Rexroth
Bosch Group

Automation systems and control components

Scalable, consistent and open

Discover the unlimited possibilities of Control City! The control technology capital integrates all control and drive components to provide optimum automation solutions – and therefore maximum future safety.

Contents

Welcome to Control City. Your control technology capital.

Discover the unlimited possibilities of a metropolis with many sides: Control City is looking forward to welcome you! The control technology capital integrates all control components to provide optimum automation solutions – and therefore maximum future safety.

Based on decades of experience, we developed a state of the art control platform allowing you, as a machine manufacturer, to realize your innovative machine concepts. The extensive control portfolio opens up completely new perspectives for easy, safe, and economic automation and flexible extension of your system.

We are sure that you will find your preferred control solution in Control City. On the one hand, we offer complete automation systems and our modern controls cover all automation tasks – from a compact PLC to a flexible motion control and innovative CNC control. On the other hand, the performance and function of the drive, controller, or PC based control systems can be adopted exactly to your individual requirements.
Control City enables you to design your future with the flexibility you need and to configure the control solutions exactly how you require them for your applications.

Scalable hard- and software, end-to-end engineering, and open communication for easy, safe, and economical automation from Control City – your control technology capital.

www.control-city.com

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 universally available in all of our automation systems as an integrated engineering software – you´ll profit from the fast access to all functions and data of the control components and from the increased understandability of your automation solution.

Consistent PLC logic according to IEC 61131-3
Using the IndraLogic PLC runtime system in all of your automation solutions, you will be able to standardize your application programs in conformance with IEC 61131-3. With its user-friendly handling, this program 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 from Rexroth to provide integrated 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 integrated automation of your applications. Combined with open communication interfaces, these hardware platforms provide automation solutions that are also sustainable in the future and allow factory automation with any degree of freedom.

Safety on board – certified integrated safety solution
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 EN ISO 13849-1, Cat. 3 PL d and EN 62061 SIL 2, provides comprehensive safety functions which you can easily integrate in your applications by simple parameterization.

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

Automation systems for your industry

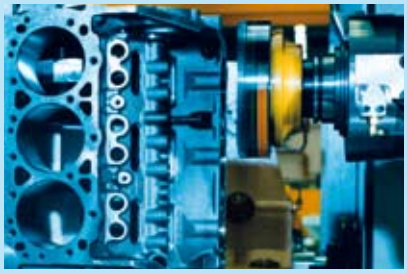
Our innovative automation systems have set milestones in focused industries. These best-in-class solutions from Rexroth present the decisive added value: absolute user-orientation, leading technology and world-wide usability – with the only goal of optimizing the economic utilization of machines and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

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

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

IndraMotion for Printing
Innovative automation system for the printing and converting industry

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



IndraMotion MTX
Highly productive CNC solution for all machine tools

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 MLP
Embedded-PC-based motion logic system for all multi-axis applications

IndraLogic
Open PLC systems for universal use

Control components for your automation system

With IndraControl, Rexroth 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, robust and modular.

IndraWorks
Engineering framework

IndraControl V
Human-machine interfaces (HMI) and industrial PCs

IndraControl L
Rack-based controls

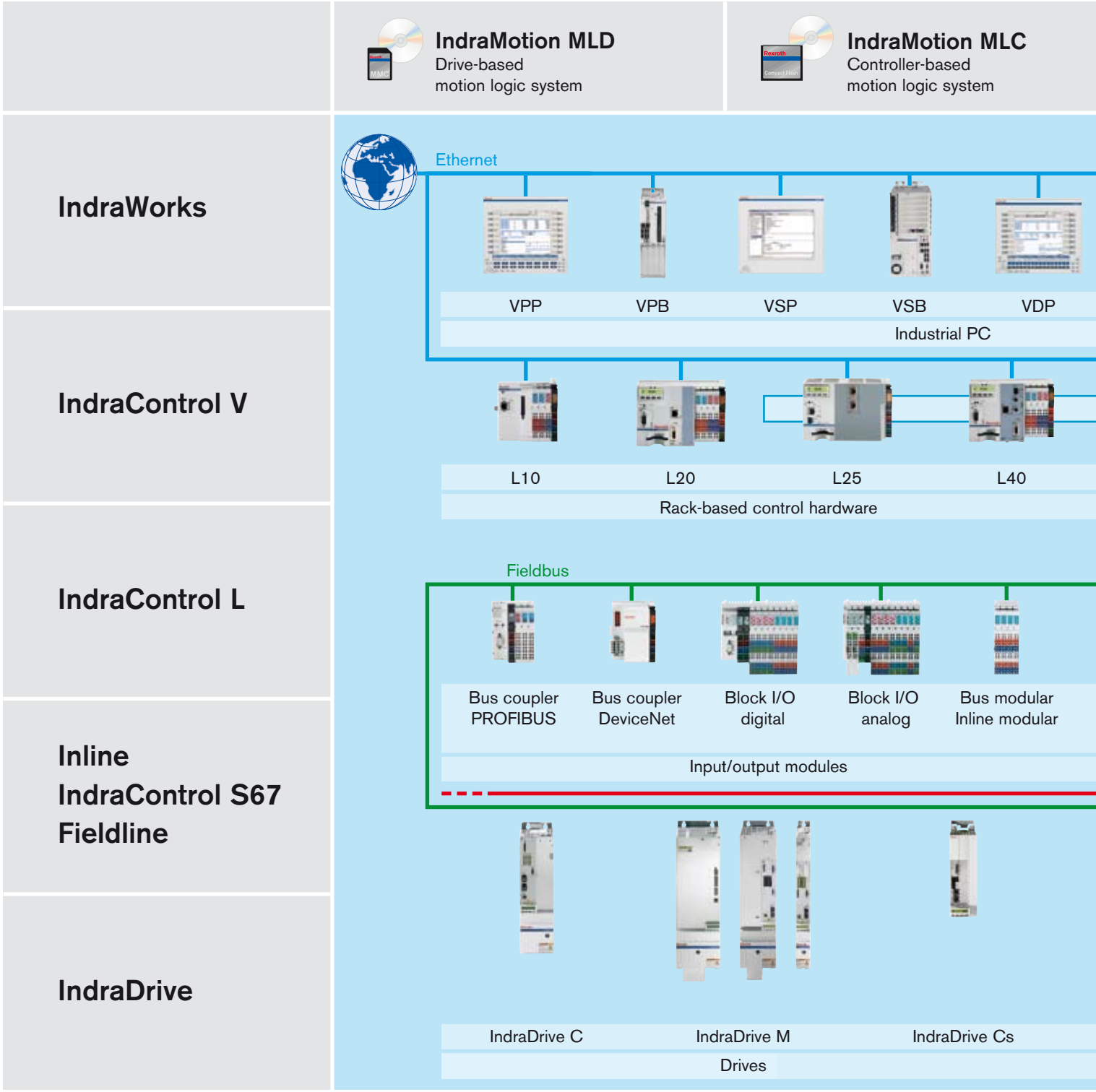
Inline
Cabinet-mount (IP20) I/O technology

IndraControl S67
Machine-mount (IP67) I/O technology

Fieldline
Machine-mount (IP67) I/O technology

Interconnection technology
Cables and plugs

Automation system and control components at a glance

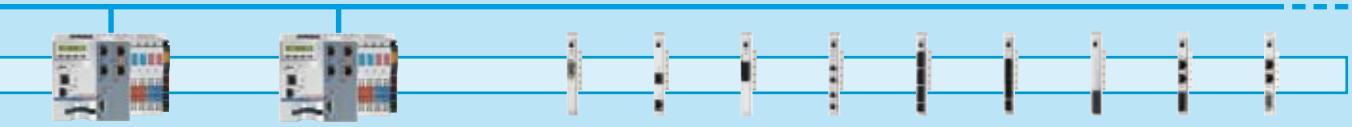


IndraMotion MLP
Embedded-PC-based motion logic system

IndraMotion MTX
CNC system

IndraLogic
PLC system

VDP40	VAM	VAK	VEP	VEP30	VEH	VCP	VCH
	Control panels/keyboards		Embedded PC			Controller	



L45	L65	Function modules for L25, L40, L45, L65
Rack-based control hardware		

SERCOS interface

IndraControl S67	Fieldline M12	Fieldline M12 Bus coupler	Fieldline M8	Bus coupler SERCOS III	Block I/O digital SERCOS III	Block I/O analog SERCOS III
Input/output modules						

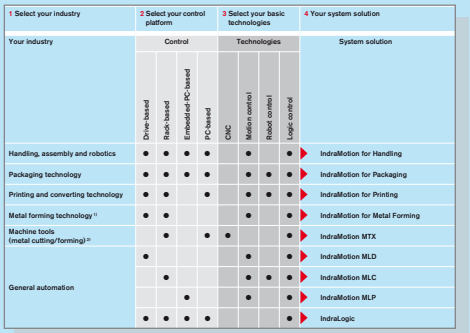
IndraDrive Mi	IndraDyn
Drives	Motors

Automation systems –
CNC, PLC and motion control

Three steps to your automation system

Example

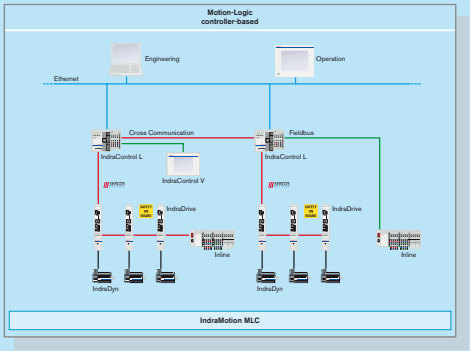
1



1 Select your industry	2 Select your control platform				3 Select your basic technologies				4 Your system solution
Your industry	Control				Technologies				System solution
	Drive-based	Rack-based	Embedded/PC-based	PC-based	CNC	Motion control	Robot control	Logic control	
Handling, assembly and robotics	●	●	●	●		●		●	IndraMotion for Handling
Packaging technology	●	●	●	●		●	●	●	IndraMotion for Packaging
Printing and converting technology	●	●		●		●	●	●	IndraMotion for Printing
Metal forming technology [1]	●	●				●		●	IndraMotion for Metal Forming
Machine tools (metal cutting/forming) [2]		●		●	●			●	IndraMotion MTX
General automation	●					●		●	IndraMotion MLD
		●				●	●	●	IndraMotion MLC
			●			●		●	IndraMotion MLP
	●	●	●	●				●	IndraLogic

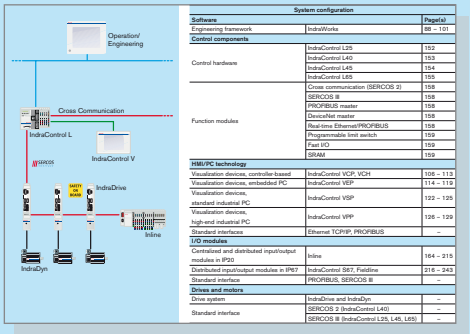
Selecting the system solution
based on the industrial focus, the preferred control platform and the preferred technology (see page 12)

2



Selecting the system topology
according to the available platforms and instances

3



System configuration			
Software			Page(s)
Engineering framework		IndraWorks	89 – 101
Control components			
Control hardware		IndraControl L25	152
		IndraControl L40	153
		IndraControl L45	154
		IndraControl L65	155
Function modules		Cross communication (SERCOS 2)	158
		SERCOS III	158
		PROFIBUS master	158
		DeviceNet master	158
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		Programmable limit switch	159
		Fast I/O	159
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HMI/PC technology			
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Visualization devices, embedded PC		IndraControl VEP	114 – 119
Visualization devices, standard industrial PC		IndraControl VSP	122 – 125
Visualization devices, high-end industrial PC		IndraControl VPP	126 – 129
Standard interfaces		Ethernet TCP/IP, PROFIBUS	–
I/O modules			
Centralized and distributed input/output modules in IP20		Inline	164 – 215
Distributed input/output modules in IP67		IndraControl S67, Fieldline	216 – 243
Standard interface		PROFIBUS, SERCOS III	–
Drives and motors			
Drive system		IndraDrive and IndraDyn	–
Standard interface		SERCOS 2 (IndraControl L40)	–
		SERCOS III (IndraControl L25, L45, L65)	–

Configuring the system
based on the supported control components with direct links to the corresponding detailed information

Selection tool

Select your preferred system solution based on the following criteria:
- Industrial orientation
- Control platform (drive, rack, embedded PC, PC)
- Basic technologies (CNC, motion control, robot control, logic control)

1 Select your industry	2 Select your control platform				3 Select your basic technologies				4 Your system solution
Your industry	Control				Technologies				System solution
	Drive-based	Rack-based	Embedded-PC-based	PC-based	CNC	Motion control	Robot control	Logic control	
Handling, assembly and robotics	●	●	●	●		●		●	IndraMotion for Handling
Packaging technology	●	●	●	●		●	●	●	IndraMotion for Packaging
Printing and converting technology	●	●		●		●	●	●	IndraMotion for Printing
Metal forming technology [1]	●	●				●		●	IndraMotion for Metal Forming
Machine tools (metal cutting/forming) [2]		●		●	●			●	IndraMotion MTX
General automation	●					●		●	IndraMotion MLD
		●				●	●	●	IndraMotion MLC
			●			●		●	IndraMotion MLP
	●	●	●	●				●	IndraLogic

[1] e.g. roll feed, synchronously running separation equipment, profiling machines
[2] e.g. turning machines, machining centers, bending machines









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 or IndraMotion MLD 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

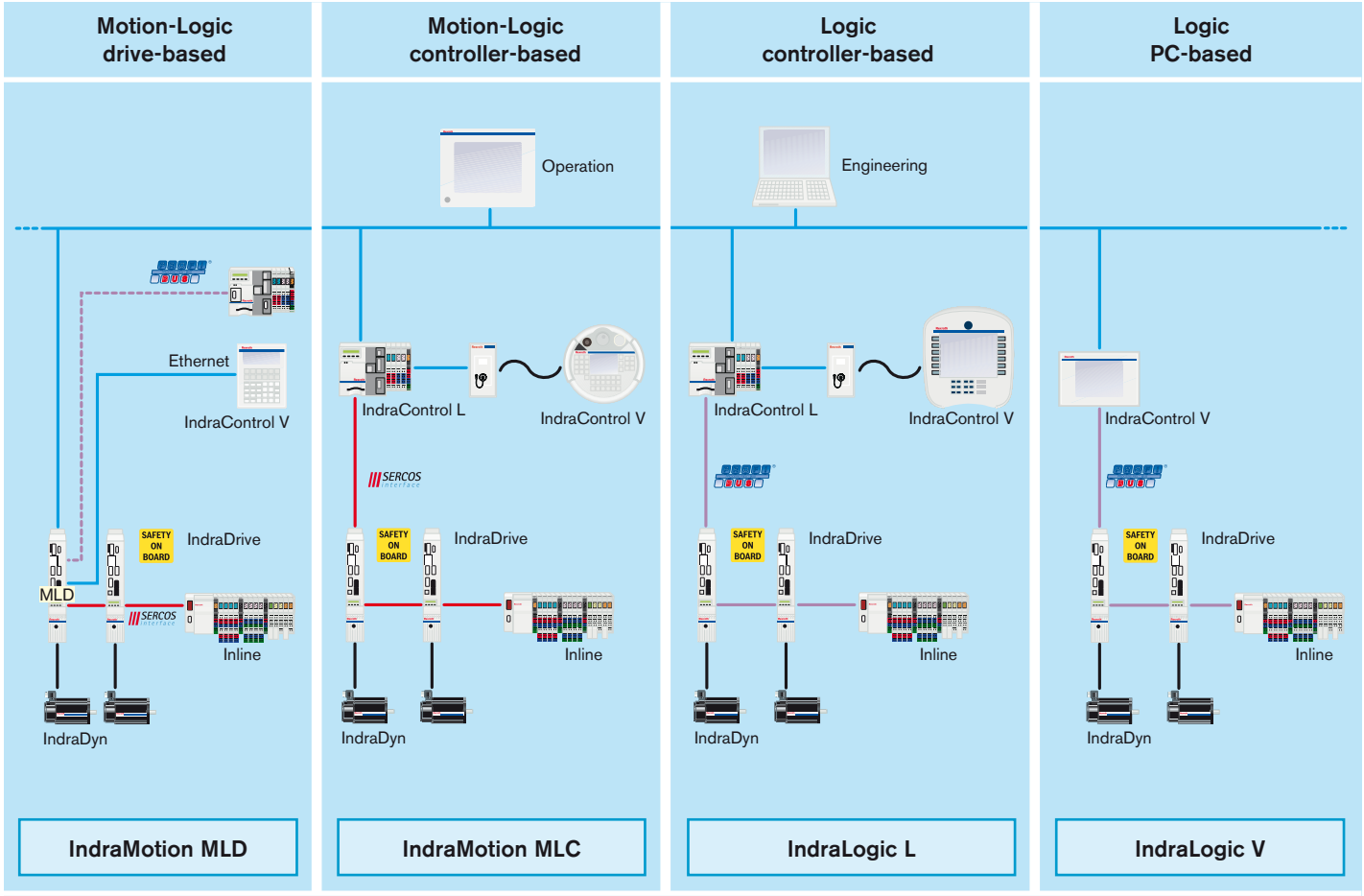
- Maximum performance and functionality through innovative control platform
- Free PLC functionality according to IEC 61131-3
- Open standardized communication interfaces
- Flexible scalability for various HMI devices
- Easy teaching, defining and programming of motion sequences through HMI, PC or PLC
- 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 ISO 13849-1, Cat. 3 PL d and EN 62061 SIL 2
- 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



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	IndraMotion MLD	Chapter 2.6
Automation system	IndraMotion MLC	Chapter 2.7
Automation system	IndraLogic L	Chapter 2.9
Automation system	IndraLogic V	Chapter 2.9
Engineering framework	IndraWorks	Chapter 3.1
Visualization devices, embedded PC	IndraControl VEH, VEP	Chapter 3.2
Visualization devices, controller-based	IndraControl VCP, VCH	Chapter 3.2
Control hardware	IndraControl L	Chapter 3.3
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

IndraMotion for Packaging – flexible automation system for the food processing and packaging industry

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 10 axes, e.g. for carton erectors, labelers
- IndraMotion MLC – for controller-based topologies with up to 64 axes, e.g. for cartoning systems, vertical tubular bag machines
- IndraMotion MLP – for embedded-PC-based topologies with up to 32 axes, e.g. for palletizing machines, pick-and-place applications or flow wrappers

Your benefits

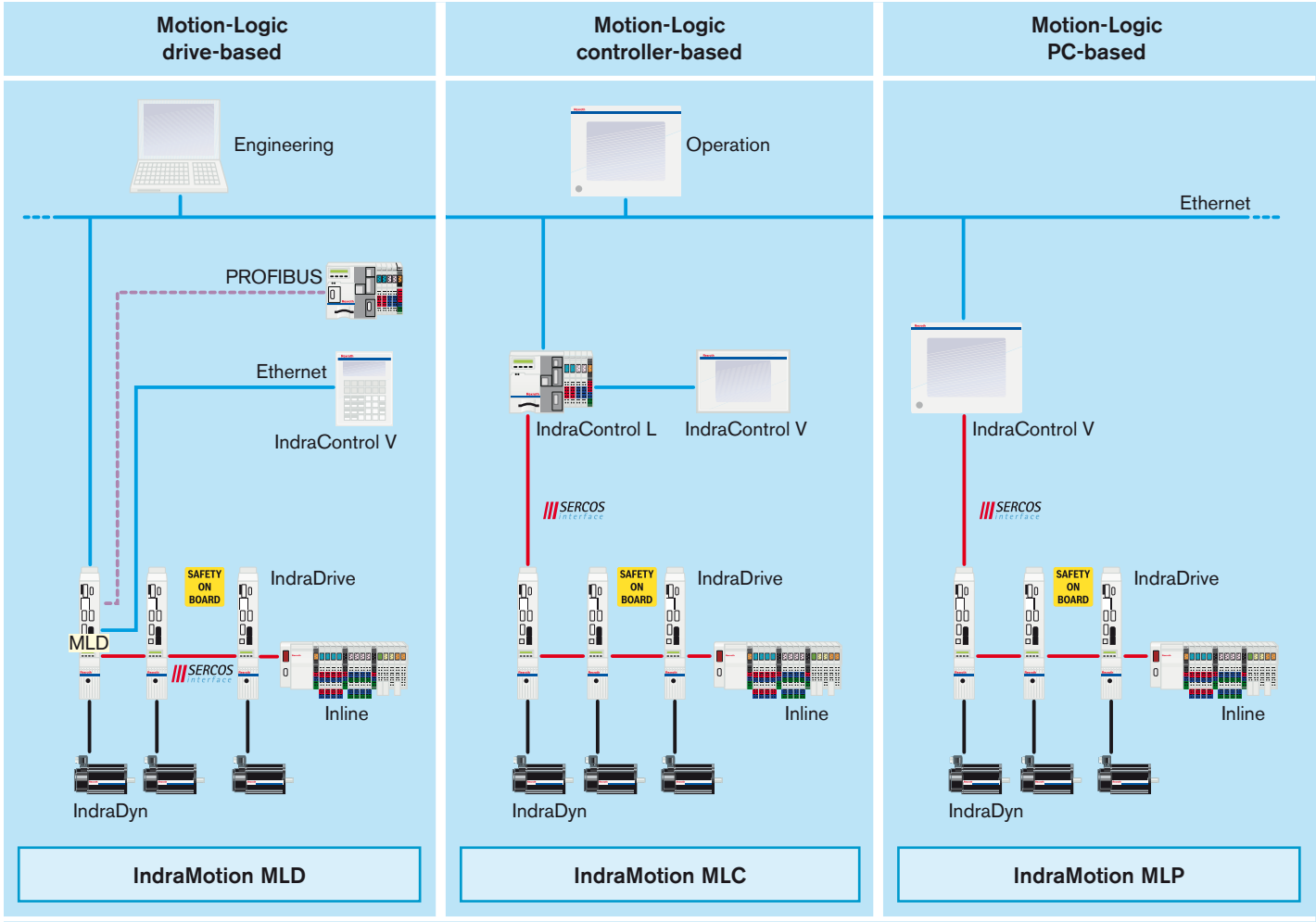
- Scalable controls on various platforms
- Integrated motion logic functions, standardized according to IEC 61131-3 and PLCopen
- Time-saving engineering through process-specific technology functions and comprehensive software libraries
- Wide range of HMI devices and I/O components
- Scalable drive 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 ISO 13849-1 Cat. 3 PL d and EN 62061 SIL 2

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

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 benefit



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

Additional information		
Automation system	IndraMotion MLD	Chapter 2.6
Automation system	IndraMotion MLC	Chapter 2.7
Automation system	IndraMotion MLP	Chapter 2.8
Engineering framework	IndraWorks	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
Control hardware	IndraControl L	Chapter 3.3
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

IndraMotion for Printing – innovative automation system for the printing and converting industry

IndraMotion for Printing is the innovative automation solution for all applications in the printing and converting industry – from commercial, packaging and newspaper printing machines to the converting of card board, film and paper. Shortest cycle times and faster format changes paired with high-precision, with IndraMotion for Printing you automate your process quickly in a simpler and more flexible manner. International software standards and scalable control platforms provide you with all the freedom for implementing your high precision printing machine or flexible inline production system.

The fusion of motion, robot and logic control combined with a wealth of industry-specific technology functions such as “color register control” guarantees an optimal solution for your application:

- IndraMotion MLD – for drive-based topologies such as tension control, or format variable cross cutters
- IndraMotion MLC – for controller-based topologies with up to 64 axes such as commercial, newspaper, packaging, sheet fed, digital, label, flexo, rotogravure and corrugated printing, as well as machines for processing envelopes, cartons, tissues, stationery, bags and diapers

Your benefits

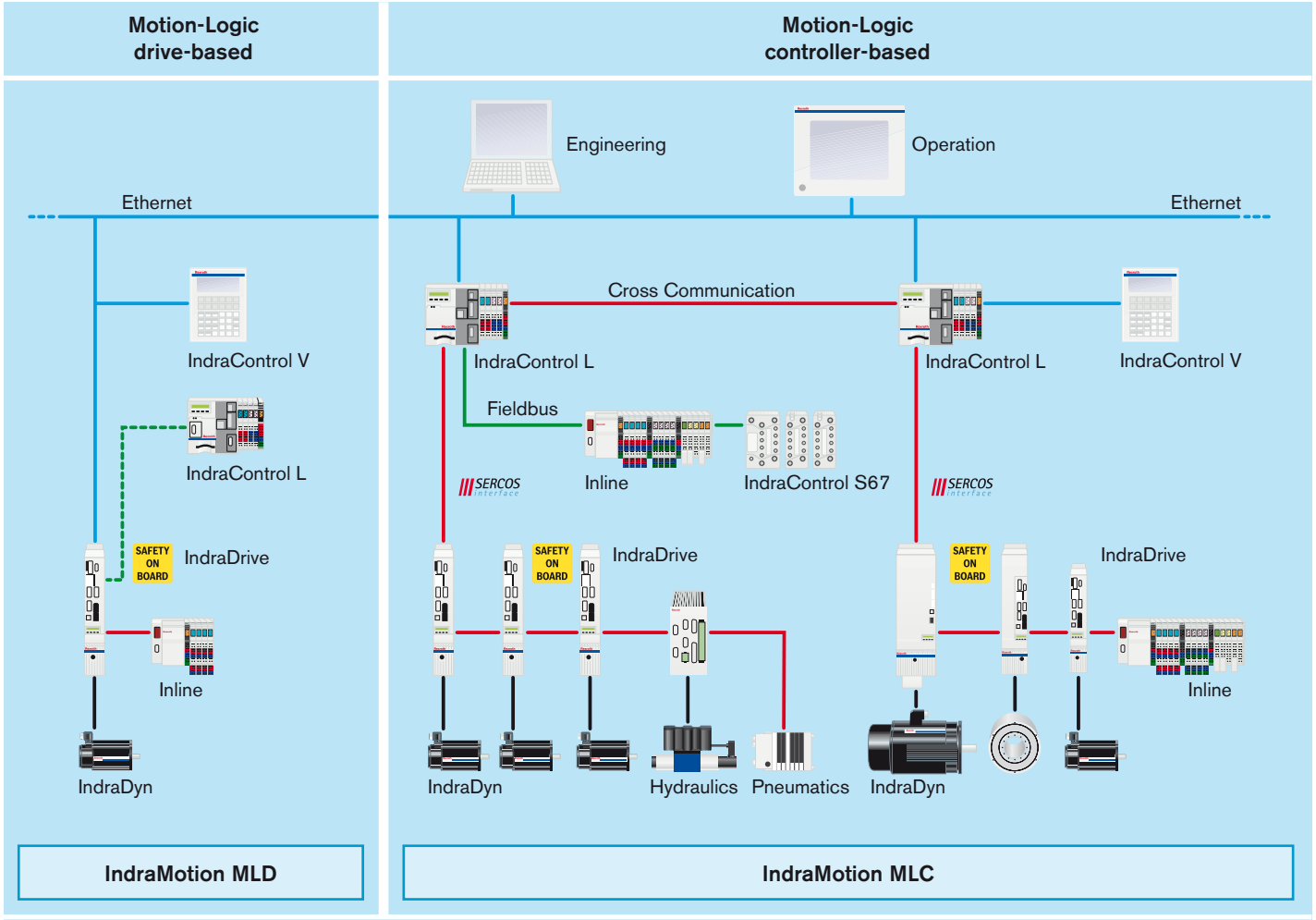
- Scalable controls on various platforms
- Integrated motion logic functions, standardized according to IEC 61131-3 and PLCopen
- Time-saving engineering through process-specific technology functions and comprehensive software libraries
- Wide range of HMI devices and I/O components
- Scalable drive 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 to EN ISO 13849-1 Cat. 3 PL d and EN 62061 SIL2

IndraMotion for Printing – open and scalable complete solution for succesful automation designs in the printing and converting industry.

Simple, scalable and powerful

- Highest productivity through faster format changes
- Simple programming by the use of industry specific technology functions
- Minimum paper waste thanks to highest precision

Your benefit



IndraMotion for Printing, the well conceived automation system with scalable control structure is tailored to perfectly meet the requirements of the printing and converting industry.

Additional information		
Automation system	IndraMotion MLD	Chapter 2.6
Automation system	IndraMotion MLC	Chapter 2.7
Engineering framework	IndraWorks	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
Control hardware	IndraControl L	Chapter 3.3
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

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

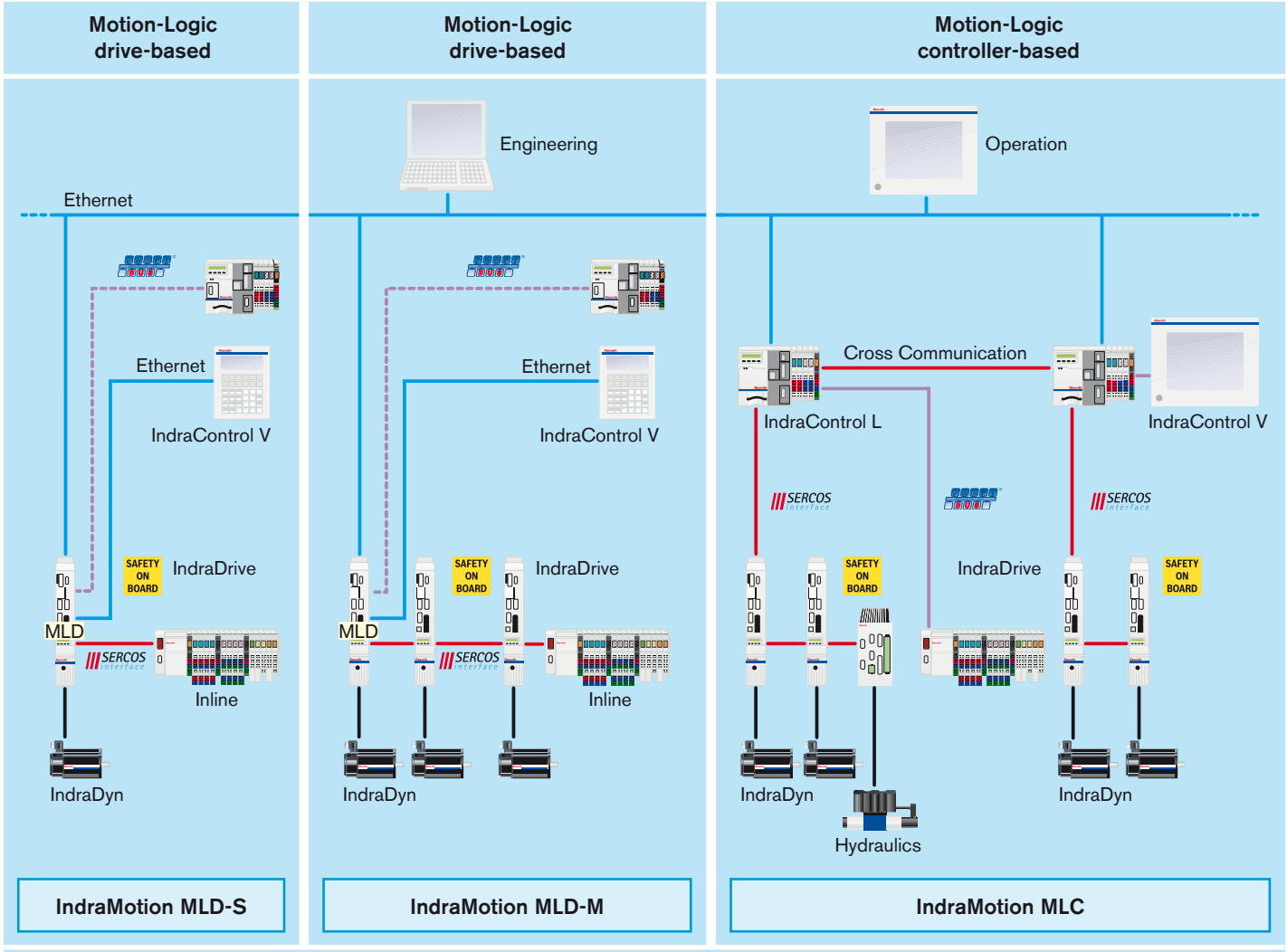
- Scalable drive platforms with highly dynamic motors
- Standardized programming tools according to IEC 61131-3 and PLCopen
- Drive-integrated technical safety system, certified according to EN ISO 13849-1 Cat. 3 PL d and EN 62061 SIL2
- Intuitive engineering with the IndraWorks software framework
- Low assembly and installation requirements as well as fast start-up through matching and pre-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 2.6
Automation system	IndraMotion MLC	Chapter 2.7
Engineering framework	IndraWorks	Chapter 3.1
Visualization devices, controller-based	IndraControl VCP	Chapter 3.2
Control hardware	IndraControl L	Chapter 3.3
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

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 industrial PC
- IndraMotion MTX performance – high-capacity plug-in control in a sturdy industrial PC
- IndraMotion MTX advanced – high-capacity plug-in control in a special high-end industrial PC for highest requirements

Your benefits

- Advanced technology functions for turning, milling, drilling, grinding, bending, nibbling, punching, shape cutting and handling
- 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

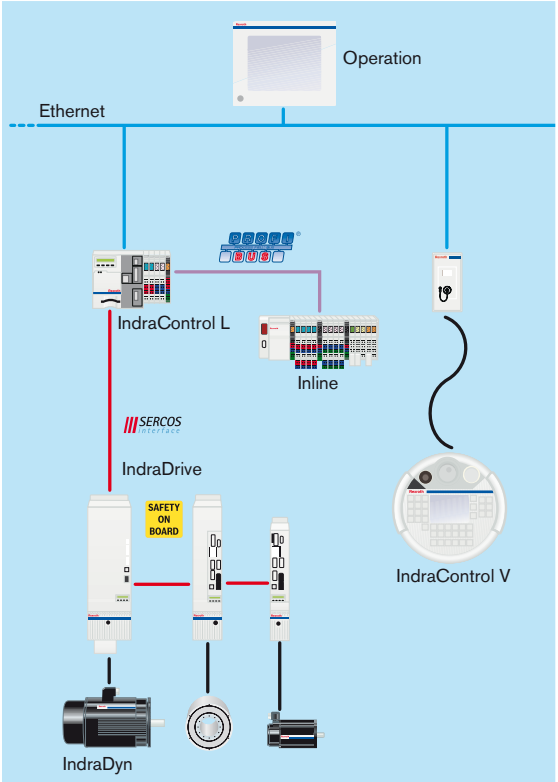
IndraMotion MTX is the customized CNC solution for turning, milling, drilling, grinding, bending, nibbling, punching and shape cutting.

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

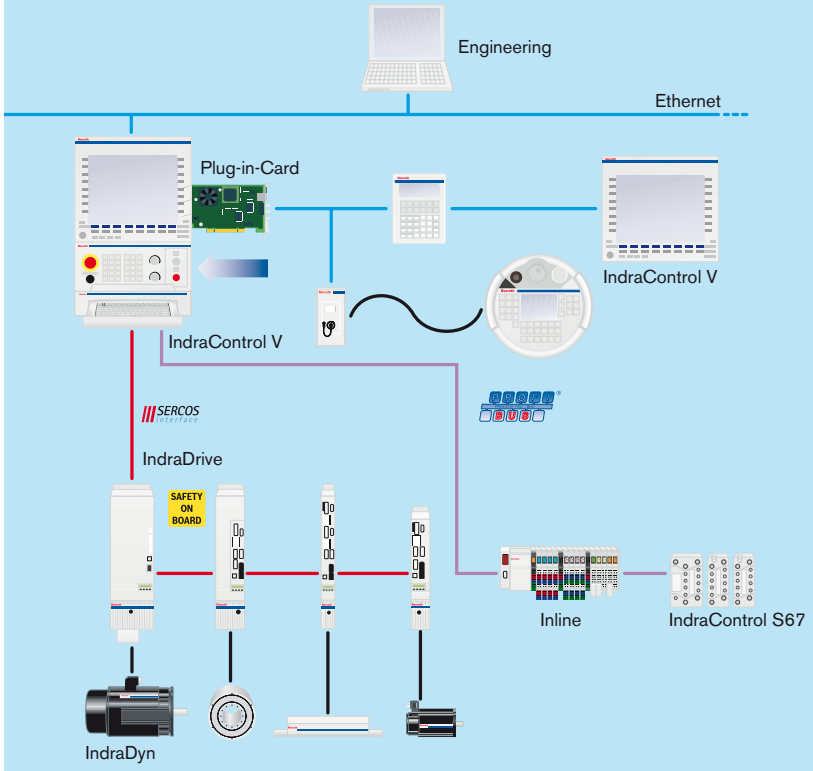
Your benefit

CNC controller-based



IndraMotion MTX compact

CNC PC-based



IndraMotion MTX standard/performance/advanced

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		
Engineering-Framework	IndraWorks	Chapter 3.1
Visualization devices, high-end industrial PC	IndraControl VPP, VPB	Chapter 3.2
Visualization devices, standard industrial PC	IndraControl VSP, VSB	Chapter 3.2
Visualization devices, displays	IndraControl VDP	Chapter 3.2
Visualization devices, embedded PC	IndraControl VEP	Chapter 3.2
Visualization devices, controller-based	IndraControl VCP, VCH	Chapter 3.2
Machine control panels, keyboards	IndraControl VAM, VAK	Chapter 3.2
Control hardware	IndraControl L	Chapter 3.3
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

IndraMotion MTX – technical data

1	Machining technologies	MTX compact	MTX standard	MTX performance	MTX advanced
1.1	Turning	●	●	●	●
1.2	Milling	●	●	●	●
1.3	Drilling	●	●	●	●
1.4	Grinding	●	●	●	●
1.5	Nibbling, shape cutting	●	●	●	●
1.6	Reforming	●	●	●	●
2	**Axis control**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
2.1	Default number of axes	8 ●	8 ●	8 ●	8 ●
2.2	Max. number of axes	8 ●	8 ●	64 ○	64 ○
2.3	Max. number of spindles thereof	2 ●	2 ●	32 ○	32 ○
2.4	Default number of independent channels	2 ●	2 ●	3 ●	3 ●
2.5	Max. number of independent channels	2 ●	2 ●	12 ○	12 ○
2.6	Default number of interpolating axes per channel	4 ●	4 ●	4 ●	4 ●
2.7	Max. number of interpolating axes per channel	4 ●	4 ●	8* ○	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 groups per channel	4 ② ⑥ ○	4 ② ⑥ ○	8 ② ③ ⑥ ○	8 ② ③ ⑥ ○
2.14	Channel-crossing axis transfer	●	●	●	●
2.15	Cams	●	●	●	●
2.16	Spindle coupling via electronic transmission	⑦ ○	⑦ ○	⑦ ○	⑦ ○
2.17	Software limit	●	●	●	●
2.18	Main spindle synchronization	① ② ○	① ② ○	① ② ③ ○	① ② ③ ○
2.19	Axis-specific jerk limitation	●	●	●	●
2.20	Integrated safety system according to EN ISO 13849-1/Cat. 3 PLe, and EN 62061 SIL2 (safe stop, safe reduced speed)	□	□	□	□
3	**Interpolation functions**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
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	Cylinder surface transformation	① ⑥ ○	① ⑥ ○	① ⑥ ○	① ⑥ ○
3.8	C-axis transformation	① ○	① ○	① ○	① ○
3.9	NC block preview, look-ahead with jerk limitation	max. 30 blocks ●	max. 30 blocks ●	max. 1,000 blocks ○	max. 1,000 blocks ○
3.10	5/6 axis transformation with TCP programming	–	–	③ ○	③ ○
3.11	Jogging with active transformation	–	–	③ ○	③ ○
3.12	Spline interpolation, C1 + C2, continuous cubic splines, B-splines, NURBS	① ② ○	① ② ○	① ② ③ ○	① ② ③ ○
3.13	Nanometer resolution	●	●	●	●

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

① “Turning 1” technology package ③ “Milling 2” technology package ⑤ “Milling” shop programming ⑦ “Electronic transmission” technology package

② “Milling 1” technology package ④ “Turning” shop programming ⑥ “Shape cutting” technology package

* An export license is required for this option. Per part I C of the export list (EC Regulation) item 2D002.

4	Feed functions	MTX compact	MTX standard	MTX performance	MTX advanced
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 ○	① ○
4.5	Feed on positive stop	●	●	●	●
4.6	Torque reduction	●	●	●	●
5	**Shifts and compensations**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
5.1	Mirroring, scaling, rotating	●	●	●	●
5.2	Zero offsets	●	●	●	●
5.3	Compensations and zero offsets programmable through CPL	●	●	●	●
5.4	Placements (FRAMES)	② ○	② ○	② ③ ○	② ③ ○
5.5	2D compensation	●	●	●	●
5.6	3D cutter radius compensation	–	–	③ ○	③ ○
5.7	Compensation with plane switching	●	●	●	●
5.8	Tangential tool guidance	●	●	●	●
6	**Tool management**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
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**	**MTX advanced**
7.1	Creation of parts program	DIN ISO 66025/ I/O 274 ●	DIN ISO 66025/ I/O 274 ●	DIN ISO 66025/ I/O 274 ●	DIN ISO 66025/ I/O 274 ●
7.2	High-level language programming, CPL (customer programming language)	●	●	●	●
7.3	Graphical NC programming	④ ⑤ ■	④ ⑤ ○	④ ⑤ ○	④ ⑤ ○
7.4	Graphical NC simulation	④ ⑤ ■	④ ⑤ ○	④ ⑤ ○	④ ⑤ ○
7.5	CNC user memory	64 MB	64 MB	64 MB	256 MB
7.6	Static memory	8 MB	8 MB	8 MB	16 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) ●	PC hard disk (network file system) ●
8	**Technology cycles**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
8.1	Drilling	① ② ■	① ② ○	① ② ③ ○	① ② ③ ○
8.2	Turning	① ④ ■	① ④ ○	① ④ ○	① ④ ○
8.3	Milling	② ⑤ ■	② ⑤ ○	② ⑤ ③ ○	② ⑤ ③ ○
9	**Functions**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
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	●	●	●	●

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

① “Turning 1” technology package ③ “Milling 2” technology package ⑤ “Milling” shop programming ⑦ “Electronic transmission” technology package

② “Milling 1” technology package ④ “Turning” shop programming ⑥ “Shape cutting” technology package

IndraMotion MTX – technical data

9	Functions	MTX compact	MTX standard	MTX performance	MTX advanced
9.5	Switching between inch and mm	●	●	●	●
9.6	Probe, static/on-the-fly measurement	●	●	●	●
9.7	Read process and drive data through SERCOS 2	●	●	●	●
9.8	Roundings and chamfers	●	●	●	●
9.9	Corner rounding with splines	●	●	●	●
9.10	Laser power control	●	●	●	●
9.11	Digitizing	●	●	●	●
9.12	NC block defined by PLC	●	●	●	●
9.13	Configurable operator screens	■	■	■	■
9.14	Cycle header/input support, OEM cycles	■	■	■	■
9.15	NC program restart/block search	●	●	●	●
9.16	Dry run	●	●	●	●
9.17	Retracting from and returning to the contour	●	●	●	●
9.18	Retrace function: reversing over the contour	⑥ ○	⑥ ○	⑥ ○	⑥ ○
10	**PLC programming**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
10.1	Integrated PLC: IndraLogic	●	●	●	●
10.2	Programming languages according to IEC 61131-3 (IL, LD, CFC, ST, SFC, FBD)	●	●	●	●
10.3	PLC program memory	8 MB	8 MB	8 MB	16 MB
10.4	Number of high-speed inputs/outputs	–	8/8 ○	8/8 ○	8/8 ○
10.5	Number of fieldbus inputs/outputs in bytes	8,192/8,192	8,192/8,192	8,192/8,192	8,192/8,192
10.6	Multitasking	●	●	●	●
10.7	Max. number of PLC tasks	16	16	16	16
11	**Diagnostic and startup tools**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
11.1	Integrated, system-crossing engineering framework IndraWorks	■	●	●	●
11.2	Automatic system monitoring units	●	●	●	●
11.3	Instructions and error messages in plaintext	■	●	●	●
11.4	Integrated drive project planning	■	●	●	●
11.5	Drive oscilloscope	■	●	●	●
11.6	Integrated PLC project planning	■	●	●	●
11.7	Logic analyzer	■	●	●	●
11.8	Circle form test	■	●	●	●
11.9	NC analyzer	■	●	●	●
11.10	Action recorder IndraMotion MTX acr	○	○	○	○
11.11	Cycle time analyzer IndraMotion MTX cta	○	○	○	○
11.12	Remote diagnostics I-Remote	○	○	○	○
11.13	Software IndraMotion MTX simulator	○	○	○	○
11.14	IndraWorks view 3D	○	○	○	○
11.15	IndraWorks machine simulator	○	○	○	○
12	**Open architecture**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
12.1	Configurable user interface with all standard functions	■	●	●	●
12.2	Projectable user-specific operator screens	■	●	●	●
12.3	Adaptation and integration through standardized interfaces (OPC, XML, ActiveX, .NET)	■	●	●	●

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

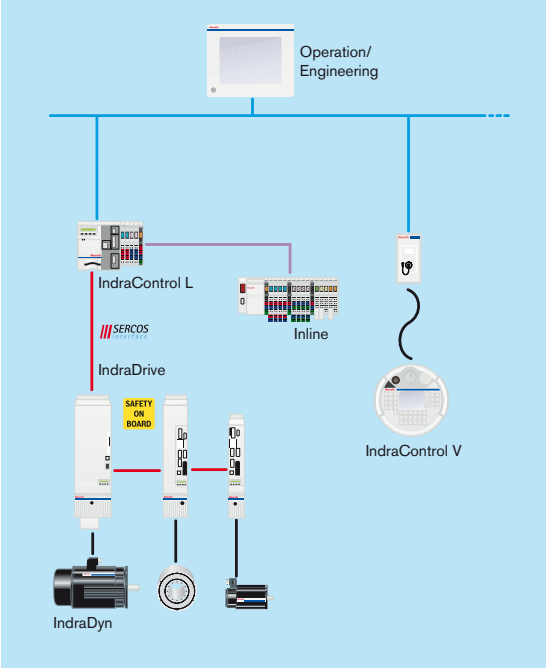
① “Turning 1” technology package ③ “Milling 2” technology package ⑤ “Milling” shop programming ⑦ “Electronic transmission” technology package

② “Milling 1” technology package ④ “Turning” shop programming ⑥ “Shape cutting” technology package

13	Control hardware and interfaces	MTX compact	MTX standard	MTX performance	MTX advanced
13.1	CPU	IndraControl L40	IndraControl P40	IndraControl P60	IndraControl P70
13.2	Digital drive interface SERCOS 2	2 to 16 MBaud ●	2 to 16 MBaud ●	2 to 16 MBaud ●	2 to 16 MBaud ●
13.3	PROFIBUS master	12 MBaud ●	12 MBaud ●	12 MBaud ●	12 MBaud ●
13.4	Ethernet TCP/IP	10/100 MBit ●	10/100 MBit ●	10/100 MBit ●	10/100 MBit ●
13.5	EtherNet/IP adapter (slave)	○	○	○	○
13.6	DeviceNet master	–	–	○	○
14	**Software and hardware**	**MTX compact**	**MTX standard**	**MTX performance**	**MTX advanced**
14.1	Operating system Windows XP	●	●	●	●
14.2	Panel PC IndraControl VSP 16/40 - CPU: Celeron 440, 2 GHz - TFT display: 30.5 cm (12")/38.1 cm (15") - 16 machine control keys For details, see Chap. 3.2 (IndraControl V)	○	○	○	○
14.3	Panel PC IndraControl VPP 16/40 - CPU: Intel Core Duo, 1.66 GHz or Intel Core 2 Duo, 2.16 GHz - TFT display: 30.5 cm (12")/38.1 cm (15") - 16 machine control keys For details, see Chap. 3.2 (IndraControl V)	○	–	○	○
14.4	Industrial PC IndraControl VSB 40 - CPU: Intel Celeron 440, 2 GHz For details, see Chap. 3.2 (IndraControl V)	○	○	○	○
14.5	Industrial PC IndraControl VPB 40 - CPU: Intel Core Duo, 1.66 GHz or Intel Core 2 Duo, 2.16 GHz For details, see Chap. 3.2 (IndraControl V)	○	–	○	○
14.6	Embedded PC IndraControl VEP 40/50 - CPU: Intel Celeron 600 MHz - TFT display: 30.5 cm (12")/38.1 cm (15") - 16 machine control keys For details, see Chap. 3.2 (IndraControl V)	○	○ Additonal user panel	○ Additonal user panel	○ Additonal user panel

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

IndraMotion MTX compact – system configuration



System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
Control components		
Control hardware	IndraControl L40	153
Function module	SRAM	159
Standard interfaces	SERCOS 2, PROFIBUS, Ethernet TCP/IP, EtherNet/IP	–
HMI/PC technology		
Visualization devices, controller-based	IndraControl VCP, VCH	106 – 113
Visualization devices, embedded PC	IndraControl VEP	114 – 119
Visualization devices, standard industrial PC	IndraControl VSP	122 – 125
	IndraControl VSB, VDP	130 – 141
Visualization devices, high-end industrial PC	IndraControl VPP	126 – 129
	IndraControl VPB, VDP	130 – 141
I/O modules		
Centralized and distributed input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Drives and motors		
Drive system	IndraDrive and IndraDyn	–

IndraMotion MTX compact – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware for IndraMotion MTX compact	FWA-CML40*-MTX-xxVRS-NN

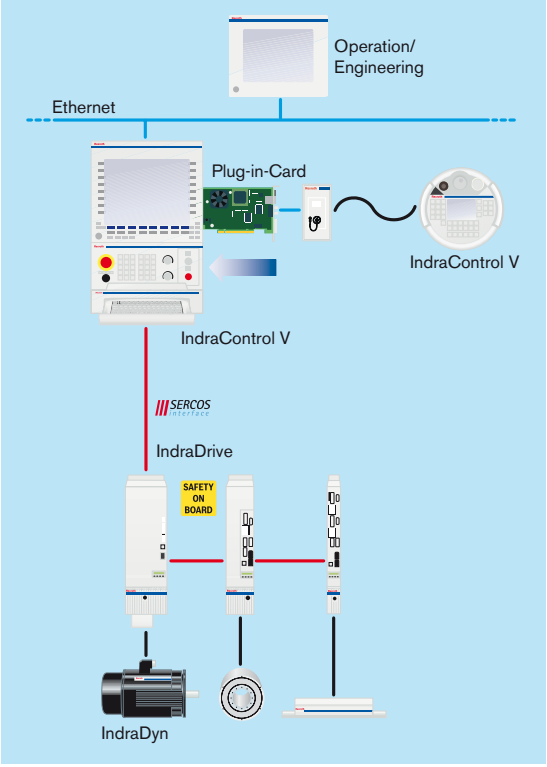
Ordering data for software and software options	
Description	**Type code**
Software DVD engineering framework IndraWorks	SWA-IWORKS-MTX-xxVRS-D0-DVD
Single-license IndraWorks (Operation)	SWL-IWORKS-MTX-xxVRS-D0-OPD
Multiple-license (25) IndraWorks (Operation)	SWL-IWORKS-MTX-xxVRS-D0-OPD*M25
Single-license IndraWorks (Operation and Engineering)	SWL-IWORKS-MTX-xxVRS-D0-OPDENG
Multiple-license (25) IndraWorks (Operation and Engineering)	SWL-IWORKS-MTX-xxVRS-D0-OPDENG*M25
Single-license IndraWorks (Offline Programming)	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR
Multiple-license (25) IndraWorks (Offline Programming)	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR*M25
Single-license IndraWorks (OPC server)	SWL-IWORKS-MTX-xxVRS-D0-COM
Multiple-license (25) IndraWorks (OPC server)	SWL-IWORKS-MTX-xxVRS-D0-COM*M25
Option technology package – turning 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-TUR1
Option shop programming – turning (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-SFPT
Option technology package – milling 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-BAZ1
Option shop programming – milling 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-SFPM
Option technology package – shape cutting	SWS-MTX***-RUN-NNVRS-D0-SHC1
Option technology package – electronic transmission	SWS-MTX***-RUN-NNVRS-D0-GEAR
Option language extension, Chinese (simplified), Czech, French, Hungarian, Italian, Korean, Polish, Portuguese, Russian, Spanish, Swedish, Turkish	Details available on request

Ordering data for hardware	
Description	**Type code**
Control component IndraControl L40 with SERCOS 2, PROFIBUS	CML40.2-SP-330-NA-NN-NN-NW
Function module SRAM	CFL01.1-Y1

Ordering data for documentations	
Description	**Type code**
System description, project planning	DOK-MTX***-SYS*DES*Vxx-PRxx-EN-P
Software installation	DOK-MTX***-SOFTINS*Vxx-IBxx-EN-P
Project planning, PLC interface	DOK-MTX***-PLC*INT*Vxx-PRxx-EN-P
Parameter description, machine parameters	DOK-MTX***-MA*PAR**Vxx-PAxx-EN-P
Standard NC operation	DOK-MTX***-NC*OP***Vxx-AWxx-EN-P
Functional description	DOK-MTX***-NC*FUNC*Vxx-FKxx-EN-P
Application description, programming manual	DOK-MTX***-NC**PRO*Vxx-AWxx-EN-P
Operating and programming manual, turning and milling shop programming	DOK-MTX***-SF*PROG*Vxx-AWxx-EN-P
Diagnosis messages	DOK-MTX***-DIAGMES*Vxx-IFxx-EN-P
Project planning, OPC interface	DOK-MTX***-OPC*INT*Vxx-PRxx-EN-P
Application description IndraWorks	DOK-IWORKS-ENGINEE*Vxx-AWxx-EN-P
Application description IndraWorks simulator	DOK-IWORKS-SIMU****Vxx-AWxx-EN-P
Application description IndraWorks vizualization	DOK-IWORKS-HMI*Vxx****-AWxx-EN-P
Application description IndraWorks remote maintenance	DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P
Installation Instructions, IndraWorks Software Installation	DOK-IWORKS-SOFTINS*Vxx-IBxx-EN-P

xx = software/firmware version

IndraMotion MTX standard – system configuration



System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
Control components		
Control hardware	IndraControl P40	–
Function module	High speed I/O	–
Standard interfaces	SERCOS 2, PROFIBUS, Ethernet TCP/IP, EtherNet/IP	–
HMI/PC technology		
Visualization devices, controller-based	IndraControl VCP, VCH	106 – 113
Visualization devices, embedded PC	IndraControl VEP	114 – 119
Visualization devices, standard industrial PC	IndraControl VSP	122 – 125
	IndraControl VSB, VDP	130 – 141
I/O modules		
Distributed input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Drives and motors		
Drive system	IndraDrive and IndraDyn	–

IndraMotion MTX standard – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware for IndraMotion MTX standard	FWA-CMP40*-MTX-xxVRS-NN

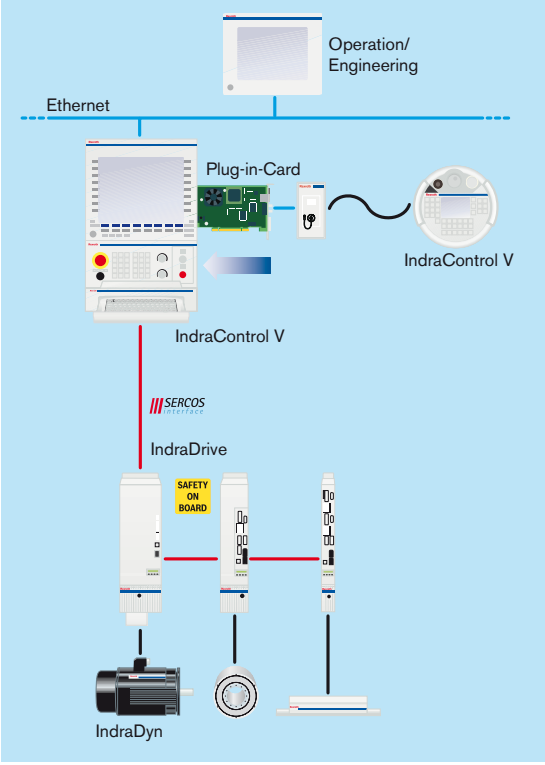
Ordering data for software and software options	
Description	**Type code**
Software DVD engineering framework IndraWorks	SWA-IWORKS-MTX-xxVRS-D0-DVD
Single-license IndraWorks (Operation)	SWL-IWORKS-MTX-xxVRS-D0-OPD
Multiple-license (25) IndraWorks (Operation)	SWL-IWORKS-MTX-xxVRS-D0-OPD*M25
Single-license IndraWorks (Operation and Engineering)	SWL-IWORKS-MTX-xxVRS-D0-OPDENG
Multiple-license (25) IndraWorks (Operation and Engineering)	SWL-IWORKS-MTX-xxVRS-D0-OPDENG*M25
Single-license IndraWorks (Offline Programming)	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR
Multiple-license (25) IndraWorks (Offline Programming)	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR*M25
Single-license IndraWorks (OPC server)	SWL-IWORKS-MTX-xxVRS-D0-COM
Multiple-license (25) IndraWorks (OPC server)	SWL-IWORKS-MTX-xxVRS-D0-COM*M25
Option technology package – turning 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-TUR1
Option shop programming – turning (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-SFPT
Option technology package – milling 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-BAZ1
Option shop programming – milling 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-SFPM
Option technology package – shape cutting	SWS-MTX***-RUN-NNVRS-D0-SHC1
Option technology package – electronic transmission	SWS-MTX***-RUN-NNVRS-D0-GEAR
Option language extension, Chinese (simplified), Czech, French, Hungarian, Italian, Korean, Polish, Portuguese, Russian, Spanish, Swedish, Turkish	Details available on request

Ordering data hardware	
Description	**Type code**
Basic device IndraControl VS with IndraControl P40 plug-in card	CFG-VSN01E1-HC-NN-NN-NN-NN-NN
Basic device IndraControl VS with IndraControl P40 plug-in card and high-speed I/O interface (8 I/8 O)	CFG-VSN01E1-HC-IC-NN-NN-NN-NN

Ordering data for documentations	
Description	**Type code**
System description, project planning	DOK-MTX***-SYS*DES*Vxx-PRxx-EN-P
Software installation	DOK-MTX***-SOFTINS*Vxx-IBxx-EN-P
Project planning, PLC interface	DOK-MTX***-PLC*INT*Vxx-PRxx-EN-P
Parameter description, machine parameters	DOK-MTX***-MA*PAR**Vxx-PAxx-EN-P
Standard NC operation	DOK-MTX***-NC*OP***Vxx-AWxx-EN-P
Functional description	DOK-MTX***-NC*FUNC*Vxx-FKxx-EN-P
Application description, programming manual	DOK-MTX***-NC**PRO*Vxx-AWxx-EN-P
Operating and programming manual, turning and milling shop programming	DOK-MTX***-SF*PROG*Vxx-AWxx-EN-P
Diagnosis messages	DOK-MTX***-DIAGMES*Vxx-IFxx-EN-P
Project planning, OPC interface	DOK-MTX***-OPC*INT*Vxx-PRxx-EN-P
Application description IndraWorks	DOK-IWORKS-ENGINEE*Vxx-AWxx-EN-P
Application description IndraWorks simulator	DOK-IWORKS-SIMU****Vxx-AWxx-EN-P
Application description IndraWorks vizualization	DOK-IWORKS-HMI*Vxx****-AWxx-EN-P
Application description IndraWorks remote maintenance	DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P
Installation Instructions, IndraWorks Software Installation	DOK-IWORKS-SOFTINS*Vxx-IBxx-EN-P

xx = software/firmware version

IndraMotion MTX performance/advanced – system configuration



System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
Control components		
Control hardware	IndraControl P60, IndraControl P70	–
Function module	DeviceNet master, CANopen master, High speed I/O	–
Standard interfaces	SERCOS 2, PROFIBUS, Ethernet TCP/IP, EtherNet/IP	–
HMI/PC technology		
Visualization devices, controller-based	IndraControl VCP, VCH	106 – 113
Visualization devices, embedded PC	IndraControl VEP	114 – 119
Visualization devices, standard industrial PC	IndraControl VSP	122 – 125
	IndraControl VSB, VDP	130 – 141
Visualization devices, high-end industrial PC	IndraControl VPP	126 – 129
	IndraControl VPB, VDP	130 – 141
I/O modules		
Distributed input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Drives and motors		
Drive system	IndraDrive and IndraDyn	–

IndraMotion MTX performance/advanced – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware for IndraMotion MTX performance	FWA-CMP60*-MTX-xxVRS-NN
Firmware for IndraMotion MTX advanced	FWA-CMP70*-MTX-xxVRS-NN

Ordering data for software and software options	
Description	**Type code**
Software DVD engineering framework IndraWorks	SWA-IWORKS-MTX-xxVRS-D0-DVD
Single-license IndraWorks (Operation)	SWL-IWORKS-MTX-xxVRS-D0-OPD
Multiple-license (25) IndraWorks (Operation)	SWL-IWORKS-MTX-xxVRS-D0-OPD*M25
Single-license IndraWorks (Operation and Engineering)	SWL-IWORKS-MTX-xxVRS-D0-OPDENG
Multiple-license (25) IndraWorks (Operation and Engineering)	SWL-IWORKS-MTX-xxVRS-D0-OPDENG*M25
Single-license IndraWorks (Offline Programming)	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR
Multiple-license (25) IndraWorks (Offline Programming)	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR*M25
Single-license IndraWorks (OPC server)	SWL-IWORKS-MTX-xxVRS-D0-COM
Multiple-license (25) IndraWorks (OPC server)	SWL-IWORKS-MTX-xxVRS-D0-COM*M25
Option extended functions – interpolation groups with more than 4 axes for path control	SWW-IWORKS-MTX-xxVRS-D0-CD650
Option 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-D0-08A02C
Option technology package – turning 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-TUR1
Option shop programming – turning (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-SFPT
Option technology package – milling 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-BAZ1
Option shop programming – milling 1 (DE/EN)	SWS-MTX***-RUN-NNVRS-D0-SFPM
Option technology package – shape cutting	SWS-MTX***-RUN-NNVRS-D0-SHC1
Option technology package – electronic transmission	SWS-MTX***-RUN-NNVRS-D0-GEAR
Option language extension, Chinese (simplified) Czech, French, Hungarian, Italian, Korean, Polish, Portuguese, Russian, Spanish, Swedish, Turkish	Details available on request

Ordering data for hardware	
Description	**Type code**
Basic device IndraControl VS with IndraControl P60 plug-in card	CFG-VSN01E1-GC-NN-NN-NN-NN-NN
Basic device IndraControl VS with IndraControl P60 plug-in card and high-speed I/O interface (8 I/8 O)	CFG-VSN01E1-GC-IC-NN-NN-NN-NN
Basic device IndraControl VP with IndraControl P60 plug-in card	CFG-VPN01A1-GC-NN-NN
Basic device IndraControl VP with IndraControl P60 plug-in card and high-speed I/O interface (8 I/8 O)	CFG-VPN01A1-GC-IC-NN
Basic device IndraControl VP with IndraControl P60 plug-in card and DeviceNet master	CFG-VPN01A1-V1-GC-NN
Basic device IndraControl VP with IndraControl P60 plug-in card and DeviceNet master and high-speed I/O interface (8 I/8 O)	CFG-VPN01A1-V1-GC-IC

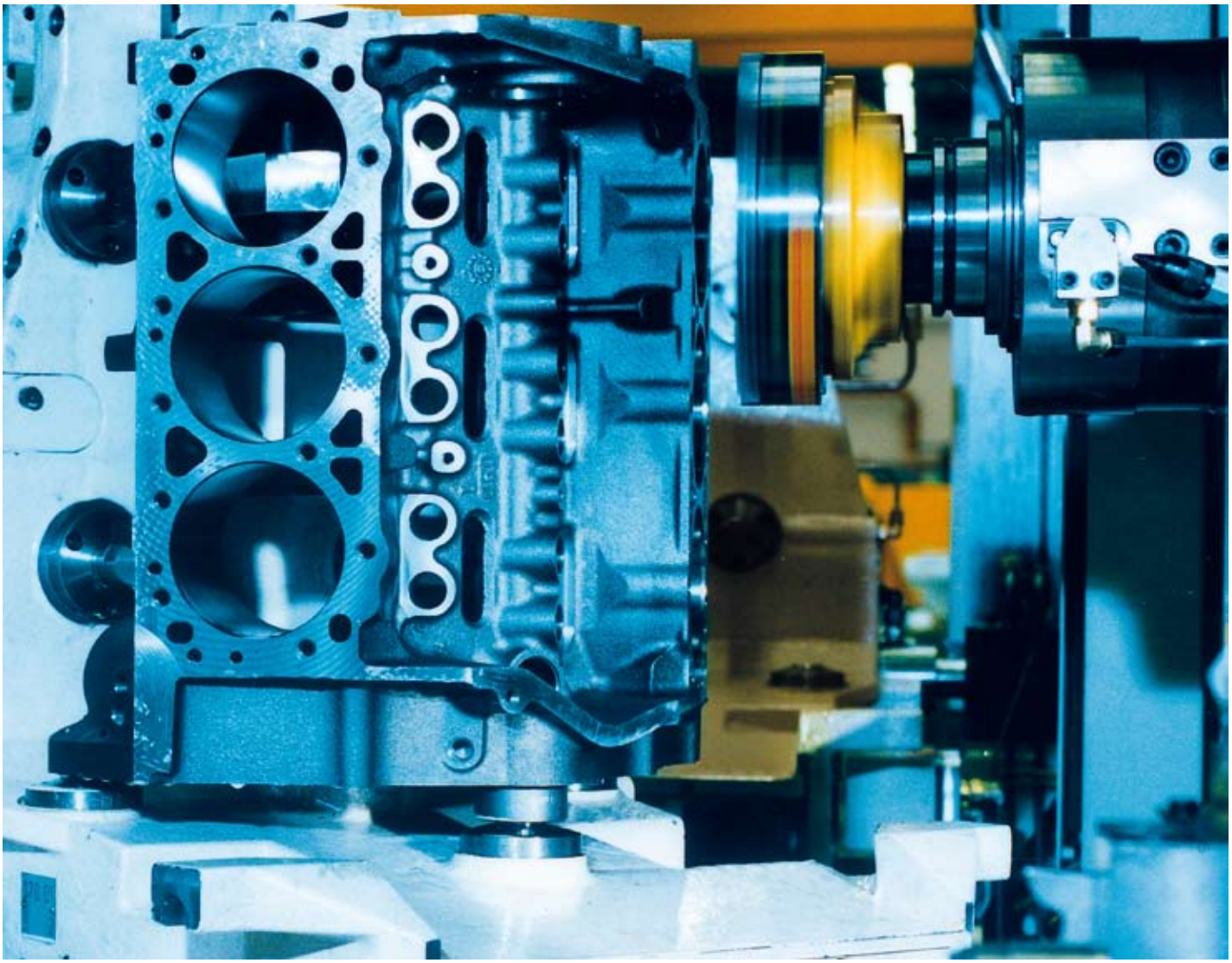
Ordering data for documentations	
Description	**Type code**
System description, project planning	DOK-MTX***-SYS*DES*Vxx-PRxx-EN-P
Software installation	DOK-MTX***-SOFTINS*Vxx-IBxx-EN-P
Project planning, PLC interface	DOK-MTX***-PLC*INT*Vxx-PRxx-EN-P
Parameter description, machine parameters	DOK-MTX***-MA*PAR**Vxx-PAxx-EN-P
Standard NC operation	DOK-MTX***-NC*OP***Vxx-AWxx-EN-P
Functional description	DOK-MTX***-NC*FUNC*Vxx-FKxx-EN-P
Application description, programming manual	DOK-MTX***-NC**PRO*Vxx-AWxx-EN-P
Operating and programming manual, turning and milling shop programming	DOK-MTX***-SF*PROG*Vxx-AWxx-EN-P
Diagnosis messages	DOK-MTX***-DIAGMES*Vxx-IFxx-EN-P
Project planning, OPC interface	DOK-MTX***-OPC*INT*Vxx-PRxx-EN-P

xx = software/firmware version

IndraMotion MTX performance/advanced – ordering data

Ordering data for documentations	
Description	**Type code**
Application description IndraWorks	DOK-IWORKS-ENGINEE*Vxx-AWxx-EN-P
Application description IndraWorks simulator	DOK-IWORKS-SIMU****Vxx-AWxx-EN-P
Application description IndraWorks vizualization	DOK-IWORKS-HMI*Vxx****-AWxx-EN-P
Application description IndraWorks remote maintenance	DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P
Installation Instructions, IndraWorks Software Installation	DOK-IWORKS-SOFTINS*Vxx-IBxx-EN-P

xx = software/firmware version



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

The integrated IndraMotion MLD automation solution is based on the scalable IndraDrive platform. High-capacity motion control and PLC functions are joined to form a complete automation system for modern machine concepts. Higher-order controls are no longer necessary. This permits a clear and fast solution of complex control and motion tasks.

The drive-based solution is scalable as a single-axis control for simple applications as well as a multi-axis control for applications with a maximum of 10 axes. Ready-to-use function libraries simplify the use of intelligent drive functions of IndraDrive. 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 the automation design.

Your benefits

- Compact system for modular distributed architectures
- Scalable as single-axis or multi-axis control
- Electronic synchronization of up to 10 servo-axes
- Ready-to-use function libraries according to PLCopen
- Integrated intelligent drive functions
- Optional interfaces for communication, safety and additional encoder
- Drive-integrated motion control and PLC according to IEC 61131-3
- Certified safety technology according to EN ISO 13849-1, category 3 PL d and EN 62061 SIL 2
- Intuitive engineering framework IndraWorks for project development, programming, visualization and diagnostics
- Software options with technology packages and turnkey solutions

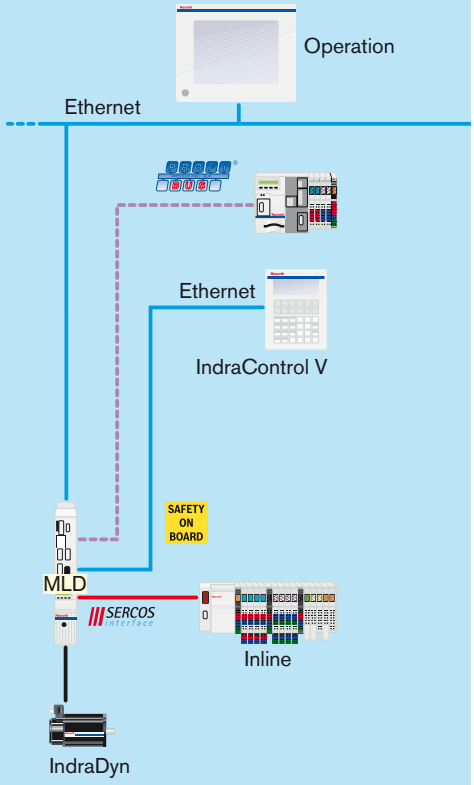
IndraMotion MLD from Rexroth helps you to integrate your valuable know-how directly in the drive, thus ensuring your competitive edge.

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

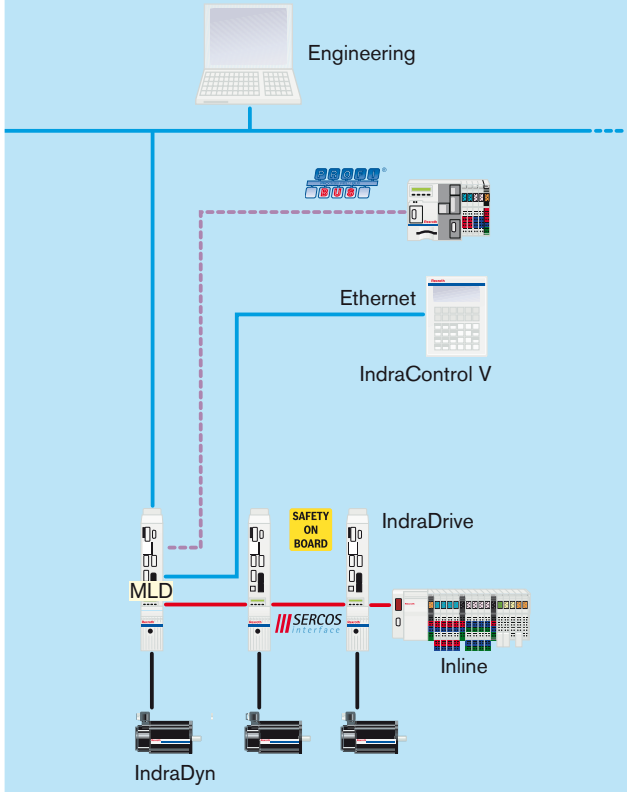
Your benefit

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		
Engineering framework	IndraWorks	Chapter 3.1
Visualization devices, controller-based and embedded PC	IndraControl VCP, VCH, VEP, VEH	Chapter 3.2
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

IndraMotion MLD – technical data

1	IndraMotion MLD control		MLD-S	MLD-M
1.1	Interfaces			
1.1.1	SERCOS III master (cross communication)	Option CCD	○	○
1.1.2	SERCOS III slave	Option S3	○	○
1.1.3	SERCOS 2 slave	Option SE	○	○
1.1.4	PROFIBUS slave	Option PB	○	○
1.1.5	DeviceNet slave	Option CO	○	○
1.1.6	PROFINET IO slave	Option ET	○	○
1.1.7	EtherNet/IP slave	Option ET	○	○
1.1.8	CANopen slave	Option CO	○	○
1.1.9	RS232	On board	●	●
1.1.10	Ethernet TCP/IP	Option CCD	○	○
1.2	On board diagnosis and settings			
1.2.1	Status display (boot, SERCOS, test)	Display or parameter	●	●
1.2.2	Errors, warnings, messages, system reset	Display or parameter	●	●
1.2.3	Ethernet settings (IP address)	Display or parameter	●	●
1.2.4	Voltage monitoring, watchdog		●	●
1.2.5	Relay output (ready for operation)		●	●
2	**Inputs and outputs**		**MLD-S**	**MLD-M**
2.1	On board			
2.1.1	Digital inputs		7 I	Depending on the number and type of control units and options used
2.1.2	Digital inputs/outputs, any adjustment		4 I or O	
2.1.3	Analog inputs and outputs		1 I/2 O	
2.1.4	Option MD1, digital I/O extension		12 I/8 O	
2.1.5	Option MD2, digital I/O extension		16 I/16 O	
2.1.6	Parallel interface, digital inputs/outputs		16 I/16 O	
2.1.7	Option MA1, analog I/O extension		2 I/2 O	
2.3	Distributed via fieldbus			
2.3.1	Inline (IP20)			
2.3.1.1	SERCOS III		○	○
3	**HMI**		**MLD-S**	**MLD-M**
3.1	IndraControl VCP, VCH (controller-based)	Ethernet TCP/IP	○	○
3.2	IndraControl VEP, VEH (embedded PC)	Ethernet TCP/IP	○	○
3.3	IndraControl VSP, VPP, VDP (industrial PC)	Ethernet TCP/IP	○	○
4	**Communication interfaces**		**MLD-S**	**MLD-M**
4.1	SERCOS 2		○	○
4.2	SERCOS III master (master axis grouping or cross communication)		○	○
4.3	SERCOS III slave		○	○
4.4	PROFIBUS-V1 slave		○	○
4.5	DeviceNet slave		○	○
4.6	Ethernet TCP/IP		●	●
4.7	PROFINET IO slave		○	○
4.8	EtherNet/IP adapter (slave)		○	○
4.9	EtherCAT slave		○	○
5	**Firmware functions**		**MLD-S**	**MLD-M**
5.1	Runtime system	Integrated motion logic systems	●	●
5.2	Logic control			
5.2.1	IndraLogic V1 kernel	Conforming with IEC 61131-3	●	●

● Default ▼ In preparation ○ Optional

5	Firmware functions		MLD-S	MLD-M
5.2.2	Freely configurable tasks	Cyclic, free-running, event-controlled	4	4
5.2.3	External event tasks	Synchronous with SERCOS cycle	●	●
		Synchronous with master communication (FKM-synchronous task)	●	●
		System-specific (task acc. to position controller cycle	●	●
5.2.4	Status/setting of cycle times	E.g. SERCOS cycle (1/2/4/8 ms)	●	●
5.2.5	Program organization	According to IEC 61131-3	●	●
5.2.6	Motion commands according to PLCopen (choice)	MC_MoveAbsolute	●	●
		MC_MoveRelative	●	●
		MC_TorqueControl	●	●
		MC_MoveVelocity	●	●
		MC_Home	●	●
		MC_CamIn, MC_CamOut	●	●
		MC_GearIn, MC_GearOut	●	●
5.2.7	Extended motion commands (choice)	MB_ReadListParameter	●	●
		MB_WriteListParameter	●	●
		MB_GearInPos	●	●
		MB_PhasingSlave	●	●
		MC_Reset	●	●
5.3	Motion control			
5.3.1	Number of axes	Real/virtual	1/1	10/1
5.3.2	Synchronization (ELS – electronic line shaft)	Multi-axis	●	●
5.3.2.1	Virtual axes	Virtual masters	●	●
5.3.2.2	Encoder axes	Real masters	●	●
5.3.2.3	Grouped axes	Cross-communication	●	●
5.3.2.4	Dynamic synchronization		●	●
5.3.2.5	Master axis grouping		●	●
5.3.2.6	Master axis cascading		●	●
5.3.3	Positioning	Single-axis	●	●
5.3.4	Electronic gears		●	●
5.3.5	Electronic cam		●	●
5.3.5.1	Intermediate point tables (in the drive)	Max. 128 intermediate points	4	4
5.3.5.2	Intermediate point tables (in the drive)	Max. 1,024 intermediate points	4	4
5.3.5.3	Electronic motion profile (in the drive)	Motion profiles, max. 8 segments	2	2
5.3.6	Torque control		●	●
5.3.7	Velocity control		●	●
5.3.8	Diagnostics	Status, warnings, errors		
5.3.8.1	Function blocks		●	●
5.3.8.2	Parameter access to diagnostics memory		●	●
5.3.8.3	Locally via display		●	●
5.3.8.4	Axis monitoring		●	●
5.3.8.5	Diagnostics memory		●	●
5.4	Technology functions (choice)			
5.4.1	Register control		●	●
5.4.2	Flying cut-off	In connection with IndraDrive firmware option: MA	●	●
5.4.3	Probe		●	●
5.4.4	Cross cutter	In connection with IndraDrive firmware option: MA	●	●

● Default ▼ In preparation ○ Optional

IndraMotion MLD – technical data

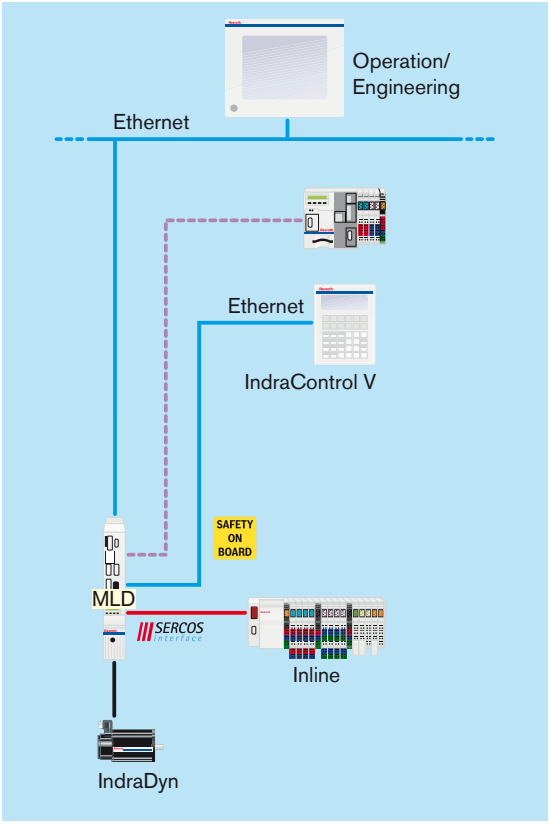
5	Firmware functions		MLD-S	MLD-M
5.4.5	Winder	In connection with IndraDrive firmware option: MA	●	●
5.4.6	Tension control	In connection with IndraDrive firmware option: MA	●	●
6	**Engineering framework IndraWorks**		**MLD-S**	**MLD-M**
6.1	General information			
6.1.1	Multilinguality of framework		●	●
6.1.2	Multilinguality of projects		●	●
6.1.3	Export/import of texts of the PLC projects		●	●
6.1.4	Firmware management		●	●
6.1.5	Deactivating/parking drives in the project		○	○
6.1.6	Automatic detection of drives		●	●
6.1.7	Switching between online and offline modes		●	●
6.1.8	Automatic system monitoring	Display of messages and errors	●	●
6.1.9	Real-time logic analyzer		●	●
6.1.10	Oscilloscope function		●	●
6.1.10.1	Graphical output with zoom function		●	●
6.1.10.2	Display of signal values of drives		●	●
6.1.10.3	Scaling		●	●
6.1.10.4	Multi-axis measurement		▼	▼
6.1.10.5	Recording of PLC variables		●	●
6.1.10.6	Measuring with/without trigger		●	●
6.2	Configuration and project planning			
6.2.1	System configurator		●	●
6.2.2	Device library for controls, visualization, peripherals		●	●
6.2.3	Commissioning wizards		●	●
6.2.4	Project navigator		●	●
6.2.5	I/O configurator	SERCOS III Block I/O	●	●
6.2.6	Fieldbus configurator		●	●
6.2.7	Project archiving		●	●
6.2.8	Parameter monitor for controls and drives		●	●
6.2.9	Offline parameterization of controls and drives		●	●
6.2.10	Cam editor		●	●
6.2.10.1	Graphical creation of cam		●	●
6.2.10.2	Motion laws according to VDI 2143		●	●
6.2.10.3	Interpolation point calculation	Linear, square, sinusoidal polynomial up to 8th degree, trapezoidal	●	●
6.2.10.4	Analytic cam for motion profiles		●	●
6.2.10.5	Wizards for specific applications		○	○
6.2.10.6	Import/export		●	●
6.3	Programming			
6.3.1	Graphical editors		●	●
6.3.1.1	SFC – Sequential Function Chart		●	●
6.3.1.2	LD – Ladder Diagram		●	●
6.3.1.3	FBD – Function Block Diagram		●	●
6.3.1.4	CFC – Continuous Function Chart		●	●
6.3.2	Textual editors		●	●
6.3.2.1	IL – Instruction List		●	●
6.3.2.2	ST – Structured Text		●	●
6.3.3	Data types			

● Default ▼ In preparation ○ Optional

6	Engineering framework IndraWorks		MLD-S	MLD-M
6.3.3.1	Standard according to IEC 61131-3	Incl. LREAL	●	●
6.3.3.2	User-defined: arrays, structures, enumeration, alias, pointer		●	●
6.3.4	Special editor features			
6.3.4.1	Syntax coloring		●	●
6.3.4.2	Multiple undo/redo		●	●
6.3.4.3	Context-sensitive input help		●	●
6.3.4.4	Context-sensitive menus		●	●
6.3.4.5	Auto-declaration		●	●
6.3.5	Library management		●	●
6.3.6	Libraries			
6.3.6.1	GAT – Generic Application Template		●	●
6.3.6.2	System		●	●
6.3.6.3	PLCopen (see Section 5.2)		●	●
6.3.6.4	Technology (see Section 5.4)		●	●
6.3.7	Online debugging and commissioning			
6.3.7.1	Monitoring of variables	Trace	●	●
6.3.7.2	Forcing of variables and variable sets		●	●
6.3.7.3	Project debugging		●	●
6.3.7.4	Power flow	Sequential check	●	●
6.3.7.5	Online exchange of function blocks		●	●
6.3.7.6	Offline simulation of PLC variables		●	●
6.3.7.7	Parameter monitor		●	●
6.3.8	Offline programming		●	●
6.3.9	Structures of axis data		●	●

● Default ▼ In preparation ○ Optional

IndraMotion MLD – system configuration



System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
HMI/PC technology		
Visualization devices, controller-based and embedded PC	IndraControl VCP, VCH, VEP, VEH	106 – 121
Standard interfaces	Ethernet TCP/IP, PROFIBUS, RS232/485	–
I/O modules		
Centralized and distributed input/output modules in IP20	Inline	164 – 215
Standard interfaces	SERCOS III, SERCOS 2, INTERBUS, PROFIBUS, DeviceNet	–
Drives and motors		
Control/drive system	IndraDrive and IndraDyn	–
Standard interfaces	SERCOS III, SERCOS 2, PROFIBUS	–

IndraMotion MLD – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware IndraDrive BASIC with option TF (with PLC capable for technology functions)	FWA-INDRV*-MPB-xxVRS-xx-x-xxx-TF
Firmware IndraDrive ADVANCED with option ML (with PLC capable for technology functions)	FWA-INDRV*-MPH-xxVRS-xx-x-xxx-ML
Firmware IndraDrive ADVANCED with option MA (with PLC capable for extensive technology functions)	FWA-INDRV*-MPH-xxVRS-D5-1-ALL-MA
Technology function Rollfeed Standard for IndraMotion MLD-S, based on IndraDrive ADVANCED	FWS-MLDTFA-RFS-xxVRS-D0
Technology function Rollfeed Standard for IndraMotion MLD-S, based on IndraDrive BASIC	FWS-MLDTFB-RFS-xxVRS-D0
Technology function Rollfeed Extended for IndraMotion MLD-S, based on IndraDrive ADVANCED	FWS-MLDTFA-RFE-xxVRS-D0
Technology function Flying Shear for IndraMotion MLD-S, based on IndraDrive ADVANCED	FWS-MLDTFA-SPF-xxVRS-D0
Technology function Sequential Motion Control for IndraMotion MLD-S, based on IndraDrive ADVANCED	FWS-MLDTFA-SMC-xxVRS-D0

Ordering data for software	
Description	**Type code**
Software DVD engineering framework IndraWorks for IndraDrive drives (parameterization)	SWA-IWORKS-D*-xxVRS-D0-DVD**-COPY
Software DVD engineering framework IndraWorks for IndraDrive drives (service tool)	SWA-IWORKS-DS*-xxVRS-D0-DVD**-COPY
Software DVD engineering framework IndraWorks for IndraMotion MLD	SWA-IWORKS-MLD-xxVRS-D0-DVD**-COPY
Single-license IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0
Software CD technology functions for IndraMotion MLD	SWA-IM*MLD-LTE-xxVRS-D0-CD650-COPY
Software CD technology functions for IndraMotion for Handling	SWA-IM*ML*-LHA-xxVRS-D0-CD650-COPY

Ordering data for hardware	
Description	**Type code**
Control and drive platform	See product catalog “Drive System Rexroth IndraDrive”

Ordering data for documentations	
Description	**Type code**
IndraMotion MLD, first Steps	DOK-IM*-F*STEP**V**-KBxx-EN-P
Function description, IndraMotion MLD, library description e.g. PLCopen function blocks	DOK-INDRV*-MLD-SYSLIB*-FKxx-EN-P
Application description, IndraMotion MLD	DOK-INDRV*-MLD-**VRS**-AWxx-EN-P
Function description, Rollfeed Standard	DOK-IM*MLD-TF*RFS**Vxx-FKxx-EN-P
Function description, Rollfeed Extended	DOK-IM*MLD-TF*RFE**Vxx-FKxx-EN-P
Function description, Synchronous Process Flying Shear	DOK-IM*MLD-TF*SPF**Vxx-FKxx-EN-P
Function description, Sequential Motion-Control	DOK-IM*MLD-TF*SCM**Vxx-FKxx-EN-P
Application description, IndraMotion MLD, Technology functions	DOK-IM*-TECHFB**Vxx-AWxx-EN-P
Application description, IndraWorks Engineering	DOK-IWORKS-ENGINEE*Vxx-AWxx-EN-P
Function description, IndraWorks tool CamBuilder	DOK-IWORKS-CAMBUIL*Vxx-FKxx-EN-P
Function description, library description MX_Technology, MX_Packaging	DOK-IM*MX*-TF*TECH*Vxx-FKxx-EN-P
Reference book, Technology functions	DOK-IM*ML*-TF*GEN**Vxx-RExx-EN-P
Reference book, Technology basic libraries	DOK-IM*ML*-TF*BASE*Vxx-RExx-EN-P
Application description, Generic Application Template (GAT)	DOK-IM*MLC-TF*GAT**Vxx-APxx-EN-P
Application description, Modbus library	DOK-IL*1G*-MOD*TCP*Vxx-AWxx-EN-P
Application description, OPC server	DOK-IM*ML*-OPC*COM*Vxx-AWxx-EN-P

xx = IndraDrive configuration respectively software/firmware version

IndraMotion MLC – controller-based solution with motion, robot and logic control

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

By combining motion, robot and logic controls with technology functions, you can synchronize multi-axis applications very easily – freely scalable for central or decentralized solutions with a flexible control platform. Motion functions, such as master axes, electronic gears, cam disks and the innovative FlexProfile for complex motion sequences, can be used quickly and transparently. Robot control provides full functionality for multi-axis path interpolation in space. Ready-to-use kinematics with the appropriate transformations and integrated belt synchronisation help you to implement your applications. The engineering framework IndraWorks with intuitive operation and the PLCopen-conforming software interface with standardized function blocks according to IEC 61131-3 facilitate integration in various machine designs.

Your benefits

- Quick integration in various processes, machines and plants
- Compact and powerful control platform IndraControl L
- Scalable for centralized and distributed architectures with maximum performance
- Open communication interfaces for integration in heterogeneous control topologies
- Integrated runtime system with motion, robot and logic controls
- Extensive software libraries in conformity with IEC 61131-3 and PLCopen
- Branch-specific library functions
- Innovative motion function FlexProfile for complex motion sequences
- Integrated software framework IndraWorks for seamless engineering workflow

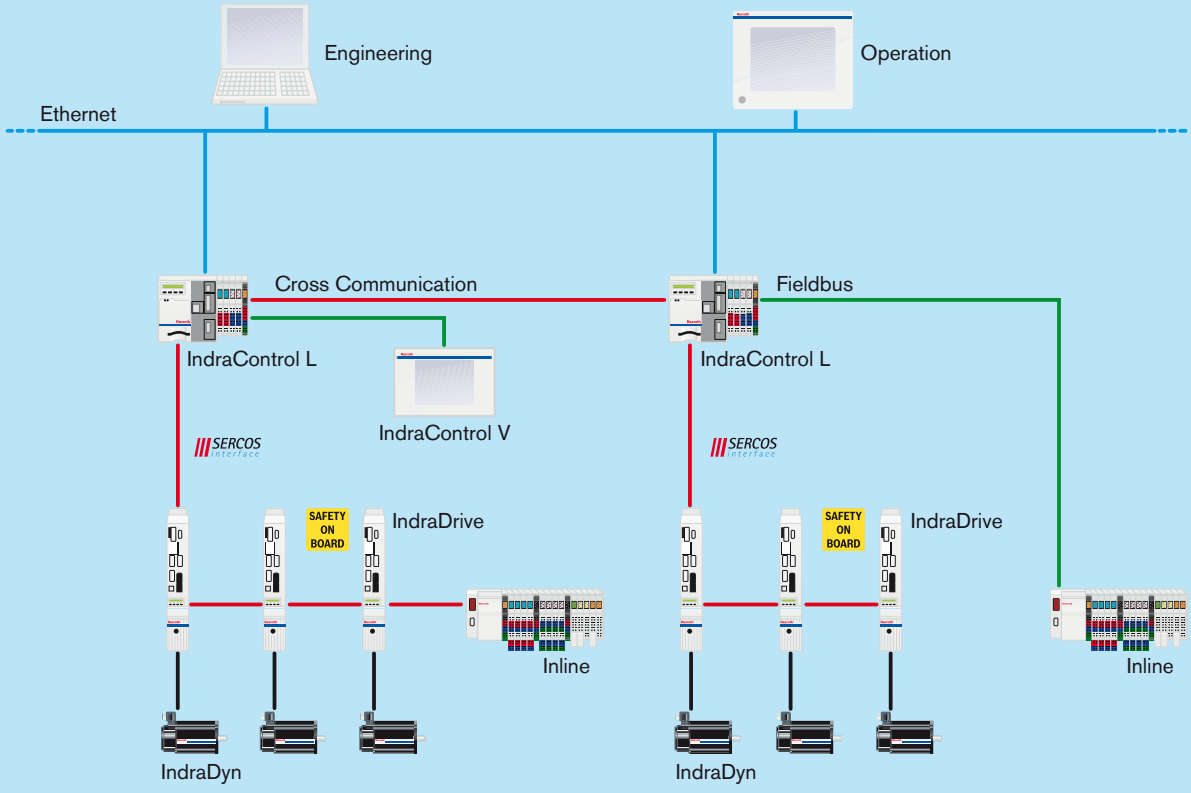
IndraMotion MLC is the integrated controller-based system solution from Rexroth. Ready-to-use technology functions accelerate engineering, for example in packaging and handling applications.

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		
Engineering framework	IndraWorks	Chapter 3.1
Visualization devices, controller-based	IndraControl VCP, VCH	Chapter 3.2
Visualization devices, embedded PC	IndraControl VEP	Chapter 3.2
Visualization devices, standard industrial PC	IndraControl VSP	Chapter 3.2
Control hardware	IndraControl L	Chapter 3.3
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

IndraMotion MLC – technical data

1	Drive system		1G[1]		2G[2]		
			L40	L65	L25	L45	L65
1.1	IndraDrive	BASIC and ADVANCED with MPB/MPH/MPC firmware, dual-axis control units with MPD firmware	●	●	●	●	●
1.2	IndraDrive Mi	With MPD firmware	●	●	●	●	●
1.3	IndraDrive Cs		–	–	●	●	●
1.4	EcoDrive Cs		●	●	●	●	●
1.5	SERCOS Pack-Profile		●	●	●	●	●
1.6	HNC100.3	Hydraulic drive	●	●	●	●	●
1.7	Master communication						
1.7.1	SERCOS III		○	●	●	●	●
1.7.2	SERCOS 2		●	○	○	○	○
1.7.3	Min. SERCOS cycle time		1 ms	1 ms	1 ms	1 ms	0.25 ms
1.7.4	Min. motion cycle time		1 ms	1 ms	2 ms	1 ms	1 ms
2	**IndraControl L control**		**1G[1]**		**2G[2]**		
			L40	**L65**	**L25**	**L45**	**L65**
2.1	Interfaces						
2.1.1	SERCOS III	On board	–	●	●	●	●
2.1.2	SERCOS 2	On board	●	–	–	–	–
2.1.3	PROFIBUS master	On board	●	●	–	●	●
2.1.4	PROFIBUS slave	On board	●	–	–	●	●
2.1.5	RS232	On board	●	–	–	–	–
2.1.6	Ethernet 10/100 MBit/s	On board	●	●	●	●	●
2.2	On board diagnosis 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	LED	●	●	●	●	●
2.2.5	Relay output (ready for operation)	LED	●	●	●	●	●
2.3	Function modules						
2.3.1	Max. number		4	4	2	4	4
2.3.2	SERCOS III/cross communication of master axes (ELS)	Function module	○	○	○	○	○
2.3.3	SERCOS 2/cross communication of master axes (ELS)	Function module	○	○	○	○	○
2.3.4	PROFIBUS master	Function module	○	○	–	–	–
2.3.5	Real-time Ethernet/PROFIBUS master/slave	Function module	–	–	▼	▼	▼
2.3.6	Real-time Ethernet/DeviceNet	Function module	–	–	▼	▼	▼
2.3.7	DeviceNet master	Function module	○	○	–	–	–
2.3.8	Programmable limit switch	Function module	○	○	○	○	○
2.3.9	SRAM	Function module for robot control	○	○	○	○	○
2.3.10	FAST I/O	Function module	○	○	○	○	○
3	**Inputs and outputs**		**1G[1]**		**2G[2]**		
			L40	**L65**	**L25**	**L45**	**L65**
3.1	On board						
3.1.1	High-speed digital inputs	Interrupt capability, typ. 50 µs	8	8	–	8	8
3.1.2	High-speed digital outputs	0.5 A, typ. 500 µs	8	8	–	8	8
3.2	Local						
3.2.1	Function module FAST I/O – high-speed digital inputs	Interrupt capability, typ. 40 µs	8/16	8/16	8/16	8/16	8/16

● Default ▼ In preparation ○ Optional – Not existing

[1] based on the PLC kernel of the 1st generation

[2] based on the PLC kernel of the 2nd generation

3	Inputs and outputs		1G[1]		2G[2]		
			L40	L65	L25	L45	L65
3.2.2	Function module FAST I/O – high-speed digital outputs	Max. 0,5 A, typ. 70 µs	8/16	8/16	8/16	8/16	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	SERCOS III	On board	–	–	●	●	●
3.3.1.2	PROFIBUS	On board/function module	○	○	○	●	●
3.3.1.3	DeviceNet	Function module	○	○	▼	▼	▼
3.3.2	Fieldline (IP67)						
3.3.2.1	PROFIBUS	On board/function module	○	○	○	○	○
3.3.2.2	DeviceNet	Function module	○	○	▼	▼	▼
3.3.3	IndraControl S67 (IP67)						
3.3.3.1	SERCOS III	On board/function module	–	–	▼	▼	▼
3.3.3.2	PROFIBUS	On board/function module	○	○	▼	▼	▼
3.3.3.3	DeviceNet	Function module	–	–	▼	▼	▼
4	**HMI**		**1G[1]**		**2G[2]**		
			L40	**L65**	**L25**	**L45**	**L65**
4.1	IndraControl VCP (controller-based)						
4.1.1	Ethernet		○	○	○	○	○
4.1.2	PROFIBUS		○	○	○	○	○
4.1.3	DeviceNet		○	○	▼	▼	▼
4.2	IndraControl VEP (embedded PC)	Ethernet TCP/IP, OPC	○	○	○	○	○
4.3	IndraControl VSP, VPP, VSB, VPB, VDP (industrial PC)	Ethernet TCP/IP, OPC	○	○	○	○	○
5	**Communication interfaces**		**1G[1]**		**2G[2]**		
			L40	**L65**	**L25**	**L45**	**L65**
5.1	SERCOS III (motion and peripherals)	Real-time motion bus	○	●	●	●	●
5.2	SERCOS 2	Real-time Ethernet bus	●	○	○	○	○
5.3	Master axis grouping						
5.3.1	SERCOS III	C2C, cross communication	○	○	○	○	○
5.3.2	SERCOS 2		○	○	○	○	○
5.3.3	Number of controls in the group		64	64	64	64	64
5.4	Control grouping	Ethernet TCP/UDP/IP	●	●	●	●	●
5.5	PROFIBUS-V1 master/slave	E.g. peripherals, HMI	●/●	●/–	○/○	●/●	●/●
5.6	DeviceNet master (explicit/implicit messaging)	E.g. peripherals, HMI	○	○	▼	▼	▼
5.7	Ethernet TCP/IP	E.g. HMI, engineering	●	●	●	●	●
5.8	PROFINET IO controller/device		–/–	–/–	○/○	○/○	○/○
5.9	EtherNet/IP scanner/adapter		–/●	–/●	○/○	○/○	○/○
6	**Firmware functions**		**1G[1]**		**2G[2]**		
			L40	**L65**	**L25**	**L45**	**L65**
6.1	Runtime system	Integrated motion logic system	●	●	●	●	●
6.2	Logic control						
6.2.1	IndraLogic 1G kernel	Conforming with IEC 61131-3	●	●	–	–	–
6.2.2	IndraLogic 2G kernel	Conforming with IEC 61131-3 with extensions	–	–	●	●	●
6.2.3	Freely configurable tasks	Cyclic, free-running, event-controlled	8	8	8	8	8
6.2.4	External event tasks	Synchronous with SERCOS cycle	1	1	1	1	1
		System-specific (e.g. error reaction)	1	1	1	1	1

● Default ▼ In preparation ○ Optional – Not existing

[1] based on the PLC kernel of the 1st generation

[2] based on the PLC kernel of the 2nd generation

IndraMotion MLC – technical data

6	Firmware functions		1G[1]		2G[2]		
			L40	L65	L25	L45	L65
6.2.5	SERCOS communication cycle time setting						
6.2.5.1	SERCOS cycle		●	●	●	●	●
6.2.5.2	Motion cycle		–	–	●	●	●
6.2.6	Program organization	According to IEC 61131-3	●	●	●	●	●
6.2.7	Motion commands according to PLCopen (choice)	MC_MoveAbsolute	●	●	●	●	●
		MC_MoveRelative	●	●	●	●	●
		MC_MoveVelocity	●	●	●	●	●
		MC_Home	●	●	●	●	●
		MC_CamIn, MC_CamOut	●	●	●	●	●
		MC_GearIn, MC_GearOut	●	●	●	●	●
6.2.8	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	64	16	32	64
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	●	●	●	●	●
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	Intermediate point tables (in the drive)	Max. 1,024 intermediate points	4	4	4	4	4
6.3.5.2	Electronic motion profile (in the control)	Motion profiles, max. 16 segments	2	2	2	2	2
6.3.5.3	FlexProfile (in the control)	Motion profiles, master-/time-based, max. 16 segments	4	4	4	4	4
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. capacity, encoders, limit values	●	●	●	●	●
6.3.6.5	Diagnostics memory	64 kB, max. 999 messages	●	●	●	●	●
6.4	Robot control						
6.4.1	Number of axes	Incl. auxiliary axes	16	16	16	16	16
6.4.2	Multi-axis kinematics		16	16	16	16	16
6.4.3	Kinematics transformations		●	●	●	●	●
6.4.4	LINEAR, CIRCULAR, PTP types of interpolation		●	●	●	●	●
6.4.5	Configurable block transitions		●	●	●	●	●

● Default ▼ In preparation ○ Optional – Not existing

[1] based on the PLC kernel of the 1st generation

[2] based on the PLC kernel of the 2nd generation

6	Firmware functions		1G[1]		2G[2]		
			L40	L65	L25	L45	L65
6.4.6	Override		●	●	●	●	●
6.4.7	Teach-in function		●	●	●	●	●
6.4.8	Approximate positioning		●	●	●	●	●
6.4.9	Late blending		–	–	●	●	●
6.4.10	Belt synchronization		●	●	●	●	●
6.4.11	Jogging/single step		–	–	●	●	●
6.4.12	Speed limitation	For path and axes	●	●	●	●	●
6.4.13	Acceleration limitation	For path and axes	●	●	●	●	●
6.4.14	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	Programmable limit switch		●	●	●	●	●
6.5.6	Cross cutter		●	●	●	●	●
6.5.7	Sag control		●	●	●	●	●
6.5.8	Winder		●	●	●	●	●
6.5.9	Tension control		●	●	●	●	●
6.6	IndraMotion service tool	Web-based engineering	–	–	●	●	●
7	**Engineering framework IndraWorks**						
7.1	General information						
7.1.1	Multilinguality of framework				●		
7.1.2	Multilinguality of projects				●		
7.1.3	Export/import of texts of the PLC projects				●		
7.1.4	Firmware management				●		
7.1.5	Deactivating/parking drives in the project				●		
7.1.6	Automatic detection of drives				●		
7.1.7	Switching between online and offline modes				●		
7.1.8	Automatic system monitoring	Display of messages and errors			●		
7.1.9	Project comparison				●		
7.1.10	Online change				●		
7.1.11	Search/replace				●		
7.1.12	Cross references				●		
7.1.13	Represents of the project as a tree structure				●		
7.1.14	Log file				●		
7.2	Version control management (VCS)						
7.2.1	Version management				●		
7.2.2	Multi-user interface				●		
7.3	Configuration and project planning						
7.3.1	System configurator				●		
7.3.2	Device library for controls, drives, visualization, peripherals				●		
7.3.3	Assistants for commissioning of controls and drives				●		
7.3.4	Project navigator				●		
7.3.5	I/O configurator				●		

● Default ▼ In preparation ○ Optional – Not existing

[1] based on the PLC kernel of the 1st generation

[2] based on the PLC kernel of the 2nd generation

IndraMotion MLC – technical data

7	Engineering framework IndraWorks		
7.3.6	Fieldbus configurator		●
7.3.7	Project archiving		●
7.3.8	Parameter monitor for controls and drives		●
7.3.9	Offline parameterization of controls and drives		●
7.3.10	FlexProfile configurator		●
7.3.11	Cams editor		
7.3.11.1	Graphical creation of cams		●
7.3.11.2	Kinematic laws according to VDI 2143		●
7.3.11.3	Interpolation point calculation	Linear, square, sinusoidal, polynomial up to 8th degree, trapezoidal	●
7.3.11.4	Analytic cams for motion profiles		●
7.3.11.5	Wizards for specific applications		●
7.3.11.6	Import/export		●
7.3.11.7	Support of FlexProfile		●
7.3.12	Cinematics (robot control)		●
7.3.13	Extended project handling		●
7.4	Programming		
7.4.1	Graphical editors		
7.4.1.1	SFC – Sequential Function Chart	Time monitoring per step	●
		Error analysis	●
		Control flags	●
7.4.1.2	LD – Ladder Diagram		●
7.4.1.3	FBD – Function Block Diagram		●
7.4.1.4	CFC – Continuous Function Chart	Auto-routing of the connections	●
		Possibility of macros to structure large networks	●
7.4.2	Textual editors		
7.4.2.1	IL – Instruction List		●
7.4.2.2	ST – Structured Text		●
7.4.2.3	RCL – Robot Control Language	Sequential motion programming	●
7.4.3	Language elements		
7.4.3.1	Operators	According to IEC 61131-3	●
7.4.3.2	Operands	Constants, variables, addresses, functions	●
7.4.3.3	Bit access		●
7.4.3.4	Typed pointers		●
7.4.3.5	Object-oriented language extension		●
7.4.4	Data types		
7.4.4.1	Standard according to IEC 61131-3	Incl. LREAL	●
7.4.4.2	User-defined: arrays, structures, enumeration, alias, pointer		●
7.4.4.3	Robot control	POINT, JC_POINT, BELT, TEXT, ARRAY, WC_FRAME, FILE	●
7.4.5	Special editor features		
7.4.5.1	Syntax coloring		●
7.4.5.2	Semantic coloring		●
7.4.5.3	Multiple undo/redo		●
7.4.5.4	Context-sensitive input help		●
7.4.5.5	Context-sensitive menus		●
7.4.5.6	Auto-declaration		●
7.4.5.7	Auto-declaration with type identification		●

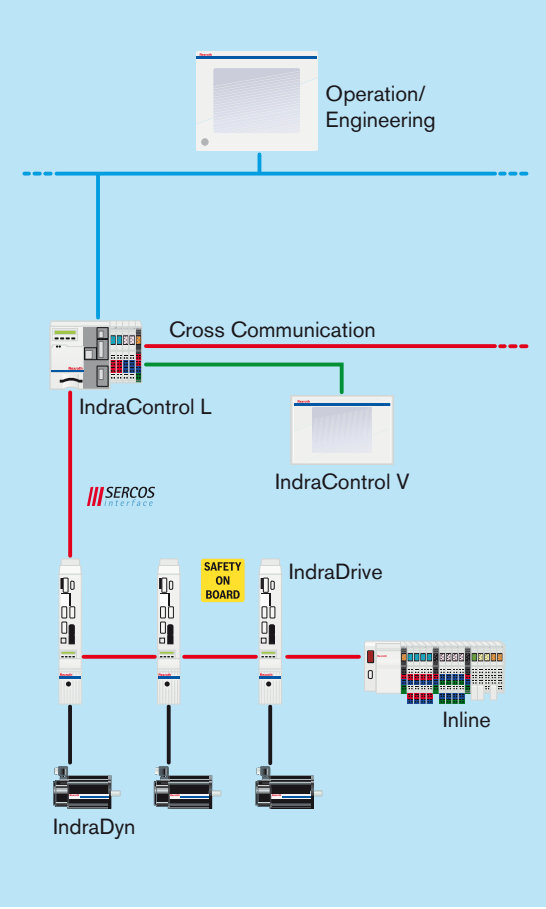
● Default ▼ In preparation ○ Optional – Not existing

IndraMotion MLC – technical data

7	Engineering framework IndraWorks		
7.4.5.8	Name spaces		●
7.4.5.9	Auto-complete (IntelliSens)	Structures, functions, function blocks	●
7.4.5.10	Pre compile for permanent syntax check		●
7.4.5.11	Folding	In/out-fading of program blocks and structures	●
7.4.5.12	Extended searching and replacing		●
7.4.5.13	Smart coding	Auto-complete and auto-format	●
7.4.6	Library management		
7.4.6.1	Managed libraries	Several library versions in one project	●
7.4.6.2	License management		●
7.4.7	Libraries (choice)		
7.4.7.1	System functions		●
7.4.7.2	Communication		●
7.4.7.3	GAT/GATcompact – Generic Application Template	Modular project template for machine control	●
7.4.7.4	PLCopen (see Section 6.2)		●
7.4.7.5	Robot control		●
7.4.7.6	Technology (see Section 6.5)		●
7.4.8	Offline programming		●
7.4.9	Automatic variable declaration of the system components		●
7.4.10	Structure for access to control data		●
7.4.11	Structure for access to axis data		●
7.4.12	Structure for access to kinematic data		●
7.4.13	Structure for access to programmable limit switch data		●
7.4.14	Structure for access to probe data		●
7.4.15	Structure for access to oscilloscope data		●
7.5	Online debugging and commissioning		
7.5.1	Diagnostics		
7.5.1.1	Real-time logic analyzer		●
7.5.1.2	Oscilloscope function	Graphical output with zoom function	●
		Display of signal values of drives	●
		Scaling	●
		Measuring with/without trigger	●
7.5.2	Debugging		
7.5.2.1	Monitoring of variables	Trace	●
7.5.2.2	Forcing of variables and variable sets		●
7.5.2.3	Project debugging	Incl. robot control	●
7.5.2.4	Power flow	Sequential check	●
7.5.2.5	Online exchange of function blocks		●
7.5.2.6	Offline simulation of PLC variables		●
7.5.2.7	Parameter monitor		●
7.5.2.8	Writing of variables		●
7.5.2.9	Breakpoint		●
7.5.2.10	Single step operation		●
7.5.2.11	Single cycle operation		●
7.5.2.12	Sequence control		●

● Default ▼ In preparation ○ Optional – Not existing

IndraMotion MLC – system configuration



System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
Control components		
Control hardware	IndraControl L25	152
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	SERCOS III	158
	PROFIBUS master	158
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HMI/PC technology		
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I/O modules		
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Drives and motors		
Drive system	IndraDrive and IndraDyn	–
Standard interface	SERCOS 2 (IndraControl L40)	–
	SERCOS III (IndraControl L25, L45, L65)	–

IndraMotion MLC[1)] – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware for IndraControl L40	FWA-CML402-MLC-xxVRS-D0
Firmware for IndraControl L65	FWA-CML65*-MLC-xxVRS-D0

Ordering data for software	
Description	**Type code**
Software CD engineering framework IndraWorks	SWA-IWORKS-ML*-xxVRS-D0-CD650
Single-license IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0
Software CD technology functions for IndraMotion for Handling	SWA-IM*ML*-LHA-xxVRS-D0-CD650-COPY

Ordering data for hardware	
Description	**Type code**
Control component IndraControl L40	CML40.2-SP-330-NA-NNNN-NW
Control component IndraControl L65	CML65.1-3P-500-NA-NNNN-NW
Control component IndraControl L65 with SRAM	CML65.1-3P-504-NA-NNNN-NW
Function module SERCOS III	CFL01.1-R3
Function module cross communication (SERCOS 2)	CFL01.1-Q2
Function module PROFIBUS master	CFL01.1-P1
Function module DeviceNet master	CFL01.1-V1
Function module programmable limit switch	CFL01.1-N1
Function module Fast I/O	CFL01.1-E2
Function module SRAM	CFL01.1-Y1
Accessories fan	CAL01.1-F1
Accessories connector set	R-IB IL CML S01-PLSET
Accessories labelling field	R-IB IL FIELD 2

Ordering data for documentations	
Description	**Type code**
First steps	DOK-IM*MLC-F*STEP**Vxx-KBxx-EN-P
Functional description, PLCopen	DOK-IM*MLC-PLCOPEN*Vxx-FKxx-EN-P
Functional description, IndraMotion MLC	DOK-IM*MLC-SYSTEM**Vxx-FKxx-EN-P
Function blocks of the ML_Technology common library	DOK-IM*MLC-TECHCOM*Vxx-AWxx-EN-P
Function blocks of the ML_Technology library	DOK-IM*MLC-TECHFB**Vxx-AWxx-EN-P
Parameter description, IndraMotion MLC	DOK-IM*MLC-A*C*PAR*Vxx-PAxx-EN-P
Functional description, CamBuilder	DOK-IM*MLC-CAM*B***Vxx-FKxx-EN-P
Diagnostics, IndraMotion MLC	DOK-IM*MLC-DIAGN***Vxx-WAxx-EN-P
Function modules, IndraMotion MLC	DOK-IM*MLC-FM******Vxx-FKxx-EN-P
Technical function block for packaging applications	DOK-IM*MLC-TFB-IMPAVxx-AWxx-EN-P
Functional description, motion control	DOK-IM*MLC-RCL*BEF*Vxx-FKxx-EN-P
Function block of Generic-Application-Template (GAT)	DOK-IM*MLC-TF*GAT**Vxx-AWxx-EN-P
Axis and control parameters, IndraMotion MLC	DOK-IM*MLC-TF*AXISIFVxx-FKxx-EN-P

xx = software/firmware version

[1)] based on PLC kernel of the 1st generation

IndraMotion MLC[2)] – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware for IndraControl L25	FWA-CML25*-MLC-xxVRS-D0
Firmware for IndraControl L45	FWA-CML45*-MLC-xxVRS-D0
Firmware for IndraControl L65	FWA-CML65*-MLC-xxVRS-D0

Ordering data for software	
Description	**Type code**
Software DVD engineering framework IndraWorks	SWA-IWORKS-ML*-xxVRS-D0-DVD
Single-license IndraWorks Engineering	SWL-IWORKS-ML*-xxVRS-D0-ENG
Multiple-license (25) IndraWorks Engineering	SWL-IWORKS-ML*-xxVRS-D0-ENG*M25
Single-license IndraWorks Teamserver	SWL-IWORKS-ML*-xxVRS-D0-TEAMSERVER
Single-license IndraWorks OPC server	SWL-IWORKS-ML*-xxVRS-D0-COM
Multiple-license (25) IndraWorks OPC server	SWL-IWORKS-ML*-xxVRS-D0-COM*M25
Single-license IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0
Multiple-license (25) IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0-M25

Ordering data for hardware	
Description	**Type code**
Control component IndraControl L25	CML25-1-3N-400-NA-NNC1-NW
Control component IndraControl L45	CML45.1-3P-500-NA-NNNN-NW
Control component IndraControl L45 with SRAM	CML45.1-3P-504-NA-NNNN-NW
Control component IndraControl L65	CML65.1-3P-500-NA-NNNN-NW
Control component IndraControl L65 with SRAM	CML65.1-3P-504-NA-NNNN-NW
Function module SERCOS III	CFL01.1-R3
Function module cross communication (SERCOS 2)	CFL01.1-Q2
Function module Real-time Ethernet/PROFIBUS	CFL01.1-TP
Function module Real-time Ethernet/DeviceNet	CFL01.1-TD
Function module programmable limit switch	CFL01.1-N1
Function module Fast I/O	CFL01.1-E2
Function module SRAM	CFL01.1-Y1
Accessories fan	CAL01.1-F2
Accessories connector set	R-IB IL CML S01-PLSET
Accessories labelling field	R-IB IL FIELD 2

Ordering data for documentations	
Description	**Type code**
IndraMotion MLC, first steps	DOK-IM*MLC-F*STEP**Vxx-APxx-EN-P
Reference book, IndraMotion MLC/MLP PLCopen	DOK-IM*MLC-FUNLIB**Vxx-FKxx-EN-P
Parameter description, IndraMotion MLC/MLP	DOK-IM*MLC-PARAM***Vxx-PAxx-EN-P
Reference book, IndraMotion MLC, maintenance guide	DOK-IM*MLC-ERRCOD**Vxx-FKxx-EN-P
Reference book, IndraMotion MLC/MLP, diagnostics	DOK-IM*MLC-DIAG****Vxx-RExx-EN-P
Reference book, IndraMotion MLC, function modules	DOK-IM*MLC-FM******Vxx-RExx-EN-P
Reference book, IndraMotion MLC, Coordinated Motion RCL Programming Instruction	DOK-IM*MLC-RCL*PRO*Vxx-RExx-EN-P
Reference book, Technology basic libraries	DOK-IM*ML*-TF*BASE*Vxx-RExx-EN-P
Reference book, Technology functions	DOK-IM*ML*-TF*GEN**Vxx-RExx-EN-P
Function description, Technology function ML_TechCrank	DOK-IM*ML*-TF*CRK**Vxx-FKxx-EN-P
Reference book, IndraMotion MLC/MLP, system description	DOK-IM*ML*-SYSTEM**Vxx-RExx-EN-P

xx = software/firmware/hardware version

[2)] based on PLC kernel of the 2nd generation

IndraMotion MLC[2)] – ordering data

Ordering data for documentations	
Description	**Type code**
Application description, IndraMotion MLC/MLP, OPC communication	DOK-IM*ML*-OPC*COM*Vxx-AWxx-EN-P
Application manual, IndraMotion MLC/MLP, Generic Application Template	DOK-IM*MLC-TF*GAT**Vxx-APxx-EN-P
Application manual, IndraMotion for Printing & Converting upgrade from SYNAX 200	DOK-IM*PR*-UPGRADE*Vxx-APxx-EN-P
Application manual, IndraWorks IndraLogic 2G PLC Programming System	DOK-CONTRL-IL2GPRO*Vxx-APxx-EN-P
Function description, IndraWorks tool CamBuilder	DOK-IWORKS-CAMBUIL*Vxx-FKxx-EN-P
Application description, IndraWorks Engineering	DOK-IWORKS-ENGINEE*Vxx-AWxx-EN-P
Installation instructions, IndraWorks Software Installation	DOK-IWORKS-SOFTINS*Vxx-IBxx-EN-P
Application description, IndraWorks FDT container	DOK-IWORKS-FDT*CON*Vxx-AWxx-EN-P

xx = software/firmware/hardware version

[2)] based on PLC kernel of the 2nd generation

IndraMotion MLP – embedded-PC-based solution with motion and logic control

Allowing innovative automation in centralized system topologies, IndraMotion MLP provides compact solutions for all synchronized multi-axis applications. IndraMotion MLP offers an extremely powerful and economical solution with integrated motion and logic control as well as extensive HMI functionality.

IndraMotion MLP is based on the new IndraControl VEP control generation. Using PLCopen-conforming motion and technology modules, it is extremely easy to integrate motion functions in user programs. And the Ethernet-based communication standard SERCOS III helps you in establishing your system network without any difficulties – be it control, drives or I/O peripherals.

Your benefits

- Ideal system solution for centralized control topologies
- New and scalable embedded-PC device family IndraControl VEP
- Integrated runtime system with motion and logic control
- Extensive HMI functions
- Integrated communication interfaces, such as SERCOS III
- Flexible adjustment to applications through ready-to-use technology modules
- PLCopen-conforming function block libraries
- Innovative motion function FlexProfile for complex motion sequences
- Simple and seamless engineering workflow through the software framework IndraWorks

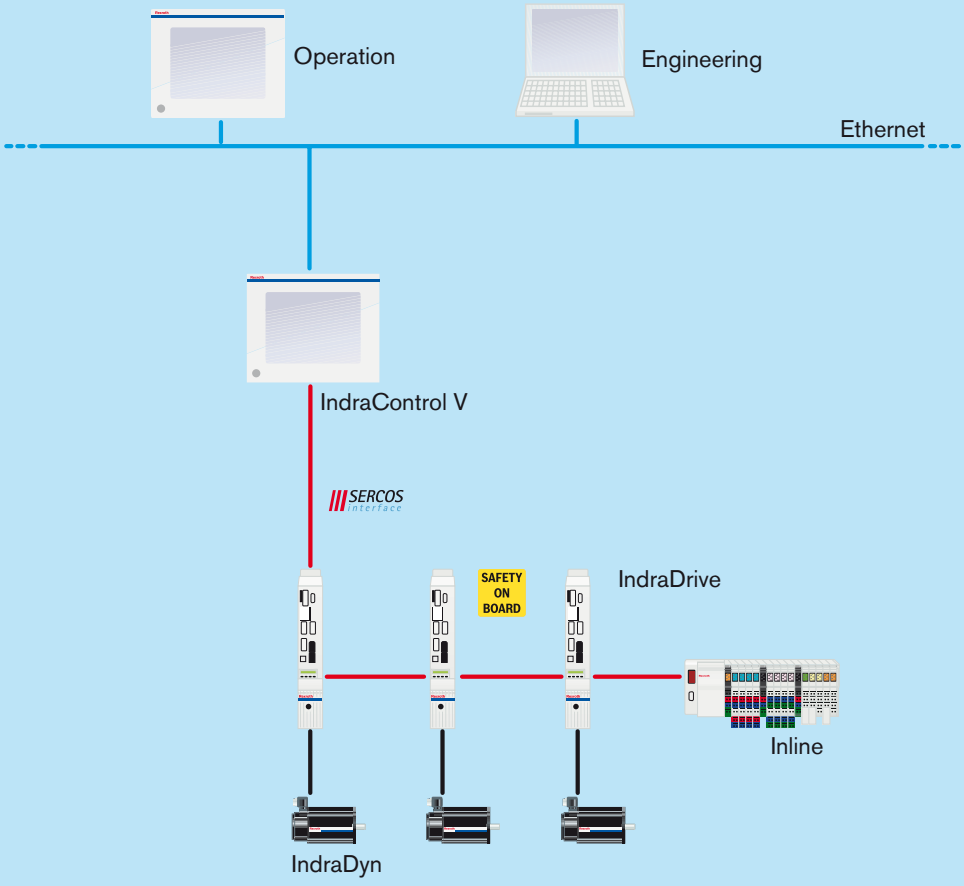
IndraMotion MLP, the innovative embedded-PC-based automation system from Rexroth, is the perfect system solution for all applications with centralized control topology.

Intelligent, economical and future-proof

- Innovative system solution for centralized control topologies
- Integrated motion and logic functionalities
- Ethernet-based real-time communication with SERCOS III

Your benefit

Motion-Logic
embedded-PC-based



IndraMotion MLP

IndraMotion MLP is the compact overall system solution with integrated motion and logic control. Based on the new generation of IndraControl V embedded PCs, it provides full functionality for all HMI requirements.

Additional information		
Engineering framework	IndraWorks	Chapter 3.1
Control hardware/visualization devices, embedded PC	IndraControl VEP	Chapter 3.2
Distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

IndraMotion MLP – technical data

1	**Drive system**		
1.1	IndraDrive	BASIC and ADVANCED with MPB/MPH/MPC firmware	●
		Dual-axis control units with MPD firmware	●
1.2	IndraDrive Mi	With MPB firmware	●
1.3	IndraDrive Cs		●
1.4	Drive communication		
1.4.1	SERCOS III		●
1.4.2	Min. SERCOS cycle time		1 ms
1.4.3	Min. motion cycle time		1 ms
2	**IndraControl VEP control**		
2.1	Interfaces		
2.1.1	SERCOS III	On board	●
2.1.2	SERCOS III cross communication	On board	▼
2.1.3	Real-time Ethernet	On board	●
2.1.4	Ethernet 10/100 MBit/s	On board	●
2.1.5	PROFIBUS master/slave	On board	●/▼
2.2	On board diagnosis and settings		
2.2.1	Status display (boot, SERCOS, test)	Display	●
2.2.2	Errors, warnings, messages, system reset	Display	●
2.2.3	Ethernet settings (IP address)	Display, soft keyboard	●
2.2.4	Voltage monitoring, watchdog		●
2.2.5	Relay output ready for operation		●
3	**Inputs and outputs**		
3.1	Inline (IP20)		
3.1.1	SERCOS III		○
3.1.2	PROFIBUS		○
3.2	Fieldline (IP67)		
3.2.1	PROFIBUS		○
3.3	IndraControl S67 (IP67)		
3.3.1	SERCOS III		▼
3.3.2	PROFIBUS		○
4	**HMI**		
4.1	IndraControl VEP	On board	●
5	**Communication interfaces**		
5.1	SERCOS III	Real-time Ethernet bus	●
5.2	SERCOS III cross communication		▼
5.2.1	Number of controls in the group		64 (▼)
5.3	Control grouping	Ethernet TCP/UDP/IP	●
5.4	PROFIBUS master/slave		●/▼
5.5	DeviceNet master/slave	Explicit/implicit messaging	▼/▼
5.6	Ethernet TCP/IP	E.g. HMI, engineering	●
5.7	PROFINET IO controller/device		▼/▼
5.8	EtherNet/IP scanner/adapter		▼/▼
6	**Firmware functions**		
6.1	Runtime system	Integrated motion logic system	●
6.2	Logic control		
6.2.1	IndraLogic 2G-Kernel	According to IEC 61131-3	●
6.2.2	Freely configurable tasks	Cyclic, free-running, event-controlled	8

● Default ▼ In preparation ○ Optional

6	Firmware functions		
6.2.3	External event tasks	Synchronous with SERCOS cycle	1
		System-specific (e.g. error reaction)	1
6.2.4	Status/setting of cycle times SERCOS communication		●
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-axis	
6.3.2.1	Virtual axes	Virtual masters	●
6.3.2.2	Encoder axes	Real masters	●
6.3.2.3	Real axes	Servo drives	●
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 cams		
6.3.4.1	Intermediate point tables (in the drive)	Max. 1,024 intermediate points	4
6.3.4.2	Electronic motion profile (in the control)	Motion profiles, max. 16 segments	2
6.3.4.3	FlexProfile (in the control)	Motion profiles, master-/time-based, max. 16 segments	4
6.3.5	Diagnostics	Status, warnings, errors	
6.3.5.1	Function blocks	Software	●
6.3.5.2	Parameter access to diagnostics memory	Software	●
6.3.5.3	Locally via display	Control hardware	●
6.3.5.4	Axis monitoring	E.g. capacity, encoders, limit values	●
6.3.5.5	Diagnostics memory	64 kB, max. 999 messages	●
6.4	Robot control		▼
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	Programmable limit switch		●
6.5.6	Cross cutter		●
6.5.7	Sag control		●
6.5.8	Winder		●

● Default ▼ In preparation ○ Optional

IndraMotion MLP – technical data

6	**Firmware functions**		
6.5.9	Tension control		●
7	**Engineering framework IndraWorks**		
7.1	General information		
7.1.1	Multilinguality of framework		●
7.1.2	Multilinguality of projects		●
7.1.3	Export/import of texts of the PLC projects		●
7.1.4	Firmware management		●
7.1.5	Deactivating/parking drives in the project		●
7.1.6	Automatic detection of drives		●
7.1.7	Switching between online and offline modes		●
7.1.8	Automatic system monitoring	Display of messages and errors	●
7.1.9	Project comparison		●
7.1.10	Online change		●
7.1.11	Search/replace		●
7.1.12	Cross references		●
7.1.13	Represents of the project as a tree structure		●
7.1.14	Log file		●
7.2	Version control management (VCS)		
7.2.1	Version management		●
7.2.2	Multi-user interface		●
7.3	Configuration and project planning		
7.3.1	System configurator		●
7.3.2	Device library for controls, drives, visualization, peripherals		●
7.3.3	Assistants for commissioning of controls and drives		●
7.3.4	Project navigator		●
7.3.5	I/O configurator		●
7.3.6	Fieldbus configurator		●
7.3.7	Project archiving		●
7.3.8	Parameter monitor for controls and drives		●
7.3.9	Offline parameterization of controls and drives		●
7.3.10	FlexProfile configurator		●
7.3.11	Cams editor		●
7.3.11.1	Graphical creation of cams		●
7.3.11.2	Kinematic laws according to VDI 2143		●
7.3.11.3	Interpolation point calculation	Linear, square, sinusoidal, polynomial up to 8th degree, trapezoidal	●
7.3.11.4	Analytic cams for motion profiles		●
7.3.11.5	Wizards for specific applications		●
7.3.11.6	Import/export		●
7.3.11.7	Support of FlexProfile		●
7.3.12	Cinematics (robot control)		●
7.3.13	Extended project handling		▼
7.4	Programming		
7.4.1	Graphical editors		
7.4.1.1	SFC – Sequential Function Chart	Time monitoring per step	●
		Error analysis	●
		Control flags	●

● Default ▼ In preparation ○ Optional

7	Engineering framework IndraWorks		
7.4.1.2	LD – Ladder Diagram		●
7.4.1.3	FBD – Function Block Diagram		●
7.4.1.4	CFC – Continuous Function Chart	Auto-routing of the connections	●
		Possibility of macros to structure large networks	●
7.4.2	Textual editors		
7.4.2.1	IL – Instruction List		●
7.4.2.2	ST – Structured Text		●
7.4.2.3	RCL – Robot Control	Sequential motion programming	●
7.4.3	Language elements		
7.4.3.1	Operators	According to IEC 61131-3	●
7.4.3.2	Operands	Constants, variables, addresses, functions	●
7.4.3.3	Bit access		●
7.4.3.4	Typed pointers		●
7.4.3.5	Object-oriented language extension		●
7.4.4	Data types		
7.4.4.1	Standard according to IEC 61131-3	Incl. LREAL	●
7.4.4.2	User-defined: arrays, structures, enumeration, alias, pointer		●
7.4.4.3	Robot control	POINT, JC_POINT, BELT, TEXT, ARRAY, WC_FRAME, FILE	●
7.4.5	Special editor features		
7.4.5.1	Syntax coloring		●
7.4.5.2	Semantic coloring		●
7.4.5.3	Multiple undo/redo		●
7.4.5.4	Context-sensitive input help		●
7.4.5.5	Context-sensitive menus		●
7.4.5.6	Auto-declaration		●
7.4.5.7	Auto-declaration with type identification		●
7.4.5.8	Name spaces		●
7.4.5.9	Auto-complete (IntelliSens)	Structures, functions, function blocks	●
7.4.5.10	Pre compile for permanent syntax check		●
7.4.5.11	Folding	In/out-fading of program blocks and structures	●
7.4.5.12	Extended searching and replacing		●
7.4.5.13	Smart coding	Auto-complete and auto-format	●
7.4.6	Library management		
7.4.6.1	Managed libraries	Several library versions in one project	●
7.4.6.2	License management		●
7.4.7	Libraries (choice)		
7.4.7.1	System functions		●
7.4.7.2	Communication		●
7.4.7.3	GAT/GATcompact – Generic Application Template	Modular project template for machine control	●
7.4.7.4	PLCopen (see Section 6.2)		●
7.4.7.5	Robot control		▼
7.4.7.6	Technology (see Section 6.5)		●
7.4.8	Offline programming		●
7.4.9	Automatic variable declaration of the system components		●
7.4.10	Structure for access to control data		
7.4.11	Structure for access to axis data		●
7.4.12	Structure for access to kinematic data		●

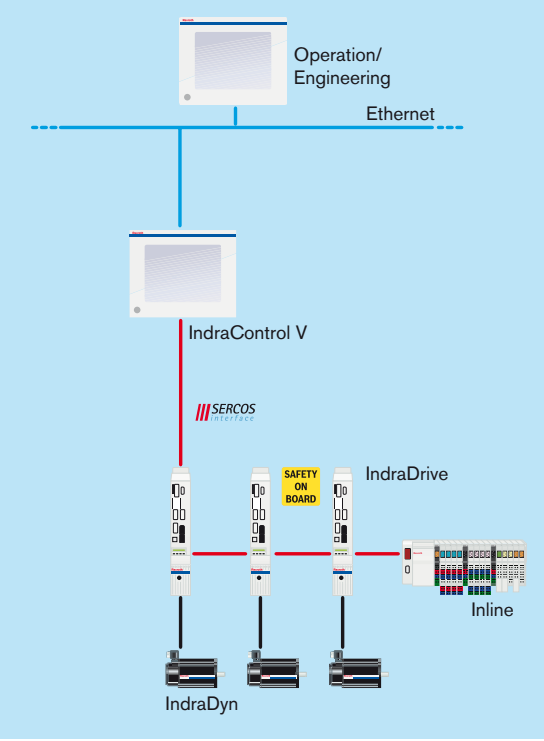
● Default ▼ In preparation ○ Optional

IndraMotion MLP – technical data

7	Engineering framework IndraWorks		
7.4.13	Structure for access to programmable limit switch data		●
7.4.14	Structure for access to probe data		●
7.4.15	Structure for access to oscilloscope data		●
7.5	Online debugging and commissioning		
7.5.1	Diagnostics		
7.5.1.1	Real-time logic analyzer		●
7.5.1.2	Oscilloscope function	Graphical output with zoom function	●
		Display of signal values of drives	●
		Scaling	●
		Measuring with/without trigger	●
7.5.2	Debugging		
7.5.2.1	Monitoring of variables	Trace	●
7.5.2.2	Forcing of variables and variable sets		●
7.5.2.3	Project debugging	Incl. robot control	●
7.5.2.4	Power flow	Sequential check	●
7.5.2.5	Online exchange of function blocks		●
7.5.2.6	Offline simulation of PLC variables		●
7.5.2.7	Parameter monitor		●
7.5.2.8	Writing of variables		●
7.5.2.9	Breakpoint		●
7.5.2.10	Single step operation		●
7.5.2.11	Single cycle operation		●
7.5.2.12	Sequence control		●

● Default ▼ In preparation ○ Optional

IndraMotion MLP – system configuration



System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
HMI/PC technology		
Control/visualization devices, embedded PC	IndraControl VEP	114 – 119
Standard interfaces	SERCOS III, PROFIBUS	–
I/O modules		
Centralized input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Standard interface	SERCOS III, PROFIBUS	–
Drives and motors		
Drive system	IndraDrive and IndraDyn	–
Standard interface	SERCOS III	–

IndraMotion MLP – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware for IndraControl VEP	FWA-VEP*04-CW-xxVRS-D0
License for IndraMotion MLP	SWL-VEP***-MLP-xxVRS-D0

Ordering data for software	
Description	**Type code**
Software DVD engineering framework IndraWorks	SWA-IWORKS-ML*-xxVRS-D0-DVD
Single-license IndraWorks Engineering	SWL-IWORKS-ML*-xxVRS-D0-ENG
Multiple-license (25) IndraWorks Engineering	SWL-IWORKS-ML*-xxVRS-D0-ENG*M25
Single-license IndraWorks Teamserver	SWL-IWORKS-ML*-xxVRS-D0-TEAMSERVER
Single-license IndraWorks OPC server	SWL-IWORKS-ML*-xxVRS-D0-COM
Multiple-license (25) IndraWorks OPC server	SWL-IWORKS-ML*-xxVRS-D0-COM*M25
Single-license IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0
Multiple-license (25) IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0-M25

Ordering data for hardware	
Description	**Type code**
IndraControl VEP 30, control component	VEP30.4EFU-5123C-MBD-1G0-NN-FW
IndraControl VEP 40, control component	VEP40.4DBU-5123C-MBD-1G0-NN-FW
IndraControl VEP 50, control component	VEP50.4DEU-5123C-MBD-1G0-NN-FW

Ordering data for documentations	
Description	**Type code**
Startup instructions, IndraMotion MLC	DOK-IM*MLC-STARTUP*Vxx-COxx-EN-P
IndraMotion MLC, first steps	DOK-IM*MLC-F*STEP**Vxx-APxx-EN-P
Function description, IndraMotion MLC/MLP PLCopen	DOK-IM*MLC-FUNLIB**Vxx-FKxx-EN-P
Parameter description, IndraMotion MLC/MLP	DOK-IM*MLC-PARAM***Vxx-PAxx-EN-P
Reference book, IndraMotion MLC, maintenance guide	DOK-IM*MLC-ERRCOD**Vxx-FKxx-EN-P
Reference book, IndraMotion MLC/MLP, diagnostics	DOK-IM*MLC-DIAG****Vxx-RExx-EN-P
Reference book, IndraMotion, technology basic libraries	DOK-IM*ML*-TF*BASE*Vxx-RExx-EN-P
Reference book, Technology functions	DOK-IM*ML*-TF*GEN**Vxx-RExx-EN-P
Function description, Technology function ML_TechCrank	DOK-IM*ML*-TF*CRK**Vxx-FKxx-EN-P
Reference book, IndraMotion MLC/MLP, system description	DOK-IM*ML*-SYSTEM**Vxx-RExx-EN-P
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Application description, IndraWorks FDT container	DOK-IWORKS-FDT*CON*Vxx-AWxx-EN-P

xx = software/firmware/hardware version


Rexroth
Rexroth
Rexroth

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 L20
  - IndraLogic L40
- PC-based PLC systems
  - IndraLogic VE
  - IndraLogic VS
  - IndraLogic VP

Your benefits

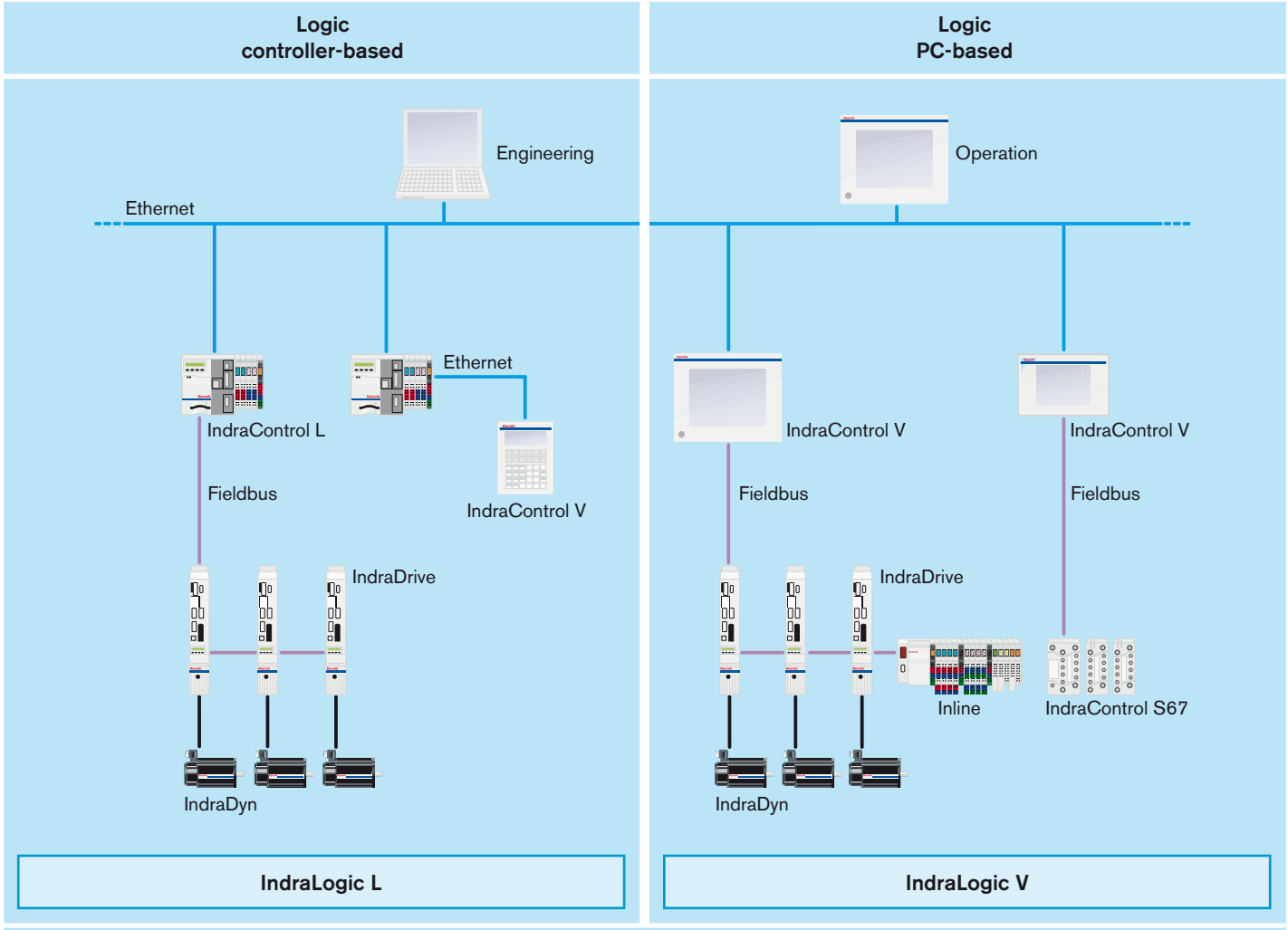
- High performance through innovative control platform
- All degrees of freedom for centralized and distributed automation
- Highest performance and functionality
- Scalable PLC solution according to IEC 61131-3
- Open standardized communication interfaces
- Comprehensive libraries and function blocks for motion control according to PLCopen
- Object oriented programming for modular automation designs
- 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 for successful automation designs – efficient, scalable and standardized.

Efficient, open 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		
Engineering framework	IndraWorks	Chapter 3.1
Visualization devices, controller-based	IndraControl VCP, VCH	Chapter 3.2
Visualization devices, embedded PC	IndraControl VEP, VEH	Chapter 3.2
Visualization devices, standard industrial PC	IndraControl VSP, VSB, VDP	Chapter 3.2
Visualization devices, high-end industrial PC	IndraControl VPP, VPB, VDP	Chapter 3.2
Control hardware	IndraControl L10, L20, L40	Chapter 3.3
Centralized and distributed input/output modules in IP20	Inline	Chapter 3.4
Distributed input/output modules in IP67	IndraControl S67, Fieldline	Chapter 3.5 and 3.6
Drive family	IndraDrive	“Drive System Rexroth IndraDrive” product catalog

IndraLogic – technical data

1	Firmware functions		IndraLogic L			IndraLogic V		
			L10	L20	L40	VE	VS	VP
1.1	Runtime system	Conforming with IEC 61131-3	●	●	●	●	●	●
1.2	Multitasking		●	●	●	●	●	●
1.3	Program organization	According to IEC 61131-3	●	●	●	●	●	●
1.4	Freely projectable tasks (priority 0-31)	Cyclic, free-running, event-controlled, external event-controlled	8	8	16	16	32	32
1.5	Task-synchronous processing of the I/O process image		●	●	●	●	●	●
1.6	Support of system events		●	●	●	●	●	●
1.7	Data management for code, data, remanent data, user data		●	●	●	●	●	●
1.8	Watchdog		●	●	●	●	●	●
1.9	Loading and executing IEC 61131-3 applications		●	●	●	●	●	●
1.10	Debugging monitor for IEC applications		●	●	●	●	●	●
1.11	Processing of I/O peripherals		●	●	●	●	●	●
1.12	Processing of fieldbuses		●	●	●	●	●	●
1.13	Processing of function modules		–	–	●	–	–	–
1.14	Integrated visualization component WinStudio		–	–	–	●	●	●
1.15	Boot project storage		●	●	●	●	●	●
1.16	Storage of PLC project as packed archive file		●	●	●	●	●	●
1.17	Storage of user data to the internal memory and a removable storage medium		●	●	●	●	●	●
1.18	Motion control functions through PLCopen function blocks		–	●	●	–	●	●
2	**Engineering framework IndraWorks**							
2.1	General information							
2.1.1	Multilinguality of framework					●		
2.1.2	Multilinguality of projects					●		
2.1.3	Export/import of texts of the PLC projects					●		
2.1.4	Firmware management					●		
2.1.5	Deactivating/parking drives in the project					●		
2.1.6	Automatic detection of drives					●		
2.1.7	Switching between online and offline modes					●		
2.1.8	Automatic system monitoring	Display of messages and errors				●		
2.1.9	Project comparison					●		
2.1.10	Online change					●		
2.1.11	Search/replace					●		
2.1.12	Cross references					●		
2.1.13	Represents of the project as a tree structure					●		
2.1.14	Log file					●		
2.2	Version control management (VCS)							
2.2.1	Version management					●		
2.2.2	Multi-user interface					●		
2.3	Configuration and project planning							
2.3.1	System configurator					●		
2.3.2	Device library for controls, drives, visualization, peripherals					●		
2.3.3	Assistants for commissioning of controls and drives					●		
2.3.4	Project navigator					●		
2.3.5	I/O configurator					●		
2.3.6	Fieldbus configurator					●		
2.3.7	Project archiving					●		

● Default ▼ In preparation ○ Optional – Not existing

2	Engineering-Framework IndraWorks		
2.3.8	Parameter monitor for controls and drives		●
2.4	Programming		
2.4.1	Graphical editors		
2.4.1.1	SFC – Sequential Function Chart	Time monitoring per step	●
		Error analysis	●
		Control flags	●
2.4.1.2	LD – Ladder Diagram		●
2.4.1.3	FBD – Function Block Diagram		●
2.4.1.4	CFC – Continuous Function Chart	Auto-routing of the connections	●
		Possibility of macros to structure large networks	●
2.4.2	Textual editors		
2.4.2.1	IL – Instruction List		●
2.4.2.2	ST – Structured Text		●
2.4.3	Language elements		
2.4.3.1	Operators	According to IEC 61131-3	●
2.4.3.2	Operands	Constants, variables, addresses, functions	●
2.4.3.3	Bit access		●
2.4.3.4	Typed pointers		●
2.4.3.5	Object-oriented language extension		●
2.4.4	Data types		
2.4.4.1	Standard according to IEC 61131-3	Incl. LREAL	●
2.4.4.2	User-defined: arrays, structures, enumeration, alias, pointer		●
2.4.5	Special editor features		
2.4.5.1	Syntax coloring		●
2.4.5.2	Semantic coloring		●
2.4.5.3	Multiple undo/redo		●
2.4.5.4	Context-sensitive input help		●
2.4.5.5	Context-sensitive menus		●
2.4.5.6	Auto-declaration		●
2.4.5.7	Auto-declaration with type identification		●
2.4.5.8	Name spaces		●
2.4.5.9	Auto-complete (IntelliSens)	Structures, functions, function blocks	●
2.4.5.10	Pre compile for permanent syntax check		●
2.4.5.11	Folding	In/out-fading of program blocks and structures	●
2.4.5.12	Extended searching and replacing		●
2.4.5.13	Smart coding	Auto-complete and auto-format	●
2.4.6	Library management		
2.4.6.1	Managed libraries	Several library versions in one project	●
2.4.6.2	License management		●
2.4.7	Libraries (choice)		
2.4.7.1	System functions		●
2.4.7.2	Communication		●
2.4.8	Offline programming		●
2.4.9	Automatic variable declaration of the system components		●
2.5	Online debugging and commissioning		
2.5.1	Diagnostics		

● Default ▼ In preparation ○ Optional

IndraLogic – technical data

2	Engineering-Framework IndraWorks		
2.5.1.1	Real-time logic analyzer		●
2.5.1.2	Oscilloscope function	Graphical output with zoom function	●
		Display of signal values of drives	●
		Scaling	●
		Measuring with/without trigger	●
2.5.2	Debugging		
2.5.2.1	Monitoring of variables	Trace	●
2.5.2.2	Forcing of variables and variable sets		●
2.5.2.3	Power flow	Sequential check	●
2.5.2.4	Online exchange of function blocks		●
2.5.2.5	Offline simulation of PLC variables		●
2.5.2.6	Parameter monitor		●
2.5.2.7	Writing of variables		●
2.5.2.8	Breakpoint		●
2.5.2.9	Single step operation		●
2.5.2.10	Single cycle operation		●
2.5.2.11	Sequence control		●

● Default ▼ In preparation ○ Optional – Not existing

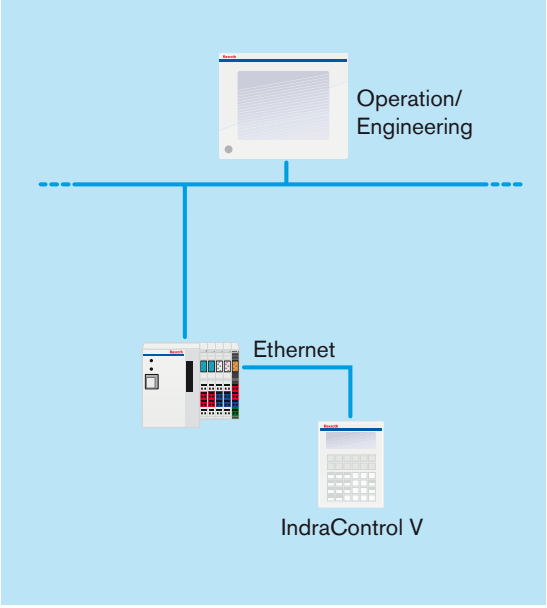

Rexroth
5 RUN
Data Axis 1
Rexroth
Maschinenvorgaben
Achse1
>Achse2
Hand / Automatik

IndraLogic L10 – technical data

1	Control hardware	IndraControl L10	
			
1.1	Interfaces		
1.1.1	Ethernet TCP/IP	1 x RJ45	●
1.2	On board diagnosis and settings		
1.2.1	Status indicator	LED	●
1.2.2	System reset	Key	●
1.2.3	Voltage monitoring		●
1.2.4	Watchdog		●
2	**Inputs and outputs**		
2.1	On board		
2.1.1	High-speed digital inputs	Interrupt capability, typ. 50 µs	8
2.1.2	High-speed digital outputs	0.5 A, typ. 500 µs	4
2.2	Local		
2.2.1	Inline (digital, analog, relay, technology)	32 byte, max. 256 I/O	○
3	**HMI**		
3.1	IndraControl VCP, VCH	Ethernet TCP/IP	○
3.2	IndraControl VEP, VEH	Ethernet TCP/IP	○
3.3	IndraControl VSP, VPP, VSB/VDP, VPB/VDP	Ethernet TCP/IP	○
4	**Communication interfaces**		
4.1	Ethernet TCP/IP	E.g. HMI, Engineering	●
4.2	PROFINET IO device (slave)		▼
4.3	EtherNet/IP adapter		●
5	**Characteristic performance data**		
5.1	User memory	Total/code/data	4/2/2 MB
5.2	Remanent memory		32 kB
5.3	Number of tasks		8
5.4	Types of task	Cyclic, free-running, event-controlled, external event-controlled	●
5.5	Processing time	1,000 instructions in IL, bit and word commands	Typ. 150 µs
6	**Engineering**		
6.1	IndraWorks		○
6.2	Compatibility with all IndraLogic L systems		●

● Default ▼ In preparation ○ Optional

IndraLogic L10 – system configuration



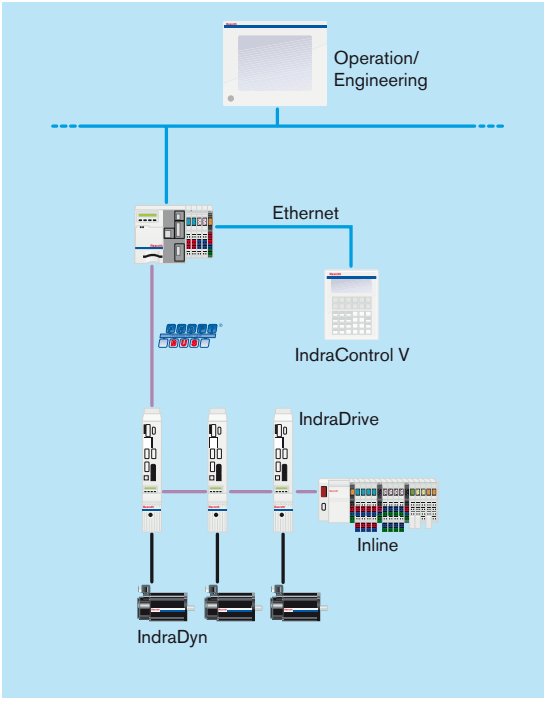
System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
Control components		
Control hardware	IndraControl L10	150
Standard interfaces	Ethernet TCP/IP, EtherNet/IP adapter PROFINET IO device (slave)	–
HMI/PC technology		
Visualization devices, controller-based	IndraControl VCP, VCH	106 – 113
Visualization devices, embedded PC	IndraControl VEP, VEH	114 – 121
Visualization devices,	IndraControl VSP	122 – 125
standard industrial PC	IndraControl VSB, VDP	130 – 141
Visualization devices,	IndraControl VPP	126 – 129
high-end industrial PC	IndraControl VPB, VDP	130 – 141
Standard interfaces	Ethernet TCP/IP	–
I/O modules		
Centralized input/output modules in IP20	Inline	164 – 215

IndraLogic L20 – technical data

1	Control hardware	IndraControl L20	
			
1.1	Interfaces		
1.1.1	Ethernet	1 x RJ45	●
1.1.2	RS232	On board	●
1.1.3	PROFIBUS master/slave	On board	●
1.2	On board diagnosis and settings		
1.2.1	Status display (boot, test)	Display/LED	●
1.2.2	Errors, warnings, messages, system reset	Display/LED, keys	●
1.2.3	Ethernet settings (IP address)	Display, keys	●
1.2.4	Voltage monitoring, watchdog		●
2	**Inputs and outputs**		
2.1	On board		
2.1.1	High-speed digital inputs	Interrupt capability, typ. 50 µs	8
2.1.2	High-speed digital outputs	0.5 A, typ. 500 µs	8
2.2	Local		
2.2.1	Inline (digital, analog, relay, technology)	32 bytes, max. 256 I/O	○
2.3	Distributed via fieldbus		
2.3.1	Inline (IP20)	PROFIBUS (on board)	○
2.3.2	IndraControl S67, Fieldline (IP67)	PROFIBUS (on board)	○
3	**HMI**		
3.1	IndraControl VCP, VCH	PROFIBUS, Ethernet TCP/IP	○/○
3.2	IndraControl VEP, VEH	Ethernet TCP/IP, OPC	○
3.3	IndraControl VSP, VPP, VSB/VDP, VDB/VDP	Ethernet TCP/IP, OPC	○
4	**Communication interfaces**		
4.1	Ethernet TCP/IP	E.g. HMI, engineering	●
4.2	RS232		●
4.3	PROFIBUS master/slave		●
4.4	EtherNet/IP adapter		●
5	**Characteristic performance data**		
5.1	User memory	Total/code/data	3/1/2 MB
5.2	Remanent memory		64 kB
5.3	Number of tasks		8
5.4	Types of task	Cyclic, event-controlled, free-running, external event-controlled	●
5.5	Processing time	1,000 instructions in IL, bit and word commands	Typ. 150 µs
6	**Engineering**		
6.1	IndraWorks		○
6.2	Compatibility with all IndraLogic L systems		●

● Default ▼ In preparation ○ Optional

IndraLogic L20 – system configuration



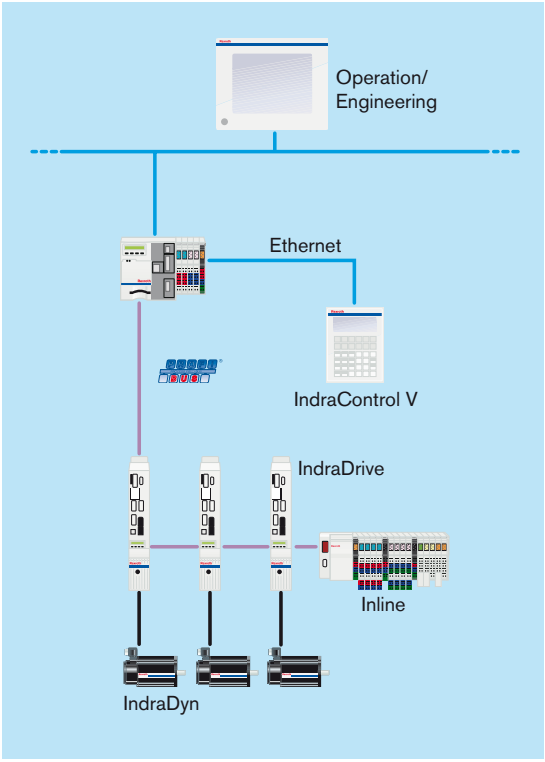
System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
Control components		
Control hardware	IndraControl L20	151
Standard interfaces	Ethernet TCP/IP, PROFIBUS, RS232	–
HMI/PC technology		
Visualization devices, controller-based	IndraControl VCP, VCH	106 – 113
Visualization devices, embedded PC	IndraControl VEP, VEH	114 – 121
Visualization devices, standard industrial PC	IndraControl VSP	122 – 125
	IndraControl VSB, VDP	130 – 141
Visualization devices, high-end industrial PC	IndraControl VPP	126 – 129
	IndraControl VPB, VDP	130 – 141
Standard interfaces	Ethernet TCP/IP, PROFIBUS, RS232	–
I/O modules		
Centralized and distributed input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Standard interfaces	PROFIBUS	–
Drives and motors		
Drive system	IndraDrive and IndraDyn	–
Standard interfaces	PROFIBUS	–

IndraLogic L40 – technical data

1	Control hardware	IndraControl L40	
			
1.1	Interfaces		
1.1.1	Ethernet	1 x RJ45	●
1.1.2	RS232	On board	●
1.1.3	PROFIBUS master/slave	On board	●
1.2	On board diagnosis and settings		
1.2.1	Status display (boot, test)	Display/LED	●
1.2.2	Errors, warnings, messages, system reset	Display/LED, keys	●
1.2.3	Ethernet settings (IP address)	Display, keys	●
1.2.4	Voltage monitoring, watchdog		●
2	**Inputs and outputs**		
2.1	On board		
2.1.1	High-speed digital inputs	Interrupt capability, typ. 50 µs	8
2.1.2	High-speed digital outputs	0.5 A, typ. 500 µs	8
2.2	Local		
2.2.1	Inline (digital, analog, relay, technology)	64 bytes, max. 512 I/O	○
2.2.2	Fast I/O	Function module	○
2.3	Distributed via fieldbus		
2.3.1	Inline (IP20)	PROFIBUS (on board), PROFIBUS (function module), DeviceNet (function module)	●/○/○
2.3.2	IndraControl S67, Fieldline (IP67)	PROFIBUS (on board), PROFIBUS (function module), DeviceNet (function module)	●/○/○
3	**HMI**		
3.1	IndraControl VCP, VCH	PROFIBUS, DeviceNet, Ethernet TCP/IP	○/○/○
3.2	IndraControl VEP, VEH	Ethernet TCP/IP, OPC	○
3.3	IndraControl VSP, VPP, VSB/VDP, VPB/VD	Ethernet TCP/IP, OPC	○
4	**Communication interfaces**		
4.1	Ethernet TCP/IP	E.g. peripherals, HMI	●
4.2	EtherNet/IP adapter		●
4.3	RS232		●
4.4	PROFIBUS master/slave		●
4.5	DeviceNet master	Function module	○
5	**Characteristic performance data**		
5.1	User memory	Total/code/data	24/16/8 MB
5.2	Remanent memory		128 kB
5.3	Number of tasks		16
5.4	Types of tasks	Cyclic, event-controlled, free-running, external event-controlled	●
5.5	Processing time	1,000 instructions in IL, bit and word commands	Typ. 30 µs
6	**Engineering**		
6.1	IndraWorks		○
6.2	Compatibility with all IndraLogic L systems		●

● Default ▼ In preparation ○ Optional

IndraLogic L40 – system configuration



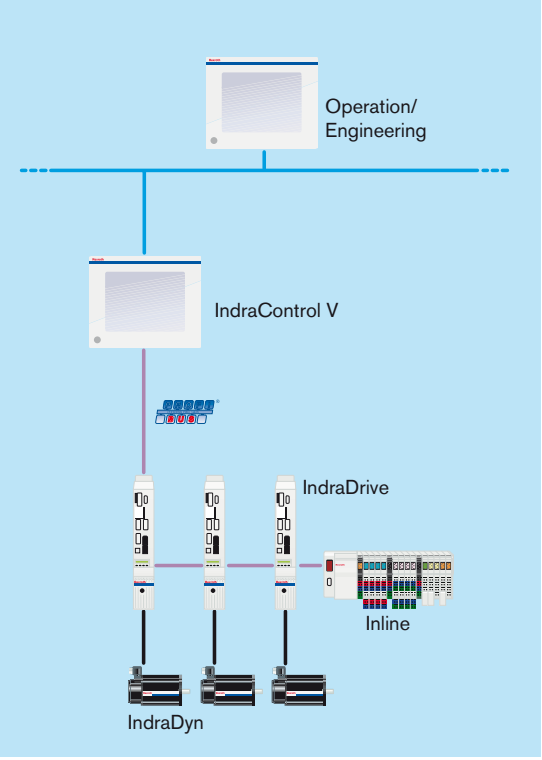
System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
Control components		
Control hardware	IndraControl L40	153
Function modules	PROFIBUS-Master	158
	DeviceNet master	158
	Fast I/O	159
Standard interfaces	Ethernet TCP/IP, PROFIBUS, RS232	–
HMI/PC technology		
Visualization devices, controller-based	IndraControl VCP, VCH	106 – 113
Visualization devices, embedded PC	IndraControl VEP, VEH	114 – 121
Visualization devices,	IndraControl VSP	122 – 125
standard industrial PC	IndraControl VSB, VDP	130 – 141
Visualization devices,	IndraControl VPP	126 – 129
high-end industrial PC	IndraControl VPB, VDP	130 – 141
Standard interfaces	Ethernet TCP/IP, PROFIBUS, RS232	–
I/O modules		
Centralized and distributed input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Standard interfaces	PROFIBUS	–
Drives and motors		
Drive system	IndraDrive and IndraDyn	–
Standard interfaces	PROFIBUS	–

IndraLogic VE – technical data

1	Control hardware	IndraControl VEP	
			
1.1	Interfaces		
1.1.1	Ethernet	1 x RJ45	●
1.2	On board diagnosis and settings		
1.2.1	Status indicator	SoftPanel	●
1.2.2	System reset	SoftPanel	●
1.2.3	Voltage monitoring	Integrated short-time UPS	●
1.2.4	Watchdog		●
1.3	Operating systems	Windows CE 4.2 for VEPxx.3	●
2	**Inputs and outputs**		
2.1	Distributed via fieldbus		
2.1.1	Inline (IP20)	PROFIBUS	●
2.2.2	IndraControl S67, Fieldline (IP67)	PROFIBUS	●
3	**HMI**		
3.1	IndraControl VEP 30.x	21.3 cm/8.4“ (800 x 600), touch or keys	●
3.2	IndraControl VEP 40.x	30.7 cm/12.1“ (800 x 600), touch or keys	●
3.3	IndraControl VEP 50.x	38.1 cm/15“ (1,024 x 768), touch or keys	●
4	**Communication interfaces**		
4.1	Ethernet TCP/IP		●
4.2	PROFIBUS master		●
5	**Characteristic performance data**		
5.1	User memory	VEPxx.3, total/code/data	24/16/8 MB
5.2	Remanent memory		256 kB
5.3	Number of tasks		16
5.4	Types of task	Cyclic, free-running, event-controlled	●
5.5	Processing time	1,000 instructions in IL, bit and word commands	Typ. 70 µs
6	**Engineering**		
6.1	IndraWorks		○
6.2	Compatibility with all IndraLogic V systems		●

● Default ▼ In preparation ○ Optional

IndraLogic VE – system configuration



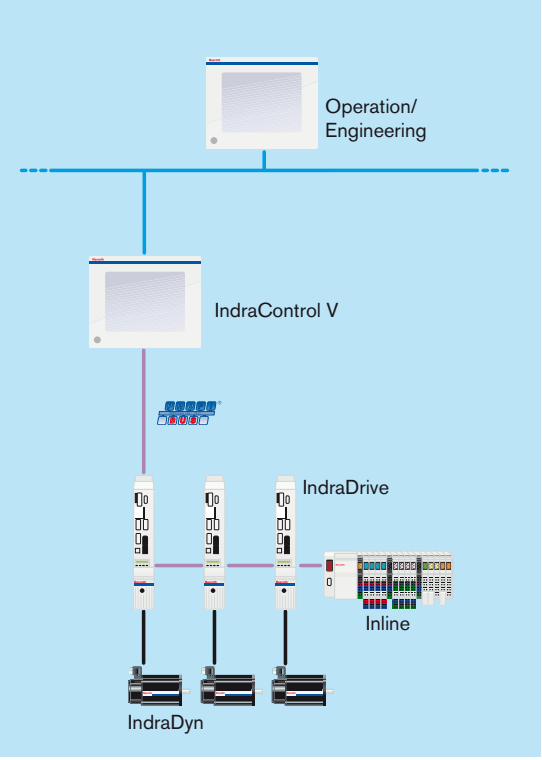
System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
HMI/PC components		
Control/visualization devices, embedded PC	IndraControl VEP	114 – 119
Standard interfaces	Ethernet TCP/IP, PROFIBUS	–
I/O modules		
Distributed input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Standard interfaces	PROFIBUS	–
Drives and motors		
Drive system	IndraDrive and IndraDyn	–
Standard interfaces	PROFIBUS	–

IndraLogic VS – technical data

1	Control hardware	IndraControl VSP, VSB	
			
1.1	Interfaces		
1.1.1	Ethernet	1 x RJ45	●
1.2	On board diagnosis and settings		
1.2.1	Status indicator	SoftPanel	●
1.2.2	System reset	SoftPanel	●
1.2.3	Voltage monitoring	Integrated UPS (external battery)	○
1.2.4	Watchdog		●
1.3	Operating systems	Windows XP	●
		Real-time operating system (VxWorks/VxWin)	●
2	**Inputs and outputs**		
2.1	Distributed via fieldbus		
2.2.1	Inline (IP20)	PROFIBUS	●
2.2.2	IndraControl S67, Fieldline (IP67)	PROFIBUS	●
3	**HMI**		
3.1	IndraControl VSP 16.x	30.5 cm/12'' (800 x 600), touch or keys	●
3.2	IndraControl VSP 40.x	38.1 cm/15'' (1,024 x 768), touch or keys	●
3.3	IndraControl VSB 40.x	Separate operating panel VDP 16 (30.5 cm/12")/ VDP 40 (38.1 cm/15")/VDP 60 (48.3 cm/19“)	●/○/○
4	**Communication interfaces**		
4.1	Ethernet TCP/IP		●
4.2	PROFIBUS master		●
5	**Characteristic performance data**		
5.1	User memory	Total/code/data	48/32/16 MB
5.2	Remanent memory	On HD with UPS	2 MB
5.3	Number of tasks		32
5.4	Types of task	Cyclic, free-running, event-controlled	●
5.5	Processing time	1,000 instructions in IL, bit and word commands	Typ. 50 µs
6	**Engineering**		
6.1	IndraWorks		○
6.2	Compatibility with all IndraLogic V systems		●

● Default ▼ In preparation ○ Optional

IndraLogic VS – system configuration



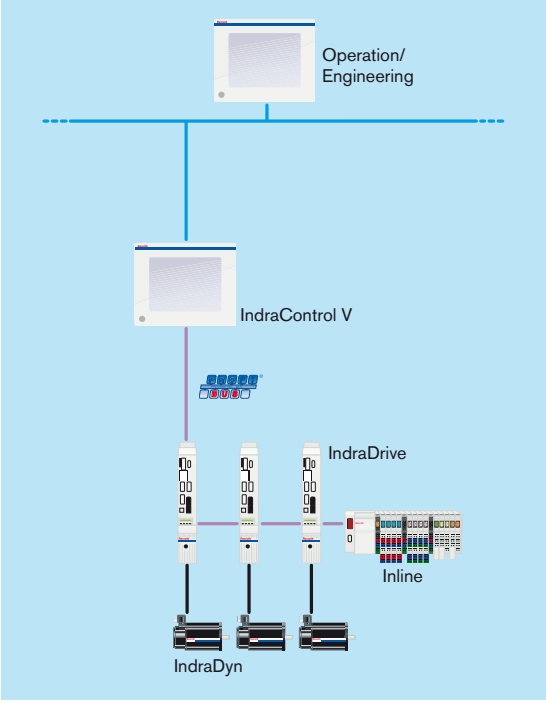
System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
HMI/PC components		
Control/visualization devices,	IndraControl VSP	122 – 125
standard industrial PC	IndraControl VSB, VDP	130 – 144
Standard interfaces	Ethernet TCP/IP, PROFIBUS	–
I/O modules		
Centralized input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Standard interfaces	PROFIBUS	–
Drives and motors		
Drive system	IndraDrive and IndraDyn	–
Standard interfaces	PROFIBUS	–

IndraLogic VP – technical data

1	Control hardware	IndraControl VPP, VPB	
			
1.1	Interfaces		
1.1.1	Ethernet	1 x RJ45	●
1.2	On board diagnosis and settings		
1.2.1	Status indicator	SoftPanel	●
1.2.2	System reset	SoftPanel	●
1.2.3	Voltage monitoring	Integrated UPS (external battery)	●
1.2.4	Watchdog		●
1.3	Operating systems	Windows XP	●
		Real-time operating systems (VxWorks/VxWin)	●
2	**Inputs and outputs**		
2.1	Distributed via fieldbus		
2.2	Inline (IP20)	PROFIBUS	●
2.2.1	IndraControl S67, Fieldline (IP67)	PROFIBUS	●
3	**HMI**		
3.1	IndraControl VPP 16.x	30.5 cm/12'' (800 x 600), touch or keys	●
3.2	IndraControl VPP 40.x	38.1 cm/15'' (1,024 x 768), touch or keys	●
3.3	IndraControl VPB 40.x	Separate operating panel VDP 16 (30.5 cm/12")/ VDP 40 (38.1 cm/15")/VDP 60 (48.3 cm/19'')	●/○/○
4	**Communication interfaces**		
4.1	Ethernet TCP/IP		●
4.2	PROFIBUS master		●
5	**Characteristic performance data**		
5.1	User memory	Total/code/data	48/32/16 MB
5.2	Remanent memory	On HD with USV	2 MB
5.3	Number of tasks		32
5.4	Types of task	Cyclic, free-running, event-controller	●
5.5	Processing time	1,000 instructions in IL, bit and word commands	Typ. 30 µs
6	**Engineering**		
6.1	IndraWorks		○
6.2	Compatibility with all IndraLogic V systems		●

● Default ▼ In preparation ○ Optional

IndraLogic VP – system configuration



System configuration		
Software		**Page(s)**
Engineering framework	IndraWorks	88 – 101
HMI/PC components		
Control/visualization devices, high-end industrial PC	IndraControl VPP	126 – 129
	IndraControl VPB, VDP	130 – 144
Standard interfaces	Ethernet TCP/IP, PROFIBUS	–
I/O modules		
Distributed input/output modules in IP20	Inline	164 – 215
Distributed input/output modules in IP67	IndraControl S67, Fieldline	216 – 243
Standard interfaces	PROFIBUS	–
Drives and motors		
Drive system	IndraDrive and IndraDyn	–
Standard interfaces	PROFIBUS	–

IndraLogic – ordering data

Ordering data for firmware	
Description	**Type code**
Firmware for IndraControl L10	FWA-CML10*-IL*-xxVRS-D0-0003
Firmware for IndraControl L20	FWA-CML20*-IL*-xxVRS-D0-0003
Firmware for IndraControl L20 for IndraMotion for Handling	FWA-CML20*-IL*-xxVRS-D0-0003-T01
Firmware for IndraControl L40	FWA-CML402-IL*-xxVRS-D0-0024
Firmware for IndraControl L40 for IndraMotion for Handling	FWA-CML402-IL*-xxVRS-D0-0024-T01
Firmware for IndraControl VEP xx.3	FWA-VEP*03-CWL-xxVRS-D0
Runtime license for IndraLogic VE	SWL-VE**01-ILC-xxVRS-NN-0024
Runtime license for IndraLogic VE and IndraMotion for Handling	SWL-VE**01-ILC-xxVRS-NN-0024-T01
Firmware for IndraControl VS/VP	FWA-VSXVPX-IL*-xxVRS-D0-0048
Firmware for IndraControl VS and VP (DE), operating system Windows XP Pro (EN) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SW)	FWA-VS3VP3-WXP-xxVRS-A0-OEM
Firmware for IndraControl VS and VP (DE), operating system Windows XP Pro (EN) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SW) and full license of Acronis data backup software	FWA-VS3VP3-WXP-xxVRS-A0-OEM A1

Ordering data for software	
Description	**Type code**
Software DVD engineering framework IndraWorks	SWA-IWORKS-ML*-xxVRS-D0-DVD**
Single-license IndraWorks Engineering	SWL-IWORKS-IL*-xxVRS-D0-ENG
Multiple-license (25) IndraWorks Engineering	SWL-IWORKS-IL*-xxVRS-D0-ENG*M25
Single-license IndraWorks Operation	SWL-IWORKS-IL*-xxVRS-D0-OPD
Multiple-license (25) IndraWorks Operation	SWL-IWORKS-IL*-xxVRS-D0-OPD*M25
Single-license IndraWorks OPC server	SWL-IWORKS-ML*-xxVRS-D0-COM
Multiple-license (25) IndraWorks OPC server	SWL-IWORKS-ML*-xxVRS-D0-COM*M25
Software CD technology functions for IndraMotion for Handling	SWA-IM*ML*-LHA-xxVRS-D0-CD650-COPY

Ordering data for hardware	
Description	**Type code**
IndraControl L10	CML10.1-NN-110-NB-NNNN-NW
IndraControl L20, PROFIBUS	CML20.1-NP-120-NA-NNNN-NW
IndraControl L40, PROFIBUS	CML40.2-NP-330-NA-NNNN-NW
IndraControl L function module DeviceNet master	CFL01.1-V1
IndraControl L function module PROFIBUS master	CFL01.1-P1
IndraControl L function module Fast I/O	CFL01.1-E2
IndraControl VEP 30, PROFIBUS, control component	VEP30.3CCU-256NA-MAD-128-NN-FW
IndraControl VEP 30 CG, PROFIBUS, control component	VEP30.3DKU-256NA-MAD-128-CG-FW
IndraControl VEP 40, PROFIBUS, control component	VEP40.3CEU-256NA-MAD-128-NN-FW
IndraControl VEP 50, PROFIBUS, control component	VEP50.3CHU-256NA-MAD-128-NN-FW
IndraControl VS/VP	For detailed type codes see chapter 3.2

Ordering data for documentations	
Description	**Type code**
PLC program development, IndraLogic	DOK-CONTRL-IL**PRO*Vxx-AWxx-EN-P
IndraLogic L10 PLC system description, operating and programming instructions	DOK-CONTRL-IL**IC*L10*****-AWxx-EN-P
IndraLogic L20 PLC system description, operating and programming instructions	DOK-CONTRL-IL**IC*L20*****-AWxx-EN-P
IndraLogic L40 PLC system description, operating and programming instructions	DOK-CONTRL-IL**IC*L40*****-AWxx-EN-P
IndraLogic VEP PLC system description, operating and programming instructions	DOK-CONTRL-IL*VEP**Vxx-AWxx-EN-P
IndraLogic V PLC system description, operating and programming instructions	DOK-CONTRL-IL*V****Vxx-AWxx-EN-P

xx = software/firmware version

Control components – components, peripherals and software

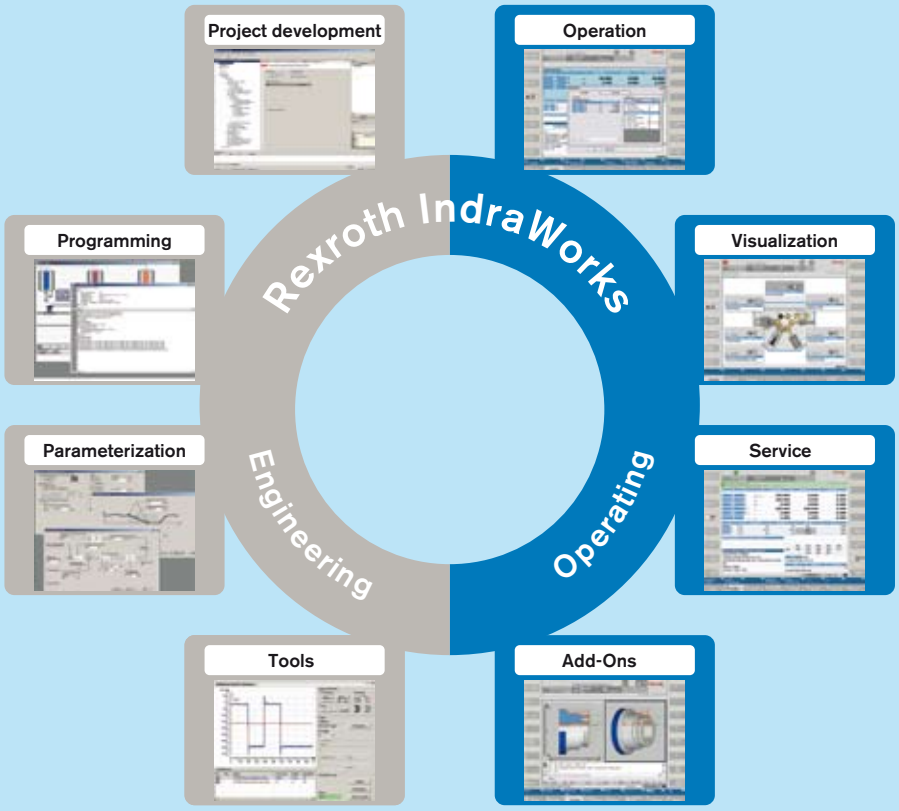
IndraWorks – the tool for all engineering tasks

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. 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 IndraMotion and IndraLogic systems from Rexroth
- 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

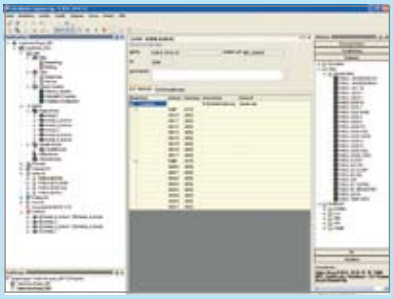


IndraWorks – the universal engineering framework

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

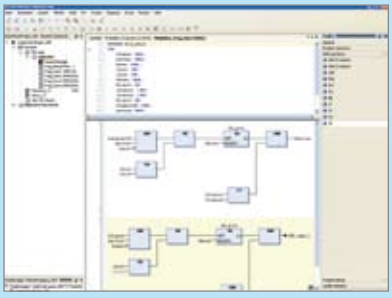
Your benefit

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

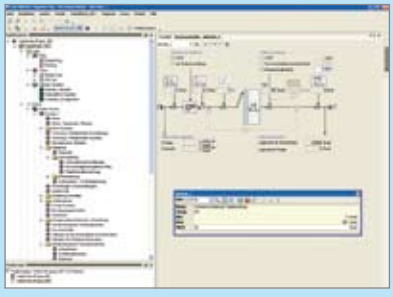


The IndraLogic runtime system that is integrated in all solutions is consistently programmed in IndraWorks. The complete language scope specified in IEC 61131-3 is available. System-specific additional functions, such as motion blocks according to PLCopen or technology blocks, can be quickly and transparently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

Operation and visualization

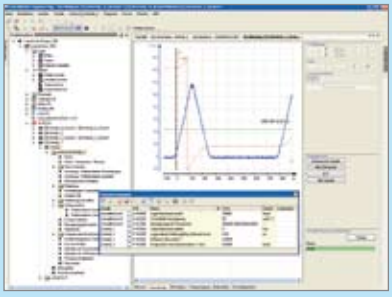
Apart from providing engineering functions, IndraWorks is also an HMI front end for various applications. IndraWorks allows you to project machine- or system-specific screens. Using the project development tool WinStudio, you can easily integrate standard screens in the user interface. In addition, you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

Parameterization



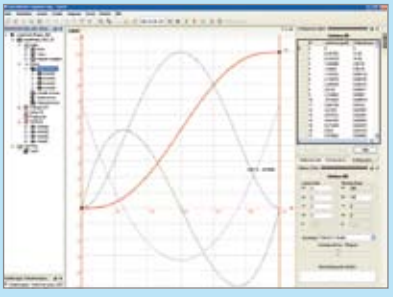
The project explorer provides access to all data of the system components. Wizards guide you through all engineering steps, interactively and in sequence. Control and drive options or motion axes can be parameterized easily and clearly, even offline. I/O peripherals and communication interfaces can be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

IndraWorks Engineering		IndraMotion				IndraLogic
		MTX	MLD	MLC	MLP	L/V
1	General information					
1.1	Multilinguality of framework	●	●	●	●	●
1.2	Multilinguality of projects	●	●	●	●	●
1.3	Export/import of texts of the PLC projects	●	●	●	●	●
1.4	Firmware management	●	●	●	●	●
1.5	Deactivating/parking drives in the project	●	●	●	●	●
1.6	Automatic detection of drives	●	●	●	●	●
1.7	Switching between online and offline modes	●	●	●	●	●
1.8	Automatic system monitoring (display of messages and errors)	●	●	●	●	●
1.9	Project comparison	●	●	●	●	●
1.10	Online change	●	●	●	●	●
1.11	Search/replace	●	●	●	●	●
1.12	Cross references	●	●	●	●	●
1.13	Represents of the project as a tree structure	●	●	●	●	●
1.14	Log file	●	●	●	●	●
2	Version control management (VCS)					
2.1	Version management	●	▼	●	●	▼
2.2	Multi-user interface	●	▼	●	●	▼
3	Configuration and project planning					
3.1	System configurator	●	●	●	●	●
3.2	Device library for controls, drives, visualization, peripherals	●	●	●	●	●
3.3	Assistants for commissioning of controls and drives	●	●	●	●	●
3.4	Project navigator	●	●	●	●	●
3.5	I/O configurator	●	●	●	●	●
3.6	Fieldbus configurator	●	●	●	●	●
3.7	Project archiving	●	●	●	●	●
3.8	Parameter monitor for controls and drives	●	●	●	●	●
3.9	Offline parameterization of controls and drives	●	●	●	●	–
3.10	FlexProfile configurator	–	–	●	●	–
3.11	Cams editor	–	●	●	●	–
3.11.1	Graphical creation of cams	–	●	●	●	–
3.11.2	Kinematic laws according to VDI 2143	–	●	●	●	–
3.11.3	Interpolation point calculation: linear, square, sinusoidal, polynomial up to 8th degree, trapezoidal	–	●	●	●	–
3.11.4	Analytic cams for motion profiles	–	●	●	●	–
3.11.5	Wizards for specific applications	–	●	●	●	–
3.11.6	Import/export	–	●	●	●	–
3.11.7	Support of FlexProfile	–	●	●	●	–
3.12	Cinematics (robot control)	–	–	●	▼	–
3.13	Extended project handling	●	●	●	●	●
4	Programming					
4.1	Graphical editors					
4.1.1	SFC – Sequential Function Chart	●	●	●	●	●
4.1.1.1	Time monitoring per step	●	●	●	●	●
4.1.1.2	Error analysis	●	●	●	●	●
4.1.1.3	Control flags	●	●	●	●	●
4.1.2	LD – Ladder Diagram	●	●	●	●	●

● Default ▼ In preparation ○ Optional – Not existing

IndraWorks Engineering		IndraMotion				IndraLogic
		MTX	MLD	MLC	MLP	L/V
4.1.3	FBD – Function Block Diagram	●	●	●	●	●
4.1.4	CFC – Continuous Function Chart					
4.1.4.1	Auto-routing of the connections	●	●	●	●	●
4.1.4.2	Possibility of macros to structure large networks	●	●	●	●	●
4.2	Textual editors					
4.2.1	IL – Instruction List	●	●	●	●	●
4.2.2	ST – Structured Text	●	●	●	●	●
4.2.3	RCL – Robot Control (Sequential motion programming)	–	–	●	▼	–
4.3	Language elements					
4.3.1	Operators (according to IEC 61131-3)	●	●	●	●	●
4.3.2	Operands (constants, variables, addresses, functions)	●	●	●	●	●
4.3.3	Bit access	●	●	●	●	●
4.3.4	Typed pointers	●	●	●	●	●
4.3.5	Object-oriented language extension	●	●	●	●	●
4.4	Data types					
4.4.1	Standard according to IEC 61131-3	●	●	●	●	●
4.4.2	User-defined: arrays, structures, enumeration, alias, pointer	●	●	●	●	●
4.4.3	Robot control: POINT, JC_POINT, BELT, TEXT, ARRAY, WC_FRAME, FILE	–	–	●	▼	–
4.5	Special editor features					
4.5.1	Syntax coloring	●	●	●	●	●
4.5.2	Semantic coloring	●	●	●	●	●
4.5.3	Multiple undo/redo	●	●	●	●	●
4.5.4	Context-sensitive input help	●	●	●	●	●
4.5.5	Context-sensitive menus	●	●	●	●	●
4.5.6	Auto-declaration	●	●	●	●	●
4.5.7	Auto-declaration with type identification	●	●	●	●	●
4.5.8	Name spaces	●	●	●	●	●
4.5.9	Auto-complete (IntelliSens): structures, functions, function blocks	●	●	●	●	●
4.5.10	Pre compile for permanent syntax check	●	●	●	●	●
4.5.11	Folding (in/out-fading) of program blocks and structures)	●	●	●	●	●
4.5.12	Extended searching and replacing	●	●	●	●	●
4.5.13	Smart coding (auto-complete and auto-format)	●	●	●	●	●
4.6	Library management					
4.6.1	Managed libraries (several library versions in one project)	●	●	●	●	●
4.6.2	License management	●	●	●	●	●
4.7	Libraries (choice)					
4.7.1	System functions	●	●	●	●	●
4.7.2	Communication	●	●	●	●	●
4.7.3	GAT/GAT compact – Generic Application Template (modular project template for machine control)	–	●	●	●	–
4.7.4	PLCopen	●	●	●	●	●
4.7.5	Robot control	–	–	●	▼	–
4.8	Offline programming	●	●	●	●	●
4.9	Automatic variable declaration of the system components	●	●	●	●	●
4.10	Structure for access to axis data					
4.10.1	AXIS_REF (reference to axis data)	●	●	●	●	–
4.10.2	ML_AXISDATA (direct access to axis data)	●	●	●	●	–

● Default ▼ In preparation ○ Optional – Not existing

IndraWorks – technical data

IndraWorks Engineering		IndraMotion				IndraLogic
		MTX	MLD	MLC	MLP	L/V
5	Online debugging and commisioning					
5.1.	Diagnostics					
5.1.1	Real-time logic analyzer	●	●	●	●	●
5.1.2	Oscilloscope function					
5.1.2.1	Graphical output with zoom function	●	●	●	●	●
5.1.2.2	Display of signal values of drives	●	●	●	●	●
5.1.2.3	Scaling	●	●	●	●	●
5.1.2.4	Measuring with/without trigger	●	●	●	●	●
5.2	Debugging					
5.2.1	Monitoring of variables (Trace)	●	●	●	●	●
5.2.2	Forcing of variables and variable sets	●	●	●	●	●
5.2.3	Project debugging (incl. robot control)	–	–	●	▼	–
5.2.4	Power flow (sequential check)	●	●	●	●	●
5.2.5	Online exchange of function blocks	●	●	●	●	●
5.2.6	Offline simulation of PLC variables	●	●	●	●	●
5.2.7	Parameter monitor	●	●	●	●	●
5.2.8	Writing of variables	●	●	●	●	●
5.2.9	Breakpoint	●	●	●	●	●
5.2.10	Single step operation	●	●	●	●	●
5.2.11	Single cycle operation	●	●	●	●	●
5.2.12	Sequence control	●	●	●	●	●
6	CNC programming					
6.1	Parts programming	●	–	–	–	–
6.2	High-level language programming	●	–	–	–	–
6.3	Graphical NC programming	●	–	–	–	–
6.4	Graphical NC simulation	●	–	–	–	–
7	HMI project planning					
7.1	Project development tool WinStudio (Lite, 500 variables)	●	●	●	●	●
7.2	WinStudio extensions (1,500/4,000/64,000/512,000 variables)	○	○	○	○	○
8	Kinematics simulation	●	–	–	–	–

IndraWorks Operation		IndraMotion				IndraLogic
		MTX	MLD	MLC	MLP	L/V
1	Operation and visualization					
1.1	Configurable user interfaces with all standard functions	●	–	●	●	●
1.2	Configurable user screens	●	–	●	●	●
1.3	Automatic system monitoring units	●	–	●	●	●
1.4	Instructions and error messages in plaintext	●	–	●	●	●
1.5	System-specific expansions	●	–	●	●	●

● Default ▼ In preparation ○ Optional – Not existing

IndraWorks – ordering data

Ordering data for software	
Description	**Type code**
Software DVD, IndraWorks for IndraDrive drives (Parameterization)	SWA-IWORKS-D**-xxVRS-D0-DVD**-COPY
Software DVD, IndraWorks for IndraDrive drives (Service tool)	SWA-IWORKS-DS*-xxVRS-D0-DVD**-COPY
Software DVD, IndraWorks for IndraMotion MLD[1)]	SWA-IWORKS-MLD-xxVRS-D0-DVD**-COPY
Software DVD, IndraWorks for IndraMotion MLC[2)], IndraMotion MLP[2)] and IndraLogic[1)]	SWA-IWORKS-ML*-xxVRS-D0-DVD**
Single-license IndraWorks for IndraLogic (Engineering)[1)]	SWL-IWORKS-IL*-xxVRS-D0-ENG
Multiple-license (25) IndraWorks for IndraLogic (Engineering)[1)]	SWL-IWORKS-IL*-xxVRS-D0-ENG *M25
Single-license IndraWorks for IndraLogic (Operation)[1)]	SWL-IWORKS-IL*-xxVRS-D0-OPD
Multiple-license (25) IndraWorks for IndraLogic (Operation)[1)]	SWL-IWORKS-IL*-xxVRS-D0-OPD *M25
Single-license IndraWorks for IndraLogic (OPC server)[1)]	SWL-IWORKS-IL*-xxVRS-D0-COM
Multiple-license (25) IndraWorks for IndraLogic (OPC server)[1)]	SWL-IWORKS-IL*-xxVRS-D0-COM *M25
Runtime license for IndraLogic VE	SWL-VE**01-ILC-xxVRS-NN-0024
Runtime license for IndraLogic VE and IndraMotion for Handling	SWL-VE**01-ILC-xxVRS-NN-0024-T01
Single-license IndraWorks for IndraMotion MLC, IndraMotion MLP (Engineering)[2)]	SWL-IWORKS-ML*-xxVRS-D0-ENG
Multiple-license (25) IndraWorks for IndraMotion MLC, IndraMotion MLP (Engineering)[2)]	SWL-IWORKS-ML*-xxVRS-D0-ENG*M25
Single-license IndraWorks for IndraMotion MLC, IndraMotion MLP (OPC server)[2)]	SWL-IWORKS-ML*-xxVRS-D0-COM
Multiple-license (25) IndraWorks for IndraMotion MLC, IndraMotion MLP (OPC server)[2)]	SWL-IWORKS-ML*-xxVRS-D0-COM*M25
Single-license IndraWorks for IndraMotion MLC, IndraMotion MLP (Teamserver)[2)]	SWL-IWORKS-ML*-xxVRS-D0-TEAMSERVER
Software DVD, IndraWorks for IndraMotion MTX[1)]	SWA-IWORKS-MTX-xxVRS-D0-DVD**
Single-license IndraWorks for IndraMotion MTX (Operation)[1)]	SWL-IWORKS-MTX-xxVRS-D0-OPD
Multiple-license (25) IndraWorks for IndraMotion MTX (Operation)[1)]	SWL-IWORKS-MTX-xxVRS-D0-OPD*M25
Single-license IndraWorks for IndraMotion MTX (Operation and Engineering)[1)]	SWL-IWORKS-MTX-xxVRS-D0-OPDENG
Multiple-license (25) IndraWorks for IndraMotion MTX (Operation and Engineering)[1)]	SWL-IWORKS-MTX-xxVRS-D0-OPDENG*M25
Single-license IndraWorks for IndraMotion MTX (Offline Programming)[1)]	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR
Multiple-license (25) IndraWorks for IndraMotion MTX (Offline Programming)[1)]	SWL-IWORKS-MTX-xxVRS-D0-SIMULATOR*M25
Single-license IndraWorks for IndraMotion MTX (OPC server)[1)]	SWL-IWORKS-MTX-xxVRS-D0-COM
Multiple-license (25) IndraWorks for IndraMotion MTX (OPC server)[1)]	SWL-IWORKS-MTX-xxVRS-D0-COM*M25

Ordering data for software	
Description	**Type code**
Single-license IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0
Multiple-license (25) IndraWorks tool CamBuilder	SWS-IWORKS-CAM-xxVRS-D0*M25
Single-license IndraWorks tool I-Remote for remote maintenance	SWS-IWORKS-REM-xxVRS-D0
Single-license IndraWorks 3D viewer for kinematics simulation	SWS-IWORKS-V3D-NNVRS-D0

Ordering data for documentations	
Description	**Type code**
Application description IndraWorks	DOK-IWORKS-ENGINEE*Vxx-AWxx-EN-P
Application description IndraWorks simulator	DOK-IWORKS-SIMU****Vxx-AWxx-EN-P
Application description IndraWorks visualization	DOK-IWORKS-HMI*Vxx****AWxx-EN-P
Application description IndraWorks remote maintenance	DOK-IWORKS-IREMOTE*Vxx-AWxx-EN-P
Application description IndraWorks FDT/DTM	DOK-IWORKS-FDT*CON*Vxx-AWxx-EN-P
Application manual, IndraWorks IndraLogic 2G PLC Programming System	DOK-CONTRL-IL2GPRO*Vxx-APxx-EN-P
Installation Instructions, IndraWorks Software Installation	DOK-IWORKS-SOFTINS*Vxx-IBxx-EN-P

[1)] based on the PLC kernel of the 1st generation
[2)] based on the PLC kernel of the 2nd generation
xx = software/firmware version

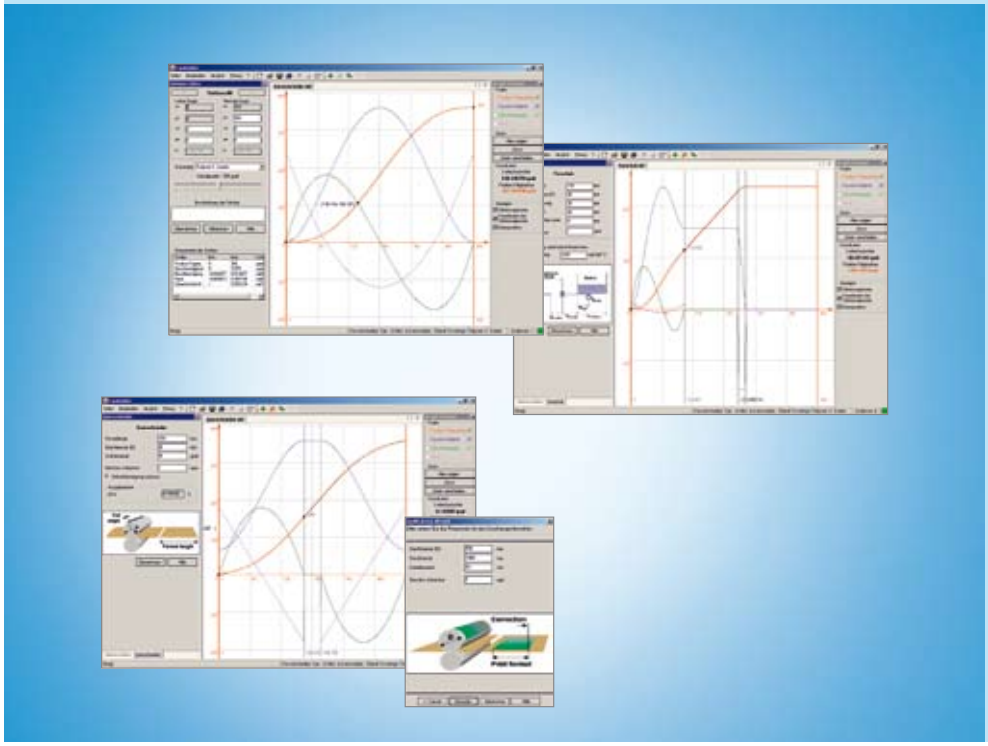
IndraWorks tool:
CamBuilder – intuitive software tool for cam creation

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 drives 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.

CamBuilder – technical data/ordering data

IndraWorks CamBuilder		
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	Motion laws	
3.1	Rest in rest	●
3.1.1	Standstill	●
3.1.2	Sine curve	●
3.1.3	Inclined sine curve	●
3.1.4	Acceleration-optimal inclined sine curve	●
3.1.5	Moment-inclined sine curve	●
3.1.6	Sinusoid of Gutman	●
3.1.7	Modified sine curve	●
3.1.8	Modified acceleration trapezoide	●
3.1.9	Quadratic parabola	●
3.1.10	Polynomial 5th order	●
3.1.11	Polynomial 7th order	●
3.1.12	Polynomial 8th order	●
3.2	Rest in velocity	●
3.2.1	Polynomial 5th order	●

IndraWorks CamBuilder		
3.2.2	Polynomial 8th order	●
3.3	Velocity in velocity	●
3.3.1	Constant velocity	●
3.3.2	Polynomial 5th order	●
3.3.3	Polynomial 7th order	●
3.3.4	Modified sene curve	●
3.4	Velocity in rest	●
3.4.1	Polynomial 5th order	●
3.4.2	Polynomial 8th order	●
3.5	General motion	●
3.5.1	Polynomial 2nd order	●
3.5.2	Polynomial 3rd order	●
3.5.3	Polynomial 4th order	●
3.5.4	Polynomial 5th order	●
3.5.5	Polynomial 7th order	●
3.5.6	Polynomial 8th order	●
3.6	Extended motion	●
3.6.1	Resulting hub	●
3.6.1.1	Velocity 2nd order (Startacc. zero)	●
3.6.1.2	Velocity 2nd order (Endacc. zero)	●
3.6.1.3	Linear velocity	●
3.6.1.4	Linear acceleration	●
3.6.2	Resulting master axis range	●
3.6.2.1	Acceleration-limited motion (trapezoid profile)	●
3.6.2.2	Acceleration-limited motion (sinusoid profile)	●
3.6.2.3	Jerk-limited motion (trapezoid profile)	●
3.6.3	Miscellaneous	●
3.6.3.1	Velocity-limited polynomial 5th order	●
3.6.3.2	Free of harmonics polynomial 5th order	●
3.6.3.3	Acceleration-limited (trapezoid profile)	●
3.7	Free cam table for user defined motion definition	●
3.8	MotionProfile	●
3.9	FlexProfile	●

Ordering data for software	
Description	**Type code**
Software CD, cam editor CamBuilder	SWA-CAM*PC-INB-xxVRS-D0-CD650
Single-license cam editor CamBuilder in IndraWorks	SWS-IWORKS-CAM-xxVRS-D0
Multiple-license (25) cam editor CamBuilder in IndraWorks	SWS-IWORKS-CAM-xxVRS-D0-M25

Ordering data for documentation	
Description	**Type code**
Functional description	DOK-IWORKS-CAMBUIL*Vxx-FKxx-EN-P

● Default

xx = software/firmware version

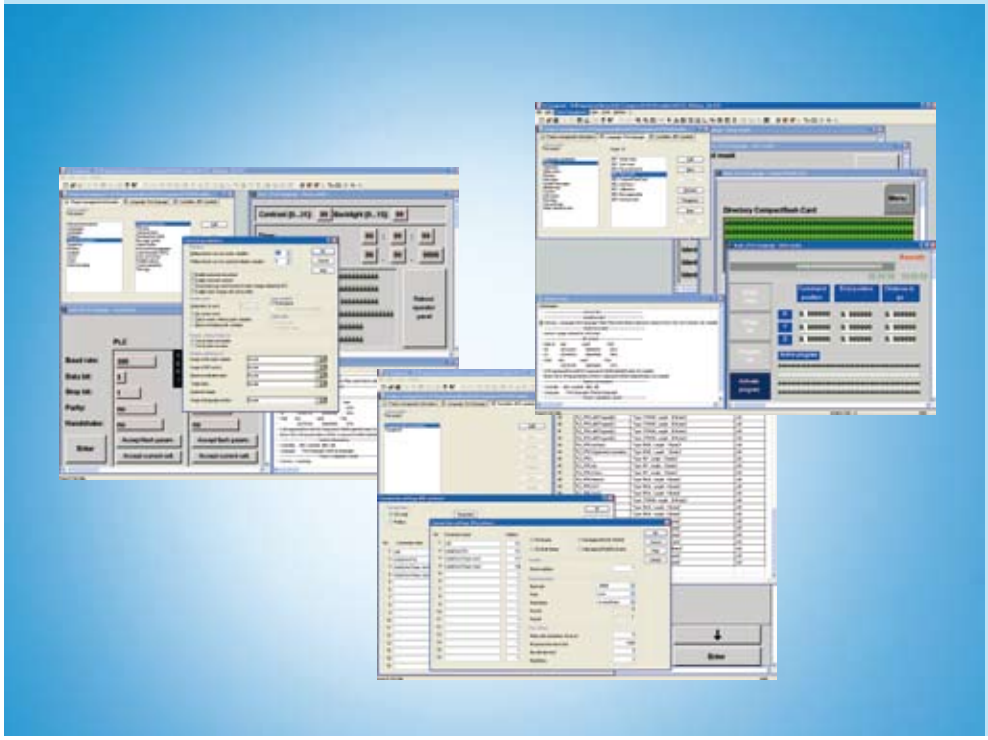
IndraWorks tool:
VI-Composer – the comfortable software for easy visualization and parameterization

VI-Composer is an easy but powerful project development tool for the visualization and parameterization of system-related data of the IndraControl VCP and 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 and VCH devices as often as desired.

The fully graphical VI-Composer software allows you to develop projects for IndraControl VCP and 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 and 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.

VI-Composer – technical data/ordering data

IndraWorks VI-Composer	
Development license for operation system	Windows XP/2000/NT
Firmware	Integrated in all VCP/VCH devices
Variables	65,535
Connections	Download: Ethernet TCP/IP
Communication	Serial, PROFIBUS, DeviceNet
Messages	9,999
Messaging buffer	3,000
Protocol driver	3S serial, Rexroth BUEP19E, BRC-Symbolic, DeviceNet, IndraLogic, PROFIBUS
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 multi-lingual projects	●
Graphics incorporation via OLE	With terminals with graphics capability
Development license	German/English

Ordering data for software	
Description	**Type code**
VI-Composer software CD	SWA-VIC*PC-INB-xxVRS-D0-CD650

Ordering data for documentation	
Description	**Type code**
Operating instructions	DOK-SUPPL*-VIC*BEDIEN*-AWxx-EN-P

● Default

xx = software/firmware version

IndraWorks Tool: WinStudio – intelligent software for creating graphical HMI interfaces

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.

WinStudio – technical data/ordering data

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
Operating system runtime license	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	WinCE	WinCE	WinCE
Operating system development license	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	WinXP/2000/ Server 2003/ Vista	–	–	–
Max. number of variables	500	1.500	4.000	64.000	512.000	500	1.500	4.000
Max. array size	256	256	512	1.024	16.384	256	256	512
Max. number of classes	32	32	32	64	512	32	32	32
Recipe handling (UNICODE, XML)	–	●	●	●	●	–	●	●
.NET controls	●	●	●	●	●	–	–	–
ODBC	●	●	●	●	●	–	–	–
Mathematics	●	●	●	●	●	●	●	●
Alarm/events	–	●	●	●	●	–	●	●
History	–	●	●	●	●	–	●	●
Driver	1	3	5	8	8	1	3	3
OPC server	–	●	●	●	●	–	●	●
OPC client	●	●	●	●	●	●	●	●
TCP/IP server	●	●	●	●	●	●	●	●
TCP/IP client	–	●	●	●	●	–	●	●
DDE server/client	–	●	●	●	●	–	–	–
Tags database	●	●	●	●	●	●	●	●
Web clients optional (WinStudio 7.2 and higher)	–	1/4/8	1/4/8	1/4/8	1/4/8	–	1/4/8	1/4/8

Ordering data for software	
Description	**Type code**
Software DVD, WinStudio	SWA-WINSTU-RUD-xxVRS-D0-DVD
RUD/1.5K (Editor licences Windows 2K/XP)	SWS-WINSTU-RUD-xxVRS-D0-1K5
RUD/4K (Editor licences Windows 2K/XP)	SWS-WINSTU-RUD-xxVRS-D0-4K
RUD/64K (Editor licences Windows 2K/XP)	SWS-WINSTU-RUD-xxVRS-D0-64K
RUD/512K (Editor licences Windows 2K/XP)	SWS-WINSTU-RUD-xxVRS-D0-512K
RUN/1.5K (Runtime licences Windows 2K/XP)	SWS-WINSTU-RUN-xxVRS-D0-1K5
RUN/4K (Runtime licences Windows 2K/XP)	SWS-WINSTU-RUN-xxVRS-D0-4K
RUN/64K (Runtime licences Windows 2K/XP)	SWS-WINSTU-RUN-xxVRS-D0-64K
RUN/512K (Runtime licences Windows 2K/XP)	SWS-WINSTU-RUN-xxVRS-D0-512K
RUN/1K5 – 1 Web client (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-1K5-1CL
RUN/4K – 1 Web client (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-4K-1CL
RUN/64K – 1 Web client (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-64K0-1CL
RUN/512K – 1 Web client (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-512K-1CL
RUN/1K5 – 4 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-1K5-4CL
RUN/4K – 4 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-4K-4CL
RUN/64K – 4 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-64K0-4CL
RUN/512K – 4 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-512K-4CL
RUN/1K5 – 8 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-1K5-8CL
RUN/4K – 8 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-4K-8CL

● Default – Not existing
xx = software/firmware version

WinStudio – ordering data

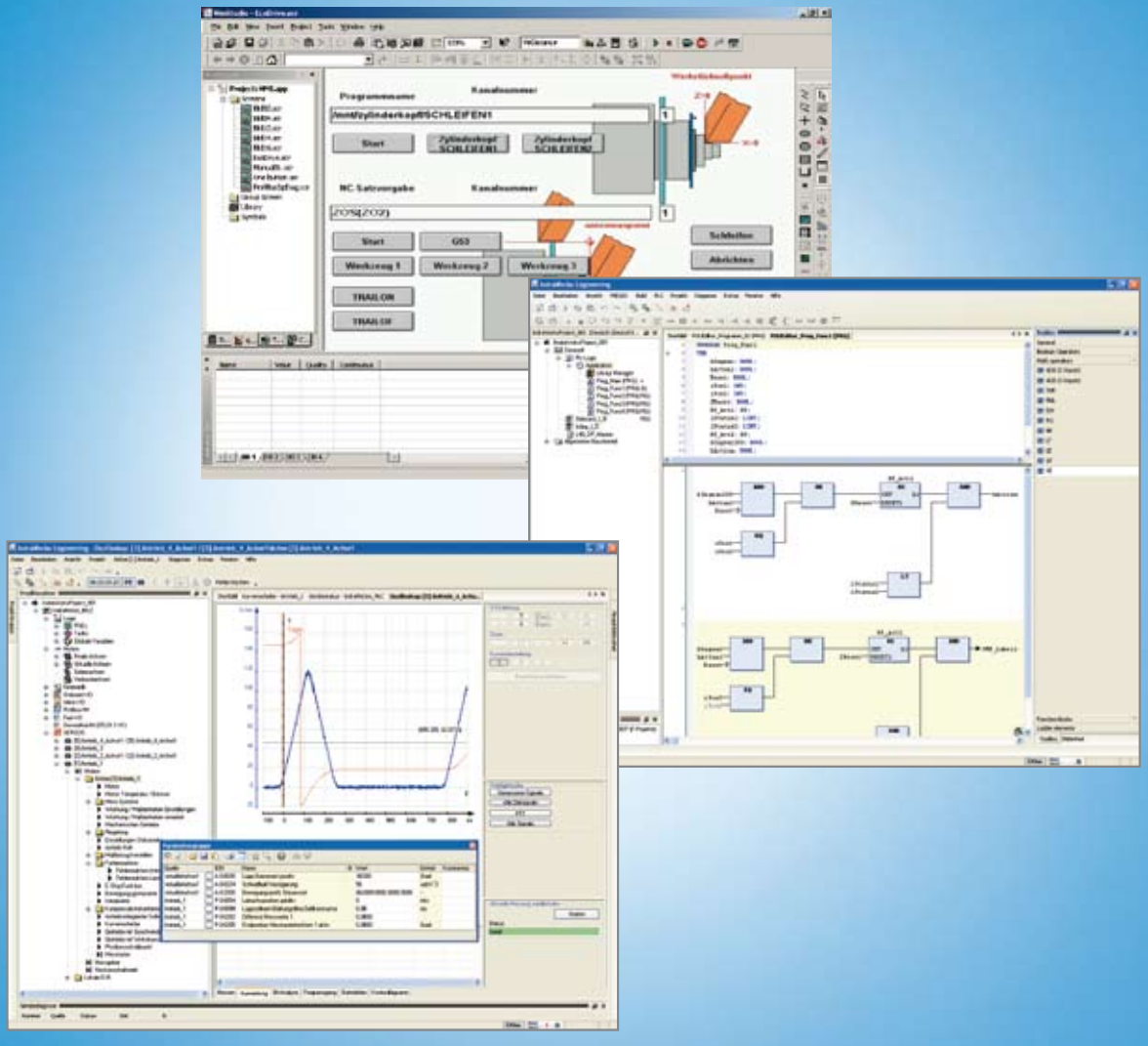
Ordering data for software	
Description	**Type code**
RUN/64K – 8 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-64K-8CL
RUN/512K – 8 Web clients (Runtime licences Windows 2K/XP with Web client)	SWS-WINSTU-RUW-xxVRS-D0-512K-8CL
RUN/1.5K – CE devices (Runtime licences for Windows CE devices)	SWS-WINSTU-RUN-xxVRS-D0-WCE1K5
RUN/4K – CE devices (Runtime licences for Windows CE devices)	SWS-WINSTU-RUN-xxVRS-D0-WCE4K
RUN/1K5 – 1 Web client (Runtime licences Windows CE with Web client)	SWS-WINSTU-RUW-xxVRS-D0-WCE1K5-1CL
RUN/4K – 1 Web client (Runtime licences Windows CE with Web client)	SWS-WINSTU-RUW-xxVRS-D0-WCE4K-1CL
RUN/1K5 – 4 Web clients (Runtime licences Windows CE with Web client)	SWS-WINSTU-RUW-xxVRS-D0-WCE1K5-4CL
RUN/4K – 4 Web clients (Runtime licences Windows CE with Web client)	SWS-WINSTU-RUW-xxVRS-D0-WCE4K-4CL
RUN/1K5 – 8 Web clients (Runtime licences Windows CE with Web client)	SWS-WINSTU-RUW-xxVRS-D0-WCE1K5-8CL
RUN/4K – 8 Web clients (Runtime licences Windows CE with Web client)	SWS-WINSTU-RUW-xxVRS-D0-WCE4K-8CL

Ordering data for accessories	
Description	**Type code**
USB dongle	B-AC USB-Dongle

Ordering data for documentation	
Description	**Type code**
Functional description	DOK-CONTRL-WIS*PC**Vxx-KBxx-EN-P

● Default – Not existing

xx = software/firmware version


Programmname
Kanalnummer
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Start
Zylinderkopf SCHLEIFEN1
Zylinderkopf SCHLEIFEN2
NC Satzeingabe
Kanalnummer
Start
G53
Werkzeug 1
Werkzeug 2
Werkzeug 3
TRAILON
TRAILOF
Schleifen
Abrichten

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:

- Printing and converting machines
- 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 VSB
  - IndraControl VPB
  - IndraControl VDP
- 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 panels

These controller-based compact operator panels 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 touch screens 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 TCP/IP, 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 connection module IndraControl 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 panels

These panels allow you to operate your machine easily and conveniently via a touch screen 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 as control hardware. Expand your embedded PCs with our soft PLC solution IndraLogic or IndraMotion MLP for multi-axis applications.

- Compact system design for attachment in control mounting
- 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 V – trend-setting human-machine interface (HMI) devices and industrial PCs

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 connection module IndraControl 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" touch screen 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 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 – compact PC system for industrial applications

The mechanical and electrical design of the IndraControl VPP compact PC control terminals make them ideal for applications that involve confined spaces. SSD memory, an optimized cooling concept and temperature monitoring ensure excellent reliability. The long-term availability of the devices and software packages gives you maximum investment security when developing and duplicating 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 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 touch screen
- Open and flexible for customer-specific requirements
- Individual solution for distributed operating and control designs
- Up to four displays at one industrial PC

IndraControl VEP and VDP – robust control terminals with an ergonomic housing

IndraControl V control terminals combine flat operating displays or embedded PCs with industrial-strength housings to form a robust unit. The IP54-compliant terminals, with IP65 protection at the front, are operated via a TFT touch screen, three function buttons, and an emergency stop button. The single-piece metal housing, with ergonomically-shaped grips and holders to VESA standards, enables user- and service-friendly operation directly at the machine.

Operating display
IndraControl VDP
- Hot plug-capable CDI interface
- Distance of up to 80 meters from the industrial PC

Embedded PC
IndraControl VEP
- Hardware with no hard drive, no rotating media
- Controller and visualization in a single unit
- Integrated UPS for temporary power

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
IndraControl VAK
- Alphanumeric keyboard and integrated mouse
- Protection to IP65 both when closed and when open

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

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

IndraControl VCP – technical data

Technical data	VCP 02	VCP 05	VCP 08	VCP 11	VCP 20	VCP 25	VCP 35
							
Display	FSTN			FSTN-Touch/ TFT-Touch	FSTN	STN-color-Touch	TFT-Touch
	With graphics capability					With full graphics capability	With full graphics capability
	5 grey tones			5 grey tones/ 256 colors	5 grey tones	125 colors	65.635 colors
	7.6 cm (3")	7.6 cm (3")	9.7 cm (3.8")	9.7 cm (3.8") 8.9 cm (3.5")	14.5 cm (5.7")	14.5 cm (5.7")	26.4 cm (10.4")
Resolution	160 x 80	160 x 80	320 x 240	320 x 240 / 320 x 240	320 x 240	320 x 240	640 x 480
Keyboard/touch	Foil keys			Touch screen	Foil keys	Touch screen	Touch screen
Function keys/ system keys	4/7 (2 with LED)	6/24 (3 with LED)	15 (12 with LED)/ 22 (3 with LED)	–	8/16 (8 with LED)	–	–
Application memory	3 MB						
Flash memory	16 MB						
Slot for expansions	1						
Supply voltage	24 VDC						
Interfaces	1 x Ethernet TCP/IP, 2 x USB host, optional: 1 RS232/RS485 module						
Fieldbus	PROFIBUS slave						
Approvals	CE/UL/CSA						
Protection category	front 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/ 130 x 96 x 58 mm	300 x 160 x 55 mm	203 x 147 x 66 mm	328 x 249 x 60 mm
Availability							
Automation system	IndraMotion MLD, IndraMotion MLC, IndraMotion MLP, IndraMotion MTX, IndraLogic, SYNAX 200 (technical details available on request)						

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VCP – ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl VCP 02	VCP02.2DRN-003-NN-NN-PW
IndraControl VCP 02 with serial interfaces	VCP02.2DRN-003-SR-NN-PW
IndraControl VCP 02 with PROFIBUS slave	VCP02.2DRN-003-PB-NN-PW
IndraControl VCP 05	VCP05.2DSN-003-NN-NN-PW
IndraControl VCP 05 with serial interfaces	VCP05.2DSN-003-SR-NN-PW
IndraControl VCP 05 with PROFIBUS slave	VCP05.2DSN-003-PB-NN-PW
IndraControl VCP 08	VCP08.2DTN-003-NN-NN-PW
IndraControl VCP 08 with serial interfaces	VCP08.2DTN-003-SR-NN-PW
IndraControl VCP 08 with PROFIBUS slave	VCP08.2DTN-003-PB-NN-PW
IndraControl VCP 11 with 9.7 cm (3.8") FSTN display	VCP11.2DWN-003-NN-NN-PW
IndraControl VCP 11 with serial interfaces 9.7 cm (3.8") FSTN display	VCP11.2DWN-003-SR-NN-PW
IndraControl VCP 11 with PROFIBUS slave, 9.7 cm (3.8") FSTN display	VCP11.2DWN-003-PB-NN-PW
IndraControl VCP 11 with 8.9 cm (3.5") TFT display	VCP11.2DCN-003-NN-NN-PW
IndraControl VCP 11 with serial interfaces, 8.9 cm (3.5") TFT display	VCP11.2DCN-003-SR-NN-PW
IndraControl VCP 11 with PROFIBUS slave, 8.9 cm (3.5") TFT display	VCP11.2DCN-003-PB-NN-PW
IndraControl VCP 20	VCP20.2DUN-003-NN-NN-PW
IndraControl VCP 20 with serial interfaces	VCP20.2DUN-003-SR-NN-PW
IndraControl VCP 20 with PROFIBUS slave	VCP20.2DUN-003-PB-NN-PW
IndraControl VCP 25	VCP25.2DVN-003-NN-NN-PW
IndraControl VCP 25 with serial interfaces	VCP25.2DVN-003-SR-NN-PW
IndraControl VCP 25 with PROFIBUS slave	VCP25.2DVN-003-PB-NN-PW
IndraControl VCP 35	VCP35.2ECN-003-NN-NN-PW
IndraControl VCP 35 with serial interfaces	VCP35.2ECN-003-SR-NN-PW
IndraControl VCP 35 with PROFIBUS slave	VCP35.2ECN-003-PB-NN-PW

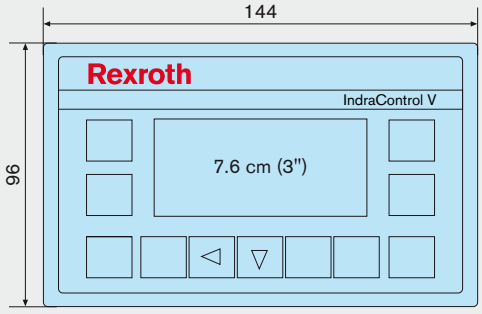
Ordering data for accessories	
Description	**Type code**
Battery kit	VAS04.1-001-002-NN

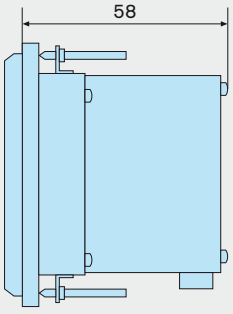
Ordering data for documentation	
Description	**Type code**
IndraControl VCP 02	DOK-SUPPL*-VCP*02.2***-PRxx-EN-P
IndraControl VCP 05	DOK-SUPPL*-VCP*05.2***-PRxx-EN-P
IndraControl VCP 08	DOK-SUPPL*-VCP*08.2***-PRxx-EN-P
IndraControl VCP 11	DOK-SUPPL*-VCP*11.2***-PRxx-EN-P
IndraControl VCP 20	DOK-SUPPL*-VCP*20.2***-PRxx-EN-P
IndraControl VCP 25	DOK-SUPPL*-VCP*25.2***-PRxx-EN-P
IndraControl VCP 35	DOK-SUPPL*-VCP*35.2***-PRxx-EN-P
IndraControl VCP operator design	DOK-SUPPL*-VIC*BED*02*-AWxx-EN-P

xx = software/firmware version, device version

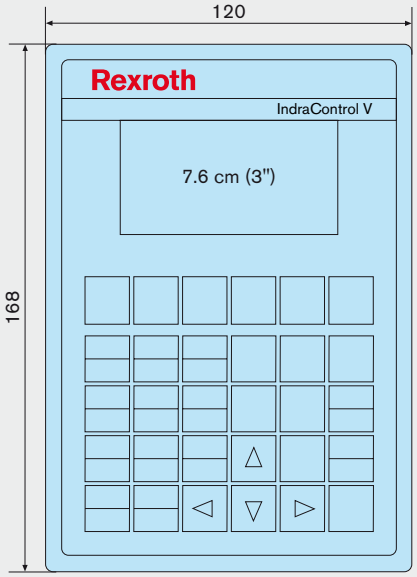
IndraControl VCP 02 and VCP 05

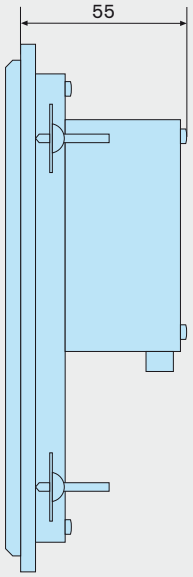
IndraControl VCP 02





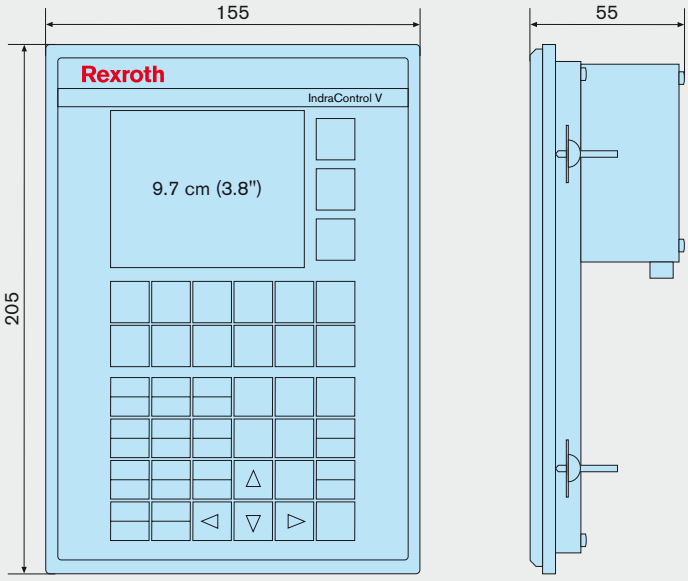
IndraControl VCP 05



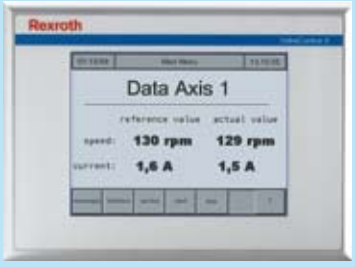


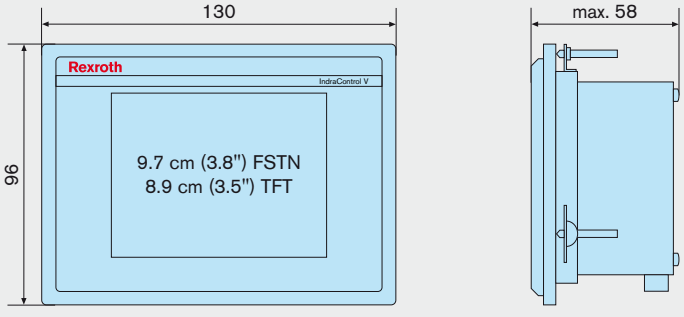
IndraControl VCP 08 and VCP 11

IndraControl VCP 08



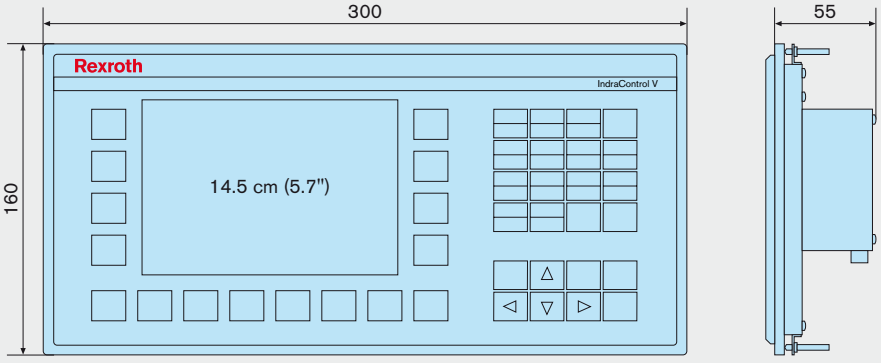
IndraControl VCP 11



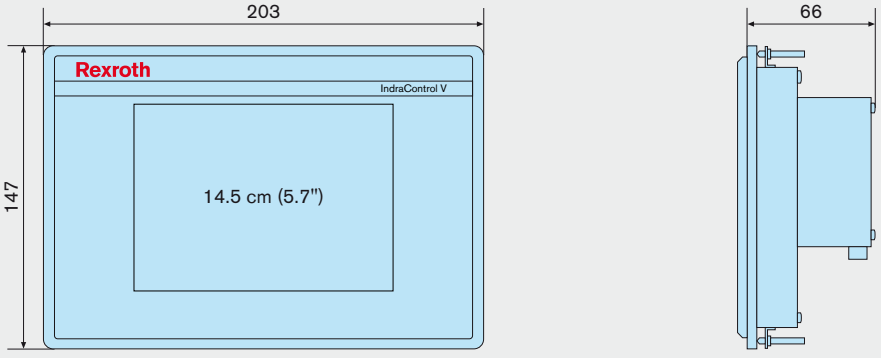


IndraControl VCP 20 and VCP 25

IndraControl VCP 20

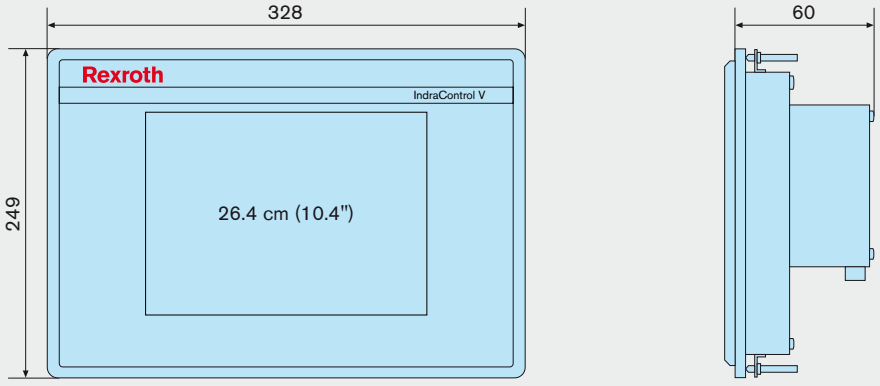


IndraControl VCP 25



IndraControl VCP 35

IndraControl VCP 35



IndraControl VCH – technical data/ordering data

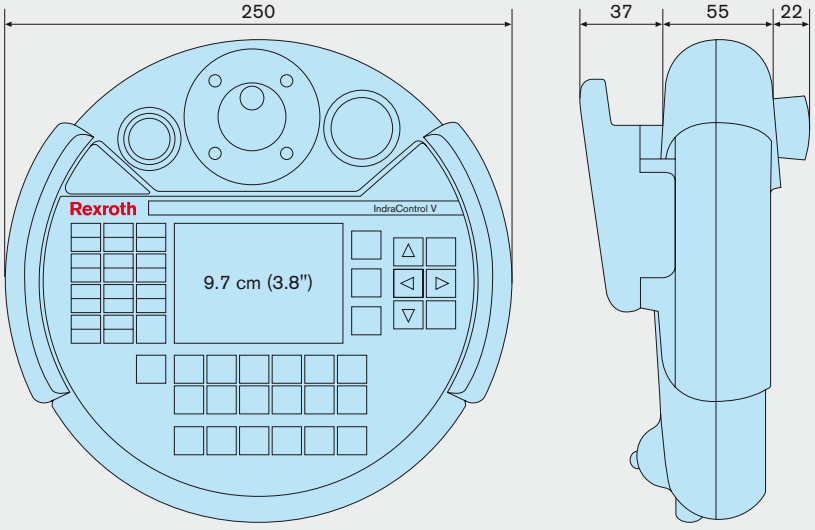
Technical data	VCH 08
	
Display	9.7 cm (3.8") – grey tones
Resolution	320 x 240
Touch screen	–
Keyboard	40 foil keys
Function keys	18 freely definable function keys
Stop button	●
2 enabling buttons (2-circuit, 3-step)	●
Override potentiometer	○
Handwheel	○
Processor	XScale
RAM	64 MB
Compact flash	64 MB
Human-Machine Interface (HMI)	24 VDC
visualization	VI composer
Approvals	UL 508, UL 1740, SIBE, CSA
Protection category	IP65
Temperature	5 – 45 °C
Dimensions (W x H x D)	Diameter 250 x 55 mm + 37 mm handle + 22 mm Stop button
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)

Ordering data for hardware/accessories	
Description	**Type code**
IndraControl VCH 08	VCH08.1EAB-064ET-A1D-064-CS-E1-PW
IndraControl VCH 08 with handwheel	VCH08.1EAB-064ET-A1D-064-DS-E1-PW
IndraControl VAC 30 connection module	VAC30.2-N-NN
VAS 01 wall-mounted holder	VAS01.1-002

Ordering data for documentation	
Description	**Type code**
IndraControl VCH 08	DOK-SUPPL*-VCH*8.1***-PR01-EN-P

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VCH 08



IndraControl VEP (series 3) – technical data

Technical data	VEP 30.3	VEP 40.3	VEP 50.3	VEP 30.3 DP
				
Display	21.3 cm (8.4") – TFT	30.7 cm (12.1") – TFT	38.1 cm (15") – TFT	21.3 cm (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			
	–	–	–	3 function buttons 1 E-stop pushbutton
Processor	● Celeron 600 MHz			Celeron 600 MHz
RAM	● 512 MB, ○ 1 GB			
Compact flash	2 CF sockets/1 x 1 GB CF card fitted			
Module slots	1			
Supply voltage	24 VDC			
Interfaces	RS232, 2 x USB, ● 1 x Ethernet, ○ 2 x Ethernet			
Fieldbus	○ Fieldbus module (PROFIBUS master) occupies 1 slot			
UPS	○ Short-time UPS for data backup (512 kB) to CF card			
Operating system	Windows CE 4.2			
Approvals	CE/UL/CSA			
Protection category	Front IP65			Front IP65/overall IP54
Temperature	5 to 45 °C			
Dimensions (W x H x D)	296 x 200 x 75 mm	350 x 290 x 73 mm	407 x 370 x 75 mm	246 x 280 x 85 mm
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VEP (series 3) – ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl VEP 30, visualization	VEP30.3CCN-256NN-MAD-128-NN-FW
IndraControl VEP 30, control component, PROFIBUS	VEP30.3CCU-256NA-MAD-128-NN-FW
IndraControl VEP 30, control terminal, visualization	VEP30.3DKN-256NN-MAD-128-CG-FW
IndraControl VEP 30, control terminal, control component, PROFIBUS	VEP30.3DKU-256NA-MAD-128-CG-FW
IndraControl VEP 40, visualization	VEP40.3CEN-256NN-MAD-128-NN-FW
IndraControl VEP 40, control component, PROFIBUS	VEP40.3CEU-256NA-MAD-128-NN-FW
IndraControl VEP 50, visualization	VEP50.3CHN-256NN-MAD-128-NN-FW
IndraControl VEP 50, control component, PROFIBUS	VEP50.3CHU-256NA-MAD-128-NN-FW

Ordering data for firmware	
Description	**Type code**
Firmware for IndraControl VEP xx.3 with support of Asiatic characters	FWA-VEP*03-CWL-xxVRS-D0

Ordering data for documentation	
Description	**Type code**
IndraControl VEP xx.3, project planning manual	DOK-SUPPL*-VEP**.3****-PRxx-EN-P

xx = software/firmware version

IndraControl VEP (series 4) – technical data

Technical data	VEP 30.4	VEP 40.4	VEP 40.4	VEP 50.4	VEP 50.4
					
Display	21.3 cm (8.4") – TFT	30.7 cm (12.1") – TFT	30.7 cm (12.1") – TFT	38.1 cm (15") – TFT	38.1 cm (15") – TFT
Resolution	800 x 600, SVGA	800 x 600, SVGA	800 x 600, SVGA	1,024 x 768, XGA	1,024 x 768, XGA
Touch screen	●				
Keyboard	Through virtual keyboard				
Machine/function/additional keys	–	–	16/16/14	–	16/16/14
Processor	● Celeron 600 MHz, ○ Celeron 1 GHz				
RAM	● 512 MB, ○ 1 GB				
Compact flash	2 CF sockets, ● 1 GB CF card fitted, ○ 4 GB CF card fitted				
Module slots	1				
Supply voltage	24 VDC				
Interfaces	3 x USB (1 x front), ● 1 x Ethernet TCP/IP, ○ 2 x Ethernet TCP/IP, ○ 2 x SERCOS III				
Fieldbus	Fieldbus module (PROFIBUS master) occupies 1 slot				
UPS	○ Short-time UPS for data backup (512 kB) to CF card				
Operating system	Windows CE 6.0, Windows XP Embedded				
Approvals	CE/UL/CSA				
Protection category	Front IP65				
Temperature	5 to 45 °C				
Dimensions (W x H x D)	296 x 200 x 88 mm	350 x 290 x 86 mm		407 x 370 x 88 mm	
Availability					
Automation system	IndraMotion MLC, IndraMotion MLP, IndraMotion MTX, IndraLogic (technical details available on request)				

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VEP (series 4) – ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl VEP 30, visualization	VEP30.4EFN-512NN-MAD-1G0-NN-FW
IndraControl VEP 30, control component, PROFIBUS	VEP30.4EFU-512NC-MAD-1G0-NN-FW
IndraControl VEP 30, control component, PROFIBUS, SERCOS III	VEP30.4EFU-5123C-MBD-1G0-NN-FW
IndraControl VEP 40, visualization	VEP40.4DBN-512NN-MAD-1G0-NN-FW
IndraControl VEP 40, keys/touch, visualization	VEP40.4EIN-512NN-MAD-1G0-NN-FW
IndraControl VEP 40, control component, PROFIBUS	VEP40.4DBU-512NC-MAD-1G0-NN-FW
IndraControl VEP 40, control component, PROFIBUS, SERCOS III	VEP40.4DBU-5123C-MBD-1G0-NN-FW
IndraControl VEP 50, visualization	VEP50.4DEN-512NN-MAD-1G0-NN-FW
IndraControl VEP 50, control component, PROFIBUS	VEP50.4DEU-512NC-MAD-1G0-NN-FW
IndraControl VEP 50, control component, PROFIBUS, SERCOS III	VEP50.4DEU-5123C-MBD-1G0-NN-FW

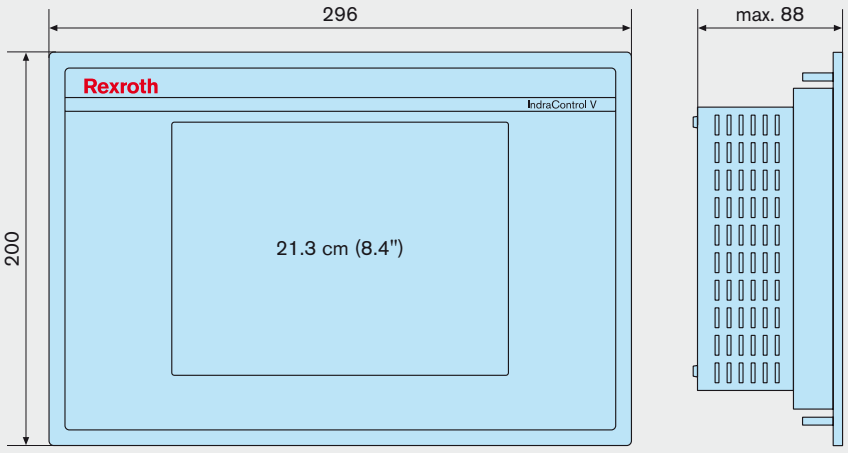
Ordering data for firmware	
Description	**Type code**
Firmware for IndraControl VEP xx.4, Windows CE 6.0	FWA-VEP*04-CWL-xxVRS-D0
Firmware for IndraControl VEP xx.4, Window XP Embedded	FWA-VEP*04-XPE-xxVRS-D0

Ordering data for documentation	
Description	**Type code**
IndraControl VEP xx.3, project planning manual	DOK-SUPPL*-VEP*xx.4***-PRxx-EN-P

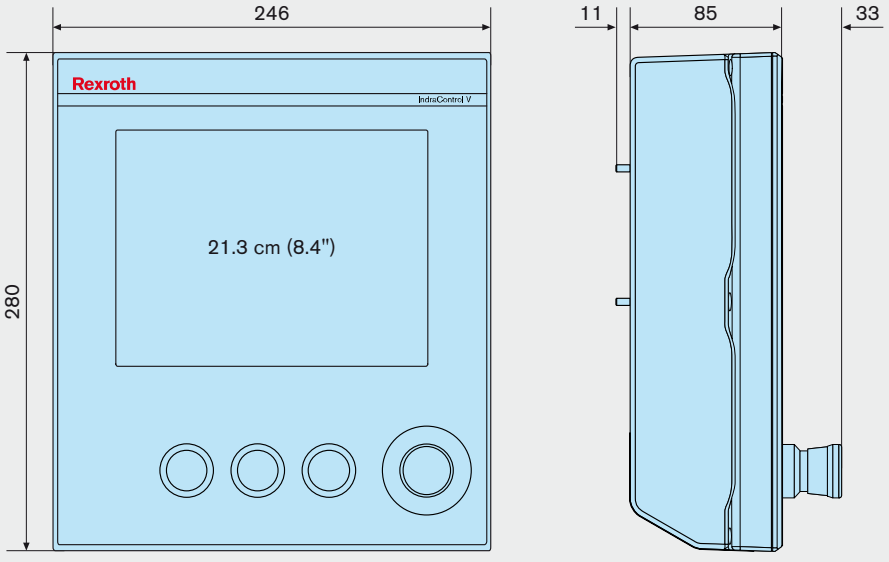
xx = software/firmware version

IndraControl VEP 30

IndraControl VEP 30

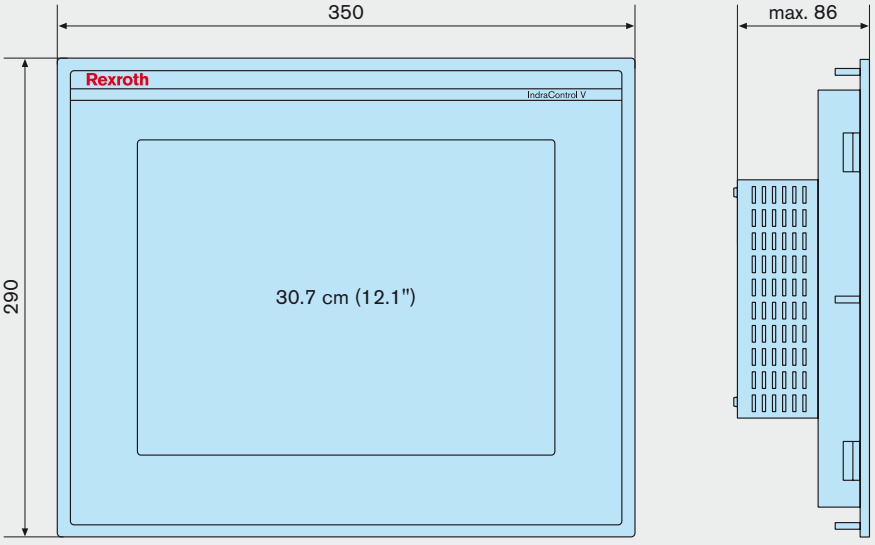


IndraControl VEP 30 DP

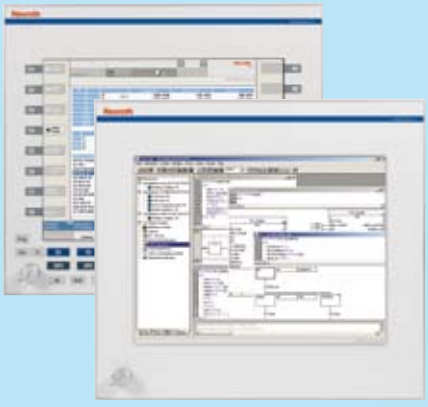


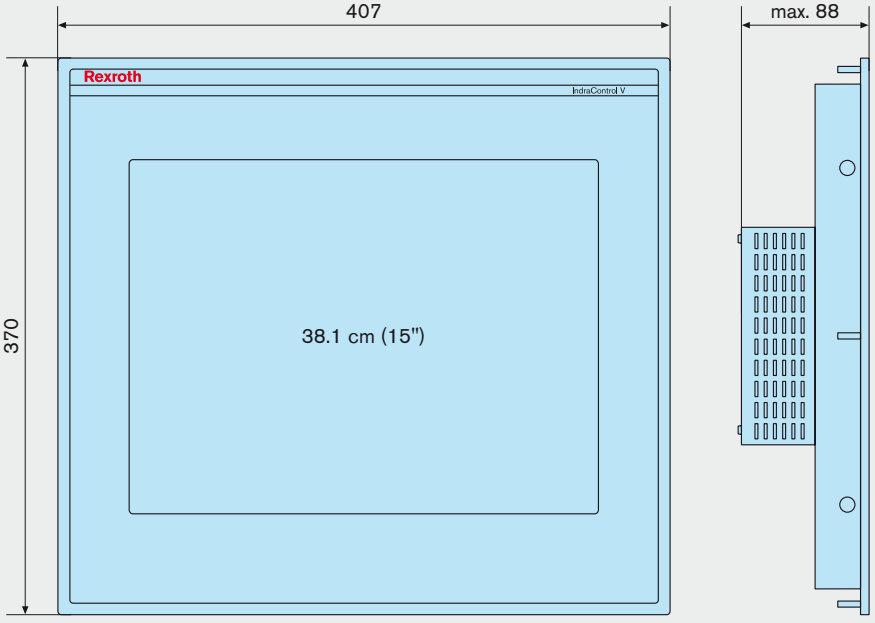
IndraControl VEP 40 and VEP 50

IndraControl VEP 40



IndraControl VEP 50





IndraControl VEH – technical data/ordering data

Technical data	VEH 30
	
Display	21.3 cm (8.4") – TFT
Resolution	800 x 600, SVGA
Touch screen	●
Keyboard	Through virtual keyboard
Function keys	34 foil keys: 2 x 6 jog keys, 2 x 8 free definable keys, 4 navigation keys, 1 x OK key, 1 x ESC key
Stop button (2-circuit)	●
2 enabling buttons (2-circuit, 3-step)	○
Override potentiometer	○
Handwheel	○
Processor	300 MHz, Intel-based
RAM	128 MB
Compact flash	128 MB
Supply voltage	24 VDC
Operating system	Windows CE
Approvals	CE/UL/CSA/BG
Protection category	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)

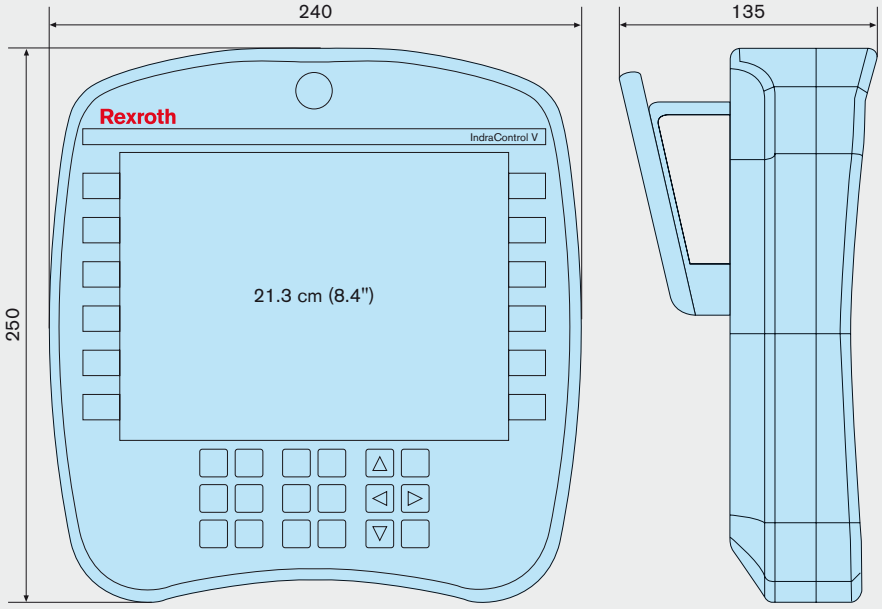
Ordering data for hardware/accessories	
Description	**Type code**
IndraControl VEH 30, foil keyboard, stop button	VEH30.1BJN-128ET-G3D-128-NS-NN-FW
IndraControl VEH 30, foil keyboard, enabling button	VEH30.1BJN-128ET-G3D-128-BS-NN-FW
IndraControl VEH 30, foil keyboard, override, handwheel	VEH30.1BJN-128ET-G3D-128-DS-NN-FW
IndraControl VAC 30 connection module	VAC30.2-N-NN
Wall-mounted holder	VAS01.1-001-NNN-NN

Ordering data for firmware	
Description	**Type code**
Firmware for IndraControl VEH 30	FWA-VEH*01-CWN-xxVRS-EN

Ordering data for documentation	
Description	**Type code**
IndraControl VEH 30.1, project planning manual	DOK-SUPPL*-VEH*30.1***-PRxx-EN-P

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VEH



IndraControl VSP – technical data

Technical data	VSP 16.3	VSP 16.3	VSP 40.3	VSP 40.3
				
Display	30.5 cm (12") – TFT		38.1 cm (15") – TFT	
Resolution	800 x 600, SVGA		1,024 x 768, XGA	
Colors	256,000			
Touch screen	–	●	–	●
Machine/function/additional keys	16/16/14	–	16/16/14	–
Alphanumeric keyboard	Additional component VAK			
Processor	Celeron 440 2 GHz			
RAM	1 GB			
Operating system	Windows XP			
PCI/PCIe slots	5/1			
80 GB hard disk	●			
2 x 80 GB hard disk (RAID 1)	○			
32 GB solid state disk SSD	○			
DVD-ROM/DVD-RW	○			
GBit-Ethernet	2			
PS2 (keyboard/mouse)	2			
USB 2.0 on PC	8			
USB on front	1			
COM	1			
External service monitor	VGA			
Supply voltage	24 VDC			
UPS	External			
Status LED	Voltage, HDD, UPS, temperature			
Monitoring software	Voltage, temperature, fan			
Approvals	CE/UL/CSA			
Protection category	Front IP65			
Vibration/shock carrying capacity	1 g/15 g			
Ambient temperature during operation	5 to 45°			
Dimensions (W x H x D)	350 x 290 x 177 mm		407 x 370 x 171 mm	
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VSP – ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl VSP 16, 30.5 cm (12") display, touch screen, 24 VDC, DVD recorder	VSP16.3DBG-1G0NN-C2D-DE-NN-FW
IndraControl VSP 16, 30.5 cm (12") display, touch screen, 24 VDC	VSP16.3DBG-1G0NN-C2D-DN-NN-FW
IndraControl VSP 16, 30.5 cm (12") display, foil keys, 24 VDC, DVD recorder	VSP16.3BKG-1G0NN-C2D-DE-NN-FW
IndraControl VSP 16, 30.5 cm (12") display, foil keys, 24 VDC	VSP16.3BKG-1G0NN-C2D-DN-NN-FW
IndraControl VSP 40, 38.1 cm (15") display, touch screen, 24 VDC, DVD recorder	VSP40.3DEG-1G0NN-C2D-DE-NN-FW
IndraControl VSP 40, 38.1 cm (15") display, touch screen, 24 VDC	VSP40.3DEG-1G0NN-C2D-DN-NN-FW
IndraControl VSP 40, 38.1 cm (15") display, foil keys, 24 VDC, DVD recorder	VSP40.3BIG-1G0NN-C2D-DE-NN-FW
IndraControl VSP 40, 38.1 cm (15") display, foil keys, 24 VDC	VSP40.3BIG-1G0NN-C2D-DN-NN-FW

Ordering data for firmware	
Description	**Type code**
Firmware (German), Windows XP operating (English) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SV)	FWA-VS3VP3-WXP-xxVRS-A0-OEM
Firmware (German), Windows XP operating (English) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SV) system and Acronis data backup software	FWA-VS3VP3-WXP-xxVRS-A0-OEM A1

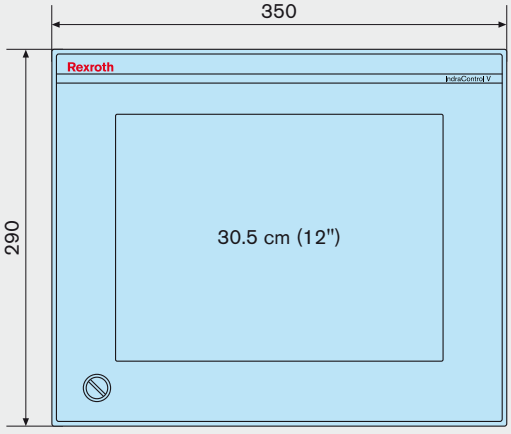
Ordering data for accessories	
Description	**Type code**
Uninterrupted power supply, 24 VDC, 240 watts	VAU01.1U-024-024-240-NN
Voltage supply, 24 VDC power supply unit, 100-120/200-240 VAC Auto Select	VAP01.1H-W32-024-010-NN

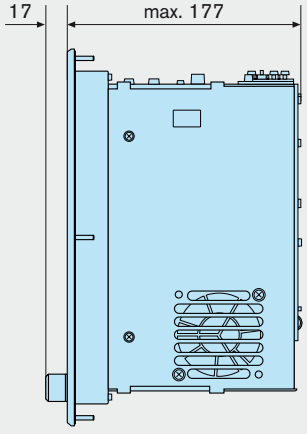
Ordering data for documentation	
Description	**Type code**
IndraControl VSP project planning	DOK-SUPPL*-VSP*16/40**PRxx-EN-P

xx = software/firmware version, device version

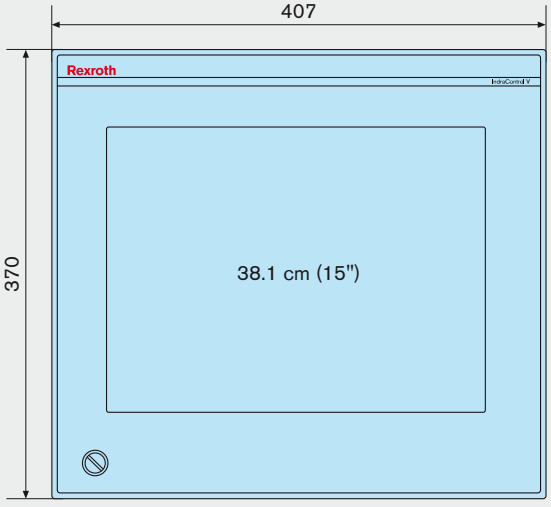
IndraControl VSP 16 and VSP 40

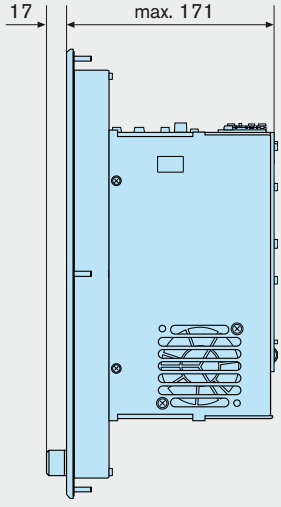
IndraControl VSP 16





IndraControl VSP 40



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IndraControl VPP – technical data

Technical data	VPP 16.3	VPP 16.3	VPP 40.3	VPP 40.3	VPP 60.3
					
Display	30.5 cm (12") – TFT		38.1 cm (15") – TFT		48.3 cm (19") – TFT
Resolution	800 x 600, SVGA		1,024 x 768, XGA		1,280 x 1,024, SXGA
Colors	256,000				16 Mio.
Touch screen	–	●	–	●	●
Machine/function/additional keys	16/16/14	–	16/16/14	–	–
Alphanumeric keyboard	Additional component VAK				
Processor	Core Duo L2400 1.66 GHz/Core 2 Duo T7400 2.16 GHz				
RAM	1 GB/2 GB				
Operating system	Windows XP				
PCI/PCIe slots	1/0 2/0 1/1 4/0 3/1				
Approvals	CE/UL/CSA				
80 GB hard disk	●				
2 x 80 GB hard disk (RAID 1)	○				
32 GB solid state disk SSD	○				
DVD-ROM/DVD-RW	○				
GBit-Ethernet	2				
USB 2.0 on PC	6				
USB on front	1				
External service monitor	VGA				
Supply voltage	24 VDC				
UPS	External				
Status LED	Voltage, HDD, UPS, temperature				
Monitoring software	Voltage, temperature, fan				
Protection category	Front IP65				
Vibration/shock carrying capacity	1 g/15 g				
Ambient temperature during operation	5 to 45°				
1 slot (W x H x D)	350 x 290 x 115 mm		407 x 370 x 109 mm		–
2 slots (W x H x D)	–		407 x 370 x 135 mm		–
4 slots (W x H x D)	350 x 290 x 123 mm		407 x 370 x 117 mm		483 x 400 x 137 mm
Availability					
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)				

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VPP – ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl VPP 16, 30.5 cm (12") display, touch screen, 24 VDC, 1 PCI slot	VPP16.3DBK-1G0NN-D1D-DN-NN-FW
IndraControl VPP 16, 30.5 cm (12") display, touch screen, 24 VDC, 4 PCI slots	VPP16.3DBM-1G0NN-D1D-DN-NN-FW
IndraControl VPP 16, 30.5 cm (12") display, foil keys, 24 VDC, 1 PCI slot	VPP16.3BKK-1G0NN-D1D-DN-NN-FW
IndraControl VPP 16, 30.5 cm (12") display, foil keys, 24 VDC, 4 PCI slots	VPP16.3BKM-1G0NN-D1D-DN-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, foil keys, 24 VDC, 2 PCI slots	VPP40.3BIL-1G0NN-D1D-DN-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, touch screen, 24 VDC, 1 PCI slot	VPP40.3DEK-1G0NN-D1D-DN-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, touch screen, 24 VDC, 2 PCI slots	VPP40.3DEL-1G0NN-D1D-DN-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, touch screen, 24 VDC, 4 PCI slots	VPP40.3DEM-1G0NN-D1D-DN-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, touch screen, 24 VDC, 4 PCI slots, DVD recorder	VPP40.3DEM-1G0NN-D1D-DE-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, foil keys, 24 VDC, 1 PCI slot	VPP40.3BIK-1G0NN-D1D-DN-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, foil keys, 24 VDC, 4 PCI slots	VPP40.3BIM-1G0NN-D1D-DN-NN-FW
IndraControl VPP 40, 38.1 cm (15") display, foil keys, 24 VDC, 4 PCI slots	VPP40.3BIM-2G0NN-D2D-DN-NN-FW
IndraControl VPP 60, 48.3 cm (19") display, touch screen, 24 VDC, 4 PCI slots	VPP60.3FEM-1G0NN-D1D-DN-NN-FW

Ordering data for accessories	
Description	**Type code**
Uninterrupted power supply UPS, 24 VDC, 240 watts	VAU01.1U-024-024-240-NN
Voltage supply, 24 VDC power supply unit, 100-120/200-240 VAC Auto Select	VAP01.1H-W32-024-010-NN

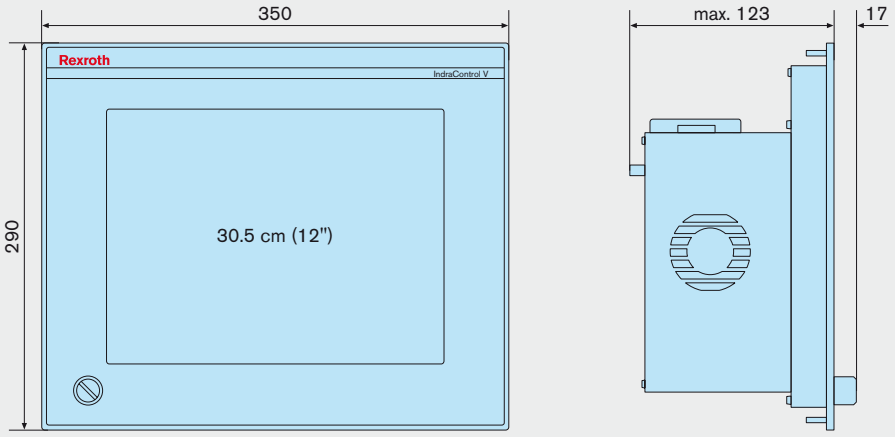
Ordering data for firmware	
Description	**Type code**
Firmware (German), Windows XP operating (English) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SV)	FWA-VS3VP3-WXP-xxVRS-A0-OEM
Firmware (German), Windows XP operating (English) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SV) system and Acronis data backup software	FWA-VS3VP3-WXP-xxVRS-A0-OEM A1

Ordering data for documentation	
Description	**Type code**
IndraControl VPP project planning	DOK-SUPPL*-VPP*16/40**PRxx-EN-P

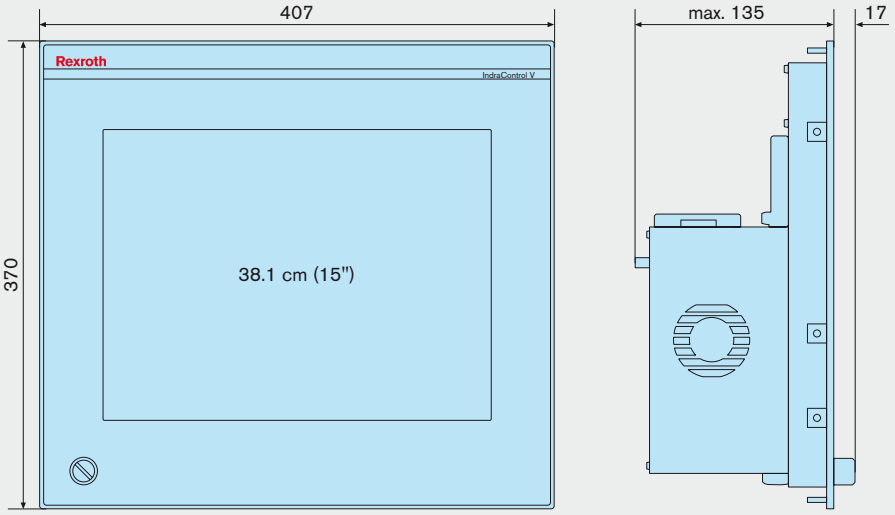
xx = software/firmware version, device version

IndraControl VPP 16 and VPP 40

IndraControl VPP 16

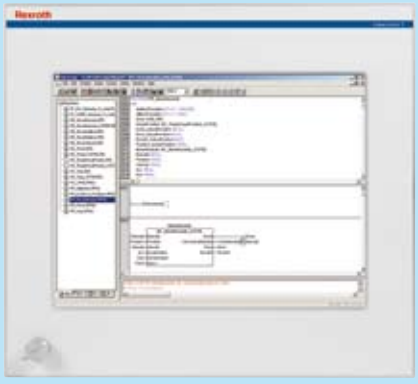


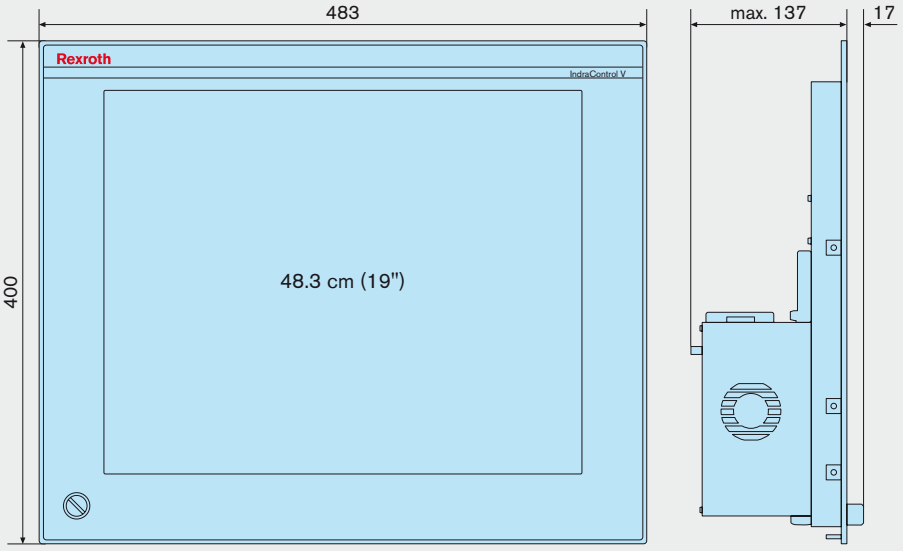
IndraControl VPP 40



IndraControl VPP 60

IndraControl VPP 60





IndraControl VSB, VPB – technical data

Technical data	VSB 40.3	VPB 40.3	VPB 40.3	VPB 40.3
				
Processor	Celeron 440 2 GHz	Core Duo L2400 1.66 GHz/Core 2 Duo T7400		
RAM	1 GB/2 GB			
PCI/PCIe slots	5/1	1/0	2/0 or 1/1	4/0 or 3/1
Operating system	Windows XP			
Approvals	CE/UL/CSA			
80 GB hard disk	●			
2 x 80 GB hard disk (RAID 1)	○			
32 GB solid state disk SSD	○			
DVD-ROM/DVD-RW	○			
GBit-Ethernet	2			
PS/2 (keyboard/mouse)	2	–		
USB 2.0	8	6		
COM	1	–		
External service monitor	VGA	DVI		
Connection to VDP	CDI			
Supply voltage	24 VDC			
UPS	External			
Status LED	–	Voltage, HDD, UPS, temperature		
Monitoring software	Voltage, HDD, fan			
Protection category	IP20			
Vibration/shock carrying capacity	1 g/15 g			
Ambient temperature during operation	5 to 45 °C			
Dimensions (W x H x D)	146 x 364 x 239 mm	84 x 205 x 181 mm	110 x 205 x 181 mm	92 x 321 x 181 mm
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VSB, VPB – ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl VSB 40, 5 x PCI, 1 x PCIe slots, 80 GB HDD	VSB40.3D1G-1G0NN-C2D-DN-NN-FW
IndraControl VSB 40, 5 x PCI, 1 x PCIe slots, 80 GB HDD, DVD recorder	VSB40.3D1G-1G0NN-C2D-DE-NN-FW
IndraControl VSB 40, 5 x PCI, 1 x PCIe slots, 2 x 80 GB HDD	VSB40.3D1G-1G0NN-C2D-EN-NN-FW
IndraControl VSB 40, 5 x PCI, 1 x PCIe slots, 2 x 80 GB HDD, DVD recorder	VSB40.3D1G-1G0NN-C2D-EE-NN-FW
IndraControl VSB 40, 5 x PCI, 1 x PCIe slots, 32 GB SSD	VSB40.3D1G-1G0NN-C2D-FN-NN-FW
IndraControl VSB 40, 5 x PCI, 1 x PCIe slots, 32 GB SSD, DVD recorder	VSB40.3D1G-1G0NN-C2D-FE-NN-FW
IndraControl VPB 40, 1 x PCI slot, 80 GB HDD	VPB40.3D1K-1G0NN-D1D-DN-NN-FW
IndraControl VPB 40, 1 x PCI slot, 32 GB SSD	VPB40.3D1K-1G0NN-D1D-FN-NN-FW
IndraControl VPB 40, 2 x PCI slots, 80 GB HDD	VPB40.3D1L-1G0NN-D1D-DN-NN-FW
IndraControl VPB 40, 2 x PCI slots, 80 GB HDD, DVD recorder	VPB40.3D1L-1G0NN-D1D-DE-NN-FW
IndraControl VPB 40, 2 x PCI slots, 2 x 80 GB HDD	VPB40.3D1L-1G0NN-D1D-EN-NN-FW
IndraControl VPB 40, 2 x PCI slots, 2 x 80 GB HDD, DVD recorder	VPB40.3D1L-1G0NN-D1D-EE-NN-FW
IndraControl VPB 40, 2 x PCI slots, 32 GB SSD	VPB40.3D1L-1G0NN-D1D-FN-NN-FW
IndraControl VPB 40, 4 x PCI slots, 80 GB HDD	VPB40.3D1M-1G0NN-D1D-DN-NN-FW
IndraControl VPB 40, 4 x PCI slots, 80 GB HDD, DVD recorder	VPB40.3D1M-1G0NN-D1D-DE-NN-FW
IndraControl VPB 40, 4 x PCI slots, 2 x 80 GB HDD, DVD recorder	VPB40.3D1M-1G0NN-D1D-EE-NN-FW
IndraControl VPB 40, 4 x PCI slots, 32 GB SSD	VPB40.3D1M-1G0NN-D1D-FN-NN-FW
IndraControl VPB 40, 4 x PCI slots, 32 GB SSD, DVD recorder	VPB40.3D1M-1G0NN-D1D-FE-NN-FW
IndraControl VPB 40, 1 x PCI slot, 2 x 80 GB HDD, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1K-2G0NN-D2D-EN-NN-FW
IndraControl VPB 40, 2 x PCI slots, 80 GB HDD, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1L-2G0NN-D2D-DN-NN-FW
IndraControl VPB 40, 4 x PCI slots, 80 GB HDD, DVD recorder, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1M-2G0NN-D2D-DE-NN-FW
IndraControl VPB 40, 2 x PCI slots, 2 x 80 GB HDD, Core 2 Duo 2.16 GHz	VPB40.3D1L-2G0NN-D2D-EN-NN-FW
IndraControl VPB 40, 2 x PCI slots, 2 x 80 GB HDD, DVD recorder, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1L-2G0NN-D2D-EE-NN-FW
IndraControl VPB 40, 2 x PCI slots, 32 GB SSD, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1L-2G0NN-D2D-FN-NN-FW
IndraControl VPB 40, 4 x PCI slots, 80 GB HDD, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1M-2G0NN-D2D-DN-NN-FW
IndraControl VPB 40, 4 x PCI slots, 2 x 80 GB HDD, DVD recorder, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1M-2G0NN-D2D-EE-NN-FW
IndraControl VPB 40, 4 x PCI slots, 32 GB SSD, 2 GB RAM, Core 2 Duo 2.16 GHz	VPB40.3D1M-2G0NN-D2D-FN-NN-FW

Ordering data for accessories	
Description	**Type code**
Uninterrupted power supply UPS, 24 VDC, 240 watts	VAU01.1U-024-024-240-NN
Voltage supply, 24 VDC power supply unit, 100-120/200-240 VAC Auto Select	VAP01.1H-W32-024-010-NN

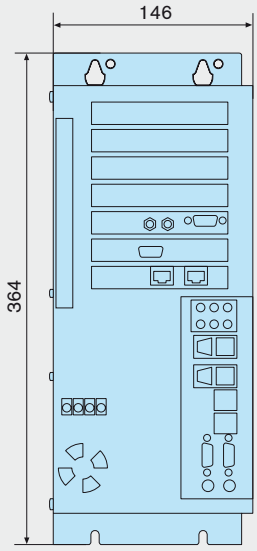
Ordering data for firmware	
Description	**Type code**
Firmware (German), Windows XP operating (English) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SV)	FWA-VS3VP3-WXP-xxVRS-A0-OEM
Firmware (German), Windows XP operating (English) and multi-lingual interface (EN, DE, FR, IT, ES, PT, SV) system and Acronis data backup software	FWA-VS3VP3-WXP-xxVRS-A0-OEM A1

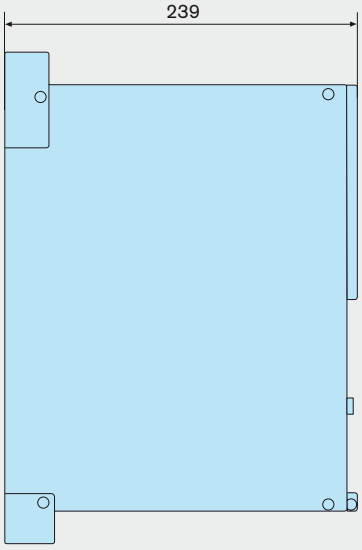
Ordering data for documentation	
Description	**Type code**
IndraControl VSB project planning	DOK-SUPPL*-VSB*40.3**PRxx-EN-P
IndraControl VPB project planning	DOK-SUPPL*-VPB*40.3**PRxx-EN-P

xx = software/firmware version, device version

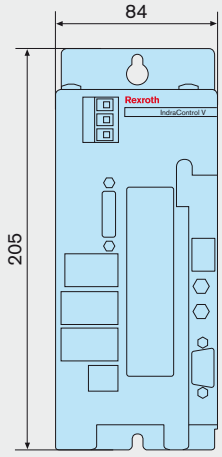
IndraControl VSB and VPB

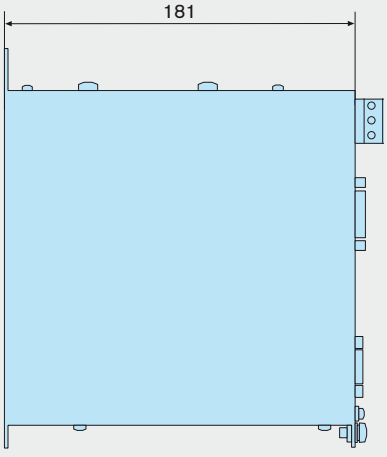
IndraControl VSB 40.3





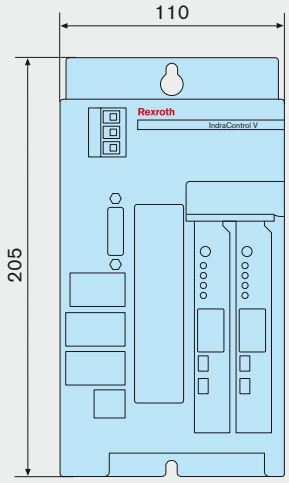
IndraControl VPB 40.3
(1 slot)

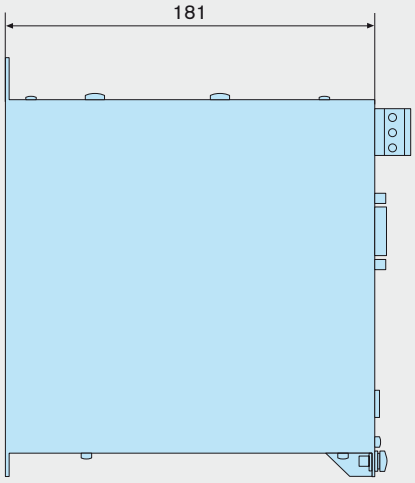




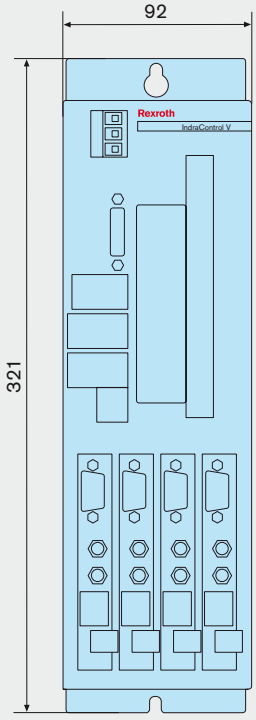
IndraControl VPB

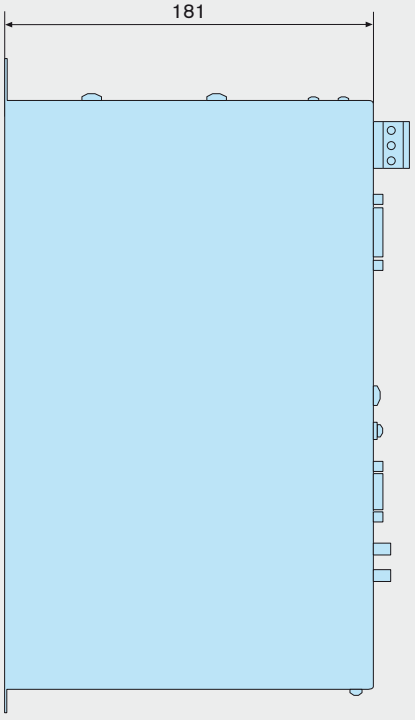
IndraControl VPB 40.3
(2 slots)





IndraControl VPB 40.3
(4 slots)





IndraControl VDP – technical data

Technical data	VDP 16.3	VDP 16.3	VDP 40.3	VDP 40.3	VDP 60.3	VDP 60.3
						
Display	30.5 cm (12") – TFT		38.1 cm (15") – TFT		48.3 cm (19") – TFT	
Resolution	800 x 600, SVGA		1,024 x 768, XGA		1,280 x 1,024, SXGA	
Colors	256,000				16 Mio.	
Touch screen	–	●	●	●	–	●
Machine/function/additional keys	16/16/14	–	16/16/14	–	16/16/14	–
Alphanumeric keyboard	Additional component VAK					
Approvals	CE/UL/CSA					
USB 2.0 on PC	4					
USB on front	1					
Supply voltage	24 VDC					
UPS	External					
Status LED	Voltage, HDD, UPS, temperature					
Protection category	Front IP65					
Vibration/shock carrying capacity	1 g/15 g					
Ambient temperature during operation	5 to 45 °C					
Dimensions (W x H x D)	350 x 290 x 46 mm		407 x 370 x 46 mm		483 x 400 x 62 mm	
Availability						
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)					

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VDP – ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl VDP 16 with 30.5 cm (12") display, touch screen	VDP16.3DBN-D1-NN-NN
IndraControl VDP 16 with 30.5 cm (12") display, foil keys	VDP16.3BKN-D1-NN-MX
IndraControl VDP 40 with 38.1 cm (15") display, touch screen	VDP40.3DEN-D1-NN-NN
IndraControl VDP 40 with 38.1 cm (15") display, foil keys	VDP40.3BIN-D1-NN-MX
IndraControl VDP 40 with 38.1 cm (15") display, touch screen, foil keys	VDP40.3DFN-D1-NN-MX
IndraControl VDP 60 with 48.3 cm (19") display, foil keys	VDP60.3FIN-D1-NN-MX
IndraControl VDP 60 with 48.3 cm (19") display, touch screen	VDP60.3FEN-D1-NN-NN

Ordering data for documentation	
Description	**Type code**
IndraControl VDP project planning	DOK-SUPPL*-VDP*xx.3**PRxx-EN-P

xx = software/firmware version, device version

IndraControl VDP operator terminals – technical data

Technical data	VDP 08.3	VDP 40.3
		
Display	21.3 cm (8.4") – TFT	38.1 cm (15") – TFT
Resolution	800 x 600, SVGA	1,024 x 768, XGA
Colors	256,000	
Touch screen	Touch screen	
Additional keys	3 function buttons and 1 E-stop pushbutton	
Approvals	CE/UL/CSA	
Connection to industrial PC	CDI	
USB	4	
USB on front	1	
Supply voltage	24 VDC	
Status LED	Voltage, HDD, UPS, temperature	
Protection degree	Front IP65, overall IP54	
Vibration/shock carrying capacity	1 g/15 g	
Ambient temperature during operation	5 to 45 °C	
Mounting	VESA bracket	
Dimensions (W x H x D)	246 x 280 x 60 mm	407 x 370 x 60 mm
Availability		
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)	

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VDP operator terminals – ordering data

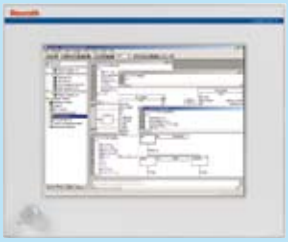
Ordering data for hardware	
Description	**Type code**
IndraControl VDP 08 with 21.3 cm (8.4") display, touch screen, housing with control elements	VDP08.3DPN-D1-NN-CG
IndraControl VDP 40 with 38.1 cm (15") display, touch screen, housing with control elements	VDP40.3DIN-D1-NN-CG

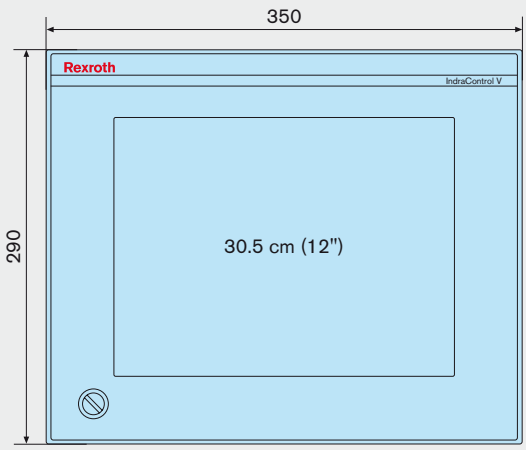
Ordering data for documentation	
Description	**Type code**
IndraControl VDP operator terminal project planning	DOK-SUPPL*-VDP16/40/60-PRxx-EN-P

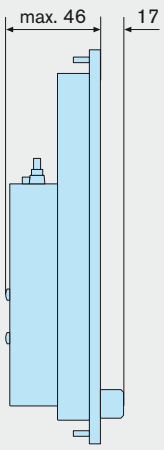
xx = software/firmware version, device version

IndraControl VDP 16 and VDP 40

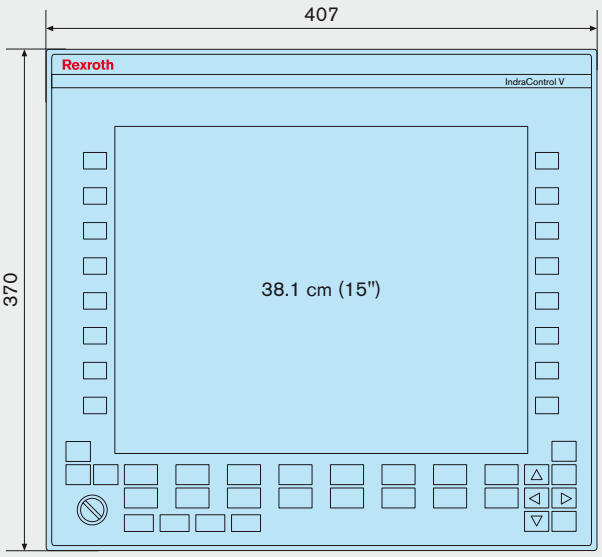
IndraControl VDP 16

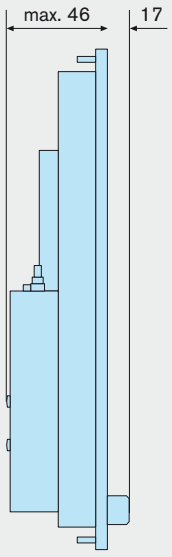






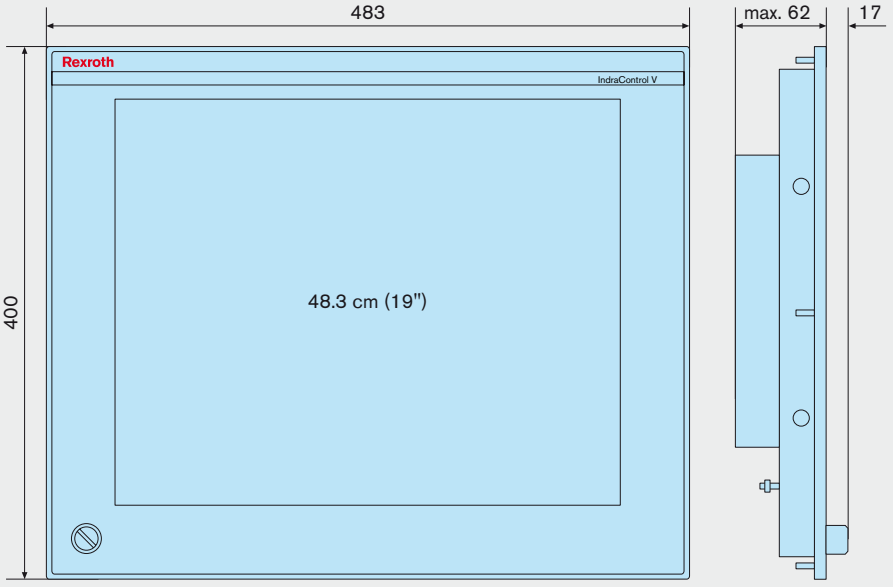
IndraControl VDP 40



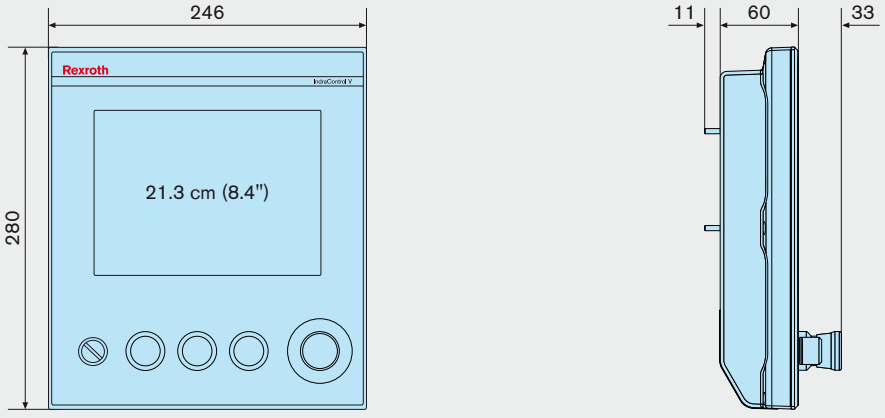


IndraControl VDP 60 and VDP 08 operator terminal

IndraControl VDP 60

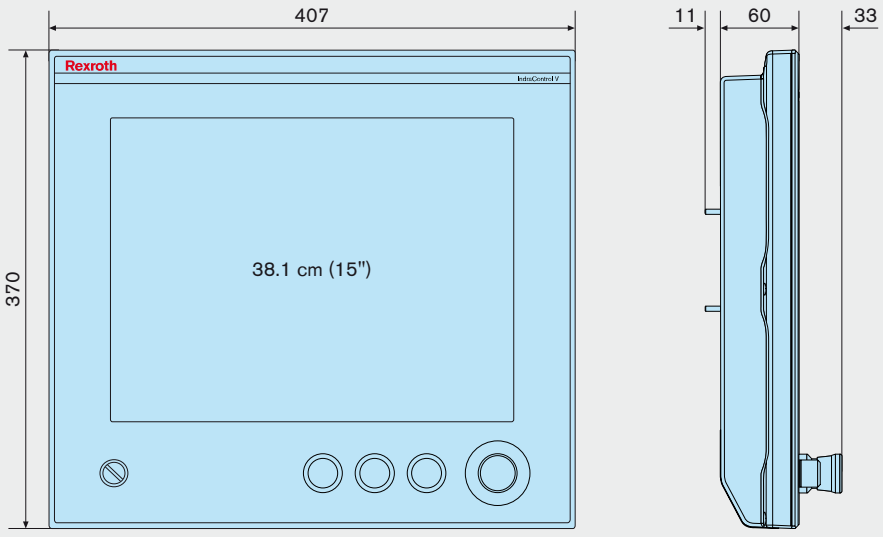


IndraControl VDP 08



IndraControl VDP 40 operator terminal

IndraControl VDP 40

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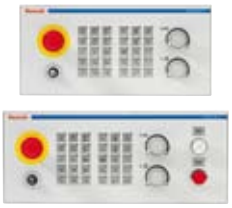
IndraControl VAK and VAM – technical data

Technical data	VAK 10/40	VAK 11/41	VAM 10/40	VAM 12/42
				
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	–		–	4/6 long-stroke buttons
Foil pushbutton	–		2 x 15 short-stroke buttons	2 x 15 short-stroke buttons
E-stop pushbutton	–	–	2 break contacts	
Override	–		Feed and spindle	
Key switch	–		4-level key-operated authorization	–
Fieldbus	–		PROFIBUS slave	
Logic supply U_L	–		24 VDC (19.2 to 30 V), PELV	
Power consumption from U_L	–		Max. 0.5 A	
Input/output supply U_Q	–		24 VDC (19.2 to 30 V), PELV	
Power consumption	0.01 A	0.01 A	Max. 1.7 A	Max. 1.7 A
Supply voltage	5 VDC (via PS/2, USB)		24 VDC	
Interface	PS/2, USB		Interface for external handwheel, 16/8 digital I/O, 24 VDC	
Approvals	CE/UL/CSA			CE/UL
Protection category	Front IP65		Front IP54	
Ambient temperature during operation	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 240 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 208/375 x 208 mm
Power cord	1 m		–	
Weight in kg	typ. 2.5/2.6 kg	typ. 1.3/1.4 kg	typ. 1.17/1.38 kg	typ. 1.17/1.38 kg
Color	Light grey RAL 7035			
Availability				
Automation system	IndraMotion MLC, IndraMotion MTX, IndraLogic (technical details available on request)			

● Default ▼ In preparation ○ Optional – Not existing

IndraControl VAK and VAM – ordering data

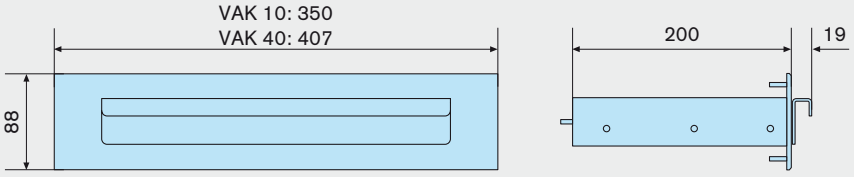
Ordering data for hardware	
Description	**Type code**
IndraControl VAK 10, slide-out keyboard, DE	VAK10.1E-DE-P-MPNN
IndraControl VAK 10, slide-out keyboard, EN	VAK40.1E-EN-P-MPNN
IndraControl VAK 40, slide-out keyboard, DE	VAK40.1E-DE-P-MPNN
IndraControl VAK 40, slide-out keyboard, EN	VAK40.1E-EN-P-MPNN
IndraControl VAK 11, foil keyboard, DE	VAK11.2F-DE-P-NNNN
IndraControl VAK 41, foil keyboard, EN	VAK41.2F-EN-P-NNNN
IndraControl VAM 10, machine control panel	VAM10.2-PB-NA-TA-TA-VB-1608-NN
IndraControl VAM 40, machine control panel	VAM40.2-PB-NA-TA-TA-VB-MA-1608-NN
IndraControl VAM 40, machine control panel with handwheel	VAM40.2-PB-NA-TA-TA-VB-HA-1608-NN
IndraControl VAM 12, machine control panel	VAM12.1-PB-NF-NN-TB-VD-NN-1608-NN
IndraControl VAM 42, machine control panel	VAM42.1-PB-NF-NN-TB-VD-NN-1608-NN

Ordering data for documentation	
Description	**Type code**
IndraControl VAK 10 and VAK 40 project planning	DOK-SUPPL*-VAK*40.1***-PRxx-EN-P
IndraControl VAM 10.2 and VAM 40.2 project planning	DOK-SUPPL*-VAM*xx.2***-PRxx-EN-P
IndraControl VAM 12.1 and VAM 42.1 project planning	DOK-SUPPL*-VAM*xx.1***-PRxx-EN-P

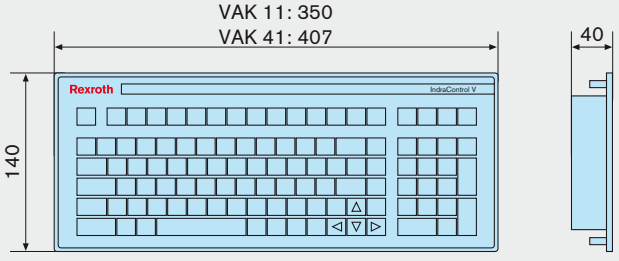
xx = software/firmware version, device version

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

IndraControl VAK 10, VAK 40

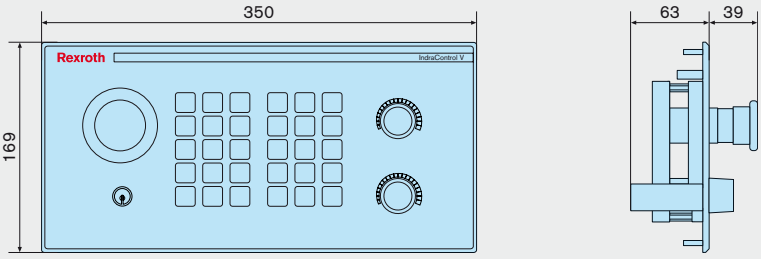


IndraControl VAK 11, VAK 41

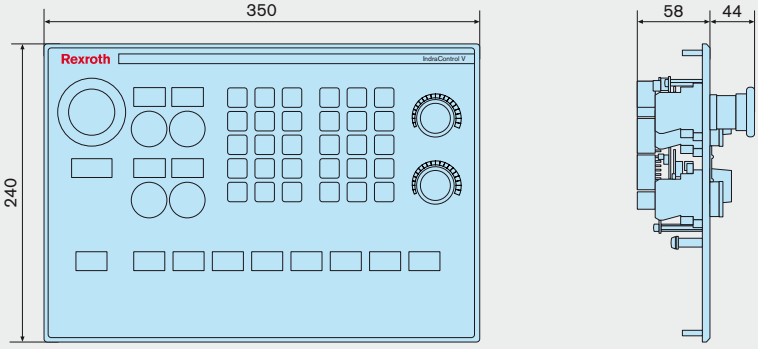


IndraControl VAM 10, VAM 12, VAM 40 and VAM 42

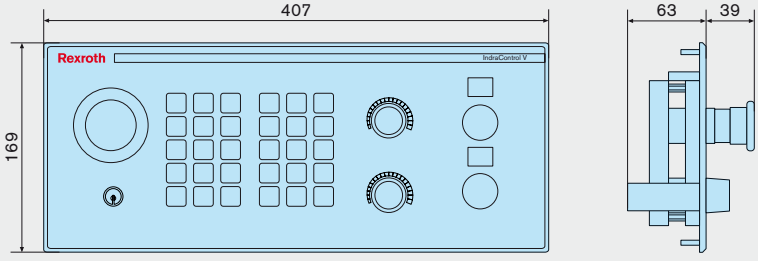
IndraControl VAM 10



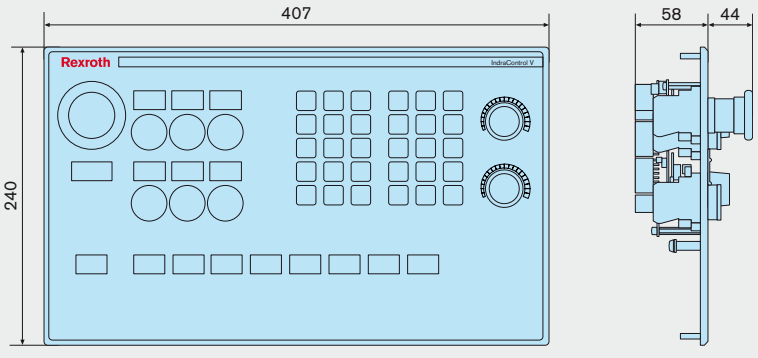
IndraControl VAM 12



IndraControl VAM 40



IndraControl VAM 42



IndraControl L – rack-based control components

IndraControl L the rack-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 allow 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 rack-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 compact 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 rack-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 technology 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 L – control overview and short description

Performance

Connectivity

IndraControl L10
Entry-level compact controller for simple PLC applications.

- Communication: Ethernet TCP/IP
- On board I/O: 8 fast inputs, 4 fast outputs
- I/O extension: up to 63 Inline I/O modules

Performance

Connectivity

IndraControl L20
Mid-range compact controller for standard PLC applications.

- Communication: Ethernet TCP/IP, PROFIBUS, RS232
- On board I/O: 8 fast inputs, 8 fast outputs
- I/O extension: up to 63 Inline I/O modules

Performance

Connectivity

IndraControl L25
Mid-range compact controller for standard motion applications.

- Communication: Ethernet TCP/IP, SERCOS III
- Function modules: up to 2
- I/O extension: up to 63 Inline I/O modules

Performance

Connectivity

IndraControl L40
High-performance compact controller for demanding PLC, motion and CNC applications.

- Communication: Ethernet TCP/IP, PROFIBUS, RS232, SERCOS 2
- Function modules: up to 4
- On board I/O: 8 fast inputs, 8 fast outputs
- I/O extension: up to 63 Inline I/O modules

Performance

Connectivity

IndraControl L45
High-performance compact controller for demanding motion applications.

- Communication: Ethernet TCP/IP, PROFIBUS, SERCOS III, PROFINET IO, EtherNet/IP
- Function modules: up to 4
- On board I/O: 8 fast inputs, 8 fast outputs
- I/O extension: up to 63 Inline I/O modules

Performance

Connectivity

IndraControl L65
High-performance compact controller for high-end motion applications.

- Communication: Ethernet TCP/IP, PROFIBUS, SERCOS III, PROFINET IO, EtherNet/IP
- Function modules: up to 4
- On board I/O: 8 fast inputs, 8 fast outputs
- I/O extension: up to 63 Inline I/O modules

IndraControl L10 – technical data

Technical data	IndraControl L10	Legend
		
CPU	SH4 compatible	
RAM	32 MB	
Retentive memory	32 kB	
Removable storage medium	CF card/128 MB	1
Diagnostics	Temperature monitoring, watchdog, powerfail	
Real-time clock	–	
Display	–	
Protection category	IP20	
Dimensions (H x W x D)	121 x 123 x 71 mm	
Interfaces		
I/O modules	Inline	
Communication interfaces	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)	4
Inputs/outputs (digital)	8 DC-decoupled inputs (with interrupt capability)	2
	4 DC-decoupled outputs	2
I/O expansion [1]	Up to 63 Inline I/O modules with up to 256 I/O (32 Byte)	3
Function modules	–	
Power supply		
Rated value	24 VDC	
Tolerance	–15/+20 % (without residual ripple)	
Residual ripple	±5 %	
U_{max}	30 VDC	
U_{min}	19.2 VDC	
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	

[1] The total current of the logic supply UL of the Inline modules must not exceed 0.8 A. If this value is exceeded, an additional infeed module must be set.

IndraControl L20 – technical data

Technical data	IndraControl L20	Legend
		
CPU	SH4 compatible	
RAM	16 MB	
Retentive memory	64 kB	
Removable storage medium	CF card/128 MB	1
Diagnostics	Temperature monitoring, watchdog, powerfail	
Real-time clock	Integrated	
Display	1 line, 4 operator keys	7
Protection category	IP20	
Dimensions (H x W x D)	120 x 175 x 76 mm	
Interfaces		
I/O modules	Inline	
Communication interfaces	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)	4
	1 x RS232	5
	1 x PROFIBUS master/slave	6
Inputs/outputs (digital)	8 DC-decoupled inputs (with interrupt capability)	2
	8 DC-decoupled outputs	2
I/O expansion	Up to 63 Inline I/O modules with up to 256 I/O (32 Byte)	3
Function modules	–	
Power supply		
Rated value	24 VDC	
Tolerance	–15/+20 % (without residual ripple)	
Residual ripple	±5 %	
U_{max}	30 VDC	
U_{min}	19.2 VDC	
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	

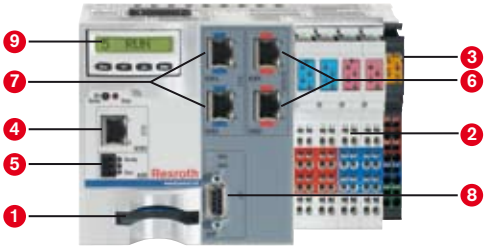
IndraControl L25 – technical data

Technical data	IndraControl L25	Legend
		
CPU	SH4 compatible	
RAM	128 MB	
Retentive memory	256 kB	
Removable storage medium	CF card/1 GB	1
Diagnostics	Temperature monitoring, watchdog, powerfail	
Real-time clock	Integrated	
Display	1 line, 4 operator keys	9
Protection category	IP20	
Dimensions (H x W x D)	120 x 175 x 76 mm	
Interfaces		
Communication interfaces (standard)	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)	4
	1 x single-pole ready contact	5
Communication interfaces (optional)	1 x SERCOS III (2 x RJ45)	6
I/O expansion	Up to 63 Inline I/O modules with up to 512 I/O (64 bytes)	3
Function modules	Up to 2	
Power supply		
Rated value	24 VDC	
Tolerance	–15/+20 % (without residual ripple)	
Residual ripple	±5 %	
U_{max}	30 VDC	
U_{min}	19.2 VDC	
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	IndraMotion MLC	

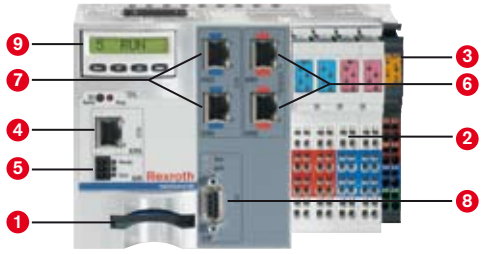
IndraControl L40 – technical data

Technical data	IndraControl L40	Legend
		
CPU	x86 compatible, 500 MHz	
RAM	64 MB	
Retentive memory	128 kB	
Removable storage medium	CF card/128 MB	1
Diagnostics	Temperature monitoring, watchdog, powerfail	
Real-time clock	Integrated	
Display	1 line, 4 operator keys	9
Protection category	IP20	
Dimensions (H x W x D)	120 x 175 x 76 mm	
Interfaces		
I/O modules	Inline	
Communication interfaces (standard)	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)	4
	1 x RS232	5
	1 x PROFIBUS master/slave	6
Communication interfaces (optional)	1 x SERCOS 2	7
	1 x single-pole ready contact	8
Inputs/outputs (digital)	8 DC-decoupled inputs (with interrupt capability)	2
	8 DC-decoupled outputs	2
I/O expansion	Up to 63 Inline I/O modules with up to 512 I/O (64 bytes)	3
Function modules	Up to 4	
Power supply		
Rated value	24 VDC	
Tolerance	–15/+20 % (without residual ripple)	
Residual ripple	±5 %	
U_{max}	30 VDC	
U_{min}	19.2 VDC	
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	

IndraControl L45 – technical data

Technical data	IndraControl L45	Legend
		
CPU	x86 compatible, 500 MHz	
RAM	512 MB	
Retentive memory	256 kB	
Removable storage medium	CF card/1 GB	1
Diagnostics	Temperature monitoring, watchdog, powerfail	
Real-time clock	Integrated	
Display	1 line, 4 operator keys	9
Protection category	IP20	
Dimensions (H x W x D)	120 x 175 x 97.5 mm	
Interfaces		
I/O modules	Inline	
Communication interfaces (standard)	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)	4
	1 x single-pole ready contact	5
	1 x PROFIBUS master/slave	8
Communication interfaces (optional)	1 x SERCOS III (2 x RJ45)	6
	1 x PROFINET IO controller/device (2 x RJ45)	7
	1 x EtherNet/IP scanner/adapter (2 x RJ45)	7
Inputs/outputs (digital)	8 DC-decoupled inputs (with interrupt capability)	2
	8 DC-decoupled outputs	2
I/O expansion	Up to 63 Inline I/O modules with up to 512 I/O (64 bytes)	3
Function modules	Up to 4	
Power supply		
Rated value	24 VDC	
Tolerance	–15/+20 % (without residual ripple)	
Residual ripple	±5 %	
U_{max}	30 VDC	
U_{min}	19.2 VDC	
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	IndraMotion MLC	

IndraControl L65 – technical data

Technical data	IndraControl L65	Legend
		
CPU	x86 compatible, 1,000 MHz	
RAM	512 MB	
Retentive memory	256 kB	
Removable storage medium	CF card/1 GB	1
Diagnostics	Temperature monitoring, watchdog, powerfail	
Real-time clock	Integrated	
Display	1 line, 4 operator keys	9
Protection category	IP20	
Dimensions (H x W x D)	120 x 175 x 97.5 mm	
Interfaces		
I/O modules	Inline	
Communication interfaces (standard)	1 x Ethernet TCP/IP (RJ45, 10/100 Base-T)	4
	1 x single-pole ready contact	5
	1 x PROFIBUS master/slave	8
Communication interfaces (optional)	1 x SERCOS III (2 x RJ45)	6
	1 x PROFINET IO controller/device (2 x RJ45)	7
	1 x EtherNet/IP scanner/adapter (2 x RJ45)	7
Inputs/outputs (digital)	8 DC-decoupled inputs (with interrupt capability)	2
	8 DC-decoupled outputs	2
I/O expansion	Up to 63 Inline I/O modules with up to 512 I/O (64 bytes)	3
Function modules	Up to 4	
Power supply		
Rated value	24 VDC	
Tolerance	–15/+20 % (without residual ripple)	
Residual ripple	±5 %	
U_{max}	30 VDC	
U_{min}	19.2 VDC	
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	IndraMotion MLC	

IndraControl L – function module overview and short description

PROFIBUS master

Fieldbus interface PROFIBUS master

SERCOS III

Fieldbus interface SERCOS III

For implementation of the Ethernet-based real-time communication as interface to drives, I/O peripherals or control cross communication

DeviceNet master

Fieldbus interface DeviceNet master

Cross communication

Fieldbus interface SERCOS 2

For communication with drives in real-time or redundant control cross communication

Real-time Ethernet and PROFIBUS

Fieldbus interface RT Ethernet (PROFINET RT, EtherNet/IP) and PROFIBUS

Real-time Ethernet and DeviceNet[1)]

Fieldbus interface RT Ethernet (PROFINET RT, EtherNet/IP) and DeviceNet

[1)] in preparation

Programmable limit switch

Function interface, programmable limit switch with 16 high-speed outputs

For implementation of high-speed cams for motion control applications

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

The inputs can be used as probes with a resolution of 1 µs

SRAM module

Memory module with 8 MB SRAM, battery-buffered

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

IndraControl L function modules – technical data

Technical data		SERCOS III CFL01.1-R3	Cross communication CFL01.1-Q2	Real-time Ethernet/ PROFIBUS CFL01.1-TP	Real-time Ethernet/ DeviceNet CFL01.1-TD (in preparation)	PROFIBUS master CFL01.1-P1	DeviceNet master CFL01.1-V1
Degree of protection		IP20	IP20	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	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	System bus	System bus
Internal power consumption	W	2.05	2.3	1.65	1.65	1.65	1.4
External	VDC	–	–	–	–	–	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 60000-6-2, EN 61000-6-4					
Availability							
Automation system		IndraMotion MLC	IndraMotion MLC	IndraMotion MLC	IndraMotion MLC	IndraMotion MLC, IndraLogic	IndraMotion MLC, IndraLogic

Technical data		Programmable limit switch CFL01.1-N1	Fast I/O CFL01.1-E2	SRAM CFL01.1-Y1
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	VDC	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“	VDC	–	–3 to +5/+11 to +30	–
Sensor supply	VDC	–	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, IndraLogic	IndraMotion MLC, IndraMotion MTX

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 – Ordering data

Ordering data for hardware	
Description	**Type code**
IndraControl L10	CML10.1-NN-210-NB-NNNN-NW
IndraControl L20, PROFIBUS	CML20.1-NP-120-NA-NNNN-NW
IndraControl L25, SERCOS III, configurable fieldbus interface	CML25.1-3N-400-NN-NNC1-NW
IndraControl L40, PROFIBUS	CML40.2-NP-330-NA-NNNN-NN
IndraControl L40, PROFIBUS, SERCOS 2	CML40.2-SP-330-NA-NNNN-NN
IndraControl L45, configurable fieldbus interface	CML45.1-NP-500-NA-NNNN-NW
IndraControl L45, SERCOS III, configurable fieldbus interface	CML45.1-3P-500-NA-NNNN-NW
IndraControl L45, SERCOS III, configurable fieldbus interface, 8 MB SRAM	CML45.1-3P-504-NA-NNNN-NW
IndraControl L65, configurable fieldbus interface	CML65.1-NP-500-NA-NNNN-NW
IndraControl L65, SERCOS III, configurable fieldbus interface	CML65.1-3P-500-NA-NNNN-NW
IndraControl L65, SERCOS III, configurable fieldbus interface, 8 MB SRAM	CML65.1-3P-504-NA-NNNN-NW

Ordering data for function modules	
Description	**Type code**
Real-time Ethernet/PROFIBUS	CFL01.1-TP
Real-time Ethernet/DeviceNet (in preparation)	CFL01.1-TD
SERCOS III	CFL01.1-R3
Cross communication (SERCOS 2 with FO)	CFL01.1-Q2
PROFIBUS master	CFL01.1-P1
DeviceNet master	CFL01.1-V1
Programmable limit switch (16 high-speed outputs)	CFL01.1-N1
Fast I/O (8 inputs, 8 outputs, 8 freely configurable inputs or outputs)	CFL01.1-E2
SRAM module (8 Mbytes, battery-buffered)	CFL01.1-Y1

Ordering data for accessories	
Description	**Type code**
Fan	CAL01.1-F1
Spare battery for SRAM module CFL01.1-Y1	CAP01.1-B2
Connector set for IndraControl L	R-IB IL CML S01-PLSET
Labelling field, narrow	R-IB IL FIELD 2
Labelling field, wide	R-IB IL FIELD 8

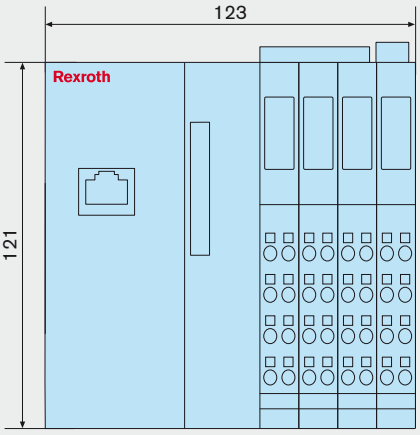
Ordering data for documentations	
Description	**Type code**
Project planning for IndraControl L10	DOK-CONTRL-IC*L10*****-PRxx-EN-P
Project planning for IndraControl L20	DOK-CONTRL-IC*L20*****-PRxx-EN-P
Project planning for IndraControl L25	DOK-CONTRL-IC*L25*****-PRxx-EN-P
Project planning for IndraControl L40	DOK-CONTRL-IC*L40*****-PRxx-EN-P
Project planning for IndraControl L45 and L65	DOK-CONTRL-IC*L45*L65*-PRxx-EN-P
Project planning for IndraControl L fieldbus modules	DOK-CONTRL-IC*L*FM****-PRxx-EN-P

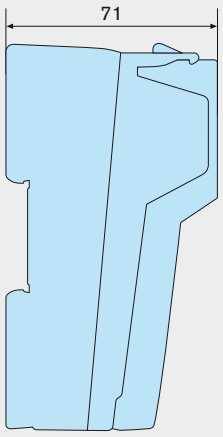
xx = software/firmware version, device version


5 RUN
Rexroth
5 RUN
Rexroth
Rexroth

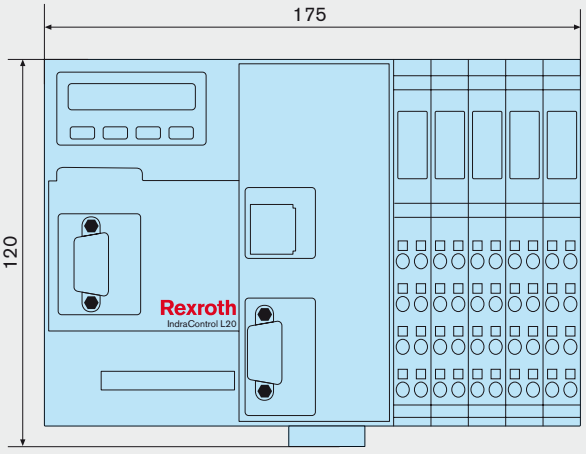
IndraControl L10, L20 and L25

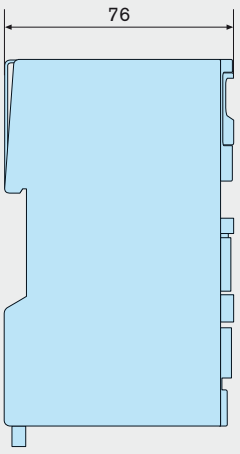
IndraControl L10



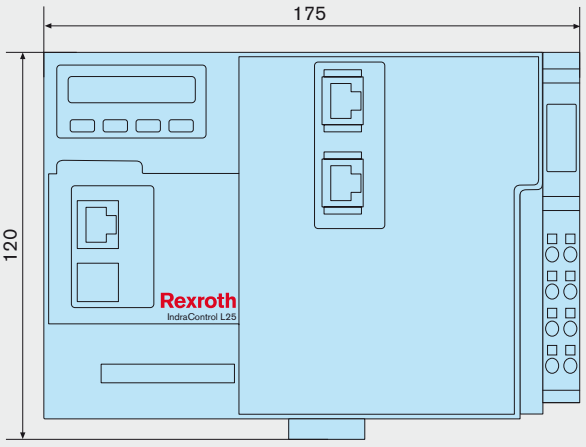


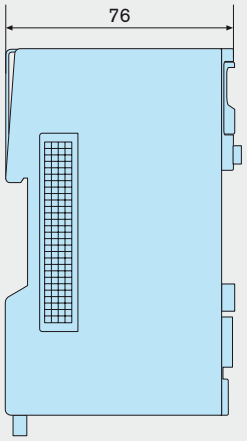
IndraControl L20





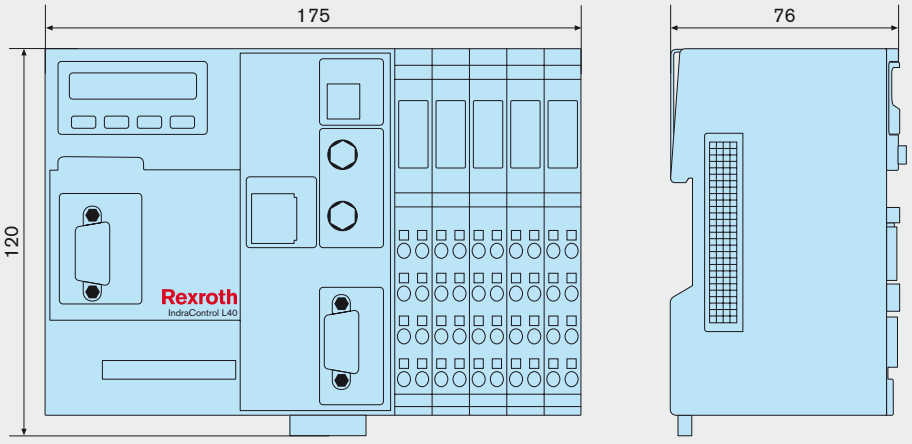
IndraControl L25



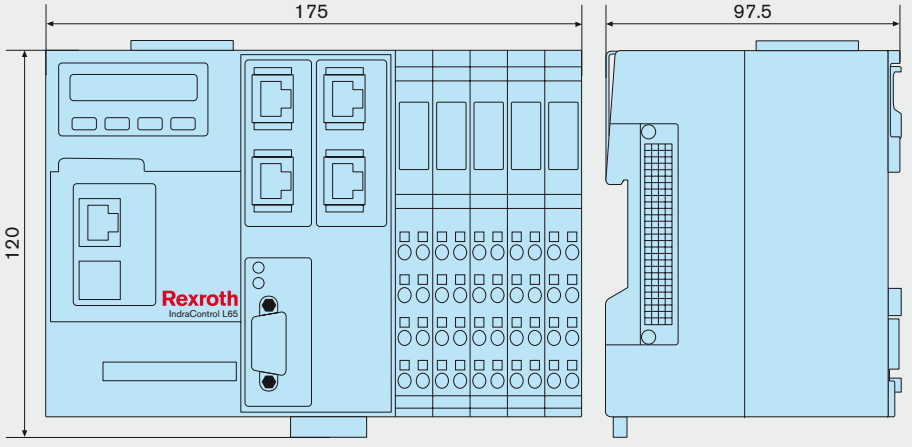


IndraControl L40, L45 and L65

IndraControl L40



IndraControl L45 and L65



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.

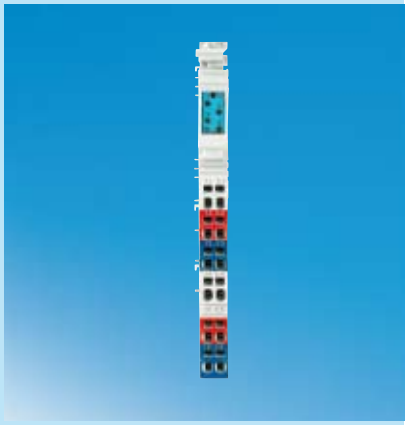
Rexroth Inline is available for all current fieldbus systems in the following two versions:

- Inline Modular – finely scalable modular I/O system for individual configuration
- Inline Block – bus coupler with preconfigured 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.

Digital modules



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

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

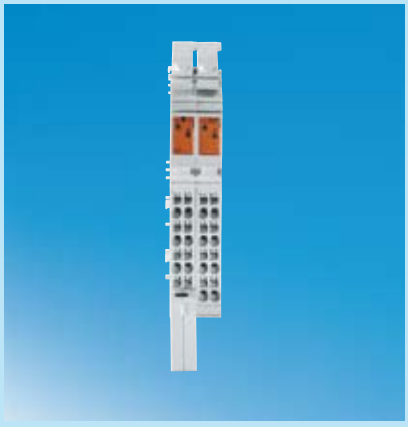
Analog modules

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

Power supply/segment modules

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

Function modules

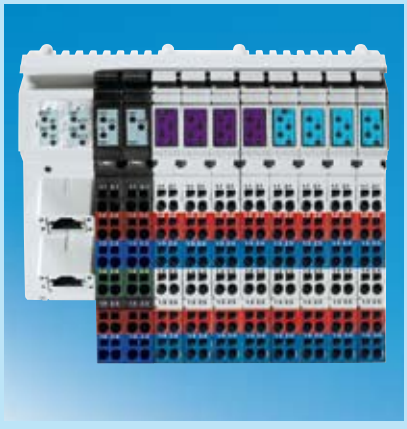


Function modules solve special tasks, for example the detection of relative, absolute or angular positions.

Relay modules

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

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.

Inline – for quick and easy assembly

Time-saving combination of bus couplers and modules

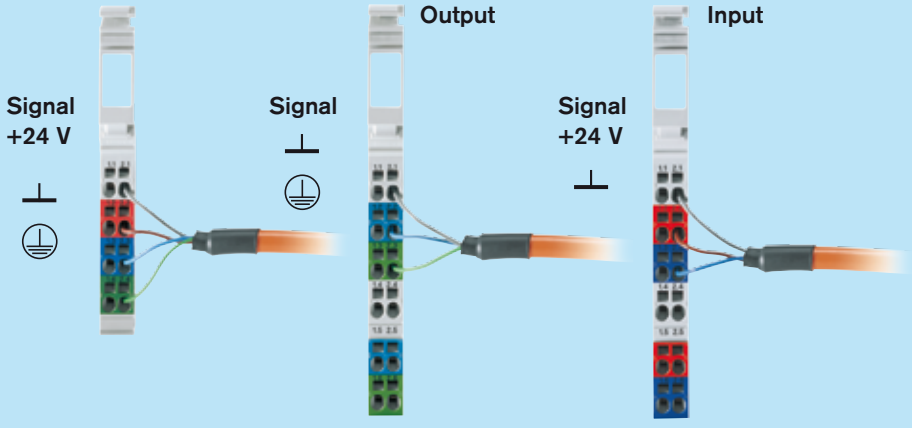
The bus coupler is the head of an Inline station. The I/O modules are simply connected to it end-to-end. All the voltages needed for these modules and the sensors actuators are automatically cross-wired via the lateral contacts within an Inline station.

Flexible connection through permanent wiring

Using snap-on connectors you can quickly make connections to sensors/actuators in the field and release them again without any complex labeling of individual cores. Shielded cables can be connected directly to functional ground using connectors with an integrated shield connection.

Easy connection of conductors

Conductors with stripped ends are simply inserted in the spring-loaded terminals of the Inline connectors without any connector sleeves. Connection cross-sections in the range from 0.2 mm² to 1.5 mm² are possible.



4-wire connection technology

3-wire connection technology

Cost-effective multi-wire connection technique

With the multi-wire connection technique there are no longer any strapping terminals in the control cabinet – this saves money and cuts installation time. The 1-wire connection technique provides you with particularly compact high-density modules with 32 channels.

The multi-wire connection technique minimizes your wiring costs.

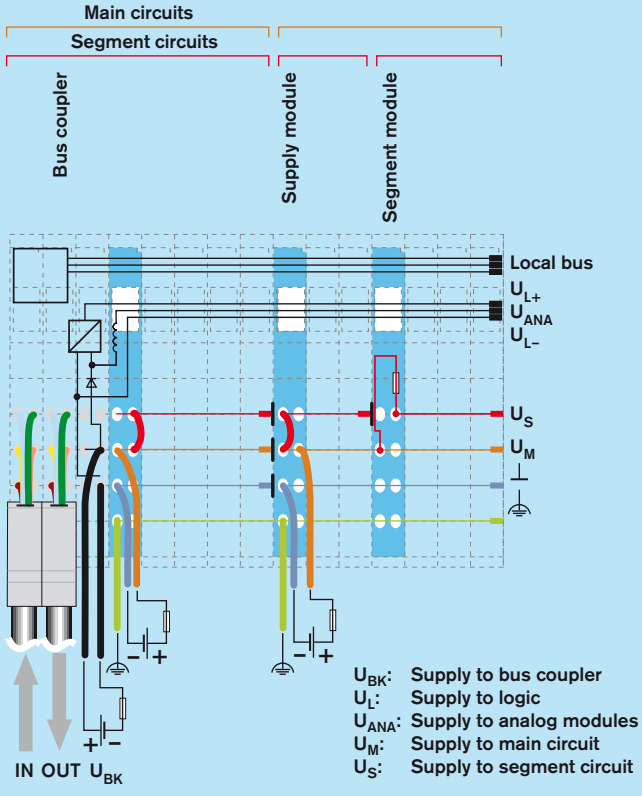
Inline –
with intelligent voltage distribution

Rexroth Inline is a convincing solution with its intelligent distribution concept for all voltages. The internal contacts of the modules automatically connect see to the cross-wiring for the internal local bus as well as for the voltage supply to the logic, analog modules, sensors and actuators. Separate protection arrangements, electrical isolation and the formation of segments can be implemented very easily. What this means to you: All voltages can be directly taken from the Inline modules and no additional distribution modules are necessary. This saves space, reduces costs and prevents wiring errors.

Supply to the bus coupler and provision of primary voltage
The voltages U_L for the logic circuit and U_{ANA} for analog modules are generated from the supply voltage U_{BK} which is connected to the bus coupler. The 24 V voltage supply to the main circuit U_M is fed in likewise at the bus coupler.

Main and segment circuits
The signal and actuator supply to the digital I/Os is effected by the segment voltage U_S. It is diverted from the main circuit U_M at the bus coupler via a bridge, an external fuse or a switch. Through the separation of U_M and U_S it is very easy to form segments which can be separately switched or protected. Neighboring terminals and their I/Os continue to be supplied when, for example, a single segment circuit is switched off.

Supply and segment modules
U_M and U_S can be fed in by means of supply modules if the power required by the signal and actuator supply exceeds the maximum distributable value. It is also possible to construct electrically-isolated main circuits within an Inline station. Inline segment modules enable several segment circuits to be constructed within a main circuit.



Easy setup of main and segment circuits – thanks to Inline.

Fieldbus coupler – technical data

Technical data		R-IL PB BK DI8 DO4-PAC	R-IL PN BK DI8 DO4-PAC	R-IL S3 BK DI8 DO4-PAC
Communication				
Interfaces		PROFIBUS	PROFIBUS IO	SERCOS III
		Local bus	Local bus	Local bus
System data				
Number of segments per station		Max. 63 (incl. 2 at bus coupler)	Max. 63 (incl. 2 at bus coupler)	Max. 63 (incl. 2 at bus coupler)
Total of all I/O data per station		Max. 244 bytes	Max. 244 bytes	Max. 244 bytes
Transmission speed in the local bus		500 kbaud or 2 Mbaud	500 kbaud or 2 Mbaud	500 kbaud or 2 Mbaud
Digital outputs				
Number		4	4	4
Nominal output voltage U_{Out}		24 VDC	24 VDC	24 VDC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		0.5 A	0.5 A	0.5 A
Nominal current tolerances		+10 %	+10 %	+10 %
Total current		2 A	2 A	2 A
Protection		Short-circuit, overload	Short-circuit, overload	Short-circuit, overload
Actuator connection type		2-, 3-wire connection	2-, 3-wire connection	2-, 3-wire connection
Digital inputs				
Number		8	8	8
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 VDC	24 VDC	24 VDC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC
Nominal input current at U_{INom}		Typ. 3 mA	Typ. 3 mA	Typ. 3 mA
Permissible line length		30 m	30 m	30 m
Sensor connection type		2-, 3-wire connection	2-, 3-wire connection	2-, 3-wire connection
Segment feed U_S/U_M				
Nominal value		24 VDC	24 VDC	24 VDC
Tolerances		–15/+20 %	–15/+20 %	–15/+20 %
Load current		Max. 8 A	Max. 8 A	Max. 8 A
Logic supply U_L				
Nominal value		7.5 V (from ext. 24 VDC)	7.5 V (from ext. 24 VDC)	7.5 V (from ext. 24 VDC)
Load current		Max. 2 A	Max. 2 A	Max. 2 A
Analog supply U_{ANA}				
Nominal value		24 VDC	24 VDC	24 VDC
Tolerances		–15/+20 %	–15/+20 %	–15/+20 %
Permissible voltage range		19 to 30 VDC	19 to 30 VDC	19 to 30 VDC
Load current		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
Permissible relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data				
Dimensions (W x H x D)		80 x 121 x 70 mm	80 x 121 x 70 mm	80 x 121 x 70 mm
Dimension drawing (see pp. 212 – 215)		Type 1	Type 1	Type 1
Weight (including plug)		320 g	320 g	320 g
Protection category		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
Accessories				
Connector		Included	Included	Included
Labelling field		Included	Included	Included

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
Communication					
Interfaces	INTERBUS Local bus	INTERBUS Local bus	DeviceNet Local bus	CANopen Local bus	SERCOS 2 (FO) Local bus
System data					
Number of segments 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 input and 32 bytes output
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 VDC	24 VDC	24 VDC	24 VDC	24 VDC
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 (from ext. 24 VDC)	7.5 V (from ext. 24 VDC)	7.5 V (from ext. 24 VDC)	7.5 V (from ext. 24 VDC)	7.5 V (from ext. 24 VDC)
Load current	Max. 2 A	Max. 2 A	Max. 2 A	Max. 2 A	Max. 2 A
Analog supply U_{ANA}					
Nominal value	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Tolerances	–15/+20 %	–15/+20 %	–15/+20 %	–15/+20 %	–15/+20 %
Permissible voltage range	19 to 30 VDC	19 to 30 VDC	19 to 30 VDC	19 to 30 VDC	19 to 30 VDC
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 relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data					
Dimensions (W x H x D)	48.8 x 120 x 70 mm	90 x 120 x 70 mm	90 x 120 x 70 mm	90 x 120 x 70 mm	90 x 121 x 70 mm
Dimension drawing (see pp. 212 – 215)	Type 3	Type 2	Type 2	Type 2	Type 2
Weight (without plug)	210 g	210 g	210 g	210 g	210 g
Protection category	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
Accessories					
Connector	R-IB IL BK-PLSET	R-IB IL SCN-PWR IN-CP	R-IB IL SCN-PWR IN-CP	Included	R-IB IL SCN-PWR IN-CP
Labelling field	R-IB IL FIELD 2	R-IB IL FIELD 2	R-IB IL FIELD 2	Included	R-IB IL FIELD 2

Digital inputs – technical data

Technical data		R-IB IL 24 DI 2	R-IB IL 24 EDI 2-DES	R-IB IL 24 DI 2-NPN-PAC (in preparation)
Digital inputs				
Number		2	2 digital input + 2 diagnosis input	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 VDC	24 VDC	24 VDC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC
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 relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data				
Dimensions (W x H x D)		12.2 x 120 x 71.5 mm	12.2 x 120 x 71.5 mm	12.2 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 4	Type 4	Type 4
Weight (without plug)		38 g	43 g	41 g
Protection category		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
Accessories				
Connector		Included	R-IB IL SCN-8	Included
Labelling field		Included	R-IB IL FIELD 2	Included

Technical data		R-IB IL 24 DI 4-PAC	R-IB IL 24 DI 8-PAC	R-IB IL 24 DI 8/HD-PAC (in preparation)	R-IB IL 24 DI 16-PAC
Digital inputs					
Number		4	8	8	16
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 UL_{max}	< 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 VDC	24 VDC	24 VDC	24 VDC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC
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- or 4-wire connection	2-, 3- or 4-wire connection	1-wire connection	2-, 3-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		40 mA	50 mA	50 mA	60 mA
Nominal current consumption from U_S		Max. 1.0 A	Max. 2.0 A	Max. 2.0 A	Max. 4.0 A
Operating mode: process data mode		4 bits	8 bits	8 bits	16 bits
Transmission speed		500 kbaud	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	–25 to +55 °C
Permissible relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data					
Dimensions (W x H x D)		12.2 x 141 x 71.5 mm	48.8 x 120 x 71.5 mm	12.2 x 141 x 71.5 mm	48.8 x 141 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 5	Type 6	Type 5	Type 7
Weight (without plug)		44 g	118 g	44 g	122 g
Protection category		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
Accessories					
Connector		Included	Included	Included	Included
Labelling field		Included	Included	Included	Included

Digital inputs – technical data

Technical data		R-IB IL 24 DI 16-NPN-PAC	R-IB IL 24 DI 32/HD-PAC
Digital inputs			
Number		16	32
Design		According to EN 61131-2, Type 1	According to EN 61131-2, Type 1
Switching thresholds	Max. voltage at low level UL_{max}	< 5 V	< 5 VDC
	Max. voltage at high level U_{Hmax}	> 15 V	> 15 VDC
Common potentials		Segment supply, ground	Segment supply, ground
Nominal input voltage U_{INom}		24 VDC	24 VDC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC
Nominal input current at U_{INom}		3 mA	2.8 mA
Delay time t_{On}		–	2 ms
Delay time t_{Off}		–	4 ms
Permissible line length		30 m	30 m
Sensor connection type		2-, 3-wire connection	1-wire connection
Electric data			
Logic voltage U_L		7.5 V	7.5 V
Power consumption from local bus U_L		60 mA	90 mA
Nominal current consumption from U_S		Max. 4.0 A	–
Operating mode: process data mode		16 bits	32 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 relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data			
Dimensions (W x H x D)		48.8 x 141 x 71.5 mm	48.8 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 7	Type 6
Weight (without plug)		122 g	125 g
Protection category		IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories			
Connector		Included	Included
Labelling field		Included	Included

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 UL_{max}	< 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 VDC	24 VDC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC
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 relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data			
Dimensions (W x H x D)		48.8 x 120 x 71.5 mm	48.8 x 141 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 6	Type 7
Weight (without plug)		118 g	122 g
Protection category		IP 20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories			
Connector		Included	Included
Labelling field		Included	Included

Digital outputs – technical data

Technical data		R-IB IL 24 DO 2-2A	R-IB IL 24 DO 2-NPN-PAC (in preparation)	R-IB IL 24 DO 4-PAC	R-IB IL 24 DO 8-PAC
Digital outputs					
Number		2	2	4	8
Nominal output voltage U_{Out}		24 VDC	24 VDC	24 VDC	24 VDC
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 ms	Typ. 200 ms	Typ. 100 ms	Typ. 100 ms
	Nominal inductive load (1.2 H, 12 Ω)	Typ. 250 ms	Typ. 250 ms	Typ. 100 ms	Typ. 100 ms
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		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 VDC (nominal value)	24 VDC (nominal value)	24 VDC (nominal value)	24 VDC (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 relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data					
Dimensions (W x H x D)		12.2 x 120 x 71.5 mm	12.2 x 120 x 71.5 mm	12.2 x 141 x 71.5 mm	48.8 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 4	Type 4	Type 5	Type 6
Weight (without plug)		46 g	42 g	46 g	130 g
Protection category		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
Accessories					
Connector		Included	Included	Included	Included
Labelling field		Included	Included	Included	Included

Technical data		R-IB IL 24 DO 8-2A-PAC	R-IB IL 24 DO 8-NPN-PAC	R-IB IL 24 DO 8/HD-PAC (in preparation)	R-IB IL 24 DO 16-PAC
Digital outputs					
Number		8	8	8	16
Nominal output voltage U_{Out}		24 VDC	24 VDC	24 VDC	24 VDC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		2 A	0.5 A	0.5 A	0.5 A
Nominal current tolerances		+10 %	+10 %	+10 %	+10 %
Total current		8 A (at 50 % synchronism)	4 A	4 A	8 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. 50 µs	Typ. 100 µs	Typ. 100 µs	Typ. 500 µs
	Nominal lamp load (48 W)	Typ. 75 ms	Typ. 100 ms	Typ. 100 ms	Typ. 100 ms
	Nominal inductive load (1.2 H, 12 Ω)	Typ. 50 ms	Typ. 100 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	Typ. 1 ms
	Nominal lamp load (48 W)	Typ. 500 µs	Typ. 1 ms	Typ. 1 ms	Typ. 1 ms
	Nominal inductive load (1.2 H, 12 Ω)	Typ. 150 ms	Typ. 50 ms	Typ. 50 ms	Typ. 50 ms
Actuator connection type		2-, 3- or 4-wire connection	2-, 3- or 4-wire connection	1-wire connection	2-, 3-wire connection
Electric data					
Logic voltage		7.5 V	7.5 V	7.5 V	7.5 V
Power consumption from local bus U_L		Max. 60 mA	Max. 60 mA	Max. 60 mA	Max. 90 mA
Segment supply voltage U_S		24 VDC (nominal value)	24 VDC (nominal value)	24 VDC (nominal value)	24 VDC (nominal value)
Nominal current consumption from U_S		Max. 8 A	Max. 4 A (8 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		8 bits	4 bits	4 bits	16 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
Ambient conditions					
Permissible temperature (operation)		–25 to +55 °C	–25 to +55 °C	–25 to +55 °C	–25 to +55 °C
Permissible relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data					
Dimensions (W x H x D)		48.8 x 120 x 71.5 mm	48.8 x 120 x 71.5 mm	12.2 x 141 x 71.5 mm	48.8 x 141 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 6	Type 6	Type 5	Type 7
Weight (without plug)		130 g	130 g	46 g	130 g
Protection category		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
Accessories					
Connector		Included	Included	Included	Included
Labelling field		Included	Included	Included	Included

Digital outputs – technical data

Technical data		R-IB IL 24 DO 32/HD-PAC	R-IB IL 24 DO 2-2A-2MBD-PAC
Digital outputs			
Number		32	2
Nominal output voltage U_{Out}		24 VDC	24 VDC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		0.5 A	2 A
Nominal current tolerances		+10 %	+10 %
Total current		8 A	4 A
Protection		Short-circuit/overload	Short-circuit/overload
Signal delay upon power on of	Nominal resistive load (12 Ω/48 W)	Typ. 500 µs	Typ. 200 µs
	Nominal lamp load (48 W)	Typ. 100 ms	Typ. 200 ms
	Nominal inductive load (1.2 H, 12 Ω)	Typ. 100 ms	Typ. 250 ms
Signal delay upon power down of	Nominal resistive load (12 Ω/48 W)	Typ. 1 ms	Typ. 200 µs
	Nominal lamp load (48 W)	Typ. 1 ms	Typ. 200 µs
	Nominal inductive load (1.2 H, 12 Ω)	Typ. 50 ms	Typ. 250 ms
Actuator connection type		1-wire connection	2-, 3- or 4-wire connection
Electric data			
Logic voltage		7.5 V	7.5 V
Power consumption from local bus U_L		Max. 140 mA	Max. 60 mA
Segment supply voltage U_S		24 VDC (nominal value)	24 VDC (nominal value)
Nominal current consumption from U_S		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	2 bits
Transmission speed		500 kbaud	2 Mbaud
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
Permissible relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data			
Dimensions (W x H x D)		48.8 x 120 x 71.5 mm	12.2 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 6	Type 4
Weight (without plug)		135 g	46 g
Protection category		IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories			
Connector		Included	Included
Labelling field		Included	Included

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 VDC	24 VDC	24 VDC
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 ms	Typ. 100 ms	Typ. 100 ms
	Nominal inductive load (1.2 H, 12 Ω)	Typ. 250 ms	Typ. 100 ms	Typ. 100 ms
Signal delay upon power down of	Nominal resistive load (12 Ω/48 W)	Typ. 200 µs	Typ. 1 ms	Typ. 1 ms
	Nominal lamp load (48 W)	Typ. 200 µs	Typ. 1 ms	Typ. 1 ms
	Nominal inductive load (1.2 H, 12 Ω)	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
Electric data				
Logic voltage		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 VDC (nominal value)	24 VDC (nominal value)	24 VDC (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 relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data				
Dimensions (W x H x D)		12.2 x 141 x 71.5 mm	48.8 x 120 x 71.5 mm	48.8 x 141 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 5	Type 6	Type 7
Weight (without plug)		44 g	130 g	130 g
Protection category		IP20	IP20	IP20
Protection class		Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 6053	Class 3 according to VDE 0106, IEC 60536
Accessories				
Connector		Included	Included	Included
Labelling field		Included	Included	Included

Analog inputs – technical data

Technical data	R-IB IL AI 2/SF-PAC	R-IB IL AI 2/SF-230-PAC
Analog inputs		
Number	2 analog single-ended inputs	2 analog 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 VDC	24 VDC
Power consumption from 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 relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)	12.2 x 135 x 71.5 mm	12.2 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 8	Type 8
Weight (without plug)	47 g	47 g
Protection category	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector	Included	Included
Labelling field	Included	Included

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 VDC
Power consumption from U_{ANA}	Typ. 31 mA, max. 40 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 10
Weight (without plug)	125 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Analog inputs – technical data

Technical data	R-IB IL AI 8/SF-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. 48 mA, max. 55 mA
Peripheral supply voltage U_{ANA}	24 VDC
Power consumption from 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	48.8 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 10
Weight (without plug)	125 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Technical data		R-IB IL SGI 2/F-PAC
Analog inputs		
Number		2 input channels 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 bit
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		6- and 4-wire connection
Output		
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 VDC
Power consumption from U_{ANA}	Without DMS	Typ. 8 mA
	60 W, with maximum load	Typ. 32 mA (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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 10
Weight (without plug)		125 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Analog inputs – technical data

Technical data	R-IB IL AI 8/SF-2MBD-PAC (in preparation)
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 VDC
Power consumption from 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 10
Weight (without plug)	125 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Technical data		R-IB IL SGI 2/F-2MBD-PAC (in preparation)
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 channels 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 bit
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		6- and 4-wire connection
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 VDC
Power consumption from U_{ANA}	Without DMS	Typ. 8 mA
	60 W, with maximum load	Typ. 32 mA (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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 10
Weight (without plug)		125 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Temperature module – technical data

Technical data	R-IB IL TEMP 2 RTD	R-IB IL TEMP 4/8 RTD-2MBD-PAC (in preparation)
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 to +85 mV
Process data update	Depending on connection method	Depending on connection method
Both channels acc. to 2-wire connection	20 ms	–
One channel acc. to 2-wire connection, one channel acc. to 4-wire connection	20 ms	–
Both channels acc. to 3-wire connection	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 VDC	24 VDC
Power consumption from 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 relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)	12.2 x 135 x 71.5 mm	48.8 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 8	Type 10
Weight (without plug)	46 g	125 g
Protection category	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector	R-IB IL SCN-6 SHIELD-TWIN	Included
Labelling field	R-IB IL FIELD 2	Included

Technical data	R-IB IL TEMP 2 UTH-PAC
Analog inputs	
Number	2 inputs for thermocouples 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 VDC
Power consumption from 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	12.2 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 8
Weight (without plug)	46 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Temperature module – technical data

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 VDC
Power consumption from 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 10
Weight (without plug)	125 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Analog outputs – technical data

Technical data	R-IB IL AO 2/U/BP-PAC
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 VDC
Power consumption from 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	12.2 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 8
Weight (without plug)	48 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Analog outputs – technical data

Technical data		R-IB IL AO 1/SF-PAC
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 output	2 kΩ
	Current output	0 to 500 Ω
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. 30 mA, max. 40 mA
Peripheral supply voltage U_{ANA}		24 VDC
Power consumption from 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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		24.4 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 9
Weight (without plug)		48 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

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 output	Min. 2 kΩ
	Current output	0 to 500 Ω
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. 36 mA, max. 45 mA
Peripheral supply voltage U_{ANA}		24 VDC
Power consumption from 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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 10
Weight (without plug)		125 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Analog outputs – technical data

Technical data		R-IB IL AO 2/SF-2MBD-PAC (in preparation)
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 output	Min. 2 kΩ
	Current output	0 to 500 Ω
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. 60 mA, max. 75 mA
Peripheral supply voltage U_{ANA}		24 VDC
Power consumption from 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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 10
Weight (without plug)		125 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Technical data	R-IB IL AO 4/8/U/BP-2MBD-PAC (in preparation)
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
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 VDC
Power consumption from U_{ANA}	Typ. 72 mA
Operating mode: process data mode	32 bits
Transmission speed	2 Mbaud
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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	48.8 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 10
Weight (without plug)	48 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Feed/segment modules – technical data

Technical data	R-IB IL 24 PWR IN-PAC	R-IB IL 24 PWR IN/2F-D-2MBD-PAC (in preparation)
24 V peripheral supply (main circuit U_M)		
Rated value	24 VDC	24 VDC
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 relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)	12.2 x 135 x 71.5 mm	12.2 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 4	Type 4
Weight (without plug)	44 g	44 g
Protection category	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector	Included	Included
Labelling field	Included	Included

Technical data	R-IB IL 24 SEG-PAC	R-IB IL 24 SEG/F-PAC	R-IB IL 24 SEG/F-D-2MBD-PAC (in preparation)
24 V peripheral supply (main circuit U_M)			
Power supply	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	6.0 A
Max. permissible value	8.0 A	8.0 A	8.0 A
Electric data			
Operating mode: process data mode	–	–	–
Transmission speed	500 kbaud	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	–25 to +55 °C
Permissible relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data			
Dimensions (W x H x D)	12.2 x 135 x 71.5 mm	12.2 x 135 x 71.5 mm	12.2 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 4	Type 4	Type 4
Weight (without plug)	44 g	44 g	44 g
Protection category	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
Accessories			
Connector	Included	Included	Included
Labelling field	Included	Included	Included

Feed/segment modules – technical data

Technical data		R-IB IL 24 PWR IN/R-PAC
24 V power supply for generation of U_L and U_{ANA}		
Rated value		24 VDC
Permissible range		19.2 to 30 VDC
Power consumption at nominal voltage		
24 V module supply		1.25 A
Logic supply	Rated value	7.5 VDC
	Max. output current	2 A
Analog supply	Rated value	24 VDC
	Max. output current	0.5 A
24 V peripheral supply (main circuit U_M)		
Rated value		24 VDC
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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		48.8 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 6
Weight (without plug)		44 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Technical data	R-IB IL 24 SEG/F-D-PAC
24 V peripheral supply (main circuit U_M)	
Power supply	Voltage infeed is in the bus terminal or in the infeed 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
Max. permissible value	8.0 A
Electric data	
Operating mode: process data mode	–
Transmission speed	500 kbaud
Error message to the higher level control system	Yes
Ambient conditions	
Permissible temperature (operation)	–25 to +55 °C
Permissible relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	12.2 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 4
Weight (without plug)	44 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Function modules – technical data

Technical data	R-IB IL CNT-PAC – counter module
Digital inputs	
Number	1 counter input for 5 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 VDC
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 output voltage U_{Out}	24 VDC
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 VDC
Nominal current consumption from 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 counter	f ≤ 100 kHz
Time measurement	0.25 ms ≤ t ≤ 131 ms (Resolution 2 µs, without reference conditions)
	1 ms ≤ t ≤ 131 ms (Resolution 2 µs, with reference 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	24.4 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 9
Weight (without plug)	90 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Technical data	R-IB IL CNT-2MBD-PAC – counter module (in preparation)
Digital inputs	
Number	1 counter input for 5 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 VDC
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 output voltage U_{Out}	24 VDC
Nominal 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 VDC
Nominal current consumption from 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 counter	f ≤ 100 kHz
Time measurement	0.25 ms ≤ t ≤ 131 ms (Resolution 2 µs, without reference conditions)
	1 ms ≤ t ≤ 131 ms (Resolution 2 µs, with reference 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	24.4 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 9
Weight (without plug)	90 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labelling field	Included

Function modules – technical data

Technical data		R-IB IL INC-IN-PAC – incremental encoder module
Digital inputs		
Number		3
Design of input		According to EN 61131-2, type 1
Nominal input voltage U_{In}		24 VDC
Permissible range		$-30 < U_{In} < +30$ VDC
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 VDC
	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 VDC
	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 VDC
Nominal current consumption from 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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		24.4 x 141 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 9
Weight (without plug)		90 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Technical data		R-IB IL INC-PAC – positioning terminal module with incremental encoder input
Digital inputs		
Number		4
Design of input		According to EN 61131-2, type 1
Nominal input voltage U_{In}		24 VDC
Permissible range		$-30 < U_{In} < +30$ VDC
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 VDC
Nominal current per output I_{Nom}		0.5 A
Total current of output		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 VDC
	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 VDC
	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 VDC
Nominal current consumption from U_S		Max. 2 A
Main supply voltage U_M		24 VDC
Nominal current consumption from 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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		48.8 x 141 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 10
Weight (without plug)		130 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Function modules – technical data

Technical data		R-IB IL SSI-PAC – positioning terminal module with SSI interface
Digital inputs		
Number		4
Design of input		According to EN 61131-2, type 1
Nominal input voltage U_{In}		24 VDC
Permissible range		$-30 < U_{In} < +30$ VDC
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 VDC
Nominal current per output I_{Nom}		0.5 A
Total current of output		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 VDC
Nominal current consumption from 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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		48.8 x 141 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 10
Weight (without plug)		130 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Technical data		R-IB IL PWM/2-PAC – PWM output modul
Digital outputs 24 VDC		
Number		2
Nominal output voltage U_{Out}		24 VDC
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 up of	Nominal resistive load (12 Ω/48 W)	Typ. 80 µs
	Nominal lamp load (48 W)	Typ. 30 ms
	Nominal inductive load (1.2 H, 12 Ω)	Typ. 30 ms
Signal delay upon power down 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
Actuator connection type		2-, 3-wire connection
Digital outputs 5 VDC		
Number		2
Nominal output voltage U_{Out}		5 VDC
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_M		24 VDC
Nominal current consumption from U_M		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 relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		24.4 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)		Type 9
Weight (without plug)		90 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Communication modules – technical data

Technical data	R-IB IL RS 232-PRO-PAC	R-IB IL RS 485/422-PRO-2MBD-PAC (in preparation)
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 kbyte	4 kbyte
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	2 Mbaud
Error message to the higher level control system	–	–
Ambient conditions		
Permissible temperature (operation)	–25 to +55 °C	–25 to +55 °C
Permissible relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)	24.4 x 135 x 71.5 mm	24.4 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 9	Type 9
Weight (without plug)	90 g	90 g
Protection category	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector	Included	Included
Labelling field	Included	Included

Technical data	R-IB IL RS 232-PRO-2MBD-PAC (in preparation)	R-IB IL RS 485/422-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 kbyte	4 kbyte
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 relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)	24.4 x 135 x 71.5 mm	24.4 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 9	Type 9
Weight (without plug)	90 g	90 g
Protection category	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector	Included	Included
Labelling field	Included	Included

Communication modules – technical data

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 VDC
Nominal current consumption from 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 relative humidity (operation)	5 to 90 %, no dewing
Mechanical data	
Dimensions (W x H x D)	12.2 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 8
Weight (without plug)	46 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	R-IB IL SCN-6 SHIELD
Labelling field	R-IB IL FIELD 2

Technical data	R-IB IL 24 LSKIP-PAC – line skip module	R-IB IL 24 FLM-PAC – branch module
Interface		
Type	Inline local bus, Max. 20 m line length	Fieldline M8 local bus
24-V-power supply for generation of U_L and U_{ANA}		
Rated value	24 VDC	–
Permissible range	19.2 to 30 VDC	–
24-V-peripheral supply (main circuit UM)		
Rated value	24 VDC	–
Permissible range	19.2 to 30 VDC	–
Permissible current	Max. 8 A	–
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 VDC
Nominal current consumption from U_S		
Fieldline M8 local bus	–	Max. 3 A (with infeed 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/2 Mbaud	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	–25 to +55 °C
Permissible relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)	48.8 x 135 x 71.5 mm	12.2 x 135 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 3	Type 8
Weight (without plug)	150 g	43 g
Protection category	IP20	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536	Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector	Included	Included
Labelling field	Included	Included

Communication modules – technical data

Technical data	R-IB IL 24 IOL 4 DI 12-PAC
IO-Link port	
Number	4
Nominal current for every IO-Link port	Max. 200 mA
Permissible line length to the sensor	20 m
Digital inputs in the SIO mode	
Number	4
Input voltage	24 VDC
Input voltage range	0 to 30 VDC
Nominal input current	5.5 mA
Digital outputs in the SIO mode	
Number	4
Nominal output voltage	≥ Segment supply voltage U_S –3 V
Nominal current per channel	Max. 200 mA
Digital inputs	
Number	12
Nominal input voltage	24 VDC
Nominal input current	2.2 mA
Delay at signal change	3 ms
Sensor connection type	2-, 3-wire connection
Electric data	
Logic voltage U_L	7.5 V
Power consumption from local bus U_L	Max. 100 mA
Nominal voltage U_S	24 VDC
Nominal current consumption at U_S	Max. 800 mA
Operating mode: process data mode	96 bits
Transmission speed	500 kbaud
Error message to the higher level control system	Short-circuit/overload of a digital output in the SIO mode
Ambient conditions	
Permissible temperature (operation)	–25 °C to +55 °C
Permissible relative humidity (operation)	10 % to 95 %, no dewing
Mechanical data	
Dimensions (W x H x D)	48.8 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 6
Weight (without plug)	200 g
Protection category	IP20
Protection class	Class 3 according to VDE 0106, IEC 60536
Accessories	
Connector	Included
Labeling field	Included

Relay modules – technical data

Technical data	R-IB IL 24/230 DOR1/W-PAC	R-IB IL 24/230 DOR4/W-PAC	R-IB IL 24/230 DOR4/W – 2MBD-PAC (in preparation)
Relay output			
Number	1	4	4
Max. switching voltage	253 VAC, 250 VDC	253 VAC, 250 VDC	253 VAC, 250 VDC
Max. switching capacity	750 VA	750 VA	750 VA
Electric data			
Logic voltage	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 relative humidity (operation)	5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data			
Dimensions (W x H x D)	12.2 x 120 x 71.5 mm	48.8 x 120 x 71.5 mm	48.8 x 120 x 71.5 mm
Dimension drawing (see pp. 212 – 215)	Type 4	Type 6	Type 6
Weight (without plug)	46 g	138 g	138 g
Protection category	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
Accessories			
Connector	Included	Included	Included
Labelling field	Included	Included	Included

Block I/O modules – technical data

Technical data		R-ILB PB 24 DI16/DO16	R-ILB DN 24 DI16/DO16	R-ILB S3 24 DI16 DIO16
Communication				
Interfaces		PROFIBUS	DeviceNet	SERCOS III
Digital inputs				
Number		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
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 VDC	24 VDC	24 VDC
Permissible nominal input voltage range		$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC	$-30 < U_{INom} < +30$ VDC
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-wire connection	2-, 3-wire connection	2-, 3-wire connection
Digital outputs				
Number		16	16	16
Nominal output voltage U_{Out}		24 VDC	24 VDC	24 VDC
Differential voltage at I_{Nom}		≤ 1 V	≤ 1 V	≤ 1 V
Nominal current I_{Nom} per channel		1 A	1 A	1 A
Nominal current tolerances		10 %	10 %	10 %
Total current		8 A	8 A	8 A
Protection		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
	Nominal lamp load (48 W)	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
Actuator connection type		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
Permissible relative humidity (operation)		5 to 90 %, no dewing	5 to 90 %, no dewing	5 to 90 %, no dewing
Mechanical data				
Dimensions (W x H x D)		156 x 141 x 55 mm	156 x 141 x 55 mm	156 x 141 x 55 mm
Dimension drawing (see pp. 212 – 215)		Type 11	Type 11	Type 11
Weight (without plug)		500 g	500 g	500 g
Protection category		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
Accessories				
Connector		Included	Included	Included
Labelling field		Included	Included	Included

Technical data		R-ILB S3 AI4 AO2
Communication		
Interfaces		SERCOS III
Analog inputs		
Number		4 analog differential inputs
Conversion time of A/D converter		180 µs
Signal connection type		2-, 3- and 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 1,000, Ni 100, Ni 1,000 L&G, 0 to 2,500 Ω, 0 to 9.500 Ω
Analog outputs		
Number		2
Conversion time of D/A converter		Max. 70 µs
Output load	Voltage ouput R_{Lmin}	2 kΩ
	Current output R_{LB}	0 to 500 Ω
Signal connection type		2-wire connection
Ambient conditions		
Permissible temperature (operation)		–25 to +55 °C
Permissible relative humidity (operation)		5 to 90 %, no dewing
Mechanical data		
Dimensions (W x H x D)		156 x 141 x 55 mm
Dimension drawing (see pp. 212 – 215)		Type 11
Weight (without plug)		500 g
Protection category		IP20
Protection class		Class 3 according to VDE 0106, IEC 60536
Accessories		
Connector		Included
Labelling field		Included

Inline – ordering data

Ordering data for fieldbus coupler	
Description	**Type code**
PROFIBUS fieldbus coupler, 8 digital inputs, 4 digital outputs, 500 mA	R-IL PB BK DI8 DO4-PAC
PROFINET IO fieldbus coupler, 8 digital inputs, 4 digital outputs, 500 mA	R-IL PN BK DI8 DO4-PAC
SERCOS III fieldbus coupler, 8 digital inputs, 4 digital outputs, 500 mA	R-IL S3 BK DI8 DO4-PAC
INTERBUS fieldbus coupler, copper connection	R-IBS IL 24 BK-T/U-PAC
INTERBUS fieldbus coupler, D-Sub connection	R-IBS IL 24 BK-DSUB
DeviceNet fieldbus coupler, D-Sub connection	R-IL DN BK
CANopen fieldbus coupler, Bus interface 2 x 5 pin connector	R-IL CAN BK-TC-PAC
SERCOS 2 fieldbus coupler	R-IL SE BK

Ordering data for digital modules	
Description	**Type code**
Digital input module, 2 digital inputs, 4-wire-connection	R-IB IL 24 DI 2-PAC
Digital input module, 2 digital inputs, 2 Desina diagnostics inputs, 3-wire-connection	R-IB IL 24 EDI 2-DES
Digital input module (in preparation), 2 digital inputs with negative logic (NPN), 4-wire-connection	R-IB IL 24 DI 2-NPN-PAC
Digital input module, 4 digital inputs, 3-wire-connection	R-IB IL 24 DI 4-PAC
Digital input module, 8 digital inputs, 4-wire-connection	R-IB IL 24 DI 8-PAC
Digital input module (in preparation), 8 digital inputs, 1-wire-connection	R-IB IL 24 DI 8/HD-PAC
Digital input module, 16 digital inputs, 3-wire-connection	R-IB IL 24 DI 16-PAC
Digital input module, 16 digital inputs with negative logic (NPN), 2-, 3-wire-connection	R-IB IL 24 DI 16-NPN-PAC
Digital input module, 32 digital inputs, 1-wire-connection	R-IB IL 24 DI 32/HD-PAC
Digital input module (in preparation), 32 digital inputs with negative logic (NPN), 1-wire-connection	R-IB IL 24 DI 32/HD-NPN-PAC
Digital input module, 8 digital inputs, 2 Mbaud, 4-wire-connection	R-IB IL 24 DI 8-2MBD-PAC
Digital input module, 16 digital inputs, 2 Mbaud, 3-wire-connection	R-IB IL 24 DI 16-2MBD-PAC
Digital output module, 2 digital outputs, 2 A, 4-wire-connection	R-IB IL 24 DO 2-2A
Digital output module (in preparation), 2 digital outputs with negative logic (NPN), 4-wire-connection	R-IB IL 24 DO 2-NPN-PAC
Digital output module, 4 digital outputs, 500 mA, 3-wire-connection	R-IB IL 24 DO 4-PAC
Digital output module, 8 digital outputs, 4-wire-connection	R-IB IL 24 DO 8-PAC
Digital output module, 8 digital outputs, 2 A, (in preparation), 4-wire-connection	R-IB IL 24 DO 8-2A-PAC
Digital output module, 8 digital outputs with negativ logic (NPN), 2-, 3-wire-connection	R-IB IL 24 DO 8-NPN-PAC
Digital output module (in preparation), 8 digital outputs, 500 mA, 1-wire connection	R-IB IL 24 DO 8/HD-PAC
Digital output module, 16 digital outputs, 500 mA, 3-wire-connection	R-IB IL 24 DO 16-PAC
Digital output module, 32 digital outputs, 500 mA, 1-wire connection	R-IB IL 24 DO 32/HD-PAC
Digital output module (in preparation), 32 digital outputs with negative logic (NPN), 1-wire connection	R-IB IL 24 DO 32/HD-NPN-PAC
Digital output module, 2 digital outputs, 2 Mbaud, 2 A, 4-wire-connection	R-IB IL 24 DO 2-2A-2MBD-PAC
Digital output module, 4 digital outputs, 2 Mbaud, 500 mA, 3-wire-connection	R-IB IL 24 DO 4-2MBD-PAC
Digital output module, 8 digital outputs, 2 Mbaud, 500 mA, 4-wire-connection	R-IB IL 24 DO 8-2MBD-PAC
Digital output module, 16 digital outputs, 2 Mbaud, 500 mA, 3-wire-connection	R-IB IL 24 DO 16-2MBD-PAC

Ordering data for analog modules	
Description	**Type code**
Analog input module, 2 analog inputs, 2-, 3-wire-connection	R-IB IL AI 2/SF-PAC
Analog input module, 2 analog inputs, 2-, 3-wire connection	R-IB IL AI 2/SF-230-PAC
Analog input module, 8 analog inputs, 2-, 3-wire-connection	R-IB IL AI 8/IS-PAC
Analog input module, 8 analog inputs, 2-wire-connection	R-IB IL AI 8/SF-PAC
Analog input module, 2 analog inputs for strain gauge	R-IB IL SGI 2/F-PAC
Analog input module (in preparation), 8 analog inputs, 2 Mbaud, 2-wire-connection	R-IB IL AI 8/SF-2MBD-PAC
Analog input module, 2 analog inputs for strain gauge, 2 Mbaud	R-IB IL SGI 2/F-2MBD-PAC
Analog input module, 2 analog inputs, RTD (Resistor sensing device), 2-, 3-, 4-wire-connection	R-IB IL TEMP 2 RTD

Ordering data for analog modules	
Description	**Type code**
Analog input module, 8 analog inputs, RTD (Resistor sensing device), 2-, 3-wire-connection, 2 Mbaud	R-IB IL TEMP 4/8 RTD-2MBD-PAC
Analog input module, 2 analog inputs, TC (thermocouple), 2-wire-connection	R-IB IL TEMP 2 UTH-PAC
Analog input module, 8 analog inputs, RTD (Resistor sensing device), 2-, 3-wire-connection	R-IB IL TEMP 4/8 RTD-PAC
Analog output module, 2 analog outputs, 2-wire-connection	R-IB IL AO 2/U/BP-PAC
Analog output module, 1 analog output, 2-wire-connection	R-IB IL AO 1/SF-PAC
Analog output module, 2 analog outputs, 2-wire-connection	R-IB IL AO 2/SF-PAC
Analog output module (in preparation), 2 analog outputs, 2 Mbaud, 2-wire-connection	R-IB IL AO 2/SF-2MBD-PAC
Analog output module (in preparation), 8 analog outputs, 2 Mbaud, 2-, 3-wire-connection	R-IB IL AO 4/8/U/BP-2MBD-PAC

Ordering data for feed/segment, function, communication, relay modules	
Description	**Type code**
Power module, without fuse	R-IB IL PWR IN-PAC
Power module (in preparation), 2 Mbaud, with fuse and diagnostics	R-IB IL PWR IN/2F-D-2MBD-PAC
Power module, Inline boost terminal for logical voltage supply	R-IB IL PWR IN/R-PAC
Segment module, without fuse	R-IB IL 24 SEG-PAC
Segment module, with fuse	R-IB IL 24 SEG/F-PAC
Segment module, 2 Mbaud, with fuse and diagnostics	R-IB IL 24 SEG/F-D-2MBD-PAC
Segment module, with fuse and diagnostics	R-IB IL 24 SEG/F-D-PAC
Counter module, 1 counter input, 1 control input, 1 output, 500 mA, 3-wire-connection	R-IB IL CNT-PAC
Function module, position module for incremental encoder interfaces, 3-wire-connection	R-IB IL INC-IN-PAC
Function module, position module with incremental encoder input, 2-, 3-wire-connection	R-IB IL INC-PAC
Function module, position terminal for SSI encoders, 3-wire-connection	R-IB IL SSI-PAC
Function module for pulse widths and frequency modulation or step motor control, 2 outputs	R-IB IL PWM/2-PAC
Counter module (in preparation), 1 counter input, 1 control input, 1 output, 2 Mbaud, 500 mA, 3-wire-connection	R-IB IL CNT-2MBD-PAC
RS232 module, 1 serial input and output channel for RS232	R-IB IL RS 232-PRO-PAC
RS485/422 module, 1 serial input and output channel for RS485/422	R-IB IL RS485/422-PRO-PAC
RS232 module (in preparation), 1 serial input and output channel for RS232, 2 Mbaud	R-IB IL RS232-PRO-2MBD-PAC
RS485/422 module, (in preparation), 1 serial input and output channel for RS485/422, 2 Mbaud	R-IB IL RS485/422-PRO-2MBD-PAC
Branch module, INTERBUS branch terminal, copper	R-IBS IL 24 RB-T
Line skip module, line skip into inline local bus, max. cable length 20 m	R-IB IL 24 LSKIP-PAC
Branch module, coupling a fieldline modular local bus M8	R-IB IL 24 FLM-PAC
IO-link module	R-IB IL 24 IOL 4 DI 12-PAC
Digital output module, 1 relay PTD contact, 5 – 253 VAC, 3 A	R-IB IL 24/230 DOR 1/W-PAC
Digital output module, 4 relay PTD contacts, 5 – 253 VAC, 3 A	R-IB IL 24/230 DOR 4/W-PAC
Digital output module (in preparation), 4 relay PTD contacts, 2 Mbaud, 5 – 253 VAC, 3 A	R-IB IL 24/230 DOR 4/W 2MBD-PAC

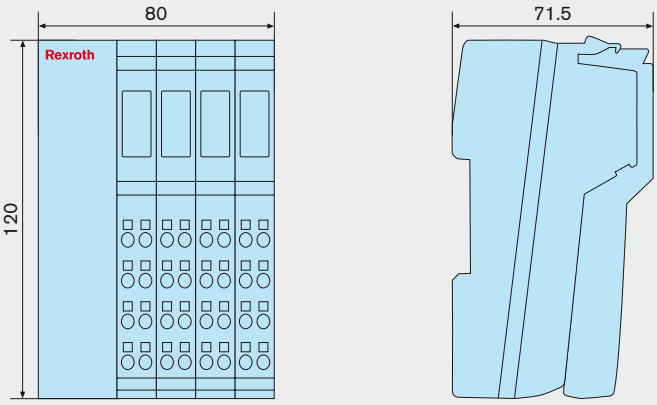
Ordering data for Block I/O modules	
Description	**Type code**
Inline Block I/O, PROFIBUS, 16 digital inputs, 16 digital outputs, 500 mA, 3-wire-connection	R-ILB PB 24 DI16/DO16
Inline Block I/O, INTERBUS, 16 digital inputs, 16 digital outputs, 500 mA, 3-wire-connection	R-ILB IB 24 DI16/DO16
Inline Block I/O, DeviceNet, 16 digital inputs, 16 digital outputs, 500 mA, 3-wire-connection	R-ILB DN 24 DI16/DO16
Inline Block I/O, SERCOS III, 16/32 digital inputs, max. 16 digital outputs, 500 mA, 2-, 3-wire connection	R-ILB S3 24 DI16 DIO16
Inline Block I/O, SERCOS III, 4 analog inputs, 2 analog outputs, 2-, 3-, 4-wire connection	R-ILB S3 AI4 AO2

Ordering data for documentation	
Description	**Type code**
Automation terminals of the Rexroth Inline Product Range	DOK-CONTRL-ILSYSINS***-AWxx-EN-P

Technical information and data sheets for Rexroth Inline are available from http://www.boschrexroth.com/mediadirectory

Inline fieldbus coupler

Type 1



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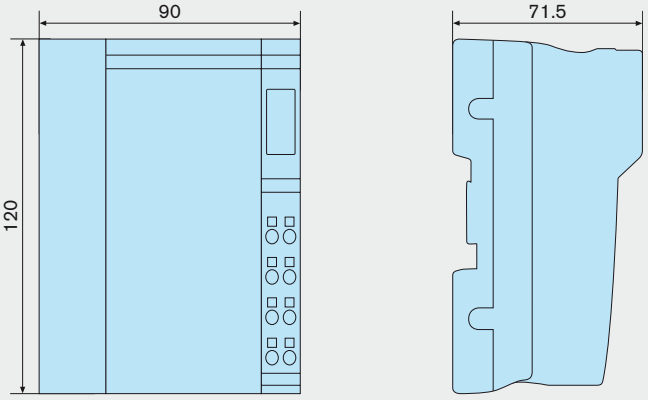

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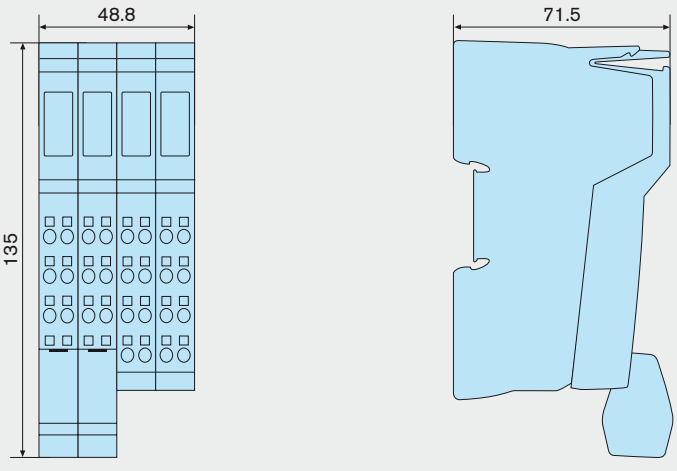
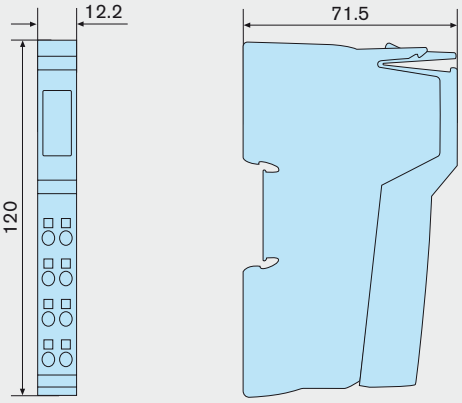
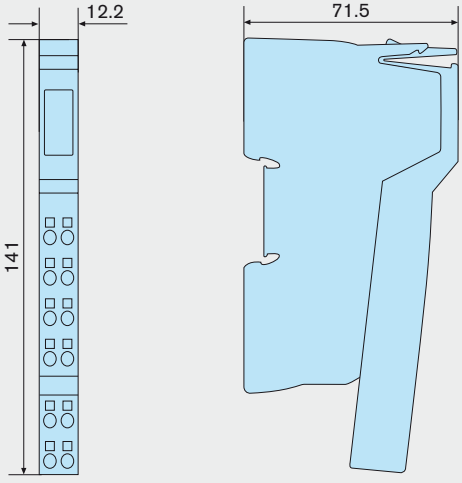


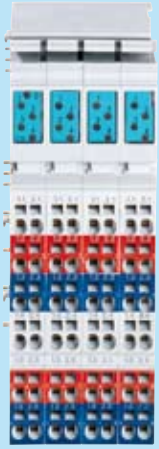
Inline digital and feed/segment modules

Type 4

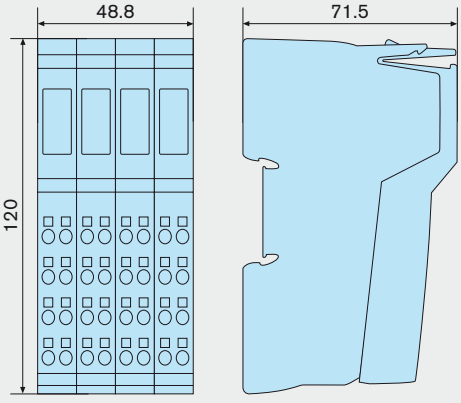


Type 5





Type 6



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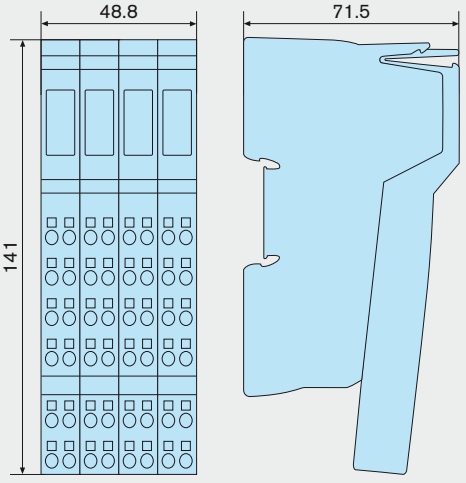
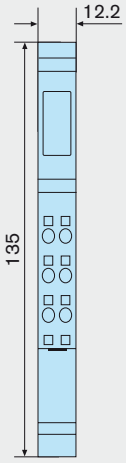
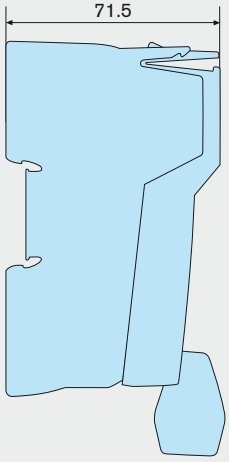


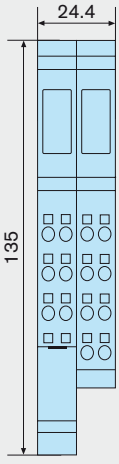
Inline analog, temperature, communication and function modules

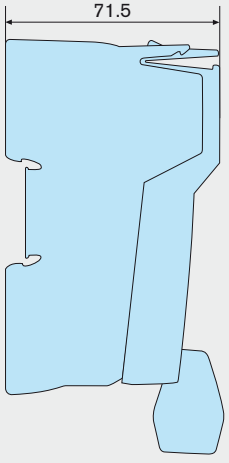
Type 8

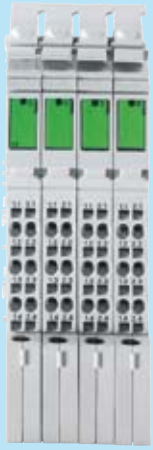




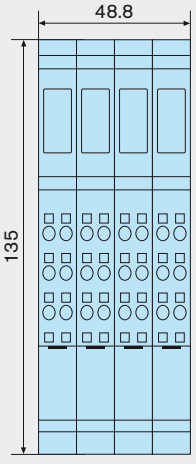
Type 9

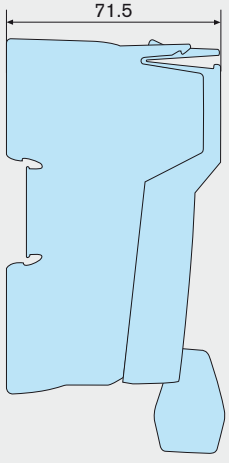






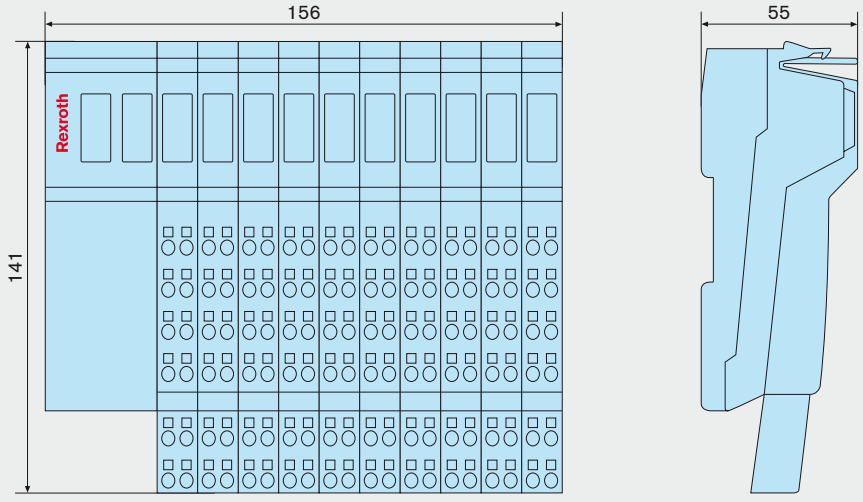
Type 10





Inline Block I/O modules

Type 11



IndraControl S67 – fast I/O system for cabinet-free automation

The IndraControl S67 enables cabinet-free installation near the machine and is suitable for use in harsh environments. The modular I/O modules provide for ultra-high flexibility and economic realization of customized machine concepts. Its high performance makes the IndraControl S67 ideal for the reliable acquisition of time-critical signals.

With IP67 protection, the IndraControl S67 is also very well suited to harsh industrial environments. The system is modular in design so that it can be optimally adapted to a wide range of applications; up to 64 I/O modules can be operated from a single fieldbus coupler. Highly accurate, synchronous acquisition and processing of signals ensure sufficient reserve capacity for motion control applications and fast signal acquisition. Comprehensive parameterization and diagnostics functions, fast, easy installation, and M12 and M8 connection technology round off the system.

Your benefits

- Extremely fast cycle times thanks to optimized data transmission
- Highly reliable operation under extreme ambient conditions
- Modular and individually expandable
- Expandable to 500 m per I/O station
- Flexible installation
- M12 and M8 connection technology in compact housing design
- Simple in operation and application
- Comprehensive diagnostics options
- Intelligent voltage concept

IndraControl S67 – for reliable acquisition of time-critical signals directly at the machine.

Fast, modular, and robust

- Reliable acquisition of time-critical signals
- Modular and individually expandable system structure
- High level of protection for application in harsh industrial environments

Your benefit

Fieldbus coupler – for connecting local I/O modules to a higher-level fieldbus system.

Digital I/O modules – for acquiring and outputting digital signals, e.g. for buttons, limit or proximity switches.

Analog I/O modules – for acquiring and outputting analog signals for standard sensors, e.g. temperature or pressure sensors.

Feed modules – for supplying IndraControl S67 components for extensive overall expansion of the system.

Fieldbus coupler – technical data

Technical data	S67-PB-BK-DI8-M8	S67-PN-BK-DI-8-M8	S67-DN-BK-DI-8-M8 (in preparation)
Fieldbus coupler			
Type	PROFIBUS slave	PROFINET IO device	DeviceNet slave
Connection type	M12 connectors, B coded, 5 poles	M12 connectors, D coded, 5 poles	M12 connectors, A coded, 5 poles
Tansmission speed	12 Mbit/s (automatic recognition)	100 Mbit/s	125/250/500 kbit/s
Transmission medium	Copper cable	Copper cable	Copper cable
Digital inputs			
Number	8	8	8
Connection type	M8 connectors, A coded, 3 poles	M8 connectors, A coded, 3 poles	M8 connectors, A coded, 3 poles
Sensor connection type	2-, 3-wire connection	2-, 3-wire connection	2-, 3-wire connection
Input filter	Parametrizable	Parametrizable	Parametrizable
Input characteristic	Type 1, acc. to IEC 61131-2	Type 1, acc. to IEC 61131-2	Type 1, acc. to IEC 61131-2
Signal voltage (0)	–30 to +5 VDC	–30 to +5 VDC	–30 to +5 VDC
Signal voltage (1)	+11 to +30 VDC	+11 to +30 VDC	+11 to +30 VDC
Input circuit	High-side switching	High-side switching	High-side switching
Input voltage	24 VDC ($-30 < U_{IN} < +30$ VDC)	24 VDC ($-30 < U_{IN} < +30$ VDC)	24 VDC ($-30 < U_{IN} < +30$ VDC)
Input current	Typ. 2.8 mA	Typ. 2.8 mA	Typ. 2.8 mA
Cable length, unshielded	≤ 30 m	≤ 30 m	≤ 30 m
Module supply			
Connection type	M12 connectors, A coded, 4 poles	M12 connectors, A coded, 4 poles	M12 connectors, A coded, 4 poles
Current carrying capacity of supply connections	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)
Logic and sensor voltage U_{LS}	24 VDC (–25 to +30 %)	24 VDC (–25 to +30 %)	24 VDC (–25 to +30 %)
Actuator voltage U_A	24 VDC (–25 to +30 %)	24 VDC (–25 to +30 %)	24 VDC (–25 to +30 %)
Logic and sensor current I_{LS}	Typ. 110 mA + sensor (max. 400 mA)	Typ. 110 mA + sensor (max. 400 mA)	Typ. 110 mA + sensor (max. 400 mA)
Actuator current I_A	5 mA	5 mA	5 mA
Protection	Reverse voltage protection for U_{LS} + U_A short circuit protection for sensor supply	Reverse voltage protection for U_{LS} + U_A short circuit protection for sensor supply	Reverse voltage protection for U_{LS} + U_A short circuit protection for sensor supply
System bus			
Number of expandable modules	63	63	63
Connection type	M12 connectors, B coded, 5 poles, shielded	M12 connectors, B coded, 5 poles, shielded	M12 connectors, B coded, 5 poles, shielded
Electrical isolation			
Channel – Channel	No	No	No
U_{LS}, U_A, system bus, fieldbus	500 VDC each	500 VDC each	500 VDC each
Service interface			
Type	USB	USB	USB
Connection type	M8 connectors, 4 poles	M8 connectors, 4 poles	M8 connectors, 4 poles
Configurable functions/digital inputs			
Input filter (per channel)	0.1/0.5/3/15/20 ms/filter off	0.1/0.5/3/15/20 ms/filter off	0.1/0.5/3/15/20 ms/filter off
Online simulation (per channel)	Lock/unlock; simulation value: 0/1	Lock/unlock; simulation value: 0/1	Lock/unlock; simulation value: 0/1
Diagnostics (per module)	Overload and short circuit (sensor supply); Undervoltage (V_{LS} + V_A)	Overload and short circuit (sensor supply); Undervoltage (V_{LS} + V_A)	Overload and short circuit (sensor supply); Undervoltage (V_{LS} + V_A)
Process image			
Input process image	244 byte	512 byte	2,048 byte
Output process image	244 byte	512 byte	2,048 byte
Ambient conditions			
Permissible temperature (operation)	–25 to +60 °C	–25 to +60 °C	–25 to +60 °C
Permissible relative humidity (operation)	5 to 95 %	5 to 95 %	5 to 95 %

Technical data	S67-PB-BK-DI8-M8	S67-PN-BK-DI-8-M8	S67-DN-BK-DI-8-M8 (in preparation)
Ambient conditions			
Permissible temperature (operation)	–25 to +60 °C	–25 to +60 °C	–25 to +60 °C
Permissible relative humidity (operation)	5 to 95 %	5 to 95 %	5 to 95 %
Permissible air pressure (operation)	795 to 1,080 hPa	795 to 1,080 hPa	795 to 1,080 hPa
Mechanical data			
Dimensions (W x H x D)	75 x 117 x 35 mm	75 x 117 x 35 mm	75 x 117 x 35 mm
Dimensional drawing (see pp. 230)	Type 1	Type 1	Type 1
Weight	330 g	330 g	330 g
Protection class	IP67 (NEMA 6&6P), DIN40050 (EN60529)	IP67 (NEMA 6&6P), DIN40050 (EN60529)	IP67 (NEMA 6&6P), DIN40050 (EN60529)
Vibration resistance	According to IEC 60068-2-6	According to IEC 60068-2-6	According to IEC 60068-2-6
Shock resistance (temporary)	According to IEC 60068-2-27	According to IEC 60068-2-27	According to IEC 60068-2-27
LED indicators			
RUN – Coupler initialization	LED (green/red)	LED (green/red)	–
DIA – PROFIBUS diagnostics	LED (red)	LED (red)	–
CS – Coupler status	LED (green/red)	LED (green/red)	LED (green/red)
BF – PROFIBUS bus error	LED (red)	LED (red)	–
BUS – PROFIBUS projecting error	LED (red)	LED (red)	–
MS – DeviceNet modul status	–	–	LED (green/red)
NS – DeviceNet network status	–	–	LED (green/red)
MBO – MAC-ID/Baud rate	–	–	LED (orange)
0 ... 7 – Input status	LED (yellow)	LED (yellow)	LED (yellow)
F – Error status	LED (red)	LED (red)	LED (red)
U_{LS} + U_A – Supply status	LED (green)	LED (green)	LED (green)
SB – system bus, status	LED (green/red)	LED (green/red)	LED (green/red)
LED indicators	Non-latching	Non-latching	Non-latching

Digital inputs – technical data

Technical data	S67-DI8-M8	S67-DI8-M12
Digital inputs		
Number	8	4
Connection type	M8 connectors, A coded, 3 poles	M12 connectors, A coded, 5 poles
Sensor connection type	2-, 3-wire connection	2-, 3-wire connection
Input filter	Parametrizable	Parametrizable
Input characteristic	Type 2, acc. to IEC 61131-2	Type 2, acc. to IEC 61131-2
Signal voltage (0)	–30 to +5 VDC	–30 to +5 VDC
Signal voltage (1)	+11 to +30 VDC	+11 to +30 VDC
Input circuit	High-side switching	High-side switching
Input voltage	24 VDC (–30 VDC < U_{IN} < +30 VDC)	24 VDC (–30 VDC < U_{IN} < +30 VDC)
Input current	Typ. 7.3 mA	Typ. 7.3 mA
Cable length, unshielded	≤ 30 m	≤ 30 m
Module supply		
Connection type	M12 connectors, A coded, 4 poles	M12 connectors, A coded, 4 poles
Current carrying capacity of supply connections	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)
Logic and sensor voltage U_{LS}	24 VDC	24 VDC
Actuator voltage U_A	24 VDC	24 VDC
Logic and sensor current I_{LS}	Typ. 40 mA + sensor (max. 400 mA)	Typ. 40 mA + sensor (max. 400 mA)
Actuator current I_A	5 mA	5 mA
Protection	Reverse voltage protection for U_{LS} + U_A short circuit protection for sensor supply	Reverse voltage protection for U_{LS} + U_A short circuit protection for sensor supply
System bus		
Connection type	M12 connectors, B coded, 5 poles, shielded	M12 connectors, B coded, 5 poles, shielded
Electrical isolation		
Channel – Channel	No	No
U_{LS}, U_A, system bus	500 VDC each	500 VDC each
Configurable functions		
Input filter (per channel)	0.1/0.5/3/15/20 ms/filter off	0.1/0.5/3/15/20 ms/filter off
Online simulation (per channel)	Lock/unlock; simulation value: 0/1	Lock/unlock; simulation value: 0/1
Diagnostics (per module)	Overload and short circuit (sensor supply), Undervoltage (U_{LS} + U_A)	Overload and short circuit (sensor supply), Undervoltage (U_{LS} + U_A)
Process image		
Process data width	1 byte data + status	1 byte data + status
Ambient conditions		
Permissible temperature (operation)	–25 to +60 °C	–25 to +60 °C
Permissible relative humidity (operation)	5 to 95 %	5 to 95 %
Permissible air pressure (operation)	795 to 1,080 hPa	795 to 1,080 hPa
Mechanical data		
Dimensions (W x H x D)	50 x 117 x 35 mm	50 x 117 x 35 mm
Dimensional drawing (see pp. 230)	Type 2	Type 2
Weight	230 g	230 g
Protection class	IP67 (NEMA 6&6P), DIN40050 (EN60529)	IP67 (NEMA 6&6P), DIN40050 (EN60529)
Vibration resistance	According to IEC 60068-2-6	According to IEC 60068-2-6
Shock resistance (temporary)	According to IEC 60068-2-27	According to IEC 60068-2-27
LED indicators		
0 ... 7 – Input status	LED (yellow)	LED (yellow)
F – Error status	LED (red)	LED (red)
ULS + UA – Supply status	LED (green)	LED (green)

Technical data	S67-DI8-M8	S67-DI8-M12
LED indicators		
SB – system bus, status	LED (green/red)	LED (green/red)
LED indicators	Non-latching	Non-latching

Digital outputs – technical data

Technical data	S67-DO8-M8	S67-DO8-M12	S67-DO8-M8-2A	S67-DO8-M12-2A
Digital outputs				
Number	8	8	8	8
Connection type	M8 connectors, 3 poles	M12 connectors, 5 poles	M8 connectors, 3 poles	M12 connectors, 5 poles
Sensor connection type	2-, 3-wire connection	2-, 3-wire connection	2-, 3-wire connection	2-, 3-wire connection
Output voltage	≤ U_A	≤ U_A	≤ U_A	≤ U_A
Output current (per channel)	0.5 A (max. 0.6 A), short-circuit/overload proof (thermal disconnection)	0.5 A (max. 0.6 A), short-circuit/overload proof (thermal disconnection)	2.0 A (max. 2.4 A), short-circuit/overload proof (thermal disconnection)	0.5 A (max. 0.6 A), short-circuit/overload proof (thermal disconnection)
Voltage drop against U_A at 500 mA	Max. 0.2 VDC	Max. 0.2 VDC	Max. 0.2 VDC	Max. 0.2 VDC
Output current (module)	Max. 4 A	Max. 4 A	Max. 8 A	Max. 8 A
Switching-on of overload circuit	Parametrizable	Parametrizable	Parametrizable	Parametrizable
Output circuit	High-side switching	High-side switching	High-side switching	High-side switching
Module supply				
Connection type	M12 connectors, A coded, 4 poles	M12 connectors, A coded, 4 poles	M12 connectors, A coded, 4 poles	M12 connectors, A coded, 4 poles
Current carrying capacity of supply connections	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)
Logic and sensor voltage U_{LS}	24 VDC	24 VDC	24 VDC	24 VDC
Actuator voltage U_A	24 VDC	24 VDC	24 VDC	24 VDC
Logic and sensor current I_{LS}	Typ. 45 mA (only logic part)	Typ. 45 mA (only logic part)	Typ. 45 mA (only logic part)	Typ. 45 mA (only logic part)
Actuator current I_A	Typ. 25 mA + actuators	Typ. 25 mA + actuators	Typ. 25 mA + actuators	Typ. 25 mA + actuators
Protection	Reverse voltage protection for U_{LS} + U_A	Reverse voltage protection for U_{LS} + U_A	Reverse voltage protection for U_{LS} + U_A	Reverse voltage protection for U_{LS} + U_A
Information on selecting the actuator				
Rise time from 0 to 1	Typ. 40 µs (resistive load)	Typ. 40 µs (resistive load)	Typ. 30 µs (resistive load)	Typ. 30 µs (resistive load)
Rise time from 1 to 0	Typ. 50 µs (resistive load)	Typ. 50 µs (resistive load)	Typ. 50 µs (resistive load)	Typ. 50 µs (resistive load)
Cable length (unshielded)	≤ 30 m	≤ 30 m	≤ 30 m	≤ 30 m
System bus				
Connection type	M12 connectors, B coded, 5 poles, shielded	M12 connectors, B coded, 5 poles, shielded	M12 connectors, B coded, 5 poles, shielded	M12 connectors, B coded, 5 poles, shielded
Electrical isolation				
Channel – Channel	No	No	No	No
U_{LS}, U_A, system bus	500 VDC each	500 VDC each	500 VDC each	500 VDC each
Configurable functions				
Substitute value strategy (per channel)	Switch substitute value/ hold last value	Switch substitute value/ hold last value	Switch substitute value/ hold last value	Switch substitute value/ hold last value
Substitute value (per channel)	0/1 (Default: 0)	0/1 (Default: 0)	0/1 (Default: 0)	0/1 (Default: 0)
Online simulation (per channel)	Lock/unlock; simulation value: 0/1	Lock/unlock; simulation value: 0/1	Lock/unlock; simulation value: 0/1	Lock/unlock; simulation value: 0/1
Diagnostics (per channel)	Short circuit, wire break (actuators)	Short circuit, wire break (actuators)	Short circuit, wire break (actuators)	Short circuit, wire break (actuators)
Diagnostics (per module)	Undervoltage (U_{LS} + U_A)	Undervoltage (U_{LS} + U_A)	Undervoltage (U_{LS} + U_A)	Undervoltage (U_{LS} + U_A)
Process image				
Process data width	1 byte data + status	1 byte data + status	1 byte data + status	1 byte data + status
Ambient conditions				
Permissible temperature (operation)	–25 to +60 °C	–25 to +60 °C	–25 to +60 °C	–25 to +60 °C

Technical data	S67-DO8-M8	S67-DO8-M12	S67-DO8-M8-2A	S67-DO8-M12-2A
Permissible relative humidity (operation)	5 to 95 %	5 to 95 %	5 to 95 %	5 to 95 %
Permissible air pressure (operation)	795 to 1,080 hPa	795 to 1,080 hPa	795 to 1,080 hPa	795 to 1,080 hPa
Mechanical data				
Dimensions (W x H x D)	50 x 117 x 35 mm	50 x 117 x 35 mm	50 x 117 x 35 mm	50 x 117 x 35 mm
Dimensional drawing (see pp. 230)	Type 2	Type 2	Type 2	Type 2
Weight	230 g	230 g	230 g	230 g
Protection class	IP67 (NEMA 6&6P), DIN40050 (EN60529)	IP67 (NEMA 6&6P), DIN40050 (EN60529)	IP67 (NEMA 6&6P), DIN40050 (EN60529)	IP67 (NEMA 6&6P), DIN40050 (EN60529)
Vibration resistance	According to IEC 60068-2-6	According to IEC 60068-2-6	According to IEC 60068-2-6	According to IEC 60068-2-6
Shock resistance (temporary)	According to IEC 60068-2-27	According to IEC 60068-2-27	According to IEC 60068-2-27	According to IEC 60068-2-27
LED indicators				
0 ... 7 – Input status	LED (yellow/red)	LED (yellow/red)	LED (yellow/red)	LED (yellow/red)
F – Error status	LED (red)	LED (red)	LED (red)	LED (red)
U_{LS} + U_A – Supply status	LED (green)	LED (green)	LED (green)	LED (green)
SB – System bus, status	LED (green/red)	LED (green/red)	LED (green/red)	LED (green/red)
LED indicators	Non-latching	Non-latching	Non-latching	Non-latching

Analog inputs – technical data

Technical data	S67-AI4-U/I-M12	S67-AI4-RTD-M12
Analog inputs		
Number	4	4
Connection type	M12 connectors, A coded, 5 poles	M12 connectors, A coded, 5 poles
Type of signal	Currents and voltages (differencial inputs)	Resistance thermometers, resistors, potentiometers
Sensor connection type	2- to 4-wire connection (external shield via knurled nut)	2- to 4-wire connection (external shield via knurled nut)
Measuring range	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 10 V, ±10 V	–
Signal measuring range	–	Resistance thermometer: PT100, PT200, PT500, PT1000, NI100, NI120, NI1000 Resistors: 1 kΩ and 4 kΩ, Potentiometer: 0 to 100 % setting angle (for 1.25 kΩ and 4 kΩ), Free characteristics: PT 3000, NTC etc.
Temperature range	–	PT: –200 to +850 °C, NI: –60 to +250 °C
Cable length	≤ 30 m	≤ 30 m
Analog value creation		
Resolution	16 bit	16 bit
Input filter		16.7 Hz, 33 Hz, 50 Hz, 60 Hz, 120 Hz, 250 Hz, 500 Hz
Conversion time	1 ms	–
Sampling delay	1 ms (Modul), < 100 µs (channel/channel)	–
Sampling repeat time	1 ms	–
Failures and errors		
Max. measuring error at 25 °C	ca. ±0.2 % the measuring range	±0.1 % the measuring range
Temperature error	ca. ±0.01 % the measuring range/K	±0.001 % the measuring range/K
Module supply		
Connection type	M12 connectors, A coded, 4 poles	M12 connectors, A coded, 4 poles
Logic and sensor voltage U_{LS}	24 VDC	24 VDC
Actuator voltage, U_A	24 VDC	24 VDC
Logic and sensor current I_{LS}	Typ. 50 mA + sensor (max. 400 mA)	Typ. 40 mA + sensor (max. 400 mA)
Actuator current I_A	5 mA	5 mA
Protection	Reverse voltage protection for U_{LS} + U_A short circuit protection for sensor supply	Reverse voltage protection for U_{LS} + U_A short circuit protection for sensor supply
System bus		
Connection type	M12 connectors, B coded, 5 poles, shielded	M12 connectors, B coded, 5 poles, shielded
Electrical isolation		
Channel – Channel	No	No
U_{LS}, U_A, system bus	500 VDC each	500 VDC each
Configurable functions		
Measuring range (per channel)	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 10 V, ±10 V	PT100, PT200, PT500, PT1000, NI100, NI120, NI1000, 1 kΩ and 4 kΩ, 0 to 100 % setting angle (for 1 kΩ and 4 kΩ), PT 3000, NTC
Connection type	–	2-, 3-, 4-wire connection
Limiting values (per channel)	Lock/unlock	Lock/unlock, Min1/Min2/Max1/Max2
Input filter (per channel)	Low pass	16.7 Hz, 33 Hz, 50 Hz, 60 Hz, 120 Hz, 250 Hz, 500 Hz
Sampling duration (per channel)	1, 2, 4, 8 ms	–
Interference frequency suppression (per channel)	50/60 Hz	–
Online simulation (per channel)	Lock/unlock, simulation value (according to measuring range)	–

Technical data	S67-AI4-U/I-M12	S67-AI4-RTD-M12
Configurable functions		
Diagnostics (per module)	Undervoltage (U_{LS} + U_A) Short circuit (sensor power supply) Wire break (sensor power supply) Limit value violation Overrange/measuring range underflow	Undervoltage (U_{LS} + U_A) Wire break (sensor power supply) Limit value violation Overrange/measuring range underflow
Process image		
Process data width	8 byte data + status	8 byte data + status
Ambient conditions		
Permissible temperature (operation)	–25 to +60 °C	–25 to +60 °C
Permissible relative humidity (operation)	5 to 95 %	5 to 95 %
Permissible air pressure (operation)	795 to 1,080 hPa	795 to 1,080 hPa
Mechanical data		
Dimensions (W x H x D)	50 x 177 x 35 mm	50 x 177 x 35 mm
Dimensional drawing (see pp. 230)	Type 2	Type 2
Weight	230 g	230 g
Protection class	IP67 (NEMA 6&6P), DIN40050 (EN60529)	IP67 (NEMA 6&6P), DIN40050 (EN60529)
Vibration resistance	According to IEC 60068-2-6	According to IEC 60068-2-6
Shock resistance (temporary)	According to IEC 60068-2-27	According to IEC 60068-2-27
LED indicators		
Ch1 to Ch4 – Input signal status	LED (yellow)	LED (yellow)
Er1 to Er4 – Input signal error	LED (red)	LED (red)
F – Error status	LED (red)	LED (red)
U_{LS} + U_A – Supply status	LED (green)	LED (green)
SB – System bus, status	LED (green/red)	LED (green/red)
LED indicators	Non-latching	Non-latching

Analog outputs – technical data

Technical data	S67-AO4-U/I-M12
Analog outputs	
Number	4
Connection type	M12 connectors, A coded, 5 poles
Type of signal	Currents and voltages
Sensor connection type	2- to 4-wire connection (external shield via knurled nut)
Measuring range	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 10 V, ±10 V
Output load (load impedance)	≤ 500 Ω (current) ; ≥ 5 kΩ (voltage)
Maximum capacitive load (at voltage outputs)	10 nF
Maximum inductive load (at current outputs)	1 mH
Cable length	≤ 30 m
Analog value creation	
Resolution	15 bit (unipolar), 16 bit (bipolar)
Monotony	Yes
Cycle time	Typ. 1 ms
Recovery time for resistive, inductive and capacitive loads	Typ. 1 ms
Failures and errors	
Max. measuring error at 25 °C	≤ ±0.2 % the measuring range
Overshooting	Typ. ±0.05 % the measuring range
Output ripple	Typ. ±0.02 % the measuring range
Crosstalk between the channels at DC voltage and AC voltage 50 Hz and 60 Hz	–90 dB
Short circuit protection	Electronic
Nominal output current	Max. 1 A
Module supply	
Connection type	M12 connectors, A coded, 4 poles
Logic and sensor voltage U_{LS}	24 VDC
Actuator voltage U_A	24 VDC
Logic and sensor current I_{LS}	Typ. 28 mA (only logic part)
Actuator current I_A	34 mA + actuators
Protection	Reverse voltage protection for U_{LS} + U_A, overload and short circuit protection for sensor supply
System bus	
Connection type	M12 connectors, B coded, 5 poles, shielded
Electrical isolation	
Channel – Channel	No
U_{LS}, U_A, system bus	500 VDC each
Configurable functions	
Measuring range (per channel)	0 to 20 mA, 4 to 20 mA, ±20 mA, 0 to 10 V, ±10 V
Substitute value strategy (per channel)	Switch substitute value/hold last value
Substitute value (per channel)	0 mA or 0 V/substitute value according to measuring range (Default: 0 mA or 0 V)
Online simulation (per channel)	Lock/unlock, simulation value (according to measuring range)
Diagnostics (per module)	Short circuit (actuator supply), wire break (current), undervoltage (U_{LS} + U_A)
Process image	
Process data width	8 byte data + status
Ambient conditions	
Permissible temperature (operation)	–25 to +60 °C

Technical data	S67-AO4-U/I-M12
Ambient conditions	
Permissible relative humidity (operation)	5 to 95 %
Permissible air pressure (operation)	795 to 1,080 hPa
Mechanical data	
Dimensions (W x H x D)	50 x 117 x 35 mm
Dimensional drawing (see pp. 230)	Type 2
Weight	230 g
Protection class	IP67 (NEMA 6&6P), DIN40050 (EN60529)
Vibration resistance	According to IEC 60068-2-6
Shock resistance (temporary)	According to IEC 60068-2-27
LED indicators	
Ch1 to Ch4 – Input signal status	LED (yellow)
Er1 to Er4 – Input signal error	LED (red)
F – Error status	LED (red)
U_{LS} + U_A – Supply status	LED (green)
SB – System bus, status	LED (green/red)
LED indicators	Non-latching

Power divider – technical data

Technical data	S67-PWR-IN-M12
Power divider	
Connection type	M23 connectors, 6 poles
Supply voltage	
Logic and sensor voltage U_{LS}	24 VDC (–25 to +30 %)
Actuator voltage U_A	24 VDC (–25 to +30 %)
Supply current	
Logic and sensor current I_{LS}	Typ. 4 mA
Actuator current I_A	Typ. 4 mA
Supply outputs	
Number	6
Connection type	M12 connectors, A coded, 4 poles
Current carrying capacity (connector)	Max. 8 A (U_{LS}: 4 A, U_A: 4 A)
Current carrying capacity (module)	Max. 24 A (U_{LS}: max. 8 A, U_A: max. 16 A)
Short circuit protection	No
Electrical isolation	
U_{LS} – U_A	500 VDC
Ambient conditions	
Permissible temperature (operation)	–25 to +60 °C
Permissible relative humidity (operation)	5 to 95 %
Permissible air pressure (operation)	795 to 1,080 hPa
Mechanical data	
Dimensions (W x H x D)	50 x 117 x 35 mm
Dimensional drawing (see pp. 230)	Type 2
Weight	240 g
Protection class	IP67 (NEMA 6&6P), DIN40050 (EN60529)
Vibration resistance	According to IEC 60068-2-6
Shock resistance (temporary)	According to IEC 60068-2-27
LED indicators	
U_{LS} + U_A – Supply status	LED (green)
LED indicators	Non-latching

IndraControl S67 – Ordering data

Ordering data hardware	
Description	**Type code**
IndraControl S67, fieldbus coupler, PROFIBUS	S67-PB-BK-DI8-M8
IndraControl S67, fieldbus coupler, PROFINET	S67-PN-BK-DI8-M8
IndraControl S67, fieldbus coupler, DeviceNet	S67-DN-BK-DI8-M8
IndraControl S67, digital input module, 8 inputs (M8)	S67-DI8-M8
IndraControl S67, digital input module, 8 inputs (4 x M12, two inputs per connector)	S67-DI8-M12
IndraControl S67, digital output module, 0.5 A, 8 outputs (M8)	S67-DO8-M8
IndraControl S67, digital output module, 0.5 A, 8 outputs (4 x M12, two outputs per connector)	S67-DO8-M12
IndraControl S67, digital output module, 2.0 A, 8 outputs (M8)	S67-DO8-M8-2A
IndraControl S67, digital output module, 2.0 A, 8 outputs (4 x M12, two outputs per connector)	S67-DO8-M12-2A
IndraControl S67, analog input module, voltage/current (U/I), 4 inputs	S67-AI4-U/I-M12
IndraControl S67, analog input module, resistance temperature device (RTD), 4 inputs	S67-AI4-RTD-M12
IndraControl S67, analog output module, voltage/current (U/I), 4 outputs	S67-AO4-U/I-M12
IndraControl S67, power supply (1 x M23/6 x M12)	S67-PWR-IN-M12

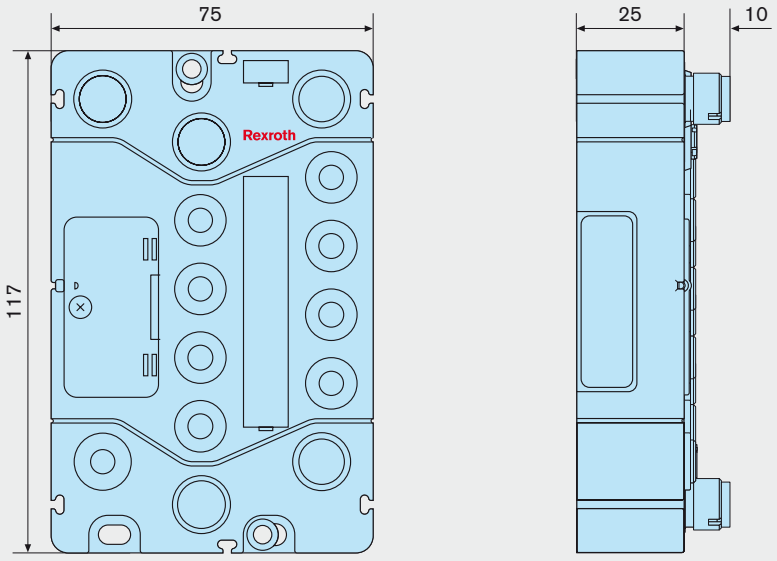
Ordering data hardware	
Description	**Type code**
Cables	See chapter 3.7 (Interconnection technology)
System bus cable, M12 female connector to M12 male connector, available lengths: 0.20/0.30/0.50/1/2/5/10 m	RKB0041/0xx,x
System bus cable, M12 female connector to M12 male connector, length free selectable	RKB0041/000,0
M12 terminating connector, B-coding, axial	RBS0020
Carrier rail adapter for fieldbus couplers	SUP-M01-S67-0001
Carrier rail adapter for I/O modules	SUP-M01-S67-0002
Profile adapter for fieldbus couplers	SUP-M01-S67-0003
Profile adapter for I/O modules	SUP-M01-S67-0004
Spacer module	SUP-M01-S67-0005
Marker strips for fieldbus couplers and I/O modules	SUP-M01-S67-0006

Ordering data for documentation	
Description	**Type code**
Application manual, IndraControl S67	DOK-CONTRL-S67********-APxx-EN-P
Application manual, fieldbus coupler PROFIBUS	DOK-CONTRL-S67PBBKDI8M-APxx-EN-P
Application manual, fieldbus coupler PROFINET, (in preparation)	DOK-CONTRL-S67PNBKDI8M-APxx-EN-P
Application manual, fieldbus coupler DeviceNet, (in preparation)	DOK-CONTRL-S67DNBKDI8M-APxx-EN-P
Application manual, digital input module, 8 inputs (4 x M12, two inputs per connector)	DOK-CONTRL-S67DI8M12**-APxx-EN-P
Application manual, digital input module, 8 inputs (M8)	DOK-CONTRL-S67DI8M8***-APxx-EN-P
Application manual, digital output module, 8 outputs (4 x M12, two inputs per connector), 0.5 A	DOK-CONTRL-S67DO8M12**-APxx-EN-P
Application manual, digital output module, 8 outputs (4 x M12, two inputs per connector), 2 A	DOK-CONTRL-S67DO8M122A-APxx-EN-P
Application manual, digital output module, 8 outputs (M8), 0.5 A	DOK-CONTRL-S67DO8M8***-APxx-EN-P
Application manual, digital output module, 8 outputs (M8), 2 A	DOK-CONTRL-S67DO8M82A*-APxx-EN-P
Application manual, analog input module, 4 resistance (RTD) inputs (M12)	DOK-CONTRL-S67AI4RTDM1-APxx-EN-P
Application manual, analog input module, 4 voltage/current (U/I) inputs (M12)	DOK-CONTRL-S67AI4UIM12-APxx-EN-P
Application manual, analog output module, 4 voltage/current (U/I) outputs (M12)	DOK-CONTRL-S67AO4UIM12-APxx-EN-P
Application manual, supply module, (1 x M23/6 x M12)	DOK-CONTRL-S67PWRINM12-APxx-EN-P

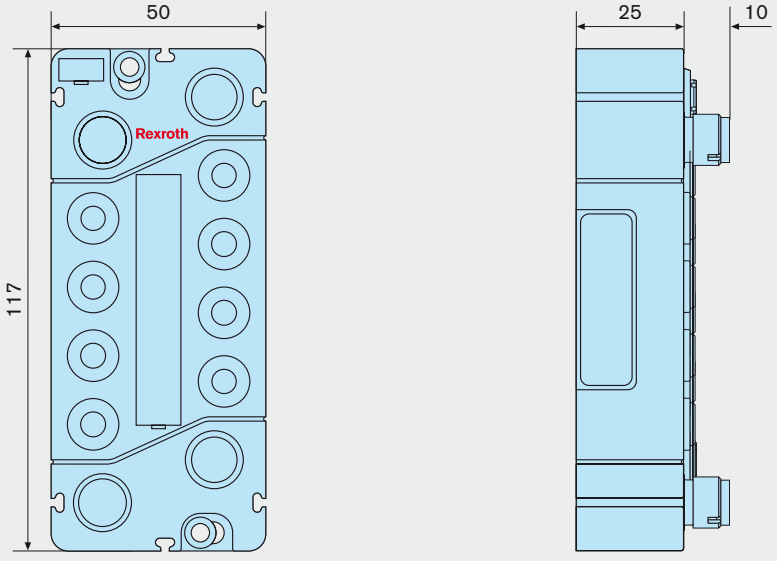
xxx = cable length in meter

IndraControl S67

Type 1



Type 2




PWR IN
DI8
SB
Rexroth
PROFIBUS
FB
RUN DIA CS
BF BUS
COM
AI4-UI
DO8

Fieldline – the robust I/O technology for field use

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 – for cost-effective assembly

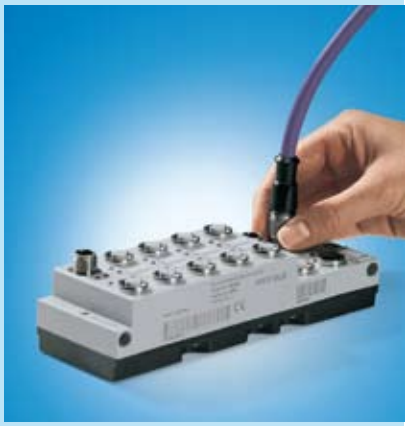
Flexible mounting

Fieldline can be mounted on any level base. Mounting holes are integrated so that the installation is adapted to the application and not vice versa. The modules can be mounted from the front as well as from the side.

Simple operation

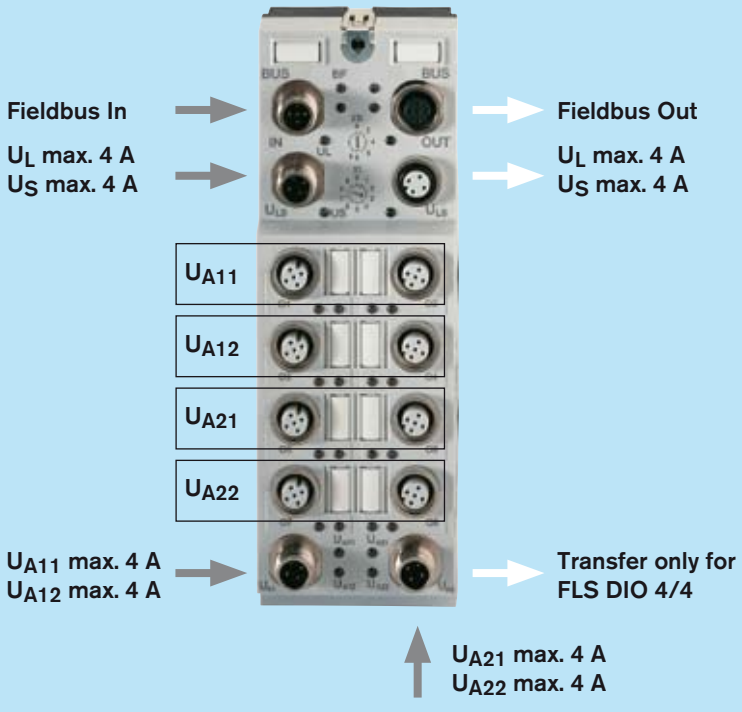
The bus parameters are set without the use of any additional equipment or tools. A standard screwdriver is all you need to set the bus address – even in difficult assembly conditions.

Easy handling



Connections are arranged for Fieldline to be installed easily, quickly and error-free. This is why we have opted for the M12 connection system in an ideally prepared layout – this saves time and money.

Well thought-out voltage concept three voltages for logic (U_L), sensor (U_S) and actuator (U_A) are separated from each other. The actuator voltage can be broken down into 4 groups (U_{AXX}), each interruptible on its own. This means that if one actuator suffers a shortcircuit, the other groups will still be fully functional.



The well thought-out voltage concept enables the flexible grouping of actuators.


BUS
UL
RC
BUS
IN
BA
RD
OUT
BUS
UL
MD
LB
BF
RUN
IN
OUT
IN
LB
OUT
Rexroth
BK PB
DI 8
DIO 8/4

Fieldline Stand-Alone M12 PROFIBUS – technical data

Technical data		RF-FLS PB M12 DI 8 M12	RF-FLS PB M12 DIO 4/4 M12	RF-FLS PB M12 DO 8 M12-2A	RF-FLS PB M12 DIO 8/8 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 VDC		–	24 VDC
Range		$-30 < U_{In} < +30$ VDC		–	$-30 < U_{In} < +30$ VDC
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 VDC			
Range		18 to 30 VDC			
Power consumption at U_L at 24 VDC		Typ. 35 mA, max. 100 mA	Typ. 40 mA, max. 100 mA		
Power consumption at U_S at 24 VDC		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 VDC		–	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			
Tansmission speed		9.64 kbaud to 12 Mbaud autobaud selection			
Transmission rate		12 Mbit/s			
Operation mode		8 bit	4 bit	8 bit	
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 relative humidity (operation)		95 %			
Permissible air pressure (operation)		80 to 106 kPa (up to 2,000 m above MSL)			
Mechanical data					
Dimensions (W x H x D)		60 x 161 x 44.5 mm	60 x 178 x 49.3 mm		
Dimension drawing (see pp. 242/243)		Type 1	Type 2	Type 2	Type 2
Weight		310 g	340 g	350 g	340 g
Protection category		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 M12 INTERBUS – technical data

Technical data		RF-FLS IB M12 DI 8 M12	RF-FLS IB M12 DIO 4/4 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 VDC		–
Range		$-30 < U_{In} < +30$ VDC		–
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 VDC		
Range		18 to 30 VDC		
Power consumption at U_L at 24 VDC		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 VDC		5 mA + sensor current, max. 700 mA		3.5 mA
Power consumption at U_{Axx} at 24 VDC		–	3 mA + actuator current, max. 4 A	12 mA + actuator current, max. 4 A
Tansmission 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 relative humidity (operation)		95 %		
Permissible air pressure (operation)		80 to 106 kPa (up to 2,000 m above MSL)		
Mechanical data				
Dimensions (W x H x D)		60 x 161 x 44.5 mm	60 x 178 x 49.3 mm	
Dimension drawing (see pp. 242/243)		Type 1	Type 2	Type 2
Weight		310 g	340 g	350 g
Protection category		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 M12 DeviceNet – technical data

Technical data		RF-FLS DN M12 DI 8 M12	RF-FLS DN M12 DIO 4/4 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	Max. low-level voltage	$U_{Lmax} < 5$ V		–
	Min. high-level voltage	$U_{Hmin} > 11$ V		–
Nominal input voltage		24 VDC		–
Range		$-30 < U_{In} < 30$ VDC		–
Nominal input current		5 mA		–
Current flowing linearly in the range of		$1 V < U_{In} < 30$ VDC		–
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	
Nominal current 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 VDC		
Range		18 to 30 VDC		
Power consumption at U_L at 24 VDC		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 VDC		5 mA + sensor current, max. 700 mA	4.5 mA + sensor current, max. 700 mA	3.5 mA
Power consumption at U_{Axx}		–	12 mA + Actuator current, max. 4 A	
Transmission medium		Copper cable according to DeviceNet specification		
Tansmission 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 relative humidity (operation)		95 %		
Permissible air pressure (operation)		80 to 106 kPa (up to 2.000 m above MSL)		
Mechanical data				
Dimensions (W x H x D)		60 x 161 x 44.5 mm	60 x 178 x 49.3 mm	
Dimension drawing (see pp. 242/243)		Type 1	Type 2	Type 2
Weight		Typ. 310 g	Typ. 340 g	Typ. 350 g
Protection category		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 Modular M8 – technical data

Technical data	RF-FLM DI 8 M8	RF-FLM DIO 8/4 M8
Digital inputs		
Input description	4 fixed, 4 freely selectable	
Sensor connection type	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 VDC	
Input voltage range, low level	–30 to 5 VDC	
Input voltage range, high level	13 to 30 VDC	
Digital outputs		
Output description	–	Can also be used as inputs
Connection method	–	2-, 3-wire connection
Number	–	4
Max. output current per channel	–	500 mA
Protective circuit	–	Short circuit protection
Output voltage	–	24 VDC
Electric data		
Designation	U_L	
Supply voltage	24 VDC	
Supply voltage range	18 to 30 VDC, IEC 61131-2 (ripple included)	
Supply current	3 A	
Tansmission rate	500 kbaud	
Connection type	M8 connectors	
Ambient conditions		
Ambient temperature (operation)	–25 to +60 °C	
Permissible relative humidity (operation)	5 to 95 %	
Atmospheric pressure (operation)	80 to 106 kPa (up to 2,000 m above MSL)	
Mechanical data		
Dimensions (W x H x D)	29.8 x 143 x 26.5 mm	
Dimension drawing (see pp. 242/243)	Type 4	Type 4
Weight	137 g	
Drill hole spacing	133 mm	
Mounting type	Mounted to walls	
Test section to peripherals	500 VAC	
Protection category	IP65/67	
Protection class	3, VDE 0106, IEC 60536	

Fieldline Modular M8 bus coupler – technical data

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	8
Protective circuit	Reverse polarity protection
Filter time	3 ms
Input voltage	24 VDC
Input voltage range, low level	–30 to 5 VDC
Input voltage range, high level	13 to 30 VDC
Lokal bus Gateway	
Connection type	M12 connectors, B coded
Tansmission rate	500 kbaud
Max. number of local bus users	16
Max. length of local bus	20 m
Interface	
Designation	PROFIBUS
Connection type	2 M12 connectors, B coded
Tansmission 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 VDC
Supply voltage range	18 to 30 VDC, IEC 61131-2 (ripple included)
Ambient conditions	
Ambient temperature (operation)	–25 to 60 °C
Atmospheric pressure (operation)	80 to 106 kPa (up to 2.000 m above MSL)
Mechanical data	
Dimensions (W x H x D)	70 x 178 x 50 mm
Dimension drawing (see pp. 242/243)	Type 3
Weight	331 g
Drill hole spacing	168 mm
Mounting type	Mounted to walls
Test section to peripherals	500 VAC
Protection category	IP65/67
Protection class	3, VDE 0106, IEC 60536

Fieldline – ordering data

Ordering data Fieldline M12	
Description	**Type code**
Fieldline Stand-Alone, PROFIBUS, 8 digital inputs	RF-FLS PB M12 DI 8 M12
Fieldline Stand-Alone, PROFIBUS, 4 digital inputs/4 digital outputs (2 A)	RF-FLS PB M12 DIO 4/4 M12-2A
Fieldline Stand-Alone, PROFIBUS, 8 digital outputs (2 A)	RF-FLS PB M12 DO 8 M12-2A
Fieldline Stand-Alone, PROFIBUS, 8 digital inputs/8 digital outputs	RF-FLS PB M12 DIO 8/8 M12
Fieldline Stand-Alone, INTERBUS, 8 digital inputs	RF-FLS IB M12 DI 8 M12
Fieldline Stand-Alone, INTERBUS, 4 digital inputs/4 digital outputs (2 A)	RF-FLS IB M12 DIO 4/4 M12-2A
Fieldline Stand-Alone, INTERBUS, 8 digital outputs (2 A)	RF-FLS IB M12 DO 8 M12-2A
Fieldline Stand-Alone, DeviceNet, 8 digital inputs	RF-FLS DN M12 DI 8 M12
Fieldline Stand-Alone, DeviceNet, 4 digital inputs/4 digital outputs (2 A)	RF-FLS DN M12 DIO 4/4 M12-2A
Fieldline Stand-Alone, DeviceNet, 8 digital outputs (2 A)	RF-FLS DN M12 DO 8 M12-2A

Ordering data Fieldline M8	
Description	**Type code**
Fieldline modular M8, local bus device, 8 digital inputs, 24 VDC	RF-FLM DI 8 M8
Fieldline modular M8, local bus device, 8 digital inputs, max. 4 digital outputs, 500 mA, 24 VDC	RF-FLM DIO 8/4 M8
Fieldline modular bus coupler, PROFIBUS, 8 digital inputs, 24 VDC, M12	RF-FLM BK PB M12 DI 8 M12

Ordering data for accessories	
Description	**Type code**
Adapter, M12/M8	RF-FLM ADAP M12/M8

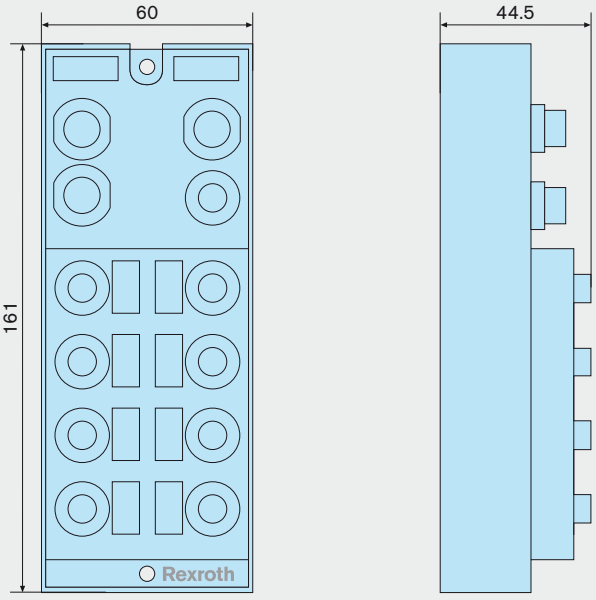
Ordering data for documentations	
Description	**Type code**
Project planning for Fieldline PROFIBUS	DOK-CONTRL-RF-FLS-PB**-PRxx-EN-P
Project planning for Fieldline INTERBUS	DOK-CONTRL-RF-FLS-IB**-PRxx-EN-P

Technical information and data sheets for Rexroth Fieldline are available from http://www.boschrexroth.com/mediadirectory

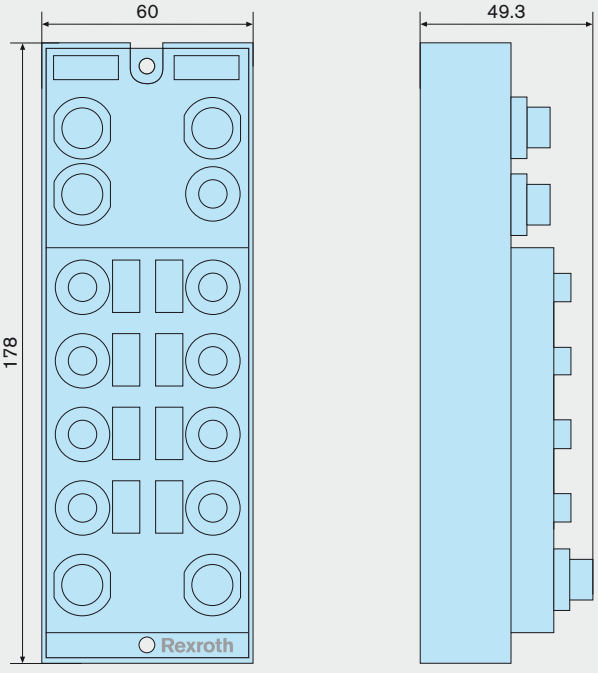
xxx = cable length in meter

Fieldline Stand-Alone M12

Type 1

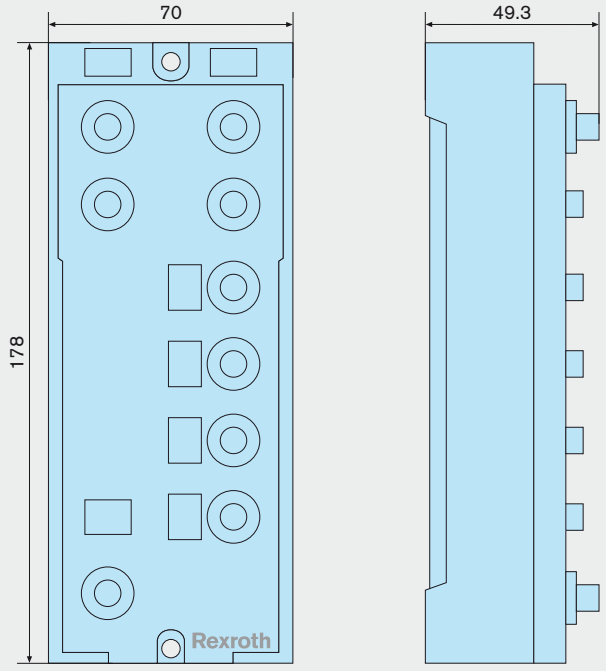


Type 2

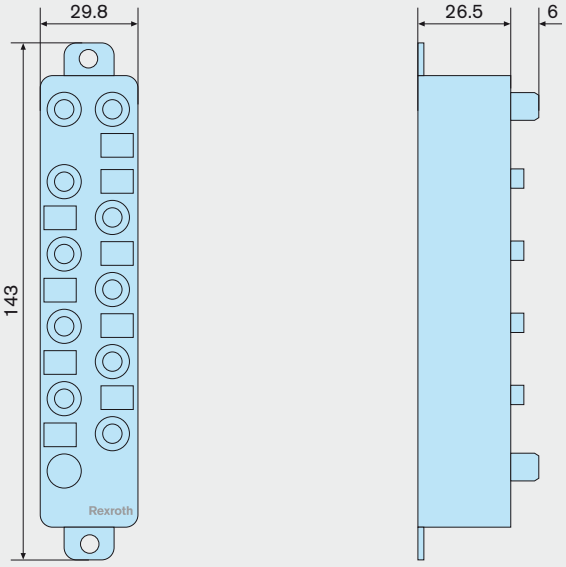


Fieldline Modular M8

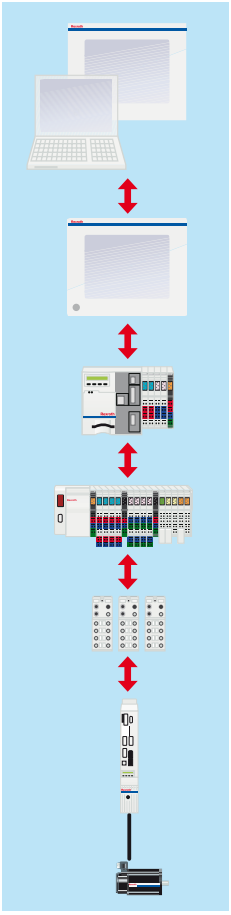
Type 3



Type 4



Interconnection technology – general overview

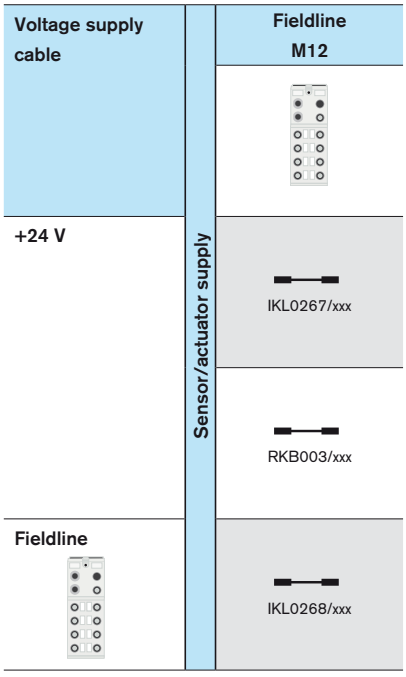


	SERCOS III	SERCOS 2	PROFIBUS	DeviceNet	INTERBUS	Ethernet TCP/IP	RS232
Engineering/Operation							
			IKB0033, IKB0034			RKB0007, RKB0008	RKB0009
HMI/PC components							
IndraControl V			IKB0033, IKB0034			RKB0007, RKB0008	RKB0009
Control components							
IndraControl L	RKB0011, RKB0013	RKO0100, RKO0101	IKB0033, IKB0034			RKB0007, RKB0008	RKB0009
I/O modules in IP20							
Inline	RKB0011, RKB0013		IKB0033, IKB0034, IKB0049	IKB0043	IKB0046		
I/O modules in IP67							
Fieldline/ IndraControl S67			IKB0049, IKB0050, RF-FLM ADAP M12/M8[1], RKB0016	IKB0042, IKB0044	IKB0047		
Drives (Link to control level)[2]							
IndraDrive	RKB0011, RKB0013	RKO0100, RKO0101	IKB0033, IKB0034			RKB0007, RKB0008	

[1] in combination with Rexroth Fieldline

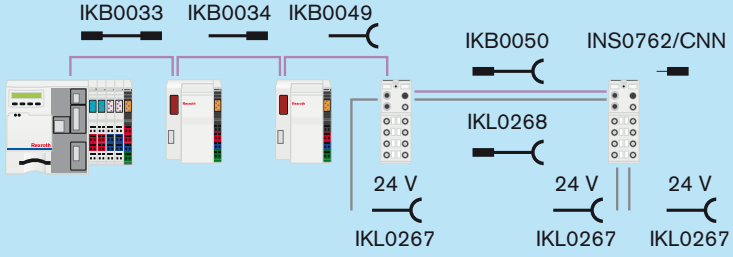
[2] Power supply and encoder cables for all drive/motor combinations can be found in the “Rexroth IndraDrive Drive System” product catalog

Interconnection technology – selection tool



Selecting the field bus and voltage supply cables
An extensive cable range is available for wiring all IndraControl L components. Please proceed as follows when selecting the cables and plugs:

1. **Specify the stations n (left column)**
2. **Specify the stations n + 1 (top header)**
3. **Select preassembled cable (on gray background), or the individual interconnection components**
4. **Define the bus terminating resistance**

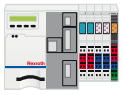
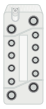
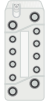


Selection example for PROFIBUS

Legend of cable symbols

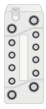
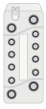
Ready-made cable	Ready-made plug/ socket	Open cable end/ plug	Open cable end/ socket	Plug	Socket

Interconnection technology – PROFIBUS selection matrix

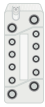
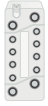
		IndraControl L	Inline	Fieldline M12/ IndraControl S67	Fieldline M8	IndraDrive
						
IndraControl L 	PROFIBUS	IKB0033/xxx	IKB0033/xxx			IKB0033/xxx
		RBS0010… RBS0012 IKB0034/xxx	RBS0010… RBS0012 IKB0034/xxx	RBS0010… RBS0012 IKB0049/xxx		RBS0010… RBS0012 IKB0034/xxx
		RBS0013… RBS0015 REB0001/xxx REB0002/xxx RBS0013… RBS0015	RBS0013… RBS0015 REB0001/xxx REB0002/xxx RBS0013… RBS0015			RBS0013… RBS0015 REB0001/xxx REB0002/xxx RBS0013… RBS0015
Function module PROFIBUS		IKB0033/xxx	IKB0033/xxx			IKB0033/xxx
		RBS0001 IKB0034/xxx	RBS0001 IKB0034/xxx	IKB0034/xxx RBS0002		RBS0010… RBS0012 IKB0034/xxx
		RBS0001 REB0001/xxx REB0002/xxx RBS0013… RBS0015	RBS0001 REB0001/xxx REB0002/xxx RBS0013… RBS0015	RBS0001 REB0001/xxx REB0002/xxx RBS0002		RBS0013… RBS0015 REB0001/xxx REB0002/xxx RBS0013… RBS0015
Inline 		IKB0033/xxx	IKB0033/xxx			IKB0033/xxx
		RBS0010… RBS0012 IKB0034/xxx	IKB0034/xxx	IKB0049/xxx		IKB0034/xxx
		RBS0013… RBS0015 REB0001/xxx REB0002/xxx RBS0013… RBS0015	REB0001/xxx REB0002/xxx RBS0013… RBS0015	REB0001/xxx REB0002/xxx RBS0002		REB0001/xxx REB0002/xxx RBS0013… RBS0015
Fieldline M12/ IndraControl S67 				IKB0050/xxx	RF-FLM ADAP M12/M8[1] RKB0016[1]	
		RBS0001 IKB0034/xxx	IKB0049/xxx	IKB0049/xxx RBS0002		RBS0001 IKB0034/xxx
		RBS0001 REB0001/xxx REB0002/xxx RBS0013… RBS0015	RBS0001 REB0001/xxx REB0002/xxx	RBS0001 REB0001/xxx REB0002/xxx RBS0002		RBS0001 REB0001/xxx REB0002/xxx RBS0013… RBS0015
IndraDrive 						
		RBS0010… RBS0012 IKB0034/xxx	IKB0034/xxx	RBS0010… RBS0012 IKB0049/xxx		
		RBS0013… RBS0015 REB0001/xxx REB0002/xxx RBS0013… RBS0015	REB0001/xxx REB0002/xxx RBS0013… RBS0015	RBS0010… RBS0012 REB0001/xxx REB0002/xxx RBS0002		

[1] in combination with Rexroth Fieldline

Interconnection technology – PROFINET IO selection matrix

	PROFINET IO	IndraControl L	Inline	IndraControl S67
				
IndraControl L 				RKB0045
		RBS0016 RBS0016	RBS0016 RBS0016	RBS0016 RBS0018
Function module Real-time Ethernet (PROFINET RT, EtherNet/IP) and PROFIBUS or DeviceNet				RKB0045
		RBS0016 RBS0016	RBS0016 RBS0016	RBS0016 RBS0018
Inline 				RKB0045
		RBS0016 RBS0016	RBS0016 RBS0016	RBS0016 RBS0018
IndraControl S67 				RKB0040
		RBS0018 RBS0018	RBS0018 RBS0016	RBS0018 RBS0018

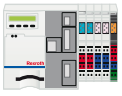
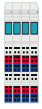
Interconnection technology – DeviceNet selection matrix

	DeviceNet	Inline D-SUB	Function module DeviceNet master	Fieldline M12/ IndraControl S67
				
Function module DeviceNet master				
				IKB0043/xxx
Inline 				
				IKB0043/xxx
Fieldline M12/ IndraControl S67 				IKB0044/xxx
		IKB0042/xxx		IKB0042/xxx RBS0008

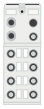
Interconnection technology – INTERBUS selection matrix

	INTERBUS	Inline		Fieldline M12	
					
Inline 					
		INK0699		IKB0046/xxx	
Fieldline M12 				IKB0047	
		IKB0045/xxx	INS0703	IKB0045/xxx	RBS0002

Interconnection technology – line skipping module selection matrix

	New line	IndraControl L	Inline
			
Inline 			
		—	—
		INK0699	INK0699

Interconnection technology – Fieldline and IndraControl S67 voltage supply selection matrix

	Supply	Fieldline M12/IndraControl S67	Fieldline M8
			
Fieldline M12/ IndraControl S67 		 IKL0268/xxx	
		RBS0003 IKL0267/xxx	
Fieldline M8 			
+24 V		 RKB0003/000,3[1]	RKB0017/xxx
		IKL0267/xxx	

[1] in combination with Rexroth Fieldline

Interconnection technology – Fieldline M8 selection matrix

	Fieldline M8	IndraControl L	Inline	Fieldline M8
				
IndraControl L 				
				RKB0015/xxx
Inline 				
				RKB0015/xxx
Fieldline M12 				RF-FLM ADAP M12/M8 RKB0016
Fieldline M8 				RKB0016/xxx
		RKB0014/xxx	RKB0014/xxx	

Interconnection technology – ordering data

Ordering data for interconnection technology	
Description	**Type code**
SERCOS III cable sets	
SERCOS III cable, 100-Base-T, CAT5E, shielded, RJ45 plug on both sides, 4 pins, twisted quad, stranded, red, length free selectable	RKB0011/xxx
SERCOS III cable, 100-Base-T, CAT5E, S/TP, RJ45 plug on both sides, 8 pins, twisted pair, red, available lengths: 0.25/0.35/0.55 m	RKB0013/xxx
SERCOS 2 cable sets	
FO cable, 2.2 mm in diameter, available lengths: 0.15/0.25/0.30/0.50/1 m	RKO0100/xxx
FO cable, 6.0 mm in diameter, available lengths: 5/10/15 m	RKO0101/xxx
FO cable plug connector (2.2 mm in diameter)	ROS0001/C02
FO cable plug connector (6.0 mm in diameter)	ROS0002/C06
FO cable, 2.2 mm in diameter (by the meter)	INK0414
FO cable, 6.0 mm in diameter (by the meter)	INK0435
PROFIBUS cable sets	
PROFIBUS bus cable, D-SUB, cable outlet 45°, D-SUB cable outlet 45°	IKB0033/xxx
PROFIBUS bus cable, D-SUB, cable outlet 45°, free line end	IKB0034/xxx
PROFIBUS bus cable, standard cable, fast connect, length selectable as desired	REB0001
PROFIBUS bus cable, drag cable, fast connect, length selectable as desired	REB0002
D-SUB connector, PROFIBUS, cable outlet 90°, screwed connection	RBS0010/K02
D-SUB connector, PROFIBUS, cable outlet 90°, with additional D-SUB socket, screwed connection	RBS0011/K02
D-SUB connector, PROFIBUS, cable outlet 180°, screwed connection	RBS0012/K02
D-SUB connector, PROFIBUS, cable outlet 90°, insulation displacement	RBS0013/F03
D-SUB connector, PROFIBUS, cable outlet 90°, with additional D-SUB socket, insulation displacement	RBS0014/F03
D-SUB connector, PROFIBUS, cable outlet 180°, insulation displacement	RBS0015/F03
PROFIBUS bus cable, M12 male connector, straight, shielded, 5 pins, B-coded, free line end, available lengths: 5/10 m	IKB0048/xxx
PROFIBUS bus cable, M12 female connector, straight, shielded, 5 pins, B-coded, free line end, available lengths: 5/10 m	IKB0049/xxx
PROFIBUS bus cable, M12 male connector, straight, shielded, 5 pins, B-coded, M12 female, straight, shielded, 5 pins, B-coded, available lengths: 0.30/0.50/1/2/5/10 m	IKB0050/xxx
M12 connector, male connector, straight, shielded, with screwed connection, 5 pins, B-coded	RBS0001/K01
M12 connector, female connector, straight, shielded, with screwed connection, 5 pins, B-coded	RBS0002/K01
M12 terminating resistor, PROFIBUS, 5 pins, B-coded	INS0762/CNN
Local bus cable, M8 female connector, straight, M8 male, straight	RKB0016/xxx
Stripping tool for PROFIBUS cables	WERKZ-ABISOLIERER-FC-KABEL
Spare knife for stripping tool	WERKZ-ABISOLIERER-FC-KABEL-ERSATZMESSER
DeviceNet cable sets	
DeviceNet bus cable, M12 male connector, straight, shielded, 5 pins, B-coded, free line end, length: 10 m	IKB0042/010,0
DeviceNet bus cable, M12 female connector, straight, shielded, 5 pins, B-coded, free line end, length: 10 m	IKB0043/010,0
DeviceNet bus cable, M12 male connector, straight, shielded, 5 pins, B-coded, M12 female, straight, shielded, B-coded, available lengths: 0.50/2/5/10 m	IKB0044/xxx
M12 connector, male connector, shielded, with screwed connection, 5 pins, A-coded	RBS0008/K01
M12 terminating resistor, DeviceNet, 5 pins, B-coded	INS0763/CNN
INTERBUS cable sets	
INTERBUS bus cable, M12 male connector, straight, shielded, 5 pins, B-coded, free line end, length: 10 m	IKB0045/010,0
INTERBUS bus cable, M12 female connector, straight, shielded, 5 pins, B-coded, free line end, length: 10 m	IKB0046/010,0
INTERBUS bus cable, M12 male connector, straight, shielded, 5 pins, B-coded, free line end, M12 female, straight, shielded, 5 pins, available lengths: 0.50/2/5/10 m	IKB0047/xxx

xxx = cable length in meters

Interconnection technology – ordering data

Ordering data for interconnection technology	
Description	**Type code**
INTERBUS cable sets	
M12 connector, male connector, straight, shielded with screwed connection, 5 pins, B-coded	RBS0001/K01
M12 connector, female connector, straight, shielded with screwed connection, 5 pins, B-coded	RBS0002/K01
INTERBUS connector, 9 pins, female connector	INS0703/K01
Bus cable, local bus, M8 male connector, straight, free line end, available lengths: 2/5/10 m	RKB0014/xxx
Bus cable, local bus, M8 female connector, straight, free line end, available lengths: 2/5/10 m	RKB0015/xxx
Bus cable, local bus, M8 female connector, straight, M8 male, straight, available lengths: 0.10/1/2/5 m	RKB0016/xxx
Supply cable sets	
M12 connector, male connector straight, unshielded, 4 pins, A-coded	RBS0003/K01
M12 connector, female connector straight, unshielded, 4 pins, A-coded	RBS0004/K01
M12 connector, male connector straight, unshielded, 4 pins, A-coded, quickon connection technology	RBS0005/Q01
M12 connector, female connector straight, unshielded, 4 pins, A-coded, quickon connection technology	RBS0006/Q01
Voltage cable, female, straight connector, unshielded, M12, A-coded, 4 pins, open line end, available lengths: 5/10/15 m	IKL0267/xxx
Voltage cable, female connector, straight, unshielded, M12, A-coded, 4 pins, female, straight, unshielded, M12, A-coded, 4 pins, open line end, available lengths: 0.30/0.50/1/2/5/10 m	IKL0268/xxx
Voltage cable, Y-connector, straight, M12 on 2 x female, straight, M12	RKB0003/xxx
Voltage cable, M8 female, straight, free line end, available lengths: 2/5/10 m	RKB0017/002,0/xxx
Ethernet cable sets	
Ethernet cable, 10-Base-T, CAT.6+, crosslink, UL, suitable as trailing cable, ready-made on either end, with RJ45 plug, available lengths: 0.15/2.50/5/10/25 m	RKB0007/xxx
Ethernet cable, 10-Base-T, CAT.6+, UL, suitable as trailing cable, ready-made on either end, with RJ45 plug, available lengths: 2.50/5/10/25 m	RKB0008/xxx
Accessories for I/O modules in IP67	
End mount for Inline station	SUP-M01-ENDHALTER
End mount for Inline station, aluminium	SUP-M01-ENDHALTER/AL
M8 cover for not used in/outputs	RF-PROT-M8
M12 cover for not used in/outputs	SUP-M01-SM*12.1
M12 cover for not used connectors	RF-PROT-M12-M
RS232 cable set	
RS232 cable, null modem, ready-made on either end, with 9-pin D-SUB, length: 5 m	RKB0009/005,0
HMI cable set	
Giga interface cable between VxB 40 and VDP (G5)	BKS-U-H-G4****-IPCVDP-xxx,0-P

xxx = cable length in meters


Rexroth
MTX
Rexroth
IndraControl V
Pick&Place
> NOP
MOVE HOME
MOVE PICK_POS
GRIPPER=1
WAIT GR_CLOSE=1
MOVE VIA OVER_
5 RUN
Rexroth

Glossary

C

CDI	Compact Display Interface – interface for connecting the separate operating display to the switch cabinet PC
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
DVI	Digital Visual Interface – interface for digital transmission of video data

E

Electronic gear	Electronic simulation of a mechanical gear by software
Embedded Systems	Systems with embedded computer functions
EtherNet/IP adapter	Slave in an EtherNet/IP network (see slave)
EtherNet/IP scanner	Master in an EtherNet/IP network (see master)

F

FDT/DTM	Manufacturer-independent concept allowing the parameterization of field devices from different manufacturers with only one program
Fieldbus	Conducted communication system which connects 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.
FlexProfile	Motion functionality for non-linear motion sequences with master-axis-related or time-related profile segments
FO cable	Fiber Optic cable
Function library	Collection of function blocks or functions, for example according to IEC 61131-3 or PLCopen

G

GAT	Generic Application Template – general adjustable software templates for selective implementation of application tasks

H

HMI	Human Machine Interface. System for operating and visualizing machines and plants.
Hot-plug principle	Failure-free connection and disconnection of devices during running operation

I

IL	Short Instruction List; textual assembler-like programming language for creating PLC programs according to IEC 61131-3
IndraControl L	Controller-based PLC system family from Rexroth
IndraControl V	PC-based and embedded-PC-based PLC system family from Rexroth
IndraDrive	Drive platform from Rexroth
IndraDyn	Motor platform from Rexroth
IndraLogic	Consistent PLC platform according to IEC 61131-3 from Rexroth
IndraLogic L	Controller-based PLC system family from Rexroth

IndraLogic V	PC-based and embedded-PC-based PLC system family from Rexroth
IndraMotion	System family of integrated motion logic solutions from Rexroth
IndraMotion MLC	Controller-based system solution with integrated motion logic from Rexroth
IndraMotion MLD	Drive-based system solution with integrated motion logic from Rexroth
IndraMotion MLP	Embedded-PC-based system solution with integrated motion logic from Rexroth
IndraMotion MTX	System family of CNC solutions from Rexroth
IndraWorks	Software framework for engineering and operation, consistent for all solutions from Rexroth
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
LD	Ladder Diagram; graphics-oriented programming language for creating PLC user programs according to IEC 61131-3
Master	Central bus user controlling bus access
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	Motion functionality for non-linear motion sequences with master-axis-related profile segments
Multikinematics	Multiple motions in space, described by path, velocity, acceleration
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.

Glossary

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.
PROFINET controller	Master in a PROFINET network (see master)
PROFINET device	Slave in a PROFINET network (see slave)
Programmable limit switch	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.
RDS	Remanent Data Storage
Ready-to-apply-solution	See turnkey solution
Robot control	Motion functionality for path interpolation in space
Safety on Board	Integrated safety solutions from Rexroth
SERCOS2	Serial Real-time Communications Standard Interface – open and serial real-time communication standard for high-precision motion control applications, designed by leading manufacturers of numerically controlled drives
SERCOS III	Third SERCOS generation – further development of the existing SERCOS 2 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.
SFC	Short for Sequential Function Chart; graphical programming language for structuring PLC user programs according to IEC 61131-3
Slave	Network user not allowed to participate in data exchange except when addressed by the master
SSD	Solid State Disk – flash-based bulk storage medium with HDD form factor
ST	Structured Text; Pascal-like programming language for PLC according to IEC 61131-3
Technology function	Prefabricated software code for quick and safe implementation of master functions, e.g. winder, probe
Technology library	Collection of available technology functions
Technology module	See technology function
Technology package	Compilation of several technology functions for a specific application
Turnkey solution	Preconfigured and ready-to-use automation system
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

Standards and Certificates

General standards	
Quality management	DIN EN ISO 9001:2000
Quality management	ISO/TS 16949
Environmental protection management system	DIN ISO EN 14001
CE mark, EC declaration of conformity	95/EC
Decree on the safety of devices and products	GPSGV
Low Voltage Directive	73/23/EEC
Machine Directive	98/73/EC
ATEX Product Directive	94/9/EC
EMC Directive; IndraControl is a Class-A product	2004/108/EC

Product-specific standards	
www.ce-richtlinien.de	CE mark
www.UL.com	UL mark
Programmable controllers	IEC EN 61131
Programmable controllers – Part 2: Equipment requirements and tests	IEC EN 61131-2
Programmable controllers – Part 3: Programming languages	IEC EN 61131-3
Digital data communication for measurement and control	IEC EN 61158
SERCOS 2	IEC EN 61491
See glossary	PLCopen

Safety technology in the drive	
Safety of machinery – Safety-related parts of control systems	EN ISO 13849-1:2006
Safety of machinery – Safety-related parts of control systems	ISO 13849-1:1999
Safety of machinery – Safety-related parts of control systems	EN ISO 13849-2:2003
Safety of machinery – Electrical equipment of machines	EN 60204-1:1997
Safety of machinery – Electrical equipment of machines	EN 60204-1:2007
Electronic equipment for use in power installations	EN 50178:1997
Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods	EN 61800-3:2004
Standard for Power Conversion Equipment	UL 508C R7.03
Safety Functions Incorporating Electronic Technology	C22.2 No. 0.8-M86 (R2003)
Industrial Control Equipment	CAN/CSA C22.2 No. 14-95

Safety technology in the control	
Functional safety of electrical/electronic/programmable electronic safety-related systems	IEC61508
Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems	EN IEC62061
Safety of machinery – Safety-related parts of control systems	EN ISO13849-1:2007

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