per station		max. 244 bytes	max. 244 bytes
Transmission speed in the local bus		500 kbaud or 2 Mbaud (automatic detection)	500 kbaud or 2 Mbaud (automatic detection)
Digital outputs			
Number		4	4
Nominal output voltage U_{Out}		24 V DC	24 V DC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		0.5 A	0.5 A
Nominal current tolerances		+10 %	+10 %
Total current		2 A	2 A
Protection		Short-circuit, overload	Short-circuit, overload
Actuator connection type		2-, 3 wire connection	2-, 3 wire connection
Digital inputs			
Number		8	8
Design		According to EN 61131-2 type 1	According to EN 61131-2 type 1
Switching thresholds	max. voltage at low level U_{Lmax}	< 5 V	< 5 V
	max. voltage at high level U_{Hmax}	> 15 V	> 15 V
Common potentials		Segment supply, ground	Segment supply, ground
Nominal input voltage U_{INom}		24 V DC	24 V DC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC
Nominal input current at U_{INom}		typ. 3 mA	typ. 3 mA
Delay time t_{On}		–	–
Delay time t_{Off}		–	–
Permissible line length		30 m	30 m
Sensor connection type		2-, 3 wire connection	2-, 3 wire connection
Segment feed U_S/U_M			
Nominal value		24 V DC	24 V DC
Tolerances		–15/+20 %	–15/+20 %
Load current		max. 8 A	max. 8 A
Logic supply U_L			
Nominal value		7.5 V (converted from the external 24 V DC voltage)	7.5 V (converted from the external 24 V DC voltage)
Load current		max. 2 A	max. 2 A
Analog supply U_{ANA}			
Nominal value		24 V DC	24 V DC
Tolerances		–15/+20 %	–15/+20 %
Permissible voltage range		19 to 30 V DC	19 to 30 V DC
Load current		max. 0.5 A	max. 0.5 A
Ambient conditions			
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %
Mechanical data			
Width W		80 mm	80 mm
Height H		121 mm	121 mm
Depth D		70 mm	70 mm
Dimension drawing (see pp. 140 – 143)		Type 1	Type 1
Weight (including plug)		320 g	320 g
Degree of protection		IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IBS IL 24 BK-T/U	R-IBS IL 24 BK-DSUB	R-IL DN BK	R-IL CAN BK-PAC	R-IL SE BK
Interfaces	INTERBUS	INTERBUS	DeviceNet	CANopen	SERCOS interface (FO)
	Local bus	Local bus	Local bus	Local bus	Local bus
System data					
Number of users per station	max. 63	max. 63	max. 63	max. 63	max. 40
Total of all I/O data per station	max. 192 bytes	max. 192 bytes	max. 192 bytes	max. 192 bytes	max. 32 bytes inputs and 32 bytes outputs
Transmission speed in the local bus	500 kbaud	500 kbaud	500 kbaud	500 kbaud	500 kbaud
Segment feed U_S/U_M					
Nominal value	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
Tolerances	–15/+20 %	–15/+20 %	–15/+20 %	–15/+20 %	–15/+20 %
Load current	max. 8 A	max. 8 A	max. 8 A	max. 8 A	max. 8 A
Logic supply U_L					
Nominal value	7.5 V (converted from the external 24 V DC voltage)	7.5 V (converted from the external 24 V DC voltage)	7.5 V (converted from the external 24 V DC voltage)	7.5 V (converted from the external 24 V DC voltage)	7.5 V (converted from the external 24 V DC voltage)
Load current	max. 2 A	max. 2 A	max. 2 A	max. 2 A	max. 2 A
Analog supply U_{ANA}					
Nominal value	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
Tolerances	–15/+20 %	–15/+20 %	–15/+20 %	–15/+20 %	–15/+20 %
Permissible voltage range	19 to 30 V DC	19 to 30 V DC	19 to 30 V DC	19 to 30 V DC	19 to 30 V DC
Load current	max. 0.5 A	max. 0.5 A	max. 0.5 A	max. 0.5 A	max. 0.5 A
Ambient conditions					
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C	–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C	–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %	5 to 90 %	5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)	5 to 95 %	5 to 95 %	5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data					
Width W	48.8 mm	90 mm	90 mm	90 mm	90 mm
Height H	120 mm	120 mm	120 mm	120 mm	121 mm
Depth D	70 mm	70 mm	70 mm	70 mm	70 mm
Dimension drawing (see pp. 140 – 143)	Type 3	Type 2	Type 2	Type 2	Type 2
Weight (without plug)	210 g	210 g	210 g	210 g	320 g
Degree of protection	IP20	IP20	IP20	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Digital inputs

Technical data		R-IB IL 24 DI 2	R-IB IL 24 EDI 2-DES	R-IB IL 24 DI 2-NPN-PAC
Digital inputs				
Number		2	2 digital inputs + 2 diagnostic inputs	2
Design		According to EN 61131-2, type 1	According to EN 61131-2, type 1	According to EN 61131-2, type 1
Switching thresholds	max. voltage at low level U_{Lmax}	< 5 V	< 6 V	< 5 V
	max. voltage at high level U_{Hmax}	> 15 V	> 13 V	> 15 V
Common potentials		Segment supply, ground	Segment supply, ground	Segment supply, ground
Nominal input voltage U_{INom}		24 V DC	24 V DC	24 V DC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC
Nominal input current at U_{INom}		min. 5 mA	min. 3 mA	min. 5 mA
Delay time t_{On}		–	–	–
Delay time t_{Off}		–	–	–
Permissible line length		30 m	30 m	30 m
Sensor connection type		2-, 3 or 4 wire connection	According to DESINA specification or 2-, 3 wire connection	2-, 3 or 4 wire connection
Electric data				
Logic voltage U_L		7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		35 mA	31 mA	35 mA
Nominal current consumption from U_S		max. 0.5 A (2 x 0.25 A)	max. 0.25 A	max. 0.5 A
Operating mode: process data mode		2 bits	4 bits	2 bits
Transmission speed		500 kbaud	500 kbaud	500 kbaud
Error message to the higher level control system		–	Yes	–
Ambient conditions				
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data				
Width W		12.2 mm	12.2 mm	12.2 mm
Height H		120 mm	120 mm	120 mm
Depth D		71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 4	Type 4	Type 4
Weight (without plug)		38 g	43 g	41 g
Degree of protection		IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data		R-IB IL 24 DI 4	R-IB IL 24 DI 8	R-IB IL 24 DI 16
Digital inputs				
Number		4	8	16
Design		According to EN 61131-2, type 1	According to EN 61131-2, type 1	According to EN 61131-2, type 1
Switching thresholds	max. voltage at low level U_{Lmax}	< 5 V	< 5 V	< 5 V
	max. voltage at high level U_{Hmax}	> 15 V	> 15 V	> 15 V
Common potentials		Segment supply, ground	Segment supply, ground	Segment supply, ground
Nominal input voltage U_{INom}		24 V DC	24 V DC	24 V DC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC
Nominal input current at U_{INom}		min. 3 mA	min. 3 mA	min. 3 mA
Delay time t_{On}		–	–	–
Delay time t_{Off}		–	–	–
Permissible line length		30 m	30 m	30 m
Sensor connection type		2-, 3 or 4 wire connection	2-, 3 or 4 wire connection	2-, 3 or 4 wire connection
Electric data				
Logic voltage U_L		7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		40 mA	50 mA	60 mA
Nominal current consumption from U_S		max. 1.0 A	max. 2.0 A	max. 4.0 A
Operating mode: process data mode		4 bits	8 bits	16 bits
Transmission speed		500 kbaud	500 kbaud	500 kbaud
Error message to the higher level control system		–	–	–
Ambient conditions				
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data				
Width W		12.2 mm	48.8 mm	48.8 mm
Height H		120 mm	120 mm	141 mm
Depth D		71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 5	Type 6	Type 7
Weight (without plug)		44 g	118 g	122 g
Degree of protection		IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Digital inputs

Technical data		R-IB IL 24 DI 16-NPN-PAC	R-IB IL 24 DI 32/HD	R-IB IL 24 DI 32/HD-NPN-PAC
Digital inputs				
Number		16	32	32
Design		According to EN 61131-2, type 1	According to EN 61131-2, type 1	According to EN 61131-2, type 1
Switching thresholds	max. voltage at low level U_{Lmax}	< 5 V	< 5 V DC	< 5 V DC
	max. voltage at high level U_{Hmax}	> 15 V	> 15 V DC	> 15 V DC
Common potentials		Segment supply, ground	Segment supply, ground	Segment supply, ground
Nominal input voltage U_{INom}		24 V DC	24 V DC	24 V DC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC
Nominal input current at U_{INom}		3 mA	2.8 mA	2.8 mA
Delay time t_{On}		–	2 ms	2 ms
Delay time t_{Off}		–	4 ms	4 ms
Permissible line length		30 m	30 m	30 m
Sensor connection type		2-, 3 wire connection	1 wire connection	1 wire connection
Electric data				
Logic voltage U_L		7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		60 mA	90 mA	90 mA
Nominal current consumption from U_S		max. 4.0 A	–	–
Operating mode: process data mode		16 bits	32 bits	32 bits
Transmission speed		500 kbaud	500 kbaud	500 kbaud
Error message to the higher level control system		–	–	–
Ambient conditions				
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data				
Width W		48.8 mm	48.8 mm	48.8 mm
Height H		141 mm	120 mm	120 mm
Depth D		71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 7	Type 6	Type 6
Weight (without plug)		122 g	125 g	125 g
Degree of protection		IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data		R-IB IL 24 DI 8-2MBD-PAC	R-IB IL 24 DI 16-2MBD-PAC
Digital inputs			
Number		8	16
Design		According to EN 61131-2, type 1	According to EN 61131-2, type 1
Switching thresholds	max. voltage at low level U_{Lmax}	< 5 V	< 5 V
	max. voltage at high level U_{Hmax}	> 15 V	> 15 V
Common potentials		Segment supply, ground	Segment supply, ground
Nominal input voltage U_{INom}		24 V DC	24 V DC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ V DC	$-30 < U_{INom} < +30$ V DC
Nominal input current at U_{INom}		min. 3 mA	min. 3 mA
Delay time t_{On}		–	–
Delay time t_{Off}		–	–
Permissible line length		30 m	30 m
Sensor connection type		2-, 3 or 4 wire connection	2-, 3 wire connection
Electric data			
Logic voltage U_L		7.5 V	7.5 V
Power consumption from local bus U_L		80 mA	80 mA
Nominal current consumption from U_S		max. 2.0 A	max. 4.0 A
Operating mode: process data mode		8 bits	16 bits
Transmission speed		2 Mbaud	2 Mbaud
Error message to the higher level control system		–	–
Ambient conditions			
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %
Mechanical data			
Width W		48.8 mm	48.8 mm
Height H		120 mm	141 mm
Depth D		71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 6	Type 7
Weight (without plug)		118 g	122 g
Degree of protection		IP 20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Digital outputs

Technical data		R-IB IL 24 DO 2-2A	R-IB IL 24 DO 2-NPN-PAC	R-IB IL 24 DO 4	R-IB IL 24 DO 8
Digital outputs					
Number		2	2	4	8
Nominal output voltage U_{Out}		24 V DC	24 V DC	24 V DC	24 V DC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		2 A	2 A	0.5 A	0.5 A
Nominal current tolerances		+10 %	+10 %	+10 %	+10 %
Total current		4 A	1 A	2 A	4 A
Protection		Short-circuit/overload	Short-circuit/overload	Short-circuit/overload	Short-circuit/overload
Signal delay upon power on of	nominal resistive load (12 Ω/48 W)	typ. 200 µs	typ. 200 µs	typ. 100 µs	typ. 100 µs
	nominal lamp load (48 W)	typ. 200 µs	typ. 200 µs	typ. 100 µs	typ. 100 µs
	nominal inductive load (1.2 H, 12 Ω)	typ. 250 ms	typ. 250 ms	typ. 100 µs	typ. 100 µs
Signal delay upon power down of	nominal resistive load (12 Ω/48 W)	typ. 200 µs	typ. 200 µs	typ. 1 ms	typ. 1 ms
	nominal lamp load (48 W)	typ. 200 µs	typ. 200 µs	typ. 1 ms	typ. 1 ms
	nominal inductive load (1.2 H, 12 Ω)	typ. 250 ms	typ. 250 ms	typ. 50 ms	typ. 50 ms
Actuator connection type		2-, 3 or 4 wire connection	2-, 3 or 4 wire connection	2-, 3 wire connection	2-, 3 or 4 wire connection
Electric data					
Logic voltage U_L		7.5 V	7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		max. 35 mA	max. 32 mA	max. 44 mA	max. 60 mA
Segment supply voltage U_S		24 V DC (nominal value)	24 V DC (nominal value)	24 V DC (nominal value)	24 V DC (nominal value)
Nominal current consumption from U_S		max. 4 A (2 x 2 A)	max. 1 A (2 x 0.5 A)	max. 2 A (2 x 0.5 A)	max. 4 A (8 x 0.5 A)
Operating mode: process data mode		2 bits	2 bits	4 bits	8 bits
Transmission speed		500 kbaud	500 kbaud	500 kbaud	500 kbaud
Error message to the higher level control system		Short-circuit/overload of an output	Short-circuit/overload of an output	Short-circuit/overload of an output	Short-circuit/overload of an output
Ambient conditions					
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data					
Width W		12.2 mm	12.2 mm	12.2 mm	48.8 mm
Height H		120 mm	120 mm	121 mm	120 mm
Depth D		71.5 mm	71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 4	Type 4	Type 5	Type 6
Weight (without plug)		46 g	42 g	46 g	130 g
Degree of protection		IP20	IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data		R-IB IL 24 DO 8-2A	R-IB IL 24 DO 8-NPN-PAC	R-IB IL 24 DO 16
Digital outputs				
Number		8	8	16
Nominal output voltage U_{Out}		24 V DC	24 V DC	24 V DC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		2 A	0.5 A	0.5 A
Nominal current tolerances		+10 %	+10 %	+10 %
Total current		8 A (at 50 % synchronism)	4 A	8 A
Protection		Short-circuit/overload	Short-circuit/overload	Short-circuit/overload
Signal delay upon power on of	nominal resistive load (12 Ω/48 W)	typ. 50 µs	typ. 100 µs	typ. 500 µs
	nominal lamp load (48 W)	typ. 75 ms	typ. 100 ms	typ. 100 ms
	nominal inductive load (1.2 H, 12 Ω)	typ. 50 ms	typ. 100 ms	typ. 100 ms
Signal delay upon power down of	nominal resistive load (12 Ω/48 W)	typ. 500 µs	typ. 1 ms	typ. 1 ms
	nominal lamp load (48 W)	typ. 500 µs	typ. 1 ms	typ. 1 ms
	nominal inductive load (1.2 H, 12 Ω)	typ. 150 ms	typ. 50 ms	typ. 50 ms
Actuator connection type		2-, 3 or 4 wire connection	2-, 3 or 4 wire connection	2-, 3 wire connection
Electric data				
Logic voltage		7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		max. 60 mA	max. 60 mA	max. 90 mA
Segment supply voltage U_S		24 V DC (nominal value)	24 V DC (nominal value)	24 V DC (nominal value)
Nominal current consumption from U_S		max. 8 A	max. 4 A (8 x 0.5 A)	max. 8 A (16 x 0.5 A)
Operating mode: process data mode		8 bits	4 bits	16 bits
Transmission speed		500 kbaud	500 kbaud	500 kbaud
Error message to the higher level control system		–	Short-circuit/overload of an output	Short-circuit/overload of an output
Ambient conditions				
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data				
Width W		48.8 mm	48.8 mm	48.8 mm
Height H		120 mm	120 mm	141 mm
Depth D		71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 6	Type 6	Type 7
Weight (without plug)		130 g	130 g	130 g
Degree of protection		IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Digital outputs

Technical data		R-IB IL 24 DO 32/HD	R-IB IL 24 DO 32/HD-NPN-PAC	R-IB IL 24 DO 2-2A-2MBD-PAC
Digital outputs				
Number		32	32	2
Nominal output voltage U_{Out}		24 V DC	24 V DC	24 V DC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		0.5 A	0.5 A	2 A
Nominal current tolerances		+10 %	+10 %	+10 %
Total current		8 A	8 A	4 A
Protection		Short-circuit/overload	Short-circuit/overload	Short-circuit/overload
Signal delay upon power on of	nominal resistive load (12 Ω/48 W)	typ. 500 µs	typ. 500 µs	typ. 200 µs
	nominal lamp load (48 W)	typ. 100 µs	typ. 100 µs	typ. 200 µs
	nominal inductive load (1.2 H, 12 Ω)	typ. 100 µs	typ. 100 µs	typ. 250 µs
Signal delay upon power down of	nominal resistive load (12 Ω/48 W)	typ. 1 µs	typ. 1 µs	typ. 200 µs
	nominal lamp load (48 W)	typ. 1 µs	typ. 1 µs	typ. 200 µs
	nominal inductive load (1.2 H, 12 Ω)	typ. 50 µs	typ. 50 µs	typ. 250 µs
Actuator connection type		1 wire connection	1 wire connection	2-, 3 or 4 wire connection
Electric data				
Logic voltage		7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		max. 140 mA	max. 140 mA	max. 60 mA
Segment supply voltage U_S		24 V DC (nominal value)	24 V DC (nominal value)	24 V DC (nominal value)
Nominal current consumption from U_S		max. 8 A (16 x 0.5 A or 32 x 0.25 A)	max. 8 A (16 x 0.5 A or 32 x 0.25 A)	max. 4 A (2 x 2 A)
Operating mode: process data mode		32 bits	32 bits	2 bits
Transmission speed		500 kbaud	500 kbaud	2 Mbaud
Error message to the higher level control system		Short-circuit/overload of an output	Short-circuit/overload of an output	Short-circuit/overload of an output
Ambient conditions				
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data				
Width W		48.8 mm	48.8 mm	12.2 mm
Height H		120 mm	120 mm	120 mm
Depth D		71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 6	Type 6	Type 4
Weight (without plug)		135 g	135 g	46 g
Degree of protection		IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data		R-IB IL 24 DO 4-2MBD-PAC	R-IB IL 24 DO 8-2MBD-PAC	R-IB IL 24 DO 16-2MBD-PAC
Digital outputs				
Number		4	8	16
Nominal output voltage U_{Out}		24 V DC	24 V DC	24 V DC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		2 A	0.5 A	1 A
Nominal current tolerances		+10 %	+10 %	+10 %
Total current		4 A	4 A	8 A
Protection		Short-circuit/overload	Short-circuit/overload	Short-circuit/overload
Signal delay upon power on of	nominal resistive load (12 Ω/48 W)	typ. 200 µs	typ. 100 µs	typ. 500 µs
	nominal lamp load (48 W)	typ. 200 µs	typ. 100 µs	typ. 100 µs
	nominal inductive load (1.2 H, 12 Ω)	typ. 250 µs	typ. 100 µs	typ. 100 µs
Signal delay upon power down of	nominal resistive load (12 Ω/48 W)	typ. 200 µs	typ. 1 µs	typ. 1 µs
	nominal lamp load (48 W)	typ. 200 µs	typ. 1 µs	typ. 1 µs
	nominal inductive load (1.2 H, 12 Ω)	typ. 250 µs	typ. 50 µs	typ. 50 µs
Actuator connection type		2-, 3 or 4 wire connection	2-, 3 or 4 wire connection	2-, 3 wire connection
Electric data				
Logic voltage U_L		7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		max. 65 mA	max. 85 mA	max. 105 mA
Segment supply voltage U_S		24 V DC (nominal value)	24 V DC (nominal value)	24 V DC (nominal value)
Nominal current consumption from U_S		max. 2 A (4 x 0.5 A)	max. 4 A (8 x 0.5 A)	max. 8 A (16 x 0.5 A)
Operating mode: process data mode		4 bits	8 bits	16 bits
Transmission speed		2 Mbaud	2 Mbaud	2 Mbaud
Error message to the higher level control system		Short-circuit/overload of an output	Short-circuit/overload of an output	Short-circuit/overload of an output
Ambient conditions				
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data				
Width W		12.2 mm	48.8 mm	48.8 mm
Height H		141 mm	120 mm	141 mm
Depth D		71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 5	Type 6	Type 7
Weight (without plug)		44 g	130 g	130 g
Degree of protection		IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Analog inputs

Technical data	R-IB IL 24 AI 2/SF	R-IB IL 24 AI 2/SF-230-PAC
Analog inputs		
Number	2 anlog single-ended inputs	2 anlog single-ended inputs
Digital filtering (averaging)	Across 16 measurement values (can be switched off)	Across 16 measurement values (can be switched off)
Conversion time of A/D converter	typ. 120 µs	typ. 120 µs
Voltage inputs		
Measuring ranges	0 to 10 V, ±10 V	0 to 10 V, ±10 V
Input resistance	> 220 kΩ	> 220 kΩ
Limit frequency (–3 dB) of input filters	40 Hz	230 Hz
Process data update of either channel	< 1.5 ms	< 1.5 ms
Current inputs		
Input resistance	50 Ω	50 Ω
Measuring ranges	0 to 20 mA, ±20 mA, 4 to 20 mA	0 to 20 mA, ±20 mA, 4 to 20 mA
Limit frequency (–3 dB) of input filters	40 Hz	230 Hz
Process data update of either channel	< 1.5 ms	< 1.5 ms
Max. permissible current in each input	±100 mA	±100 mA
Resolution	16 bits	16 bits
Sensor connection type	2-, 3 wire connection	2-, 3 wire connection
Electric data		
Logic voltage U_L	7.5 V	7.5 V
Power consumption from local bus U_L	typ. 45 mA	typ. 45 mA
Peripheral supply voltage U_{ANA}	24 V DC	24 V DC
Power consumption at U_{ANA}	typ. 12 mA	typ. 12 mA
Operating mode: process data mode	32 bits	32 bits
Transmission speed	500 kbaud	500 kbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}, peripheral/user error	Failure of supply voltage U_{ANA}, peripheral/user error
Ambient conditions		
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing	5 to 95 %, no dewing
Mechanical data		
Width W	12.2 mm	12.2 mm
Height H	135 mm	135 mm
Depth D	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 8	Type 8
Weight (without plug)	47 g	47 g
Degree of protection	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL AI 8/IS-PAC
Analog inputs	
Number	8 analog single-ended inputs
Digital filtering (averaging)	None or across 4, 16 or 32 measurement values
Conversion time of A/D converter	max. 10 µs
Current inputs	
Input resistance	25 Ω
Measuring ranges	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 40 mA, ±40 mA
Limit frequency (–3 dB) of input filters	3.5 kHz
Process data update of either channel	Synchronous with the bus
Max. permissible current in each input	±100 mA
Resolution	16 bits
Sensor connection type	2-, 3 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 52 mA, max. 65 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 31 mA, max. 40 mA
Operating mode: process data mode	2 words
Transmission speed	500 kbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}, peripheral/user error
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Analog inputs

Technical data	R-IB IL 24 AI 8/SF-PAC
Analog inuts	
Number	8 analog single-ended inputs
Digital filtering (averaging)	None or across 4, 16 or 32 measurement values
Conversion time of A/D converter	max. 10 µs
Voltage inputs	
Measuring ranges	0 to 10 V, ±10 V, 0 to 5 V, ±5 V, 0 to 25 V, ±25 V, 0 to 50 V
Input resistance	min. 240 kΩ
Limit frequency (–3 dB) of input filters	3.5 kHz
Process data update of either channel	< 1.5 ms
Current inputs	
Input resistance	25 Ω
Measuring ranges	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 40 mA, ±40 mA
Limit frequency (–3 dB) of input filters	3.5 kHz
Process data update of either channel	< 1.5 ms
Max. permissible current in each input	±100 mA
Resolution	16 bits
Sensor connection type	2 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 48 mA, max. 55 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 30 mA, max. 35 mA
Operating mode: process data mode	32 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}, peripheral/user error
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	120 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL SGI 2/F-PAC
Analog inputs	
Number	2 input channel for strain gauges (4 voltage inputs)
Bridge voltage U_0	3.3 V (±0.5 V) or 5 V (±0.5 V)
Measured value representation	15 bits + sign
Process data update	Synchronous with the bus
Bus cycle time	≥ 1 ms
Limit frequency of differential bridge input	typ. 1.6 kHz
Strain gauge connection type	Six- and four-wire principle
Outputs	
Number	2 voltage outputs (U_V = 3.3 V, U_V = 5 V)
Total impedance of Inline module	> 60 Ω
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 75 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 30 mA, max. 35 mA
Without strain gauge	typ. 8 mA
With maximum load 60 Ω	32 mA (typ. bei U_V = 5 V)
Operating mode: process data mode	48 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Yes
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Analog inputs

Technical data	R-IB IL 24 AI 8/SF-2MBD-PAC
Analog inputs	
Number	8 analog single-ended inputs
Digital filtering (averaging)	None or across 4, 16 or 32 measurement values
Conversion time of A/D converter	max. 10 µs
Voltage inputs	
Measuring ranges	0 to 10 V, ±10 V, 0 to 5 V, ±5 V, 0 to 25 V, ±25 V, 0 to 50 V
Input resistance	min. 240 kΩ
Limit frequency (–3 dB) of input filters	3.5 kHz
Process data update of either channel	< 1.5 ms
Current inputs	
Input resistance	25 Ω
Measuring ranges	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 40 mA, ±40 mA
Limit frequency (–3 dB) of input filters	3.5 kHz
Process data update of either channel	< 1.5 ms
Max. permissible current in each input	±100 mA
Resolution	16 bits
Sensor connection type	2 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 68 mA, max. 85 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 24 mA, max. 38 mA
Operating mode: process data mode	32 bits
Transmission speed	2 Mbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}, peripheral/user error
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL SGI 2/F-2MBD-PAC
Analog outputs	
Number	2 voltage outputs (U_V = 3.3 V, U_V = 5 V)
Total impedance of Inline module	> 60 Ω
Analog inputs	
Number	2 input channel for strain gauges (four voltage inputs)
Bridge voltage U_0	3.3 V (±0.5 V) or 5 V (±0.5 V)
Measured value representation	15 bits + sign
Process data update	Synchronous with the bus
Bus cycle time	≥ 1 ms
Limit frequency of differential bridge input	typ. 1.6 kHz
Strain gauge connection type	Six- and four-wire principle
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 100 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	
Without strain gauge	typ. 8 mA
With maximum load 60 Ω	typ. 32 mA (at U_V = 5 V)
Operating mode: process data mode	48 bits
Transmission speed	2 Mbaud
Error message to the higher level control system	Yes
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Temperature modules

Technical data	R-IB IL TEMP 2 RTD	R-IB IL TEMP 4/8 RTD-2MBD-PAC
Analog inputs		
Number	2 inputs for resistive temperature sensors	8 inputs for resistive temperature sensors
Usable sensor types	Pt, Ni, Cu, KTY	Pt, Ni, Cu, KTY, linear resistors
Characteristic current	According to DIN, according to SAMA	According to DIN EN 60751: 07/1996, according to SAMA RC 21-4-1966
Conversion time of A/D converter	typ. 120 µs	typ. 5 µs, max. 10 µs
Voltage input range	–	–15 bis +85 mV
Process data update	Depending on connection method	Depending on connection method
Both channels acc. to two-wire principle	20 ms	–
One channel acc. to two-wire principle, one channel acc. to four-wire principle	20 ms	–
Both channels acc. to three-wire principle	32 ms	–
Sensor connection type	2-, 3 or 4 wire connection	2-, 3 wire connection
Electric data		
Logic voltage U_L	7.5 V	7.5 V
Power consumption from local bus U_L	typ. 43 mA	typ. 100 mA
Peripheral supply voltage U_{ANA}	24 V DC	24 V DC
Power consumption at U_{ANA}	typ. 11 mA	typ. 41 mA
Operating mode: process data mode	32 bits	80 bits
Transmission speed	500 kbaud	2 Mbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}, peripheral/user error	Failure of supply voltage U_{ANA}, peripheral/user error
Ambient conditions		
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing	5 to 95 %, no dewing
Mechanical data		
Width W	12.2 mm	48.8 mm
Height H	135 mm	120 mm
Depth D	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 8	Type 10
Weight (without plug)	46 g	125 g
Degree of protection	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL TEMP 2 UTH-PAC
Analog inputs	
Number	2 inputs for thermcouples or linear voltages
Usable sensor types	B, C, E, J, K, L, N, R, S, T, U, W, HK
Characteristic current	DIN EN 60584-1: 1995 (B, E, J, K, N, R, S, T) DIN 43710 (U, L)
Voltage input range	–15 to +85 mV
Conversion time of A/D converter	typ. 120 µs
Process data update	max. 30 ms for either channel
Limit frequency of analog filter	48 Hz
Sensor connection type	2 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 43 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 11 mA
Operating mode: process data mode	32 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}, peripheral/user error
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	12.2 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 8
Weight (without plug)	46 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Temperature modules

Technical data	R-IB IL TEMP 4/8 RTD-PAC
Analog inputs	
Number	8 inputs for resistive temperature sensors
Usable sensor types	Pt, Ni, Cu, KTY, linear resistors
Characteristic current	According to DIN EN 60751: 07/1996; according to SAMA RC 21-4-1966
Voltage input range	–15 to +85 mV
Conversion time of A/D converter	typ. 5 µs, max. 10 µs
Process data update	Depending on connection method
Sensor connection type	2-, 3 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 75 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 28 mA
Operating mode: process data mode	80 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}, peripheral/user error
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Analog outputs

Technical data	R-IB IL AO 2/U/BP
Analog outputs	
Number	2 single-ended outputs
Voltage ranges	–10 to +10 V/0 to +10 V
Basic error limit	±0.02 %
Output load	min. 2 kΩ
Resolution	16 bits
Process data update including conversation time of D/A converter	< 1 ms
Actuator connection type	2 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 33 mA, max. 40 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 25 mA, max. 35 mA
Operating mode: process data mode	32 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Failure or logic voltage U_L not reached
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	12.2 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 8
Weight (without plug)	48 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Analog outputs

Technical data	R-IB IL AO 1/SF
Analog outputs	
Number	1, automatically configured in relation to the terminal point used
Current ranges	0 to 20 mA, 4 to 20 mA
Voltage ranges	0 to 10 V
Output load	
Voltage ouput	2 kΩ
Current output	0 to 500 Ω
Resolution	16 bits
Process data update including conversion time of D/A converter	< 1 ms
Actuator connection type	2 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 30 mA, max. 40 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 50 mA, max. 65 mA
Operating mode: process data mode	32 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Failure or logic voltage U_L not reached
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	24.4 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 9
Weight (without plug)	48 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL AO 2/SF-PAC
Analog outputs	
Number	2, automatically configured in relation to the terminal point used
Current ranges	0 to 20 mA, 4 to 20 mA
Voltage ranges	0 to 10 V
Basic error limit within current range	±0.003 %
Output load	
Voltage ouput	min. 2 kΩ
Current output	0 to 500 Ω
Resolution	16 bits
Process data update including conversion time of D/A converter	< 1 ms
Actuator connection type	2 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 36 mA, max. 45 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 75 mA, max. 95 mA
Operating mode: process data mode	32 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Analog outputs

Technical data	R-IB IL AO 2/SF-2MBD-PAC
Analog outputs	
Number	2, automatically configured in relation to the terminal point used
Current ranges	0 to 20 mA, 4 mA to 20 mA
Voltage ranges	0 to 10 V
Basic error limit within current range	±0.003 %
Output load	
Voltage ouput	min. 2 kΩ
Current output	0 to 500 Ω
Resolution	16 bits
Process data update including conversion time of D/A converter	< 1 ms
Actuator connection type	2 wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 60 mA, max. 75 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 75 mA, max. 95 mA
Operating mode: process data mode	32 bits
Transmission speed	2 Mbaud
Error message to the higher level control system	Failure of supply voltage U_{ANA}
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	48.8 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	125 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL AO 4/8/U/BP-2MBD-PAC
Analog outputs	
Number	8
Voltage ranges	0 to 10 V, 0 to 5 V, ±10 V, ±5 V
Basic error limit	typ. ±0,1 % of output range and value
Output load	typ. 30 kΩ, min. 2 kΩ
Resolution	16 bits
Process data update including conversation time of D/A converter	2 ms
Actuator connection type	2 wire connection with shield connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 80 mA
Peripheral supply voltage U_{ANA}	24 V DC
Power consumption at U_{ANA}	typ. 72 mA
Operating mode: process data mode	32 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Failure or logic voltage U_L not reached, failure of internal peripheral voltage supply
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	12.2 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 10
Weight (without plug)	48 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Power supply/segment modules

Technical data	R-IB IL PWR IN	R-IB IL 24 PWR IN/2F-D-2MBD-PAC
24-V peripheral supply (main circuit U_M)		
Rated value	24 V DC	24 V DC
Permissible range	19.2 to 30 V	19.2 to 30 V
Permissible current	max. 8 A	max. 8 A
Electric data		
Operating mode: process data mode	–	2 bits
Transmission speed	500 kbaud	2 Mbaud
Error message to the higher level control system	–	Yes
Ambient conditions		
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %	5 to 90 %
Permissible air humidity (storage)	5 to 95 %	5 to 95 %
Mechanical data		
Width W	12.2 mm	12.2 mm
Height H	120 mm	120 mm
Depth D	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 4	Type 4
Weight (without plug)	44 g	44 g
Degree of protection	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL 24 SEG/F	R-IB IL 24 SEG/F-D-2MBD-PAC
24-V peripheral supply (main circuit U_M)		
Voltage supply is in the bus terminal or in the supply terminal. No connections for the supply voltage are required at the segment terminal.		
The appropriate terminal points are available for testing purposes.		
Permissible total current in the potential terminals of the main and segment circuits		
Nominal terminal current	6.0 A	6.0 A
Max. permissible value	8.0 A	8.0 A
Electric data		
Operating mode: process data mode	–	–
Transmission speed	500 kbaud	2 Mbaud
Error message to the higher level control system	–	Yes
Ambient condition		
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %	5 to 90 %
Permissible air humidity (storage)	5 to 95 %	5 to 95 %
Mechanical data		
Width W	12.2 mm	12.2 mm
Height H	120 mm	120 mm
Depth D	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 4	Type 4
Weight (without plug)	44 g	44 g
Degree of protection	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data		R-IB IL PWR IN/R-PAC
24-V power supply for generation of U_L and U_{ANA}		
Rated value		24 V DC
Permissible range		19.2 to 30 V DC
Power consumption at nominal voltage		
24-V module supply		1.25 A DC
Logic supply	Rated value	7.5 V DC
	max. output current	2 A DC
Analog supply	Rated value	24 V DC
	max. output current	0.5 A DC
24-V peripheral supply (main circuit U_M)		
Rated value		24 V DC
Permissible range		19.2 to 30 V
Permissible current		max. 8 A
Electric data		
Operating mode: process data mode		–
Transmission speed		500 kbaud
Error message to the higher level control system		–
Ambient conditions		
Permissible temperature (operation)		–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %
Permissible air humidity (storage)		5 to 95 %
Mechanical data		
Width W		48.8 mm
Height H		120 mm
Depth D		71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 6
Weight (without plug)		132 g
Degree of protection		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536

Function modules

Technical data	R-IB IL CNT – counter module
Digital inputs	
Number	4
	1 counter input for 24-V signals
	1 counter input for 5-V signals
	1 control input for 24-V signals
	1 control input for 5-V signals
Nominal input voltage U_{In}	24 V DC
Nominal input current U_{In}	5 mA
Delay time	< 5 µs
24-V sensor connection type	2-, 3 wire connection
5-V sensor connection type	2 wire connection
Switching output	
Number	1
Nominal output voltage U_{Out}	24 V DC
Nominal current I_{Nom}	max. 0.5 A
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 40 mA, max. 50 mA
Nominal voltage U_S	24 V DC
Nominal current consumption at U_S	max. 1 A
Operating mode: process data mode	32 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Short-circuit/overload of sensor supply
Frequency measurement	f ≤ 100 kHz
Event counting	f ≤ 100 kHz
Time measurement	0.25 ms ≤ t ≤ 131 ms (Resolution 2 µs, without relation conditons)
	1 ms ≤ t ≤131 ms (Resolution 2 µs, with relation conditions)
	2 ms ≤ t ≤ 131 s (Resolution 2 ms)
	10 ms ≤ t ≤ 655 s (Resolution 10 ms)
Pulse generator	1 kHz ≤ f ≤ 10 kHz
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	24.4 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 9
Weight (without plug)	90 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Technical data		R-IB IL INC-IN-PAC – incremental-encoder module
Digital inputs		
Number		3
Design of inputs		According to EN 61131-2, type 1
Nominal input voltage U_{In}		24 V DC
Permissible range		$-30 < U_{In} < +30$ V DC
Nominal input current at U_{In}		typ. 2.7 mA
Delay time		< 1 ms
Sensor connection type		2-, 3 wire connection
Digital outputs		
Number		1 (double assignment of input E3)
Output type		NPN (switches against ground)
Actuator connection type		2-, 3 wire connection
Incremental-value-encoder inputs		
Number		1
Encoder signals		2 pulse strings (A and B, electrically shifted by 90°) and 1 reference signal (Z)
Encoder types		
Symmetrical incremental-value encoders (symmetrical pulse train (RS422) with transverse trace)	Encoder supply	5 or 24 V DC
	Signal connection type	A and A inverted, B and B inverted, Z and Z inverted
	Input frequency	max. 300 kHz
Asymmetrical incremental-value encoder (asymmetrical pulse train without transverse trace	Encoder supply	5 or 24 V DC
	Signal connection type	A, B, Z
	Input frequency	max. 300 kHz
Electric data		
Logic voltage U_L		7.5 V
Power consumption from local bus U_L		max. 70 mA
Nominal voltage U_M		typ. 24 V DC
Nominal current consumption at U_M		typ. 340 mA
Operating mode: process data mode		32 bits
Transmission speed		500 kbaud
Error message to the higher level control system		Short-circuit/overload of sensor supply
Ambient conditions		
Permissible temperature (operation)		–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %, no dewing
Permissible air humidity (storage)		5 to 95 %, no dewing
Mechanical data		
Width W		24.4 mm
Height H		141 mm
Depth D		71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 9
Weight (without plug)		90 g
Degree of protection		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536

Function modules

Technical data		R-IB IL INC-PAC – incremental-encoder module (in preparation)
Digital inputs		
Number		4
Design of inputs		According to EN 61131-2, type 1
Nominal input voltage U_{In}		24 V DC
Permissible range		–30 < U_{In} < +30 V DC
Nominal input current at U_{In}		typ. 5 mA
Delay time		< 1 ms
Sensor connection type		2-, 3 wire connection
Digital outputs		
Number		4
Nominal output voltage U_{Out}		24 V DC
Nominal current per output I_{Nom}		0.5 A
Total current of outputs		2 A
Actuator connection type		2-, 3 wire connection
Incremental-value-encoder inputs		
Number		1
Encoder signals		2 pulse strings (A and B, electrically shifted by 90°) and 1 reference signal (Z)
Encoder types		
Symmetrical incremental-value encoders (symmetrical pulse train (RS422) with transverse trace)	Encoder supply	5 or 24 V DC
	Signal connection type	A and A inverted, B and B inverted, Z and Z inverted
	Input frequency	max. 500 kHz
Asymmetrical incremental-value encoder (asymmetrical pulse train without transverse trace	Encoder supply	5 or 24 V DC
	Signal connection type	A, B, Z
	Input frequency	max. 50 kHz
Electric data		
Logic voltage U_L		7.5 V
Power consumption from local bus U_L		max. 110 mA
Segment supply voltage U_S		24 V DC
Nominal current consumption at U_S		max. 2 A
Main supply voltage U_M		24 V DC
Nominal current consumption at U_M		max. 1 A
Operating mode: process data mode		32 bits
Transmission speed		500 kbaud
Error message to the higher level control system		Failure or overload of encoder supply/ no encoder connected/core break at one of the encoder lines
Ambient conditions		
Permissible temperature (operation)		–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %, no dewing
Permissible air humidity (storage)		5 to 95 %, no dewing
Mechanical data		
Width W		48.8 mm
Height H		141 mm
Depth D		71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 10
Weight (without plug)		130 g
Degree of protection		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536

Technical data		R-IB IL SSI-PAC – SSI module (in preparation)
Digital inputs		
Number		4
Design of inputs		According to EN 61131-2, type 1
Nominal input voltage U_{In}		24 V DC
Permissible range		$-30 < U_{In} < +30$ V DC
Nominal input current at U_{In}		typ. 5 mA
Delay time		< 1 ms
Sensor connection type		2-, 3 wire connection
Digital outputs		
Number		4
Nominal output voltage U_{Out}		24 V DC
Nominal current per output I_{Nom}		0.5 A
Total current of outputs		2 A
Actuator connection type		2-, 3 wire connection
Absolute-value encoder	Number	1
	Encoder signals	Clock pulse, inverted clock pulse, data, inverted data
Encoder types		
Types		Single-turn or multi-turn
Resolution		8 to 26 bits (parameterizable)
Code type		Gray Code, binary code
Parity monitoring		None, even, uneven
Rotation direction reversal		Yes
Encoder supply		5 V (500 mA) or 24 V (500 mA)
Transmission frequency		400 kHz
Electric data		
Logic voltage U_L		7.5 V
Power consumption from local bus U_L		max. 60 mA
Nominal voltage U_M		24 V DC
Nominal current consumption at U_M		max. 2 A
Operating mode: process data mode		32 bits
Transmission speed		500 kbaud
Error message to the higher level control system		Failure or overload of encoder supply/no encoder connected/ core break at one of the encoder lines
Ambient conditions		
Permissible temperature (operation)		–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %, no dewing
Permissible air humidity (storage)		5 to 95 %, no dewing
Mechanical data		
Width W		48.8 mm
Height H		141 mm
Depth D		71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 10
Weight (without plug)		130 g
Degree of protection		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536

Function modules

Technical data		R-IB IL PWM/2-PAC – PWM output module (in preparation)
Digital outputs, 24 V DC		
Number		2
Nominal output voltage U_{Out}		24 V DC
Differential voltage at I_{Nom}		≤ 1 V
Nominal current I_{Nom} per channel		0.5 A
Nominal current tolerances		+10 %
Protection		Short-circuit/overload
Signal delay upon power on of	nominal resistive load (12 Ω/48 W)	typ. 80 µs
	nominal lamp load (48 W)	typ. 100 µs
	nominal inductive load (1.2 H, 12 Ω)	typ. 150 µs
Signal delay upon power down of	nominal resistive load (12 Ω/48 W)	typ. 500 Hz
	nominal lamp load (48 W)	typ. 500 Hz
	nominal inductive load (1.2 H, 12 Ω)	typ. 0.3 Hz
Actuator connection type		2-, 3 wire connection
Digital outputs, 5 V DC		
Number		2
Nominal output voltage U_{Out}		5 V DC
Differential voltage at I_{Nom}		0.5 V
Nominal current I_{Nom} per channel		10 mA
Nominal current tolerances		+10 %
Protection		Short-circuit/overload
Signal delay on activation of a nominal resistive load		2 µs
Signal delay on deactivation of a nominal resistive load		2 µs
Switching frequency at a nominal resistive load		50 kHz
Electric data		
Logic voltage U_L		7.5 V
Power consumption from local bus U_L		130 mA
Nominal voltage U_S		24 V DC
Nominal current consumption at U_S		max. 1 A
Operating mode: process data mode		32 bits
Transmission speed		500 kbaud
Error message to the higher level control system		Short-circuit/overload of sensor supply
Ambient conditions		
Permissible temperature (operation)		–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %, no dewing
Permissible air humidity (storage)		5 to 95 %, no dewing
Mechanical data		
Width W		24.4 mm
Height H		135 mm
Depth D		71.5 mm
Dimension drawing (see pp. 140 – 143)		Type 9
Weight (without plug)		90 g
Degree of protection		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL CNT-2MBD-PAC – counter module (in preparation)
Digital inputs	
Number	4
	1 counter input for 24 V signals
	1 counter input for 5 V signals
	1 control input for 24 V signals
	1 control input for 5 V signals
Nominal input voltage U_{In}	24 V DC
Nominal input current at U_{In}	5 mA
Delay time	< 5 µs
24 V sensor connection type	2-, 3 wire connection
5 V sensor connection type	2 wire connection
Switching output	
Number	1
Nominal ouput voltage U_{Out}	24 V DC
Nominal ouput current I_{Nom}	max. 0.5 A
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	60 mA
Nominal voltage U_S	24 V DC
Nominal current consumption at U_S	max. 1 A
Operating mode: process data mode	32 bits
Transmission speed	2 Mbaud
Error message to the higher level control system	Short-circuit/overload of sensor supply
Frequency measurement	f ≤ 100 kHz
Event counting	f ≤ 100 kHz
Time measurement	0.25 ms ≤ t ≤ 131 ms (Resolution 2 µs, without relation conditons)
	1 ms ≤ t ≤131 ms (Resolution 2 µs, with relation conditions)
	2 ms ≤ t ≤ 131 s (Resolution 2 ms)
	10 ms ≤ t ≤ 655 s (Resolution 10 ms)
Pulse generator	1 kHz ≤ f ≤ 10 kHz
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	24.4 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 9
Weight (without plug)	90 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Communications modules

Technical data	R-IB IL RS 232-PRO-PAC	R-IB IL RS485/422-PRO-PAC
Serial interface		
Type	V.24 interface with DTR/CTS handshake, designed as data terminal equipment (DTE), electric data acc. to EIA (RS) 232, CCITT V.28, DIN 66259 Part 1	Half-duplex RS485 or full-duplex RS422, electric data acc. to EIA (RS) 485, EIA (RS) 422, CCITT V.11
Transmission rate adjustable to	38.4 kbaud	38.4 kbaud
Receiver buffer	4 kbytes	4 kbytes
Transmitter buffer	1 kbyte	1 kbyte
Electric data		
Logic voltage U_L	7.5 V	7.5 V
Power consumption from local bus U_L	typ. 170 mA	typ. 170 mA
Operating mode: process data mode	96 bits	96 bits
Transmission speed	500 kbaud	500 kbaud
Error message to the higher level control system	–	–
Ambient conditions		
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing	5 to 95 %, no dewing
Mechanical data		
Width W	24.4 mm	24.4 mm
Height H	120 mm	120 mm
Depth D	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 9	Type 9
Weight (without plug)	90 g	90 g
Degree of protection	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL RS232-PRO-2MBD-PAC	R-IB IL RS485/422-PRO-PAC
Serial interface		
Type	V.24 interface with DTR/CTS handshake, designed as data terminal equipment (DTE), electric data acc. to EIA (RS) 232, CCITT V.28, DIN 66259 Part 1	Half-duplex RS485 or full-duplex RS422, electric data acc. to EIA (RS) 485, EIA (RS) 422, CCITT V.11
Transmission rate adjustable to	37.5 kbaud	37.5 kbaud
Receiver buffer	4 kbytes	4 kbytes
Transmitter buffer	1 kbyte	1 kbyte
Electric data		
Logic voltage U_L	7.5 V	7.5 V
Power consumption from local bus U_L	typ. 170 mA	typ. 170 mA
Operating mode: process data mode	96 bits	96 bits
Transmission speed	2 Mbaud	500 kbaud
Error message to the higher level control system	–	–
Ambient conditions		
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing	5 to 95 %, no dewing
Mechanical data		
Width W	24.4 mm	24.4 mm
Height H	135 mm	135 mm
Depth D	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 9	Type 9
Weight (without plug)	90 g	90 g
Degree of protection	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Communication modules

Technical data	R-IBS IL 24 RB-T
Interface	
Type	INTERBUS branch module
Max. number of connectable Inline terminals	63
Electric data	
Logic voltage U_L	–
Power consumption from local bus U_L	–
Analog supply voltage U_{ANA}	24 V DC
Nominal current consumption at U_{ANA}	29 mA
Operating mode: process data mode	–
Transmission speed	500 kbaud
Error message to the higher level control system	–
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	12.2 mm
Height H	120 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 8
Weight (without plug)	46 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL 24 FLM-PAC
Serial interface	
Type	Fieldline M8 local bus
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 110 mA
Segment supply voltage U_S	24 V DC
Nominal current consumption at U_S	
Fieldline M8 local bus	max. 3 A (with voltage supply through return line), max. 6 A (with infeed on either side)
Internal	max. 55 mA
Operating mode: process data mode	96 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Through upstream segment terminal IB IL 24 SEG/F-D
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	12.2 mm
Height H	120 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 8
Weight (without plug)	43 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Technical data	R-IB IL DDL – for pneumatic valves
Interface	
Type	DDL master
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	typ. 100 mA
Operating mode: process data mode	64 bits
Transmission speed	500 kbaud
Error message to the higher level control system	DDL diagnostics
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %, no dewing
Permissible air humidity (storage)	5 to 95 %, no dewing
Mechanical data	
Width W	24.4 mm
Height H	135 mm
Depth D	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 9
Weight (without plug)	90 g
Degree of protection	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536

Relay modules

Technical data	R-IB IL 24/230 DOR 1/W	R-IB IL 24/230 DOR 4/W	R-IB IL 24/230 DOR 4/W – 2 MBD-PAC
Relay output			
Number	1	4	4
Max. switching voltage	253 V AC, 250 V DC	253 V AC, 250 V DC	253 V AC, 250 V DC
Max. switching capacity	750 VA	750 VA	750 VA
Electric data			
Logic voltage U_L	7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L	max. 60 mA	max. 187 mA	max. 220 mA
Operating mode: process data mode	2 bits	4 bits	4 bits
Transmission speed	500 kbaud	500 kbaud	2 Mbaud
Error message to the higher level control system	–	–	–
Ambient conditions			
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible temperature (storage)	–25 to +85 °C	–25 to +85 °C	–25 to +85 °C
Permissible air humidity (operation)	5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)	5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data			
Width W	12.2 mm	12.2 mm	12.2 mm
Height H	120 mm	120 mm	120 mm
Depth D	71.5 mm	71.5 mm	71.5 mm
Dimension drawing (see pp. 140 – 143)	Type 4	Type 6	Type 6
Weight (without plug)	46 g	46 g	46 g
Degree of protection	IP20	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Block I/O modules

Technical data		R-ILB PB 24 DI16/DO16	R-ILB IB 24 DI16/DO16	R-ILB DN 24 DI16/DO16	R-ILB S3 24 DI16 DIO16
Interfaces		**PROFIBUS DP**	**INTERBUS**	**DeviceNet**	**SERCOS III**
Digital inputs					
Number		16	16	16	32 (16 fixed, 16 freely configurable)
Design		According to EN 61131-2, type 1	According to EN 61131-2, type 1	According to EN 61131-2, type 1	According to EN 61131-2, type 1
Switching thresholds	max. voltage at low level U_{Lmax}	< 5 V	< 5 V	< 5 V	< 5 V
	max. voltage at high level U_{Hmax}	> 15 V	> 15 V	> 15 V	> 15 V
Common potentials		Segment supply, ground	Segment supply, ground	Segment supply, ground	Segment supply, ground
Nominal input voltage U_{INom}		24 V DC	24 V DC	24 V DC	24 V DC
Permissible nominal input voltage range		−30 < U_{INom} < +30 V DC	−30 < U_{INom} < +30 V DC	−30 < U_{INom} < +30 V DC	−30 < U_{INom} < +30 V DC
Nominal input current at U_{INom}		min. 3 mA	min. 3 mA	min. 3 mA	min. 3 mA
Delay time t_{On}		–	–	–	–
Delay time t_{Off}		–	–	–	–
Permissible line length		30 m	30 m	30 m	30 m
Sensor connection type		2-, 3 wire connection	2-, 3 wire connection	2-, 3 wire connection	2-, 3 wire connection
Digital outputs					
Number		16	16	16	16
Nominal output voltage U_{Out}		24 V DC	24 V DC	24 V DC	24 V DC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		1 A	1 A	1 A	1 A
Nominal current tolerances		10 %	10 %	10 %	10 %
Total current		8 A	8 A	8 A	8 A
Protection		Short-circuit/overload	Short-circuit/overload	Short-circuit/overload	Short-circuit/overload
Signal delay on activation of a	nominal resistive load (12 Ω/48 W)	typ. 500 µs	typ. 500 µs	typ. 500 µs	typ. 500 µs
	nominal lamp load (48 W)	typ. 100 ms	typ. 100 ms	typ. 100 ms	typ. 100 ms
	nominal inductive load (1.2 H, 12 Ω)	typ. 100 ms	typ. 100 ms	typ. 100 ms	typ. 100 ms
Actuator connection type		2-, 3 wire connection	2-, 3 wire connection	2-, 3 wire connection	2-, 3 wire connection
Ambient conditions					
Permissible temperature (operation)		−25 to +55 °C	−25 to +55 °C	−25 to +55 °C	−25 to +55 °C
Permissible temperature (storage)		−25 to +85 °C	−25 to +85 °C	−25 to +85 °C	−25 to +85 °C
Permissible air humidity (operation)		5 to 90 %	5 to 90 %	5 to 90 %	5 to 90 %
Permissible air humidity (storage)		5 to 95 %	5 to 95 %	5 to 95 %	5 to 95 %
Mechanical data					
Width W		155.8 mm	155.8 mm	155.8 mm	155.8 mm
Height H		55 mm	55 mm	55 mm	55 mm
Depth D		141 mm	141 mm	141 mm	141 mm
Dimension drawing (see pp. 140 – 143)		Type 11	Type 12	Type 11	Type 11
Weight (including plug)		500 g	500 g	500 g	500 g
Degree of protection		IP20	IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536

Block I/O modules

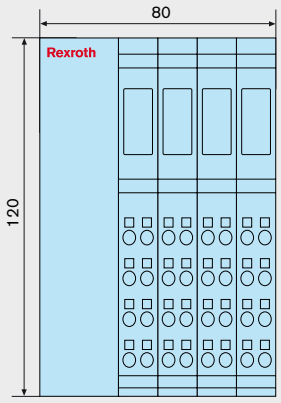
Technical data		R-ILB S3 AI4 AO2 (in preparation)
Interfaces		**SERCOS III**
Analog inputs		
Number		4 analog differential inputs
Conversion time of A-D converter		180 µs
Signal connection type		2-, 3 or 4 wire connection
Analog differential voltage inputs		
Number		4
Input range		0 to 10 V, ±10 V, 0 to 5 V, ±5 V
Input resistance		> 240 kΩ
Analog differential current inputs		
Number		4
Input range		0 to 20 mA, ±20 mA, 4 to 20 mA
Input resistance		< 100 Ω
Analog differential RTD inputs		
Number		4
Input range		PT 100, PT 500, PT 1000, Ni 100, Ni 1000 L&G, 0 to 2500 Ω, 0 to 9500 Ω
Analog outputs		
Number		2
Conversion time of A-D converter		max. 180 µs
Output load	Voltage output	RL_{min} = 2 kΩ
	Current output	RLB = 0 to 500 Ω
Signal connection type		2 wire connection
Ambient conditions		
Permissible temperature (operation)		–25 to +55 °C
Permissible temperature (storage)		–25 to +85 °C
Permissible air humidity (operation)		5 to 90 %
Permissible air humidity (storage)		5 to 95 %
Mechanical data		
Width W		155.8 mm
Height H		55 mm
Depth D		141 mm
Dimension drawing (see pp. 140 – 143)		Type 11
Weight (including plug)		500 g
Degree of protection		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536

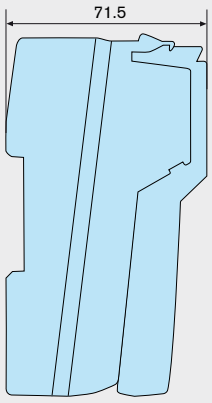
Accessories

Ordering data	
Type code	**Description**
D-SUB cable sets	
IKB0033	Bus cable PROFIBUS, D-SUB, cable outlet 45 °C, D-SUB, cable outlet 45 °C
IKB0034	Bus cable PROFIBUS, D-SUB, cable outlet 45 °C, free line end
Cables which can be prepared in the field	
REB0001	Bus cable PROFIBUS, standard cable, fast connect
REB0002	Bus cable PROFIBUS, drag cable, fast connect
D-SUB connectors	
RBS0013	D-SUB connector, PROFIBUS, cable outlet 90 °C, insulation displacement
RBS0015	D-SUB connector, PROFIBUS, cable outlet 180 °C, insulation displacement
RBS0014	D-SUB connector, PROFIBUS, cable outlet 90 °C, with additional D-SUB socket, insulation displacement
RBS0010	D-SUB connector, PROFIBUS, cable outlet 90 °C, screwed connection
RBS0012	D-SUB connector, PROFIBUS, cable outlet 180 °C, screwed connection
RBS0011	D-SUB connector, PROFIBUS, cable outlet 90 °C, with additional D-SUB socket, screwed connection

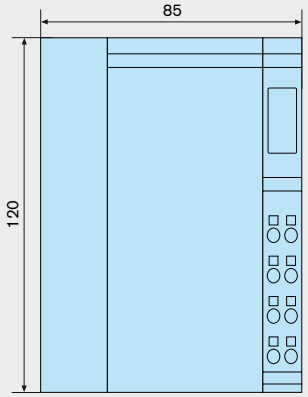
Bus couplers

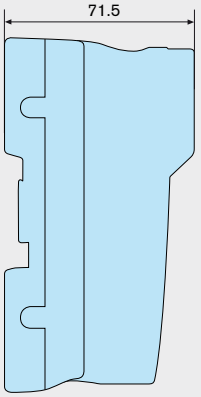
Type 1



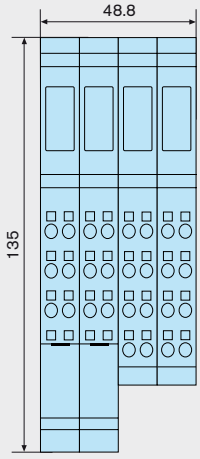


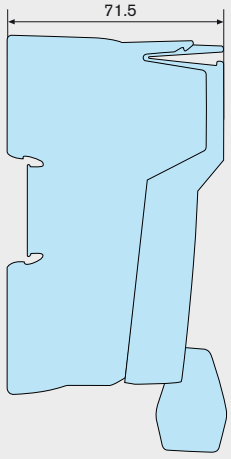
Type 2





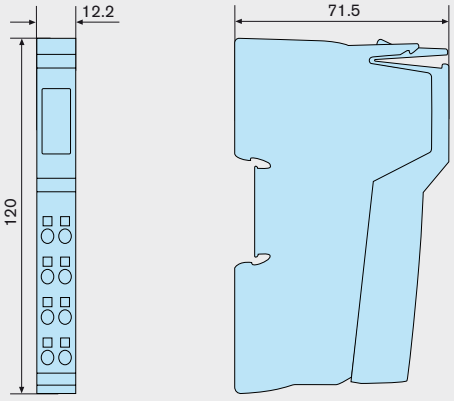
Type 3



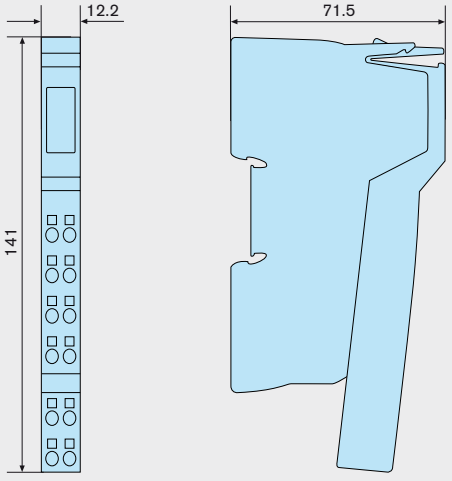


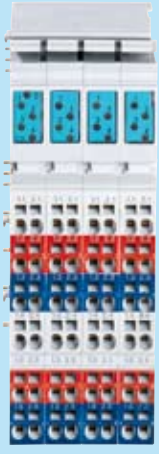
Digital modules

Type 4

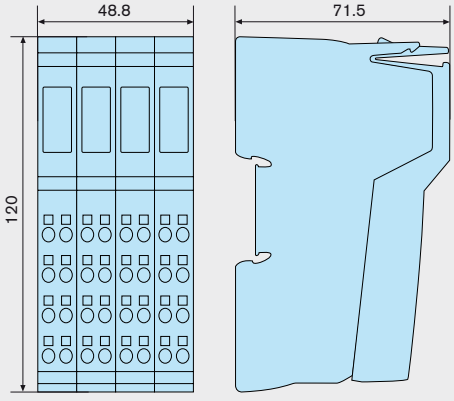


Type 5

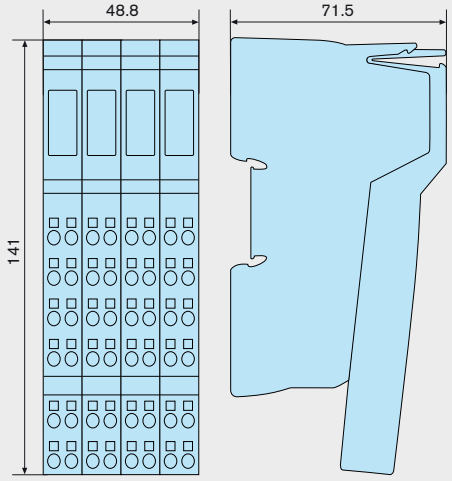




Type 6

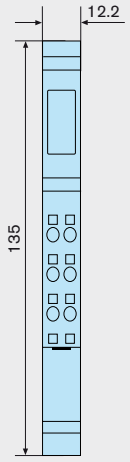


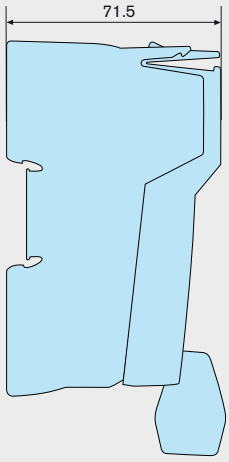
Type 7

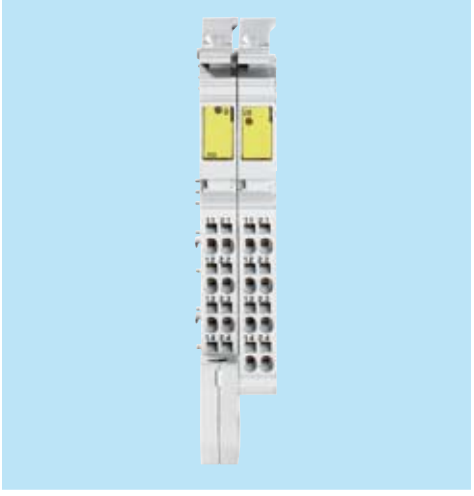


Inline analog, temperature, communication and function modules

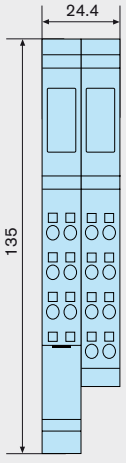
Type 8

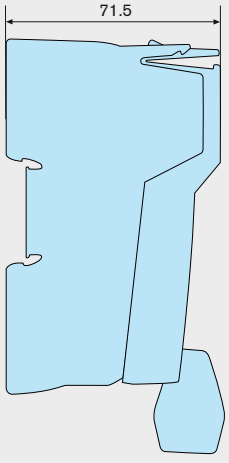




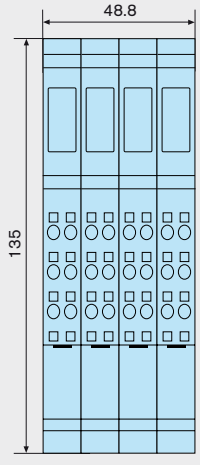


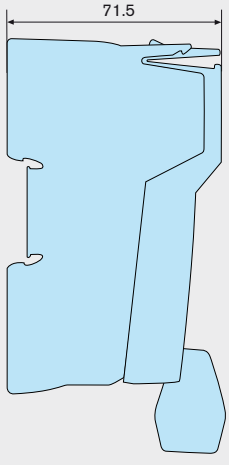
Type 9





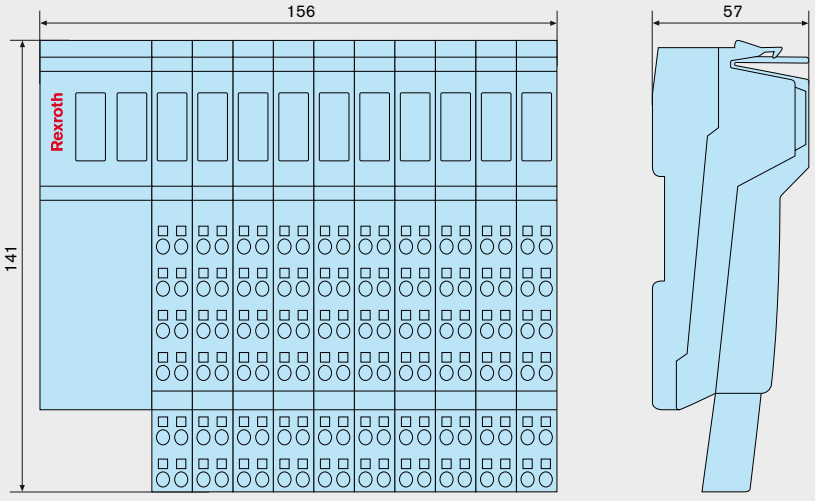
Type 10



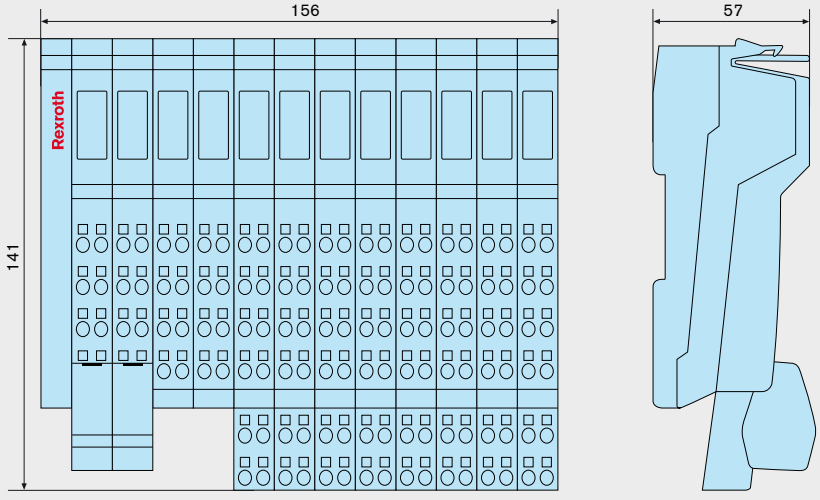


Block I/O modules

Type 11



Type 12



Fieldline –
Robust I/O Technology for Use in the Field

Rexroth Fieldline enables on-machine installation with particularly high operational reliability even in harsh environment – thanks to IP67 enclosure rating. User-friendly operation, easy installation and flexible assembly enable I/Os to be connected over shorter wiring distance and without a control cabinet.

Fieldline-Stand-Alone M12 – is excellently suited for connecting sensors and actuators through standard M12 connectors in harsh industrial environments. The standard bus systems INTERBUS, PROFIBUS and DeviceNet are available.

Fieldline-Modular M8 – owes its special capability of connecting sensors and actuators under the most difficult mounting conditions in the immediate vicinity of the process to its compact design and the M8 connection system. The Fieldline modules can be coupled to our Fieldline-Modular coupler for PROFIBUS or to an Inline-Modular station.

Your benefits

- High degree of protection IP67 for harsh industrial environments
- Easy handling
- Flexible assembly
- Simple operation and application
- Quick and convenient diagnostics
- Intelligent voltage concept for selective power off
- Fast and perfect installation
- High operational reliability under extreme environmental conditions
- Compact space-saving design

Rexroth Fieldline – allows reliable I/O signal transmission directly at the machine

Robust, reliable and cost-effective

- Ideal for on-machine installation
- Reliable even in harsh industrial environments
- Time-saving and cost-effective installation

Your benefit

Fieldline-Stand-Alone M12 – PROFIBUS
Fieldline-Stand-Alone M12 for the PROFIBUS fieldbus system for connecting sensors and actuators through standard M12 connectors.

Fieldline-Stand-Alone M12 – INTERBUS
Fieldline-Stand-Alone M12 for the INTERBUS fieldbus system for connecting sensors and actuators through standard M12 connectors.

Fieldline-Stand-Alone M12 – DeviceNet
Fieldline-Stand-Alone M12 for the DeviceNet fieldbus system for connecting sensors and actuators through standard M12 connectors.

Fieldline-Modular M8
Fieldline-Modular M8 – the I/O system with IP67 protection degree for connecting sensors and actuators through standard M8 connectors.

Fieldline-Stand-Alone – PROFIBUS

Technical data		RF-FLS PB M12 DI 8 M12	RF-FLS PB M12 DIO 4 M12	RF-FLS PB M12 DO 8 M12-2A	RF-FLS PB M12 DIO 8 M12
Digital inputs					
Number		8	4	–	8
Design of inputs according to		IEC 61131-2, type 1		–	IEC 61131-2, type 1
Definition of switching thresholds	max. low-level voltage	$U_{Lmax} < 5$ V		–	$U_{Lmax} < 5$ V
	min. high-level voltage	$U_{Hmin} > 11$ V		–	$U_{Hmin} > 11$ V
Nominal input voltage		24 V DC		–	24 V DC
Range		$-30 < U_{In} < +30$ V DC		–	$-30 < U_{In} < +30$ V DC
Nominal input current		5 mA		–	3 mA
Current flowing linearly in the range of		$1 < U_{In} < 30$ V		–	$1 < U_{In} < 30$ V
Delay time		$t_{On} = 3{,}1$ ms/$t_{Off} = 4{,}1$ ms		–	$t_{On} = 3$ ms; $t_{Off} = 3$ ms
Permissible line length to the sensor		100 m		–	< 30 m
Digital outputs					
Number		–	4	8	
Nominal output voltage U_{Out}		–	U_{Axx} –1 V		
Differential voltage at I_{Nom}		–	≤ 1 V		
Nominal current I_{Nom} per channel		–	2 A		500 mA
Total current		–	8 A (observe derating)	16 A (observe derating)	4 A (observe derating)
Short-circuit current		–	max. 22 A for 300 µs		
Protection		–	Short-circuit/overload		
Electric data					
Supply voltage		24 V DC			
Range		18 to 30 V DC			
Power consumption at U_L at 24 V DC		typ. 35 mA, max. 100 mA	typ. 40 mA, max. 100 mA		
Power consumption at U_S at 24 V DC		typ. 4.5 mA + sensor current, max. 700 mA		typ. 3 mA, max. 700 mA	typ. 10 mA + sensor current, max. 500 mA
Power consumption at U_{Axx} at 24 V DC		–	6 mA + actuator current, max. 4 A	12 mA + actuator current, max. 4 A	6 mA + actuator current, max. 4 A
Transmission medium		PROFIBUS-conforming copper cable			
Transmission rate		9.64 kbaud to 12 Mbaud autobaud selection			
Transmission speed		12 Mpbs			
Operation mode		8 bits	4 bits	8 bits	
Sensor connection type		2-, 3 or 4 wire connection		–	2-, 3 or 4 wire connection
Actuator connection type		–	2-, 3 wire connection		
Ambient conditions					
Permissible temperature (operation)		–25 to +60 °C			
Permissible temperature (storage)		–25 to +85 °C			
Permissible air humidity		95 %			
Permissible atmospheric pressure (operation)		80 to 106 kPa (up to 2,000 m above MSL)			
Permissible atmospheric pressure (storage)		70 to 106 kPa (up to 3,000 m above MSL)			
Mechanical data					
Housing dimensions (W x H x D)		60 x 161 x 44.5 mm	60 x 178 x 49.3 mm		
Dimension drawing (see pp. 152 – 153)		Type 1	Type 2	Type 2	Type 2
Weight		310 g	340 g	350 g	340 g
Degree of protection		IP65/IP67 according to IEC 60529			
Protection class		Class 3 according to VDE 0106, IEC 60536			
Vibration test (sinusoidal oscillations) acc. to EN 0068-2-6		5 g load in each spatial direction			
Shock test according to EN 60068-2-27		30 g load, half sine wave positive and negative in each spatial direction			

Fieldline-Stand-Alone – INTERBUS

Technical data		RF-FLS IB M12 DI 8 M12	RF-FLS IB M12 DIO 4 M12	RF-FLS IB M12 DO 8 M12-2A
Digital inputs				
Number		8	4	–
Design of inputs according to		IEC 61131-2 type 1		–
Definition of switching thresholds	max. low-level voltage	$U_{Lmax} < 5$ V		–
	min. high-level voltage	$U_{Hmin} > 11$ V		–
Nominal input voltage		24 V DC		–
Range		$-30 < U_{In} < +30$ V DC		–
Nominal input current		5 mA		–
Current flowing linearly in the range of		$1 V < U_{In} < 30$ V	$1 V < U_{In} < 30$ V	–
Delay time		$t_{On} = 3.1$ ms/$t_{Off} = 4.1$ ms		–
Permissible line length to the sensor		100 m		–
Digital outputs				
Number		–	4	8
Nominal output voltage U_{Out}		–	$U_{Axx} - 1$ V	
Differential voltage at I_{Nom}		–	< 1 V	
Nominal current I_{Nom} per channel		–	2 A	
Total current		–	8 A (observe derating)	16 A (observe derating)
Short-circuit current		–	max. 22 A for 300 µs	
Protection		–	Short-circuit/overload	
Electric data				
Supply voltage		24 V DC		
Range		18 to 30 V DC		
Power consumption at U_L at 24 V DC		typ. 65 mA, max. 100 mA	typ. 60 mA, max. 100 mA	typ. 80 mA, max. 100 mA
Power consumption at U_S at 24 V DC		5 mA + sensor current, max. 700 mA		3.5 mA
Power consumption at U_{Axx} at 24 V DC		–	3 mA + actuator current, max. 4 A	12 mA + actuator current, max. 4 A
Transmission rate		500 kbaud		
Operation mode		8 bits	4 bits	8 bits
Sensor connection type		2-, 3 or 4 wire connection		–
Actuator connection type		–	2-, 3 wire connection	
Ambient conditions				
Permissible temperature (operation)		–25 to +60 °C		
Permissible temperature (storage)		–25 to +85 °C		
Permissible air humidity		95 %		
Permissible atmospheric pressure (operation)		80 to 106 kPa (up to 2,000 m above MSL)		
Permissible atmospheric pressure (storage)		70 to 106 kPa (up to 3,000 m above MSL)		
Mechanical data				
Housing dimensions (W x H x D)		60 x 161 x 44.5 mm	60 x 178 x 49.3 mm	
Dimension drawing (see pp. 152 – 153)		Type 1	Type 2	Type 2
Weight		310 g	340 g	350 g
Degree of protection		IP65/IP67 according to IEC 60529		
Protection class		Class 3 according to VDE 0106, IEC 60536		
Vibration test (sinusoidal oscillations) according to EN 0068-2-6		5 g load in each spatial direction		
Shock test according to EN 60068-2-27		30 g load, half sine wave positive and negative in each spatial direction		

Fieldline-Stand-Alone – DeviceNet

Technical data		RF-FLS DN M12 DI 8 M12	RF-FLS DN M12 DIO 4 M12	RF-FLS DN M12 DO 8 M12-2A
Digital inputs				
Number		8	4	–
Design of inputs according to		IEC 61131-2, type 1		–
Definition of switching thresholds	U_{Lmax}	< 5 V		–
	U_{Hmin}	> 11 V		–
Nominal input voltage		24 V DC		–
Range		$-30 < U_{In} < +30$ V DC		–
Nominal input current		5 mA		–
Current flowing linearly in the range of		$1 V < U_{In} < +30$ V DC		–
Delay time		$t_{On} = 3.1$ ms, $t_{Off} = 4.1$ ms		–
Permissible line length to the sensor		< 30 m		–
Digital outputs				
Number		–	4	8
Nominal output voltage U_{Out}		–	$U_{Axx} - 1$ V	
Differential voltage at I_{Nom}		–	≤ 1 V	
I_{Nom} per channel		–	2 A	
Total current		–	8 A (observe derating)	
Short-circuit current		–	max. 28 A for 150 µs	
Protection		–	Short-circuit/overload	
Electric data				
Supply voltage		24 V DC		
Range		18 to 30 V DC		
Power consumption at U_L at 24 V DC		typ. 65 mA, max. 100 mA	typ. 60 mA, max. 100 mA	typ. 680 mA, max. 100 mA
Power consumption at U_S at 24 V DC		5 mA + sensor current, max. 700 mA	4.5 mA + sensor current, max. 700 mA	3.5 mA
Power consumption at U_{Axx} at 24 V DC		–	12 mA + actuator current, max. 4 A	
Transmission medium		Copper cable according to DeviceNet specification		
Transmission rate		125 kbaud, 250 kbaud, 500 kbaud		
Operation mode		8 bits	4 bits	8 bits
Sensor connection type		2-, 3 or 4 wire connection		–
Actuator connection type		–	2-, 3 wire connection	
Ambient conditions				
Permissible temperature (operation)		–25 to +60 °C		
Permissible temperature (storage)		–25 to +85 °C		
Permissible air humidity		95 %		
Permissible atmospheric pressure (operation)		80 to 106 kPa (up to 2,000 m above MSL)		
Permissible atmospheric pressure (storage)		70 to 106 kPa (up to 3,000 m above MSL)		
Mechanical data				
Housing dimensions (W x H x D)		60 x 161 x 44.5 mm	60 x 178 x 49.3 mm	
Dimension drawing (see pp. 152 – 153)		Type 1	Type 2	Type 2
Weight		typ. 310 g	typ. 340 g	typ. 350 g
Degree of protection		IP65/IP67 according to IEC 60529		
Protection class		Class 3, according to VDE 0106, IEC 60536		
Vibration test (sinusoidal oscillations) according to EN 0068-2-6		5 g load in each spatial direction		
Shock test according to EN 60068-2-27		30 g load, half sine wave positive and negative in each spatial direction		

Fieldline-Modular M8 – digital inputs and outputs

Technical data	RF-FLM DI 8 M8	RF-FLM DIO 8/4 M8
Digital inputs		
Input description	4 fixed, 4 freely selectable	
Connection method	2-, 3 wire connection	
Number	8	
Protective circuit	Reverse polarity protection	
Filter time	3 ms	
Input characteristic	IEC 61131-2, type 1	
Input voltage	24 V DC	
Input voltage range, low level	–30 to 5 V DC	
Input voltage range, high level	13 to 30 V DC	
Digital outputs		
Output description	–	Can also be used as inputs
Connection method	–	2-, 3 wire connection
Number of outputs	–	4
max. output current per channel	–	500 mA
Protective circuit	–	Short-circuit protection
Output voltage	–	24 V DC
max. output current per channel	–	500 mA
Electric data		
Designation	U_L	
Supply voltage	24 V DC	
Supply voltage range	18 to 30 V DC, IEC 61131-2 (ripple included)	
Supply current	3 A	
Transmission rate	500 kbaud	
Connection type	M8 connector	
Ambient conditions		
Ambient temperature (operation)	–25 to 60 °C	
Ambient temperature (transport/storage)	–25 to 85 °C	
Permissible air humidity (operation)	5 to 95 %	
Permissible air humidity (storage/transport)	10 to 95 %	
Atmospheric pressure (operation)	80 to 106 kPa (up to 2,000 m above MSL)	
Atmospheric pressure (transport/storage)	70 to 106 kPa (up to 3,000 m above MSL)	
Mechanical data		
Housing dimensions (W x H x D)	29.8 x 143 x 26.5 mm	
Dimension drawing (see pp. 152 – 153)	Type 4	Type 4
Weight	137 g	
Drill hole spacing	133 mm	
Mounting type	Mounted to walls	
Test section to peripherals	500 V AC	
Degree of protection	IP65/67	
Protection class	3, VDE 0106, IEC 60536	

Fieldline-Modular M8 – bus couplers

Technical data	RF-FLM BK PB M12 DI 8 M12
Digital inputs	
Connection type	M12 connectors
Connection method	2-, 3 or 4 wire connection
Number of inputs	8
Protective circuit	Reverse polarity protection
Filter time	3 ms
Input voltage	24 V DC
Input voltage range, low level	–30 to 5 V DC
Input voltage range, high level	13 to 30 V DC
Local bus Gateway	
Connection type	M12 connectors, B-coded
Transmission rate	500 kbaud
Max. number of local bus users	16
Max. length of local bus	20 m
Interface	
Designation	PROFIBUS DP
Connection type	2 M12 connectors, B-coded
Transmission rate	9.64 to 12 Mbaud, autobauds
Address space assignment	1 to 127, adjustable
Number of pins	5
Electric data	
Connection method	M12 connectors
Designation	U_L
Supply voltage	24 V DC
Supply voltage range	18 to 30 V DC, IEC 61131-2 (ripple included)
Ambient conditions	
Ambient temperature (operation)	–25 to 60 °C
Ambient temperature (transport/storage)	–25 to 85 °C
Permissible air humidity (storage/transport)	95 %
Atmospheric pressure (operation)	80 to 106 kPa (up to 2,000 m above MSL)
Atmospheric pressure (transport/storage)	70 to 106 kPa (up to 3,000 m above MSL)
Mechanical data	
Housing dimensions (W x H x D)	70 x 178 x 50 mm
Dimension drawing (see pp. 152 – 153)	Type 3
Weight	331 g
Drill hole spacing	168 mm
Mounting type	Mounted to walls
Test section to peripherals	500 V AC
Degree of protection	IP65/67
Protection class	3, VDE 0106, IEC 60536

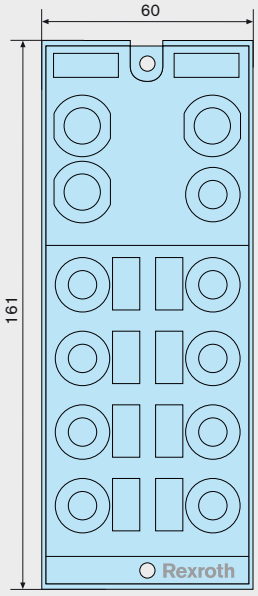
Accessories

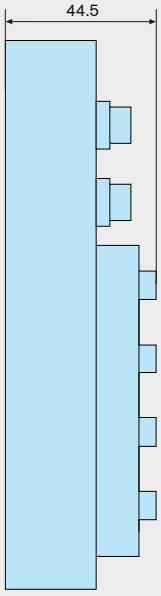
Ordering data	
Type code	**Description**
M12 cable sets	
IKB0048/xxx	Bus cable PROFIBUS, M12 male, straight, shielded, 5 pins, B-coded, free line end
IKB0049/xxx	Bus cable PROFIBUS, M12 female, straight, shielded, 5 pins, B-coded, free line end
IKB0050/xxx	Bus cable PROFIBUS, M12 male, straight, shielded, 5 pins, B-coded, M12 female, straight, shielded, 5 pins, B-coded
IKB0045/xxx	Bus cable INTERBUS, M12 male, straight, shielded, 5 pins, B-coded, free line end
IKB0046/xxx	Bus cable INTERBUS, M12 female, straight, shielded, 5 pins, B-coded, free line end
IKB0047/xxx	Bus cable INTERBUS, M12 male, straight, shielded, 5 pins, B-coded, M12 female, straight, shielded, 5 pins, B-coded
IKB0042/xxx	Bus cable DeviceNet, M12 male, straight, shielded, 5 pins, B-coded, free line end
IKB0043/xxx	Bus cable DeviceNet, M12 female, straight, shielded, 5 pins, B-coded, free line end
IKB0044/xxx	Bus cable DeviceNet, M12 male, straight, shielded, 5 pins, B-coded, M12 female, straight, shielded, 5 pins, B-coded
IKL0267/xxx	Voltage cable, female, straight, unshielded, M12 A-coded, 4 pins, open line end
IKL0268/xxx	Voltage cable, male, straight, unshielded, M12 A-coded, female, straight, unshielded, M12 A-coded, 4 pins
RKB0003/xxx	Voltage cable, Y-connector, straight, M12 on 2 x female, straight, M12
M12 connectors	
RBS0001	M12 connector, male, straight, shielded, with screwed connection, 5 pins, B-coded
RBS0002	M12 connector, female, shielded, with screwed connection, 5 pins, B-coded
RBS0003	M12 connector, male, straight, unshielded, A-coded, 4 pins
RBS0004	M12 connector, female, straight, unshielded, A-coded, 4 pins
RBS0005	M12 connector – insulation displacement, male, straight, unshielded, A-coded, 4 pins
RBS0006	M12 connector – insulation displacement, female, straight, unshielded, A-coded, 4 pins
RBS0008	M12 connector, male, shielded, with screwed connection, 5 pins, A-coded
M12 accessories	
INS0762/CNN	M12 terminating resistor, PROFIBUS, B-coded, 5 pins
M8 cable sets	
RKB0014/xxx	Local bus cable, M8 male, straight, free line end
RKB0015/xxx	Local bus cable, M8 female, straight, free line end
RKB0016/xxx	Local bus cable, M8 female, straight, M8 male, straight
RKB0017/xxx	Voltage cable, M8 female, straight, free line end
M8 accessories	
FLM ADAP M12/M8	Adapter, M12/M8

xxx = cable length in meters

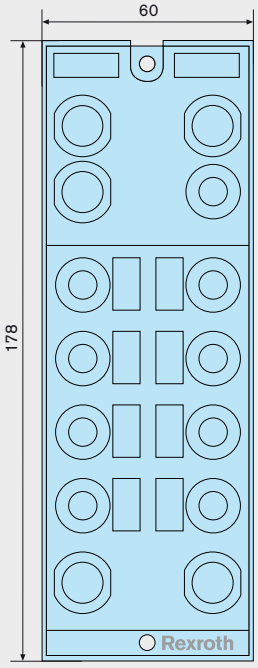
Fieldline-Stand-Alone M12

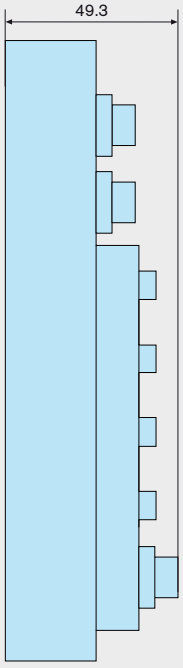
Type 1





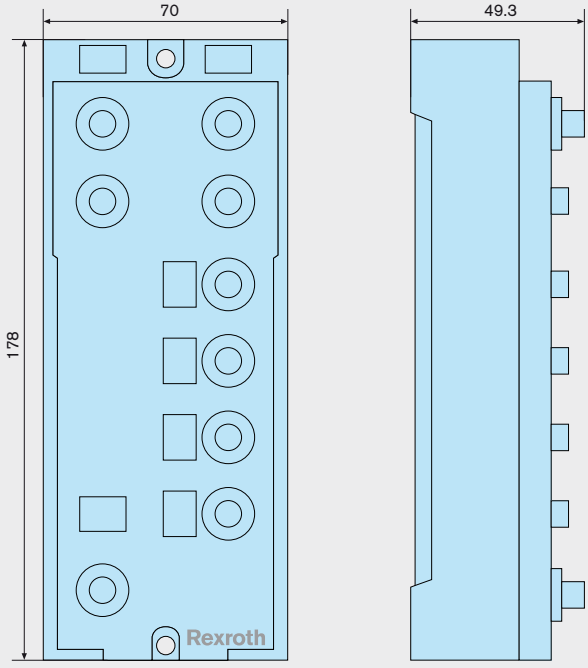
Type 2



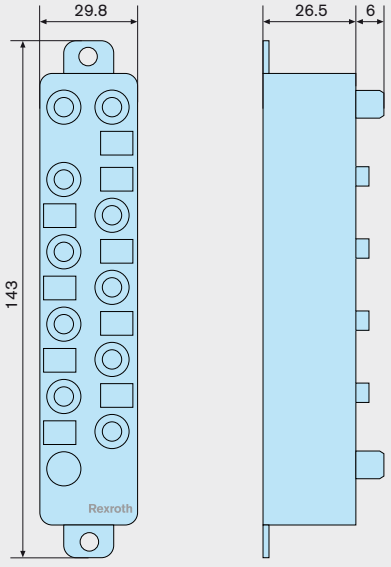


Fieldline-Stand-Alone M8

Type 3



Type 4



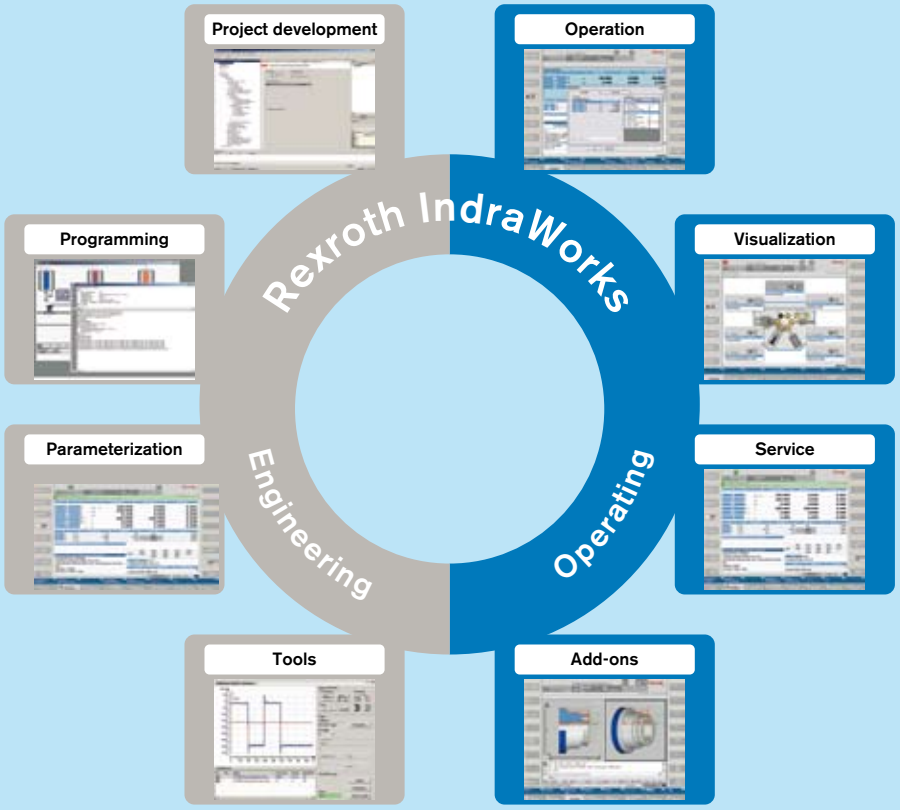
IndraWorks – the Tool for all Engineering Tasks

Rexroth IndraWorks allows you to solve all tasks in a uniform and intuitive software environment – from project planning and programming to visualization and diagnostics.

The uniform engineering framework IndraWorks is consistently available for all systems from the Rexroth Automation House. You, as user, profit from the fast and transparent access to all functions and system data of the automation components. The standardized tools and interfaces help you to solve all engineering tasks centrally with a single software.

Your benefits

- Available for all systems and solutions from the Rexroth Automation House
- Integrated framework for all engineering tasks
- Consistent operating environment for project planning, programming, visualization and diagnostics
- Central project management with intuitive system navigation
- Intelligent operation with wizard support
- Comprehensive online help
- Uniform programming according to the PLC standard IEC 61131-3
- PLCopen-conforming function block and technology libraries
- Standardized interfaces for communication
- Transparent access to all system components
- Integrated FDT/DTM interface for integration of the DTM of third party manufacturers

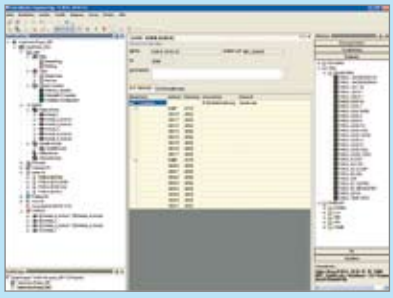


IndraWorks – the universal engineering framework

- One tool for all automation tasks
- Goal reached quickly through startup guide
- Offline configuration of projects
- Comfortable programming environment

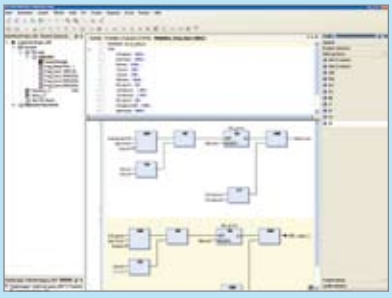
Your benefit

Project development



The overall system is uniformly and consistently projected for all solutions. User and multi-project management are available in all instances. The project and device explorers provide access to all control components. With its clearly organized dialog boxes, IndraWorks guides you intuitively through the configuration of your system.

Programming

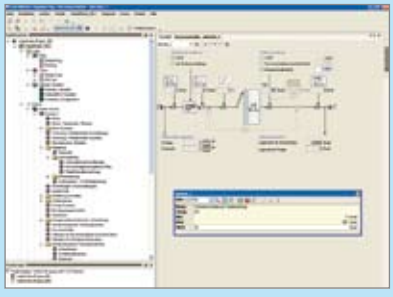


The IndraLogic runtime system that is integrated in all solutions is consistently programmed in IndraWorks. The complete language scope specified in IEC 61131-3 is available. System-specific additional functions, such as motion blocks according to PLCopen or technology blocks, can be quickly and transparently implemented in your logic programs.

Operation and visualization

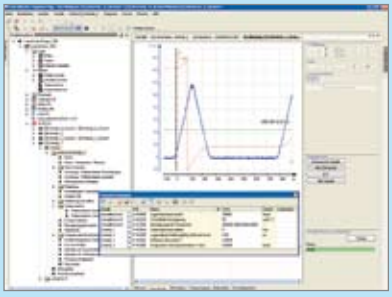
Apart from providing engineering functions, IndraWorks is also an HMI front end for various applications. IndraWorks allows you to project machine- or system-specific screens. Using the project development tool WinStudio, you can easily integrate standard screens in the user interface. In addition, you can easily integrate prefabricated ActiveX controls in your HMI applications.

Parameterization



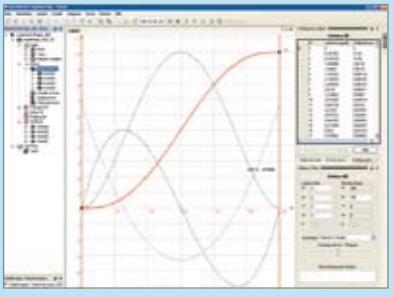
The project explorer provides access to all data of the system components. Wizards guide you through all engineering steps, interactively and in sequence. Control and drive options or motion axes can be parameterized easily and clearly, even offline. I/O peripherals and communication interfaces can be configured through the integrated configurators. The online help provides you with all necessary information.

Diagnostics



Comprehensive tools are implemented in Indraworks to facilitate startup or service activities. Such tools cover the complete range from four-channel oscilloscope and logic analyzer through debugging functions of the PLC logic to manifold status messages and system diagnostics. To provide comprehensive detailed information on controls, drives, HMI, and peripherals, you just have to press a button.

Tools



The tools for all engineering tasks are integrated in IndraWorks. Additional solution-specific tools are consistently available in the software framework. Using menus or the project tree, you can access, for example, CamBuilder for creating cams, simulation tools, firmware management, or system-compatible programming editors.

IndraWorks

1.	IndraWorks Engineering	
1.1	General information	
1.1.1	Multilingualism of framework	●
1.1.2	Multilingualism of projects	●
1.1.3	Export/import of texts of the PLC projects	●
1.1.4	Firmware management	●
1.1.5	Deactivating/parking drives in the project	☐
1.1.6	Switching between online and offline modes	●
1.1.7	Automatic system monitoring units	●
1.1.8	Real-time logic analyzer	●
1.1.9	Oscilloscope function	●
1.1.9.1	Graphical output with zoom function	●
1.1.9.2	Display of signal values of drives	●
1.1.9.3	Scaling	●
1.1.9.4	Measuring with/without trigger	●
1.1.10	System-specific expansions	☐
1.2	Configuration and project planning	
1.2.1	System configurator	●
1.2.2	Device library for controls, drives, visualization, peripherals	●
1.2.3	Assistants for commissioning of controls and drives	●
1.2.4	Project navigator	●
1.2.5	I/O configurator	●
1.2.6	Fieldbus configurator	●
1.2.7	Project archiving	●
1.2.8	Parameter monitor for controls and drives	●
1.2.9	Offline parameterization of controls and drives	●
1.2.10	System-specific expansions	☐
1.2.11	Cams editor	☐
1.2.11.1	Graphical creation of cams	●
1.2.11.2	Kinematic laws according to VDI 2143	●
1.2.11.3	Interpolation point calculation: linear, square, sinusoidal, polynomial up to 8th degree, trapezoidal	●
1.2.11.4	Analytic cam disks for motion profiles	●
1.2.11.5	Wizards for specific applications	●
1.2.11.6	Import/export	●
1.3	PLC programming	
1.3.1	Graphical editors	
1.3.1.1	Sequential function chart (SFC)	●
1.3.1.2	Ladder diagram (LD)	●
1.3.1.3	Function Block Diagram (FBD)	●
1.3.1.4	Continuous Function Chart (CFC)	●
1.3.2	Textual editors	
1.3.2.1	Instruction List (IL)	●
1.3.2.2	Structured Text (ST)	●

● Default
○ Optional
☐ System-relating

1.	IndraWorks Engineering	
1.3.3	Data types	
1.3.3.1	Standard according to IEC 61131-3 incl. LREAL	●
1.3.3.2	User-defined: arrays, structures, enumeration, alias, pointer	●
1.3.4	Special editor features	
1.3.4.1	Syntax coloring	●
1.3.4.2	Multiple undo/redo	●
1.3.4.3	Context-sensitive input help	●
1.3.4.4	Context-sensitive menus	●
1.3.4.5	Auto-declaration	●
1.3.5	Library management	●
1.3.6	Libraries	
1.3.6.1	General information	●
1.3.6.2	System	☐
1.3.6.3	PLCopen	☐
1.3.6.4	Technology functions	☐
1.3.7	Online debugging/commissioning	●
1.3.7.1	Monitoring of variables (trace)	●
1.3.7.2	Forcing of variables and variable sets	●
1.3.7.3	Project debugging	●
1.3.7.4	Power flow (sequential check)	●
1.3.7.5	Online exchange of function blocks	●
1.3.7.6	Offline simulation of PLC variables	●
1.3.7.7	Parameter monitor	●
1.3.8	Offline programming	●
1.4	CNC programming	☐
1.4.1	Parts programming	●
1.4.2	High-level language programming	●
1.4.3	Graphical NC programming	●
1.4.4	Graphical NC simulation	●
1.5	RC programming	☐
1.5.1	Textual robot-control programming	●
1.5.2	Parameterization of kinematics	●
1.6	HMI project planning	☐
1.6.1	Project development tool WinStudio (Lite, 500 variables)	●
1.6.2	WinStudio extensions (1,500/4,000/64,000/512,000 variables)	○
1.7	Kinemtaic simulation	○

2.	IndraWorks Operation	
2.1	Operation and visualization	☐
2.2	Configurable user interfaces with all standard functions	☐
2.3	Configurable user screens	☐
2.4	Automatic system monitoring units	☐
2.5	Instructions and error messages in plaintext	☐
2.6	System-specific expansions	○

Ordering data	
Order code	**Description**
SWA-IWORKS-D**-xxVRS-D0-CD650-COPY	IndraWorks for drive system IndraDrive
SWA-IWORKS-IL*-xxVRS-D0-CD650	IndraWorks for all IndraLogic systems
SWA-IWORKS-ML*-xxVRS-D0-CD650	IndraWorks for IndraMotion MLC system
SWA-IWORKS-MTX-xxVRS-D0-CD650	IndraWorks for IndraMotion MTX system
SWA-IWORKS-MTX-xxVRS-D0-CD650-OPDENG	Standard CNC operating and programming software (operation and engineering) incl. WinStudio Lite Runtime and Editor (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-OPD	Standard CNC operating software (operation) incl. WinStudio Lite Runtime (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-COM	Communication interface for customer-specific user interfaces (DE/EN)
SWA-IWORKS-MTX-xxVRS-D0-CD650-SIMULATOR	IndraWorks for IndraMotion MTX-CNC systems, offline and remote programming, MTX simulator (DE/EN)
Software options	
SWS-IWORKS-V3D-NNVRS-D0	I IndraWorks 3D-Viewer for kinematic simulation
SWS-IWORKS-REM-xxVRS-D0-CD650	IndraWorks add-on for PC-based remote maintenance

Documentations	
Order code	**Description**
DOK-IWORKS-HMI*Vxx****AWxx-EN-P	Application description of IndraWorks visualization
DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P	Application description of IndraWorks remote maintenance

xx = software/firmware version

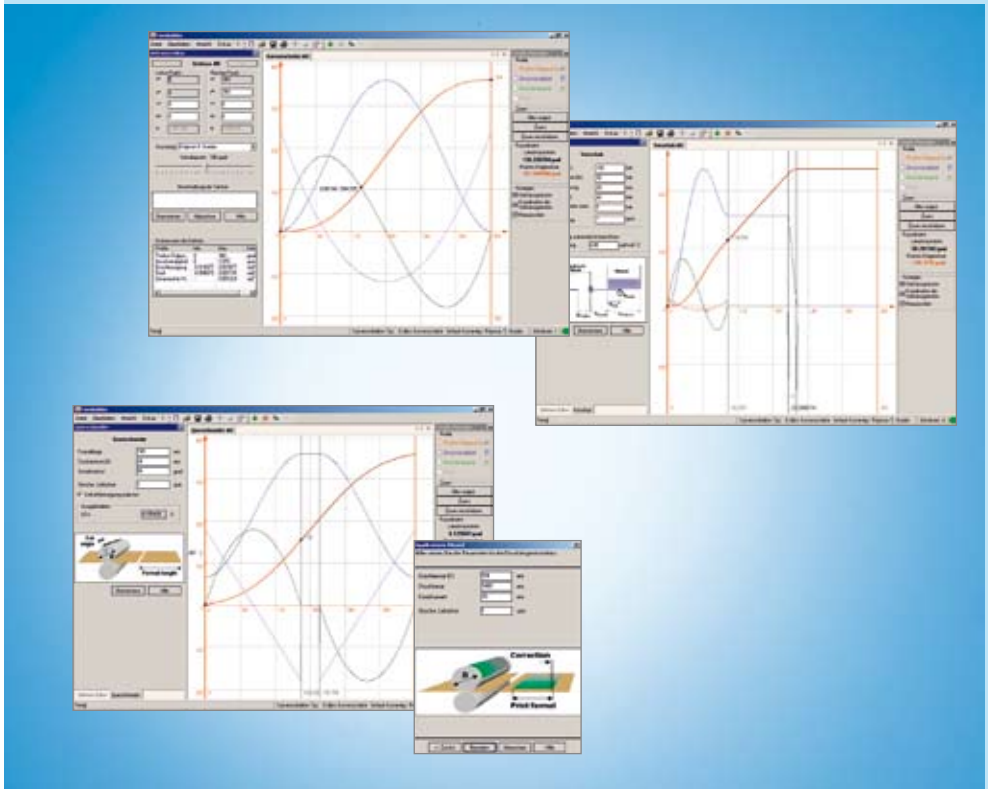
CamBuilder – Intuitive Software Tool for Cam Creation

The graphics-based software tool CamBuilder facilitates the creation of cams on the PC. With the help of dialog-controlled inputs, all requirements and special features of applications, such as cross cutters, feed axes or printing length corrections, are implemented quickly and reliably. They can then be transferred to our drive controllers or controls with only a few inputs.

CamBuilder is an optional tool that is integrated in the IndraWorks engineering framework. But CamBuilder is also available as a stand-alone tool and can be used independently of the controls and drive systems used.

Your benefits

- Easy creation of cams with the help of graphical objects
- Convenient editing of existing cams
- Editing of several cams at the same time
- Utilization of motion laws according to VDI 2143
- Transmitting and receiving of cams in Rexroth drives and controls
- Automatic display of position, acceleration, velocity, and jerk
- Support for frequent requirements provided by wizards
- Import of point tables for partial areas of the cam
- Automatic detection and calculation of marginal conditions of the cam
- Zoom functionality
- Switching between standardized and evaluated views
- Import/export functionality with various formats



CamBuilder – software tool for fast and easy creation of cams

Functions		
1	General information	
1.1	Creation of cams	●
1.2	Creation of segmented motion profiles	●
1.3	Project explorer	●
1.4	Section editor	●
1.5	Graphical output of the calculated cam	●
1.6	Graph manager	●
1.7	List of extreme values of the cam	●
1.8	Sections list	●
1.9	Representation of profile points of the cam	●
1.10	Profile point editor	●
1.11	Agents for the creation of application-specific cams	●
1.12	Data management incl. import/export	●
2	Application-related wizards	
2.1	Cross cutter	●
2.2	Feeder	●
2.3	Printing length correction	●
3	Mathematical functions	
3.1	Linear rest	●
3.2	Straightline (linear interpolation)	●
3.3	Quadratic parabola	●
3.4	2nd degree polynomial	●

Functions		
3.5	3rd degree polynomial	●
3.6	4th degree polynomial	●
3.7	5th degree polynomial	●
3.8	6th degree polynomial	●
3.9	7th degree polynomial	●
3.10	8th degree polynomial	●
3.11	Inclined sine line	●
3.12	Simple sine line	●
3.13	Modified sine line	●
3.14	Modified acceleration trapezoid	●
3.15	Linear V-cam	●
3.16	2nd degree V-cam	●
3.17	2nd degree A-cam	●
3.18	Linear A-cam	●
3.19	Analytic G-G	●
3.20	Analytic G-G (5th degree)	●
3.21	Analytic G-R (5th degree)	●
3.22	Analytic R-G (5th degree)	●
3.23	Analytic R-R (5th degree)	●
3.24	Analytic R-R (inclined sine line)	●
3.25	Import of a point table	●
3.26	User-defined kinematic laws	●

Ordering data	
Order code	**Description**
CamBuilder Stand-Alone	
SWA-CAM*PC-INB-xxVRS-D0-CD650	Cam editor CamBuilder
CamBuilder for IndraWorks (optional)	
SWS-IWORKS-CAM-xxVRS-D0	Cam editor CamBuilder in IndraWorks

xx = software/firmware version

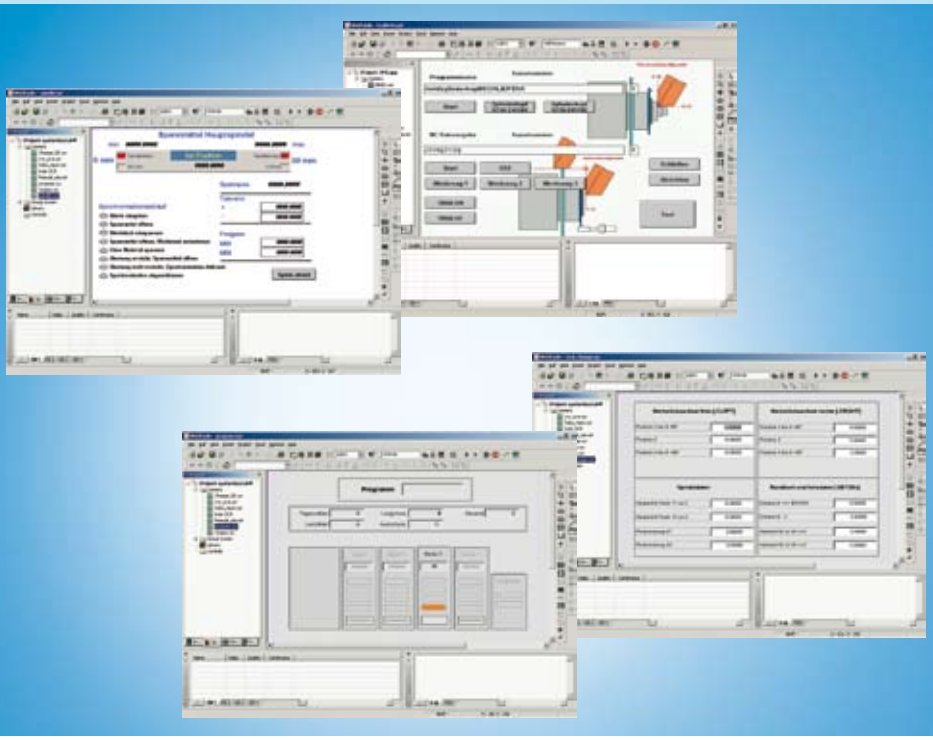
WinStudio – for More Transparency in Your Production

WinStudio is the innovative visualization module of the IndraWorks software framework for consistent engineering and user-friendly operation. WinStudio allows you to create your individual applications quickly, easily and efficiently – with one tool for all applications.

Together with the embedded PCs and the PC-based solutions from Rexroth, WinStudio ensures maximum functionality and optimum performance. The flexible licensing model is available in development and runtime versions. Needing only one development version, you can adapt your applications as often as desired and use them with various runtime versions. This design allows continuous improvement to your machines and is also very cost effective.

Your benefits

- Less project development and maintenance work through a uniform visualization software
- Clearly organized selection of objects via the project explorer
- Easy creation of screens with comprehensive libraries
- Dynamic generation of web sites
- Easy project planning without knowledge of high-level languages
- Graded software packages for individual adaptation
- UNICODE characters
- Auto-screen scaling



WinStudio – easy and effective project planning in the development environment by drag-and-drop

Type	WinStudio lite	WinStudio 1.5 k	WinStudio 4 k	WinStudio 64 k	WinStudio 512 k	WinStudio lite	WinStudio 1.5 k	WinStudio 4 k
Development license	Windows XP/2000/NT					–		
Runtime license	Windows XP/2000/NT					Windows CE		
Variables	500	1,500	4,000	64,000	512,000	500	1,500	4,000
Array size	256		512	1,024	16,384	256		512
Classes	32			64	512	32		
Open screens	1		Unlimited			1		
Network connections	–	2	4	32	Open	–	1	
Recipe handling	–	●				–	●	
ODBC	●					–		
Mathematics	●					●		
Alarm/events	–	●				–	●	
History	–	●				–	●	
Driver	1	3	5	8		1	3	
OPC server	–	●				–	●	
OPC client	●					●		
TCP/IP server	●					●		
TCP/IP client	–	●				–	●	
DDE server and client	–	●				–		
Tags database	●					●		
Web client	–			1/4/8	–	–		

● Default

Ordering data	
Order code	**Description**
Editor licenses WinNT/2K/XP	
SWS-WINSTU-RUD-xxVRS-D0-1K5	RUD/1.5K
SWS-WINSTU-RUD-xxVRS-D0-4K	RUD/4K
SWS-WINSTU-RUD-xxVRS-D0-64K	RUD/64K
SWS-WINSTU-RUD-xxVRS-D0-512K	RUD/512K
Runtime licenses WinNT/2K/XP	
SWS-WINSTU-RUN-xxVRS-D0-1K5	RUN/1.5K
SWS-WINSTU-RUN-xxVRS-D0-4K	RUN/4K
SWS-WINSTU-RUN-xxVRS-D0-64K	RUN/64K
SWS-WINSTU-RUN-xxVRS-D0-512K	RUN/512K
Runtime licenses WinNT/2K/XP with access to web clients	
SWS-WINSTU-RUW-xxVRS-D0-64K01CL	RUN/64 K – 1 web client
SWS-WINSTU-RUW-xxVRS-D0-64K04CL	RUN/64 K – 4 web clients
SWS-WINSTU-RUW-xxVRS-D0-64K08CL	RUN/64 K – 8 web clients
Runtime licenses for CE devices	
SWS-WINSTU-RUN-xxVRS-D0-WCE1K5	RUN/1.5 K – CE devices
SWS-WINSTU-RUN-xxVRS-D0-WCE4K	RUN/4 K – CE devices
Data carrier	
SWA-WINSTU-RUD-xxVRS-D0-CD650	Software CD
Dongle	
B-AC USB dongle	USB dongle
B-AC LPT dongle	LPT dongle
Documentation	**Description**
DOK-CONTRL-WIS*PC**Vxx-KBxx-EN-P	WinStudio

xx = software/firmware version

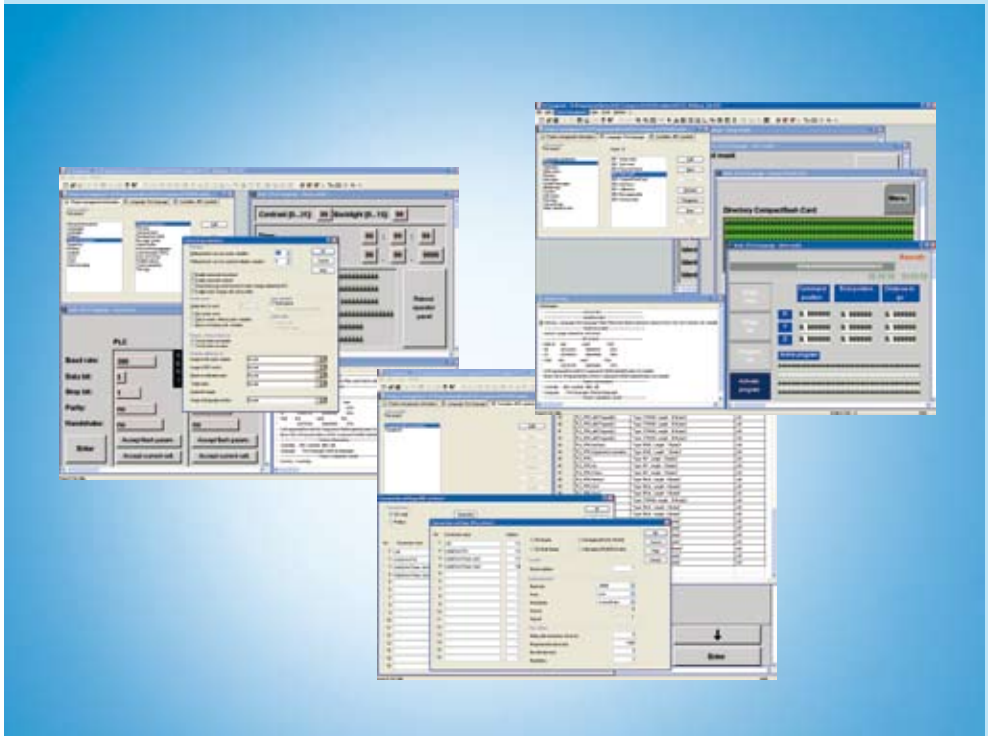
VI-Composer – the Comfortable Project Development Software for Easy Visualization and Parameterization

VI-Composer is an easy but powerful project development tool for the visualization and parameterization of system-related data of the IndraControl VCP/VCH devices. In this convenient development environment, you can efficiently create your individual application, based on the usual Windows look-and-feel. The programming result can then be used on the various IndraControl VCP/VCH devices as often as desired.

The fully graphical VI-Composer software allows you to develop projects for IndraControl VCP/VCH devices according to the WYSIWYG (What You See Is What You get) principle, text, variables and graphics are immediately represented just as they will be displayed by the IndraControl VCP/VCH devices. Predefined masks and comprehensive graphics libraries with numerous industry-compatible screen objects facilitate the creation of your applications. Based on Windows-conforming operation, you describe all variables depending on the particular control, whereas masks, graphics, recipes and the like can be created independently of any control.
VI-Composer provides direct access to the IndraWorks database and, thus, to all variables of the controls and drives. The performance is completed by comprehensive help functions.

Your benefits

- Language management of the application with up to 16 languages
- Messaging and recording system
- Font editor for creating your own character sets
- Easy graphics incorporation via OLE
- Direct access to all control and drive variables
- Project and firmware download for reloadable functions
- Integrated creation of documentation and online help
- Predefined masks, curves and bar graphs
- Definition of free menu structures
- Screen elements: texts, variables, graphics, switches, buttons, drop-down list boxes, tables, etc.



VI-Composer – efficient programming of your application in a convenient development environment

Type VI-Composer	
Development license for operation system	Windows XP/2000/NT
Firmware	Integrated in all VCP devices
Variables	65,535
Connections	Download: Ethernet
Communication	Serial, PROFIBUS DP, DeviceNet
Messages	9,999
Messaging buffer	3,000
Protocol driver	3S serial, Rexroth BUEP19E, BRC symbolics, DeviceNet, IndraLogic, PROFIBUS DP
Support of Asian characters	●
Print reports	●
Firmware download	●
Application upload	●
Recipe handling	●
Messaging and recording system	●
Online help	●
Integrated creation of documentation	●
Variables represented by curves and bar graphs	●
Translation support for multilingual projects	●
Graphics incorporation via OLE	With terminals with graphics capability
Development license	German/English

● Default

Ordering data	
Order code	**Description**
SWA-VIC*PC-INB-xxVRS-D0-CD650	VI-Composer

Documentation	
Order code	**Description**
DOK-SUPPL*-VIC*BEDIEN*-AWxx-EN-P	Operating instructions

xx = software/firmware version

Glossary

C

Cam controller Function emitting a binary signal in relation to the current position or to the distance traveled. In the past, this function was realized mechanically. Today, it is executed by programmable electronic controls.

Cams, electronic The desired position of the slave axis is calculated from the actual position of the master axis on the basis of a mathematical “cam disk” function.

CNC Computerized Numerical Control. Digital control for machine tools.

D

DeviceNet CAN-based communication system for linking industrial automation components to higher-order control equipment in a network.

E

Electronic gear Electronic simulation of a mechanical gear by software.

F

Fieldbus Conducted communication system which interconnects control units, sensors and actuators. Standardized through IEC 61508.

Firmware Device-specific software for automation components. Not exchangeable when filed to a read-only memory, or on removable memory media such as compact flash.

Function library Collection of function blocks or functions, for example according to IEC 61131-3 or PLCopen.

H

HMI Human Machine Interface. System for operating and visualizing machines and plants.

I

IndraControl L Control platform from the Rexroth Automation House.

IndraControl V IPC and visualization platform (HMI) from the Rexroth Automation House.

IndraDrive Drive platform from the Rexroth Automation House.

IndraDyn Motor platform from the Rexroth Automation House.

IndraLogic Consistent PLC platform according to IEC 61131-3 from the Rexroth Automation House.

IndraLogic L Controller-based PLC system family from the Rexroth Automation House.

IndraLogic V PC-based and embedded-PC-based PLC system family from the Rexroth Automation House.

IndraMotion System family of integrated motion-logic solutions from the Rexroth Automation House.

IndraMotion MLC Controller-based system solution with integrated motion logic from the Rexroth Automation House.

IndraMotion MLD Drive-based system solution with integrated motion logic from the Rexroth Automation House.

IndraMotion MLP PC-based system solution with integrated motion logic from the Rexroth Automation House.

IndraMotion MTX System family of CNC solutions from the Rexroth Automation House.

IndraWorks Software framework for engineering and operation, consistent for all solutions from the Rexroth Automation House.

I/O Input/output – I/O are discrete interfaces for transmitting or receiving digital or analog signals.

IPC Industrial PC – sturdy design of a standard PC, which meets the conditions of an industrial environment.

M

Master Central bus user controlling access to the bus, while lower-order users operate as slaves.

Master axis	Position or velocity command value of a master for the following slave axes.
Motion control	Intelligent and complex guidance of the movements of multi-axis systems. Control and drive functionalities are integrated in a single system.
Motion logic	Automation software or firmware with integrated motion control and PLC logic.
Motion profile	Method for describing a motion by velocity, time an position.
OPC	OLE for Process Control, communication standard for components in the automation sector, to ensure smooth standardized data exchange between controls, operating and visualization systems, field devices and office applications of various manufacturers.
PLC	A programmable logic controller, PLC or programmable controller is a small computer used for automation of real-world processes, such as control of machinery on factory assembly lines. Where older automated systems would use hundreds or thousands of relays and cam timers, a single PLC can be programmed as a replacement. Programmable controllers were initially adopted by the automotive manufacturing industry, where software revision replaced the re-wiring of hard-wired control panels.
PLCopen	International community of interests, established by control manufacturers, software companies and institutes (independent of manufacturers and products). In compliance with the PLC standard IEC 61131-3, technical committees define standards facilitating an increase in the efficiency of application software.

PROFIBUS	Process Field Bus – today, mainly serial field busses are used as communication systems for exchanging information among automation systems as well as with the connected distributed field devices.
Safety on Board	Integrated safety solutions from the Rexroth Automation House.
SERCOS III	Third SERCOS generation – further development of the existing SERCOS interface standard according to IEC/EN 61491, based on standard Ethernet. In this generation, the known SERCOS mechanisms, such as motion-control profiles, telegram structure and hardware synchronization, have been applied for hard real-time communication.
SERCOS interface	Serial Realtime Communications Standard Interface – open and serial real-time communication standard for high-precision motion-control applications, designed by leading manufacturers of numerically controlled drives.
Slave	Network user not allowed to participate in data exchange except when addressed by the master.
UPS	Uninterruptible Power Supply – ensures continuous user supply for a certain time in the event of a power failure.
User library	Collection of user-specific function blocks or functions in the form of a downloadable PLC library.
User program	Application-specific software.
Virtual master axis	Calculated position or velocity command value of a virtual master for the following slave axes.

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