Xtra Combinations

Building Automation | Industrial Automation | Systems

Product Range Catalogue

Switching and Installation System

Valid from July 2002

MOELLER

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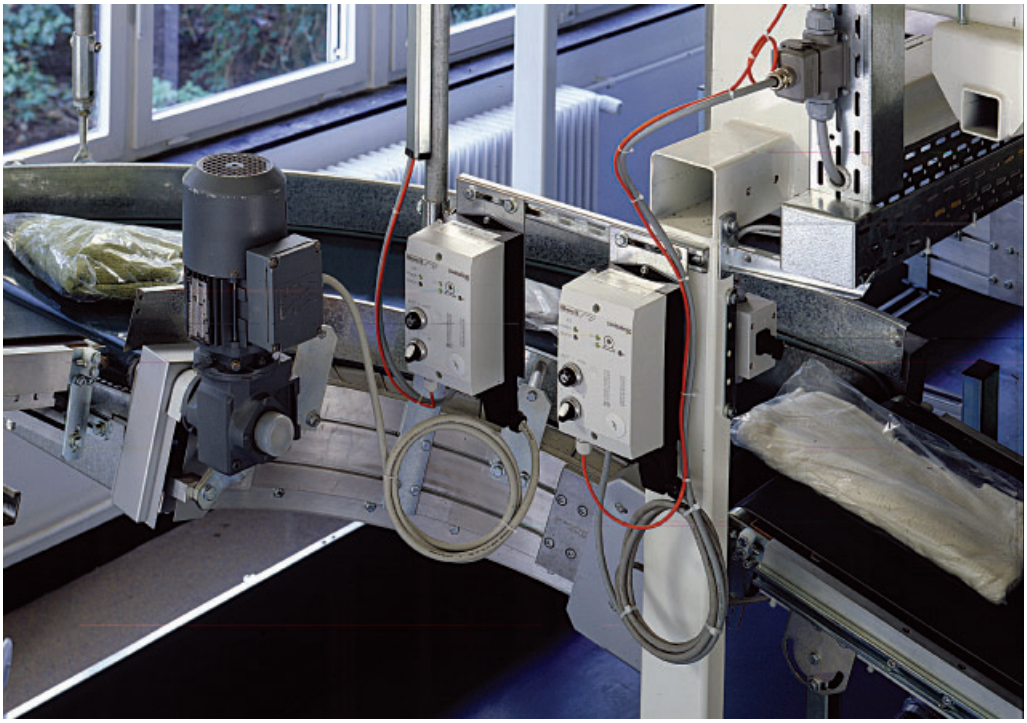

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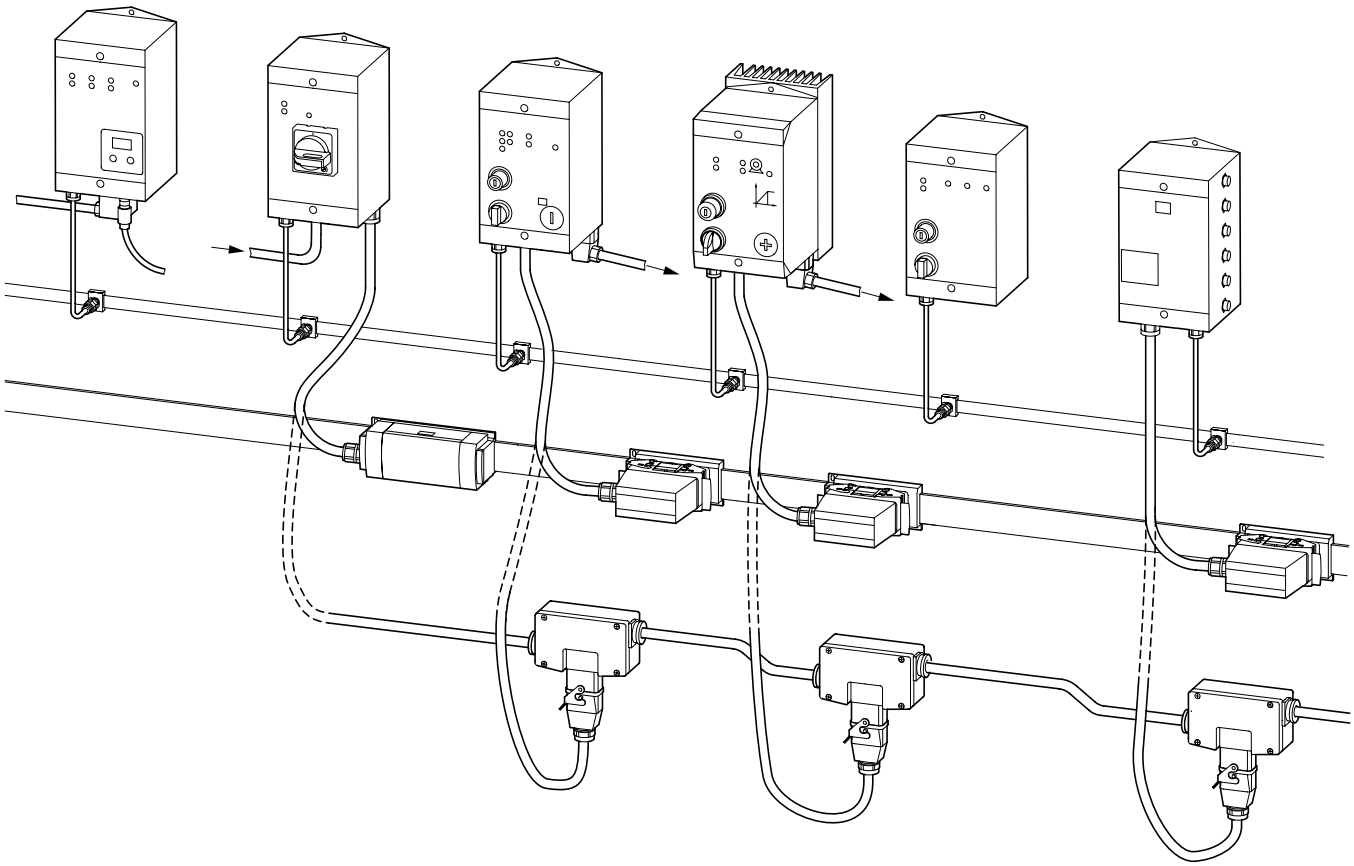
Rapid Link Switching and Installation System

Rapid Link



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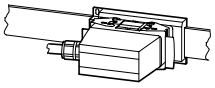
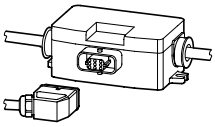
Description
Rapid Link Switching and Installation System

Application

The Rapid Link system is designed for use in small and large plants for materials handling applications, particularly for distribution and production logistics. Rapid Link offers all the functions required in IP65 for remotely controlling, switching and protecting spatially distributed drives via PROFIBUS-DP and AS-Interface networks.
The Rapid Link Units can be provided with a 400 V AC and 24 V DC power supply at any location using the easy to install 2.5 mm² or 4 mm² flexible busbar. The insulation displacement termination allows connections to be made quickly and reliably without the need for cable stripping.



Alternatively, the decentralised power supply can also be implemented using 2.5 mm² or 4 mm² round cable. Round cable junctions can be installed at any point without interrupting the line.



Features

- Fast and error-free installation to IP65
- All units are supplied ready to connect
- Simple planning by means of elementary object-oriented functional units
- Commissioning of drives also possible with manual operation without PLC/ AS-Interface
- High system availability by means of clear diagnostics and user-friendly service interfaces
- Functional units in type-tested series quality save costs, time and space
- Seamless system design and handling
- Branches can be installed without interrupting the power line

Documentation

Product information:
- Rapid Link → W2700-7506GB
- AS-Interface with Safety at Work → W2700-7491GB

Catalogues:
- HPL Industrial Switchgear → HPL0211-2002GB
- HPL Automation Systems, Drives → HPL0213-2002GB
- DF5, DF6 Frequency Inverters, DV5, DV6 Vector Frequency Inverters → NK8230-1060GB
- AS-Interface, Actuators and Sensors → SK2700-1047GB
- AS-Interface, Safety at Work → SK2700-1069GB

Manuals:
- Rapid Link Switching and Installation System → AWB2190-1430GB
- DF5 Frequency Inverters → AWB8230-1412GB
- DF5 Frequency Inverter Training Guide → AWB8230-1447GB
- EASY412, EASY600 Control Relay → AWB2528-1304GB
- AS-Interface Profibus Gateways → AWB2700-1409GB
- AS-Interface Safety Monitor → AWB2700-1420GB

Technical Guides:
- AS-Interface, Networking Inputs/Outputs on the Field Level → TB27-013GB
- Electromagnetic Compatibility of Machines and Systems → TB02-022GB

Note

The Rapid Link system must not be commissioned without referring to the manual AWB2190-1430. This manual is available online at ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/.

Documentation

Interface Control Unit

Description
- The Interface Control Unit is the interface to the higher-level fieldbus.
- As the shared communication interface, AS-Interface can be ideally combined with the commonly available sensors and actuators of different manufacturers.
- The integrated Power Extender only requires a 30 V DC power supply unit. The data decoupling process is carried out inside the Interface Control Unit.
- Several AS-Interface lines can be implemented using only one power supply unit.
- The cable length between the power supply unit and the Interface Control Unit does not reduce the permissible 100 m cable length for an AS-Interface line.

Function
- AS-Interface Master Spec. 2.1 for 62 slaves
- PROFIBUS-DP slave with up to 12 MBaud
- Power Extender for AS-Interface power supply
- External 30 V DC sufficient without data decoupling
- Differentiated diagnostics LEDs: States, Power, Error
- 3-digit address display
- Adjustable via mode and set buttons
- Installation and replacing via plug to IP65

Disconnect Control Unit

Description
- Die Disconnect Control Unit is used as a main switch and for selectively disconnecting individual sections of a materials handling system.
- It combines the functions of main switch, maintenance switch and cable protection device in one,
- and is ideal for protecting several starters and long lines by allowing the tripping currents to be set to the requirements of the application.

Function
- Mains disconnecting device with lockable handle to IEC/EN 60 947-1
- Overload and short-circuit protection of cables to IEC/EN 60 947-2 and DIN VDE 0100 Part 430
- Short-circuit protective device for RA-MO motor starter (groups) to IEC/EN 60 947-4-1, type 1 coordination
- Protection of equipment from short-circuits
- Rated current: 16 to 25 A, short-circuit tripping current: 130 A
- AS-Interface Slave Spec. 2.1 for 31 slaves
- Signalling of switch position via AS-Interface
- Differentiated diagnostics LEDs: States, Power, Error
- Knockout plate for cable entry with M20 and M25 cable glands
- Unit power supply via round cable up to 6 mm²
- Power supply of flexible busbar via 2.5 mm² and 4 mm² round cable, when using round cable junctions up to 4 mm²

Motor Control Unit

Description
- The Motor Control Unit is used for controlling remotely distributed drives
- The electronic motor protective function allows a wide range of ratings to be covered with only one device.
- A keyswitch can be used to select between manual and automatic operation. In manual mode, the drive can be commissioned without the need for the AS-Interface to be installed beforehand.
- The selectable and lockable manual operation function also allows the system to be protected from damage.
- The device can be used as a motor starter for one or two rotation directions.

Function
- Motor starter with electronic motor protection from 0.18 – 2.2 kW/400 V AC
- DOL starter, expandable DOL starter, reversing starter
- Brake control via AC-3 switching contact
- Monitoring of thermistor, thermoclick and motor plug
- Reset after fault rectification by keyswitch position 0
- AS-Interface Slave Spec. 2.1 for 62 slaves
- 2 external inputs via M12
- Quick stop and locked manual mode
- Differentiated diagnostics LEDs: States, Power, Error
- Parameter setting of rating ranges via DIP switch
- Configuration of default rotation direction via DIP switch with reversing starter
- Manual operation with AUTO-0-MAN, CCW-0-CW
- Optional: DOL starter with reversing function in manual mode
- Installation and replacement via plugs to IP65
- Standard motor cable 2 m, with plug for assembly by user, motor cable possible up to 10 m

Description
Rapid Link Switching and Installation System

Speed Control Unit

Description
- The Speed Control Unit is used for controlling variable speed drives and enables motors to be soft started.
- Up to 4 setpoints (fixed speeds) and two rotation directions can be selected via AS-Interface.
- The Unit is operational immediately for 0.75 kW drives (factory setting). The required speeds, ramp and deceleration times can be set individually and are infinitely variable.
- In manual mode, the speed can be set via a potentiometer, and the rotation direction via a selector switch, commissioning is also possible without the AS-Interface.

Function
- Speed regulator for 4-pole three-phase asynchronous motors up to 0.75 kW/400 V AC
- Soft starting, soft coasting, two rotation directions, up to 4 fixed speeds
- Factory set speeds: Potentiometer 0 – 50 Hz, 30 Hz, 40 Hz, 50 Hz
- Monitoring of thermistor, thermoclick and motor plug
- Reset after fault rectification by keyswitch position 0
- Integrated radio suppression filter for EMC-compliant installation to IEC/EN 61800-3, 2nd environment (CISPER 11 class A group 2)
- AS-Interface Slave Spec. 2.1 for 31 slaves
- Differentiated diagnostics LEDs: States, Power, Error
- Parameter setting via an RS 422 interface with keypad or PC
- Configuration of default rotation direction via DIP switch
- Manual operation with AUTO-0-MAN, CCW-0-CW
- Installation and replacement via plugs to IP65
- Standard motor cable 2 m, with plug for assembly by user, motor cable possible up to 10 m

Operation Control Unit

Description
- The Operation Control Unit is used for controlling drives, pushers and other materials handling units that do not have their own manual operation unit.
- The control circuit devices are assigned to the appropriate drive by means of the control program.
- The possibility for customized laser inscription on the cover allows the configuration at hand to be clearly illustrated.

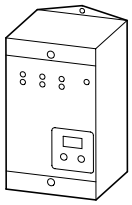
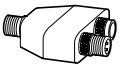
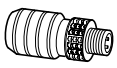
Function
- Remote manual operation via AS-Interface with 4 inputs and 3 outputs
- MANUAL-0-AUTO keyswitch
- 3-stage CCW-0-CW selector switch
- AS-Interface Slave Spec. 2.1 for 31 slaves
- Differentiated diagnostics LEDs: States, Power, Error
- Installation and replacement via plugs to IP65

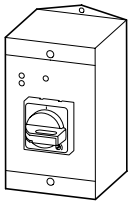
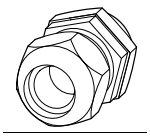
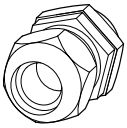
Logic Control Unit

Description
- The Logic Control Unit is the application-oriented compact control unit at the drive. It is used as an autonomous pre-processing unit for the I/O signals.
- It provides 12 inputs and 6 outputs via M12 sockets which are sequenced together in a program. 2 inputs (I7, I8) can be used as analog inputs.
- This program relieves the higher-level control system and is used for activating the light barriers and valve combinations of an accumulating conveyor.
- The display is able to show operating states in plain text messages.

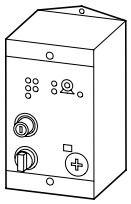
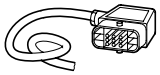
Function
- Local compact control with the EASY control relay in IP65
- Connection of up to 12 sensors via 6 M12 sockets
- Control of up to 6 actuators via transistor outputs, connection via 6 M12 sockets
- Plain text messages via display
- AS-Interface Slave Spec. 2.1 for 31 slaves
- Differentiated diagnostics LEDs: Power, Error
- Programming with cover open via pushbutton pad, PC or plug-in card
- Installation and replacement via plugs to IP65

Interface, Main Switch
Rapid Link Switching and Installation System

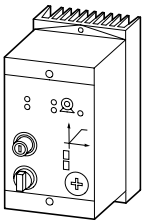
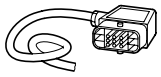
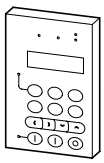
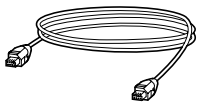
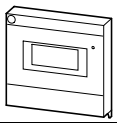
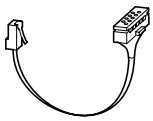
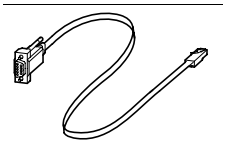
		For use with	Type Article no.	Price See Price List	Std. pack	Notes
Interface Control Unit						
• Interface to the open fieldbus incl. Power Extender • Up to 62 slaves per AS-Interface line, up to 2.8 A • Integrated data decoupling with Power Extender						
	Interface for PROFIBUS-DP/ AS-Interface	–	**RA-IN2.1-DP** 254672		1 off	The Interface Control Unit is supplied via an external 30 V DC AS-Interface power supply unit. The integrated data decoupling allows several Interface Control Units to be supplied with only one power suppply unit. The power supply unit and the PROFIBUS-DP cabling must be ordered separately (e.g. from German suppliers Turck). Supplied: • AS-Interface supply cable, 1.5 m incl. M12 plug • M12 socket for PROFIBUS-DP, B-coded • Cable socket to DIN 43 650-A/ ISO 4400 for 30 V DC supply, 2 poles + earth, for 2.5 mm² round cables, external diameter 6 – 9 mm.
RA-IN accessories						
	Y-type M12 connector for PROFIBUS-DP, B-coded	RA-IN	**RA-IN-XY-DP** 254673		1 off	–
	M12 terminating resistor for PROFIBUS-DP, B-coded	RA-IN	**RA-IN-XTR-DP** 254674		1 off	–

		For use with	Type Article no.	Price See Price List	Std. pack	Notes
Disconnect Control Unit						
• Main switch with lockable rotary handle • Group protective device • AS-Interface Slave Spec. 2.1 for 31 slaves						
	Main switch with AS-Interface signalling	Flexible RA-C1 busbar RA-C2 round cable	**RA-DI2-PKZ2** 254676		1 off	The Disconnect Control Unit is the feeder for the decentralised power supply. 400 V AC rated operational voltage. 24 V DC control circuit. Supplied: • AS-Interface supply cable, 1.0 incl. M12 plug • M20/M25 knockout plate for glands • 4 male cable lugs for connecting 4 mm² and 6 mm² cross-sections to NHI11 standard auxiliary contact
RA-DI accessories						
	M20 metric cable gland	Cables with 6 – 13 mm external diameter	**V-M20** 206910		20 off	–
	M25 metric cable gland	Cables with 9 – 17 mm external diameter	**V-M25** 206911		20 off	–

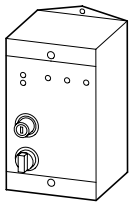
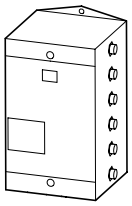
Motor Starter
Rapid Link Switching and Installation System

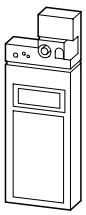
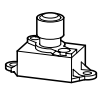
		For use with	External I/O Number	**Type** Article no.	**Price** See Price List	Std. pack	Notes
Motor Control Unit							
• Motor starter with electronic motor protection from 0.18 – 2.2 kW/400 V AC • AS-Interface Slave Spec. 2.1 for 62 slaves							
	DOL starter	Flexible RA-C1 busbar	–/–	**RA-MO2.1-D2/C1** 254660		1 off	400 V AC rated operational voltage. 24 V DC control circuit. Supplied: • Motor feeder socket to DESINA Standard • AS-Interface supply cable, 1.0 m incl. M12 plug • Power cable, 1.5 m incl. plug for line junction. Either for flexible busbar (RA-.../C1) or round cable to DESINA Standard (RA-.../C2)
	DOL starter, expandable		–/–	**RA-MO2.1-DE2/C1** 254661			
	Reversing starter		–/–	**RA-MO2.1-W2/C1** 254662			
	DOL starter		2/–	**RA-MO2.1-D4/C1** 254668			
	DOL starter, expandable		2/–	**RA-MO2.1-DE4/C1** 254666			
	Reversing starter		2/–	**RA-MO2.1-W4/C1** 254670			
	DOL starter	RA-C2 round cable	–/–	**RA-MO2.1-D2/C2** 254663			
	DOL starter, expandable		–/–	**RA-MO2.1-DE2/C2** 254664			
	Reversing starter		–/–	**RA-MO2.1-W2/C2** 254665			
	DOL starter		2/–	**RA-MO2.1-D4/C2** 254669			
	DOL starter, expandable		2/–	**RA-MO2.1-DE4/C2** 254667			
	Reversing starter		2/–	**RA-MO2.1-W4/C2** 254671			
RA-MO accessories							
	2 m motor cable, halogen free, with plastic enclosed motor feeder plug to DESINA-Standard, 8 × 1.5 mm²	RA-MO	–	**SET-M3/2-HF** 230914		1 off	DESINA
	Motor feeder plug for assembly by user, plastic enclosed to DESINA Standard, with 8 × 1.5 mm² crimp contacts, cable length max. 10 m	RA-MO	–	**SET-M3-A** 231640		1 off	DESINA

Speed Control Unit
Rapid Link Switching and Installation System

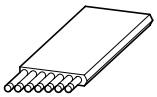
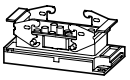
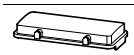
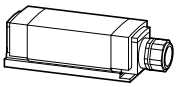
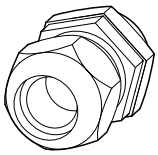
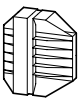
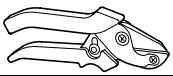
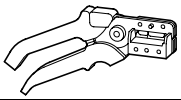
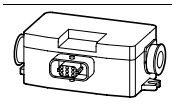
		For use with	Type Article no.	Price See Price List	Std. pack	Notes
Speed Control Unit						
• Speed regulator for controlling motors rated from 0.37 – 0.75 kW/400 V AC • AS-Interface Slave Spec. 2.1 for 31 slaves						
	0.75 kW speed regulator	RA-C1 flexible busbar	**RA-SP2-340-075/C1** 254678		1 off	Rated operational voltage 400 V AC. Supplied: • Motor feeder socket to DESINA Standard • AS-Interface supply cable, 1.5 m incl. M12 plug • Power cable, 1.0 m incl. plug for line junction. Either for flexible busbar (RA-.../C1) or round cable to DESINA Standard (RA-.../C2)
	0.75 kW speed regulator	RA-C2 round cable	**RA-SP2-340-075/C2** 254680		1 off	
RA-SP accessories						
	2 m motor cable, halogen free, with metal enclosed motor feeder plug to DESINA-Standard, 4 × 1.5 mm² + 2 × (2 × 0.75) mm²	RA-SP	**SET-M4/2-HF** 254485		1 off	DESINA
	2 m motor cable for assembly by user, metal enclosed to DESINA Standard, with 4 × 1.5 mm² crimp contacts +2 × (2 × 0.75) mm², cable length max. 10 m	RA-SP	**SET-M4-A** 254686		1 off	DESINA
	Keypad with memory	RA-SP	**DEX-KEY-10** 231421		1 off	–
	Connection cable (1.0 m)	DEX-KEY-10	**DEX-CBL-1M0-ICS** 232375		1 off	–
	Connection cable (3.0 m)	DEX-KEY-10	**DEX-CBL-3M0-ICS** 232376		1 off	–
	External display	RA-SP	**DE5-KEY-RO3** 232372		1 off	–
	Connection cable (0.5 m)	DE5-KEY-R03	**DE5-CBL-0M5-ICL** 232373		1 off	–
	Connection cable (1.0 m)	DE5-KEY-R03	**DE5-CBL-1M0-ICL** 232374		1 off	–
	Connection cable with converter, RS 232/422	PC interfacing	**DEX-CBL-2M0-PC** 233184		1 off	Moeller Drives-Soft parameter software available online at ftp://ftp.moeller.net/DRIVES/SOFTWARE/

Remote Manual Operation, Local Control, Accessories
Rapid Link Switching and Installation System

	For use with	External I/O Number	**Type** Article no.	**Price** See Price List	Std. pack	Notes
Operation Control Unit						
• Remote manual operator unit • AS-Interface Slave Spec. 2.1 for 31 slaves						
 Standard type	–	–/–	**RA-OP2** 254687		1 off	Supplied: • AS-Interface supply cable, 1.0 m incl. M12 plug
Laser inscription on request	–	–/–	**RA-OP2-*** 254688		1 off	
Logic Control Unit						
• Remote compact control unit • AS-Interface Slave Spec. 2.1 for 31 slaves						
 Remote control unit with display	Flexible RA-C1 busbar	12/6	**RA-LO2/C1** 254691		1 off	24 V DC control circuit. Supplied: • AS-Interface supply cable, 1.0 m incl. M12 plug • Power cable, 1.5 m incl. plug for line junction. Either for flexible busbar (RA-.../C1) or round cable to DESINA Standard (RA-.../C2)
Remote control unit with display	RA-C2 round cable	12/6	**RA-LO2/C2** 254692		1 off	
RA-LO accessories						
Software	RA-LO	–	**EASY-SOFT** 202407		1 off	–
Memory card		–	**EASY-M-16K** 212317			–
2 m connection cable for PC interface		–	**EASY-PC-CAB** 202409			–

		For use with	**Type** Article no.	**Price** See Price List	Std. pack	
Accessories						
AS-Interface						
	Addressing unit	RA-DI RA-MO RA-SP RA-OP RA-LO	**PG2-105-AD2** 222172		1 off	–
	AS-Interface flat cable, 100 m, yellow, profiled, 2 × 1.5 mm²	RA-IN RA-DI RA-MO RA-SP RA-OP RA-LO	**ZB2-155-KB1** 031920		1 off	–
	M12 branch, IDC cable termination	RA-IN RA-DI RA-MO RA-SP RA-OP RA-LO	**ZB2-100-AZ1** 082667		1 off	–
	M12 cap for unused branches	RA-LO RA-MO ZB2-100-AZ1	**AS2-600-ZB1** 222484		10 off	–

Accessories
Rapid Link Switching and Installation System

		For use with	Type Article no.	Price See Price List	Std. pack	
Accessories						
Remote power supply via RA-C1 flexible busbar						
	PVC busbar, 7 × 2.5 mm²	Rapid Link Units RA-.../C1	**RA-C1-7X2,5PVC** 231573		1 runn. m	–
	Flat conductor halogen free, 7 × 4 mm²	Rapid Link Units RA-.../C1	**RA-C1-7X4HF** 230860		1 runn. m	–
	Flexible busbar junction for 400 V AC and 24 V DC, terminals with piercing screws, connection socket with lock mechanism	Rapid Link Units RA-.../C1	**RA-C1-VP-PLF** 230857		5 off	–
	Protective cover for flexible busbar junction	RA-C1-VP-PLF	**RA-C1-COV** 254693		10 off	–
	Flexible busbar feeder, for 400 V AC and 24 V DC, termination with piercing screws, connection socket with screw contacts	Rapid Link Units RA-.../C1	**RA-C1-VP-SR** 230858		5 off	Order M25 gland separately. Connection of 2.5 mm² round cables.
	M25 metric cable gland	Leitungen mit Außendurchmesser 9 – 17 mm	**V-M25** 206911		20 off	Metric to EN 50 262
	Busbar end-piece	RA-C1-7X2,5PVC	**RA-C1-END** 230859		10 off	–
	Tool for cutting busbar	RA-C1-7X2,5PVC	**RA-C1-CUT** 254690		1 off	–
	Tool for removing casing at the ends of busbar	RA-C1-7X2,5PVC	**RA-C1-AZ-2,5** 254675		1 off	–
Remote power supply via RA-C2 round cable						
	Round cable junction for 7 × 2.5/4 mm² cable, 400 V AC and 24 V DC, IDC termination, cable fixing with metal screws, prewired socket inserts	Rapid Link Units RA-.../C2	**RA-C2-S1-4** 257830		1 off	Suitable for cable external diameters 10 – 13/13 – 16 mm. Supplied: 2 pairs of seals for these cable diameters, 1 lock mechanism.
Other accessories						
	Spare key for AUTO-0-MANUAL switch	RA-MO RA-SP RA-OP	**M22-ES-MS1** 216416		5 off	–

Engineering
Rapid Link Switching and Installation System

Notes, Mounting

The Rapid Link system must not be commissioned without referring to the manual AWB2190-1430. This manual is available online at ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/.

The Rapid Link Units are mounted in the direct vicinity of the drives. The connection to the AS-Interface and to the RA-C1 flexible busbars or RA-C2 round cable can be implemented at any point on the line without any interrupting the line.

Decentralised power supply

The Rapid Link system must only be implemented in three-phase networks with an earthed star point (TN-S system).

The Disconnect Control Unit RA-DI supplies the power sections with I_e = 20 A for 2.5 mm² and I_e = 20 – 25 A for 4 mm².

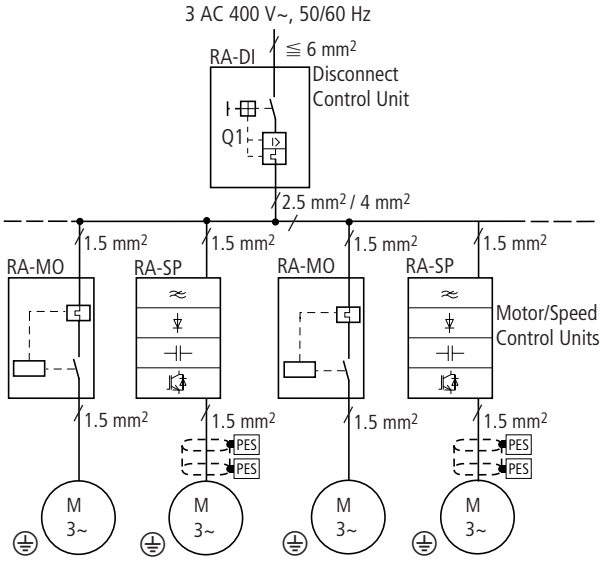
Round cables with cross-sections up to 6 mm² can be used for the power supply to the RA-DI Disconnect Control Unit .

- The Disconnect Control Unit protects the line from overloads.
- It also provides short-circuit protection for the line and for all connected RA-MO Motor Control Units.

The combination of RA-DI and RA-MO meets the requirements of IEC/EN 60947-4 -1 for type "1" coordination starters. This means that the contactor contacts in the RA-MO may stick or weld in the event of a short-circuit in the motor terminal board or in the motor cable. These regulations also meet the requirements of the German DIN VDE 0100 Part 430.

In this case, the Motor Control Unit concerned must be replaced

Group protective device of RA-DI Disconnect Control Unit



Line protection

Take the following points into consideration when implementing the decentralised power supply with the Disconnect Control Unit:

- The short-circuit current must be greater than 150 A, even with a 1-pole short-circuit at the end of the line.
- The sum of the currents of all motors running and starting at the same time must not exceed 110 A.
- The application-dependent voltage drop.

A 3-pole miniature circuit-breaker with I_n ≦ 20 A and characteristic B can also be used instead of the Disconnect Control Unit. In this case observe the following:

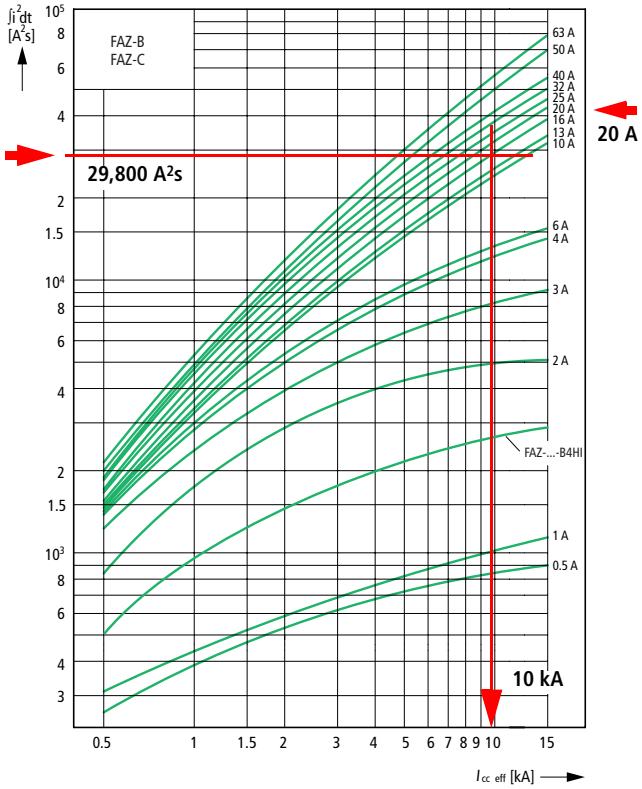
- In the event of a short-circuit the let-through energy $\int i^2 dt$ must not exceed 29,800 A^2s.
- The short-circuit I_{cc} at the installation location must therefore not exceed 10 kA (see characteristic curve).
  This limitation does not apply to the Disconnect Control Unit.

The short-circuit current and the voltage drop at the end of the line is calculated on the basis of DIN VDE 0100.

Motor cable, motor plug

When using a motor connection plug that has been assembled by the user, the length of the shielded motor cable, together with the servo cable for the RA-SP Speed Control Unit and the motor cable for the RA-MO Motor Control Unit, must not exceed 10 m.

Line protection with FAZ-3-B20



AS-Interface

The AS-Interface Power Extender is integrated in the RA-IN Interface Control Unit. This provides data decoupling for max. 2.8 A at 30 V DC AS-Interface voltage. The AS-Interface Power Extender is short-circuit limited (fuse self-resetting, slow, 3 A) The actual AS-Interface bus segment only begins at the RA-IN Interface Control Unit.

Power supply unit

A standard 30 V DC power supply unit in compliance with the AS-Interface Specification is required for supplying the implemented AS-Interface circuits. **Several AS-Interface lines can be created using only one power supply unit**. AS-Interface slaves can only be used on the actual bus segment and not on the 30 V DC power supply cable (commonly available round cable with 1.5 mm² or 2.5 mm²) cross-sections.

Voltage drop

A voltage drop will occur between the slaves and the Interface Control Unit depending on the resistance of the cable and devices used, and depending on the current. As with all conventional AS-Interface circuits, the current consumption and voltage drop must be calculated in order to ensure that all the actuators and sensors are supplied with the required voltage of 24 V DC +10/-15 %.

Cable length

Unlike conventional AS-Interface circuits (max. 100 m incl. spur lines), the maximum possible AS-Interface cable length in the Rapid Link System depends on the AS-Interface voltage present at the RA-IN Interface Control Unit. If this is only 28 V DC due to a voltage drop, the possible cable length when using the AS-Interface flat cable (1.5 mm²) is only approx. 80 m. The number of AS-Interface circuits must therefore be determined by the type and number of Rapid Link Units required.

Safe isolation, earthing

The Rapid Link Units meet the requirements of safe isolation between the AS-Interface voltage and the 24 V DC and 400 V AC voltages of the decentralised power supply.

All other equipment connected to the decentralised power supply and to AS-Interface must also meet the requirements of safe isolation in accordance with IEC/EN 60947-1, Annex N and IEC/EN 60950.

The power supply unit for the 24 V DC power supply must be earthed on the secondary side.

Technical Data
Rapid Link Switching and Installation System

			RA-IN	RA-DI
General				
Standards and regulations			EN 50081 EN 50082	IEC/EN 60947
Degree of protection (IEC/EN 60 529)			IP65	IP65
Ambient temperature, Operation		°C	0 – 40	0 – 40
Ambient temperature, Storage		°C	-25 – 70	-25 – 70
Vibration resistance (IEC/EN 60 068-2-6, const. amplitude 0.15 mm/const. acceleration 2 g)		Hz	–	–
Mechanical shock resistance (IEC/EN 60 068-2-27)			–	–
Mounting position			Vertical	Vertical
Weight		kg	0.8	2
Indication elements			7-Segment/LED	LED
Main circuit				
Supply				
Rated operational voltage	U_e	V AC	–	400
Mains current	I	A	–	20
Rated operational current	I_e	A	–	20
Rated uninterrupted current	I_u	A	–	20
Rated impulse withstand voltage	U_{imp}	kV	–	6
Overvoltage category/pollution degree			–	III/3
Frequency range		Hz	–	50 – 60
Short-circuit protective device, type “1” coordination		Type	–	–
Rated conditional short-circuit current AC		kA_{eff}	–	10
Discharge current to PE		mA	–	–
Heat dissipation		W	–	–
Motor circuit				
Assigned motor rating		kW	–	–
Setting range, motor protection		A	–	–
Tripping class		A	–	–
Output voltage	U_L	V AC	–	–
Frequency range, Motor output		Hz	–	–
Control circuit				
24 V DC				
Rated voltage	U_e	V DC	30	–
Tolerance		%	–	–
Typical current consumption at 24 V DC		mA	–	–
AS-Interface				
Max. total power consumption from AS-Interface (30 V DC power supply unit)		mA	200	90
Max. current supply in AS-Interface		mA	2800	–
AS-Interface Specification			2.1	2.1
Slave addresses		Qty.	62	31
IO code (Hex)			–	7
ID code (Hex)			–	F.E
Inputs				
Data input 0		DI0	–	Switch position (I1)
Data input 1		DI1	–	–
Data input 2		DI2	–	–
Data input 3		DI3	–	–
Outputs				
Data output 0		DO0	–	LED O1
Data output 1		DO1	–	–
Data output 2		DO2	–	–
Data output 3		DO3	–	–
Mains connection cable				
Connection cross-sections		mm^2	–	–
Material of outer sheath			–	–

Technical Data
Rapid Link Switching and Installation System

RA-MO	RA-SP	RA-OP	RA-LO
EN 50081-1 EN 50082-2 IEC/EN 55011/A1 Class A IEC/EN 55022 Class A IEC/EN 60947 DIN VDE 0660 Part 303	EN 50 178 IEC/EN 55011/A1 Class A IEC/EN 55022 Class A IEC/EN 61800-3 incl. A11	IEC/EN 55 011 Class B EN 50 081-2 IEC/EN 61000-6-2 IEC/EN 61000-4-2 IEC/EN 61000-4-3	IEC/EN 55011 Class B IEC/EN 55022 Class B EN 50178 IEC/EN 60068-2-6 IEC/EN 60068-2-27 IEC/EN 61000-4 EN 50295
IP65	IP65	IP65	IP65
0 – 40	0 – 40	0 – 40	0 – 40
-25 – 70	-25 – 70	-25 – 70	-25 – 70
–	10 – 57/57 – 150	–	10 – 57/57 – 150
6 shocks/axis	6 shocks/axis	–	6 shocks/axis
Vertical	Vertical	Vertical	Vertical
2.7	3.5	0.7	1.3
LED	LED	LED	LCD 4 × 20 characters/LED
400	400	–	–
5	3.3	–	–
5	2.5	–	–
–	–	–	–
4	–	–	–
III/2	III (to DIN VDE 0110)	–	–
50 – 60	50 – 60	–	–
RA-DI PKZ2/ZM25-8 FAZ-3-B20	RA-DI PKZ2/ZM25-8 FAZ-3-B20	–	–
10	10	–	–
–	< 3.5 mA (to EN 50 178)	–	–
–	44	–	–
0.18 – 2.2	0.37 – 0.75	–	–
0.6 – 5	(0.5 – 1.2) × I_e electronic	–	–
10	–	–	–
U_e	0 – U_e	–	–
50 – 60	0.5 – 360	–	–
24	24 (internal)	–	24
-15 – 20	–	–	-15 – 20
250	–	–	140 (max. 500)
50 (RAM-MO-2) 130 (RA-MO-4)	25	90	30
–	–	–	–
2.1	2.1	2.1	2.1
62	31	31	31
7	7	7	7
A.D	E.0	F.E	F.E
Automatic	Automatic	Automatic	S1
Central fault	Central fault	Manual	S2
External input RA-MO-4 (I3)	–	CCW (left) ←	S3
External input RA-MO-4 (I4)	–	CW (right) →	S4
Main contactor	Enable CW rotation (right)	LED O1	R1
Reversing contactor	Enable CCW rotation (left)	LED O2	R2
LED O3	Setpoints	LED O3	R3
–	Setpoints	–	R4
7 × 1.5	4 × 1.5	–	3 × 1.5
Halogen free	Halogen free	–	Halogen free

Technical Data
Remote Power Supply, Motor Connection

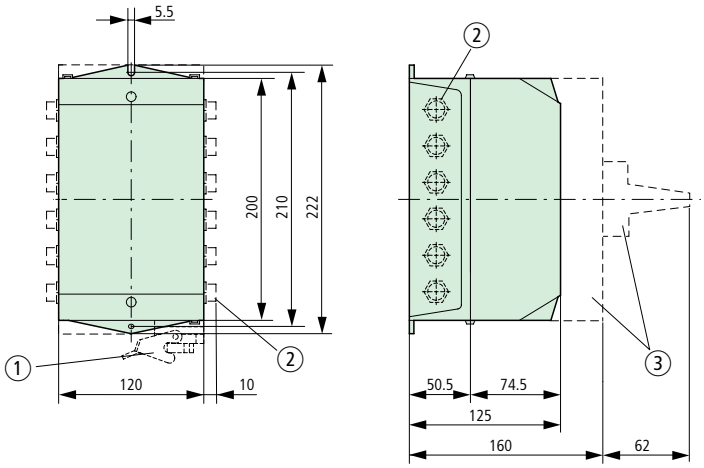
			RA-C1-7X2,5PVC flexible busbar	RA-C1-7X4HF flexible busbar	Remote power supply via RA-C1-VP-SR flexible busbar	RA-C1-VP-PLF flexible busbar junction	RA-C2-S1-4 round connector junction
General							
Standards and regulations			IEC 60332-1 DIN VDE 0295 Class 6 DIN VDE 0281 Part 404		IEC/EN 68000-2-27 IEC/EN 60998-3 IEC/EN 60999-1	IEC/EN 68000-2-27 IEC/EN 60998-3 DIN VDE 0660 Part 1535	EN 61684 DIN VDE 0110 DESINA
Degree of protection (IEC/EN 60529)			IP65	IP65	IP65	IP65	IP65
Ambient temperature, Operation		°C	-15 – 40	-40 – 70	-15 – 40	-15 – 40	-15 – 40
Ambient temperature, Mounting		°C	10 – 50	-5 – 70	10 – 50	10 – 50	10 – 50
Mounting position			As required	As required	As required	As required	As required
Flame retardance, fire resistance			Self-exstinguishing to IEC 60 332-1		–	–	–
Resistance to oils and acids			Good to very good	to VDE 0473, Part 811-2-1	–	–	–
Sheathing			PVC oil-resistant to CENELEC HD 21.1 S3, TM5, paint film contaminant/sili-con-free	Material to DIN VDE 0282, EVA-compound EM4, black	–	–	–
Minimum bending radius		mm	100	18	–	–	–
Cable weight		kg/km	402	440	–	–	–
Outer dimensions L × W × H		mm	L × 35 × 6.5	L × 34.8 × 6.0	170 × 59.5 × 60.3	119 × 57.5 × H	158 × 112.5 × 55
Overvoltage category/pollution degree			–	–	III/3	III/3	III/3
Termination			–	–	Piercing screws	Piercing screws	IDC/screw terminal
External diameter of cable		mm	–	–	9 – 17	–	10 – 13 13 – 16
Main circuit							
Rated operational voltage	U_e	V AC	400	400	400	400	400
Rated operational current	I_e	A	20	25	20	–	20/25 (2.5 mm²/4 mm²)
Rated current per junction		A	–	–	–	16	16
Line protection		Type	RA-DI FAZ-3-B20	RA-DI PKZ2/ZM25-8 FAZ-3-B20	RA-DI FAZ-3-B20	RA-DI FAZ-3-B20	RA-DI FAZ-3-B20
Control circuit							
Rated voltage	U_e	V DC	24	24	24	24	24
Rated operational current	I_e	A	5	7	5	–	5

			Motor cable and SET-M3... motor feeder plug	Motor cable and SET-M4... motor feeder plug
General				
Standards and regulations			EN 61684 DIN VDE 0110	EN 61684 DIN VDE 0110
Degree of protection (IEC/EN 60529)			IP65	IP65
Ambient temperature, Operation		°C	-30 – 70	-30 – 70
Rated operational voltage	U_e	V AC	300/500	500 (Signal wires: 300)
Connection cable				
Connection cross-sections		mm²	8 × 1.5	4 × 1.5 + 2 × (2 × 0.75) shielded
External diameter of cable		mm	9.9	12.2
Minimum bending radius		mm	6 × external diameter of cable	10 × external diameter of cable
Conductor material			Cu flexible to VDE 0295 Class 5	Cu highly flexible to VDE 0295 Class 6
Material of outer sheath			Halogen free	Halogen free
Colour			Silver grey (RAL 7001)	Orange (RAL 2003)
Resistance to oils and acids			VDE 0472 Part 803 B	VDE 0472 Part 803 A/B
Flame retardance, fire resistance			IEC 60332-1 IEC 60332-3	IEC 60332-2
Plug connector				
Conductor cross-section of contact pins		mm²	8 × 1.5	4 × 1.5 + 4 × 0.75
Material				
Contact inserts			Polycarbonate	Polycarbonate
Contact material			Cu silver-plated	Cu silver-plated
Enclosure			Polycarbonate	Metal
Locking bracket			Polyamide	Metal

Dimensions
Rapid Link Switching and Installation System

Rapid Link Units

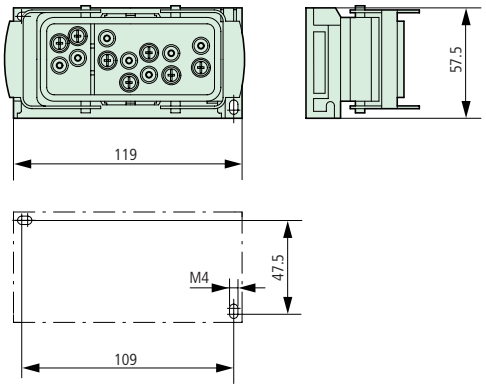
RA-IN(DI)(MO)(SP)(OP)(LO)



① Motor feeder plug for Motor Control Unit (RA-MO) and Speed Control Unit (RA-SP)
② Inputs and outputs for Logic Control Unit (RA-LO)
③ Wider enclosure depth and rotary handle for Disconnect Control Unit (RA-DI).
RA-DI knockout plate: top 2 × M20/M25, bottom 2 × M20/M25 and 1 × M20
④ Heat sink for Speed Control Unit (RA-SP)
⑤ Key and selector switch for Motor Control Unit (RA-MO), Speed Control Unit (RA-SP) and Operation Control Unit (RA-OP)

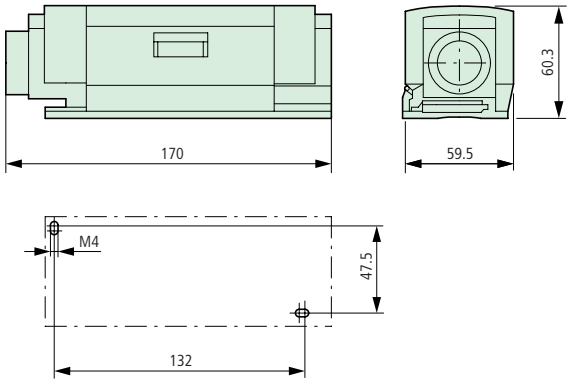
Decentralised power supply junction for flexible busbar

RA-C1-VP-PLF



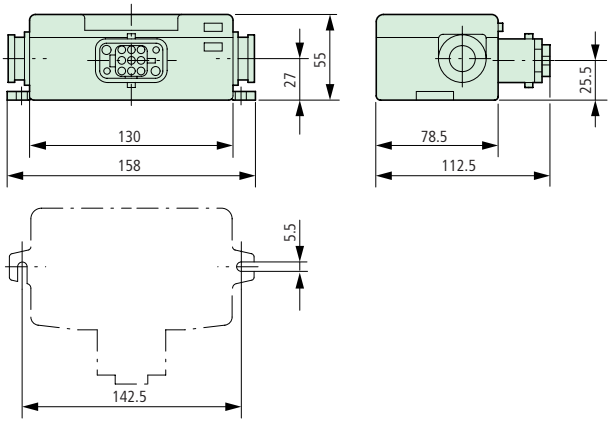
Line junction connector (and junction) for flexible busbar

RA-C1-VP-SR



Decentralised power supply junction for round cable

RA-C2-S1-4



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