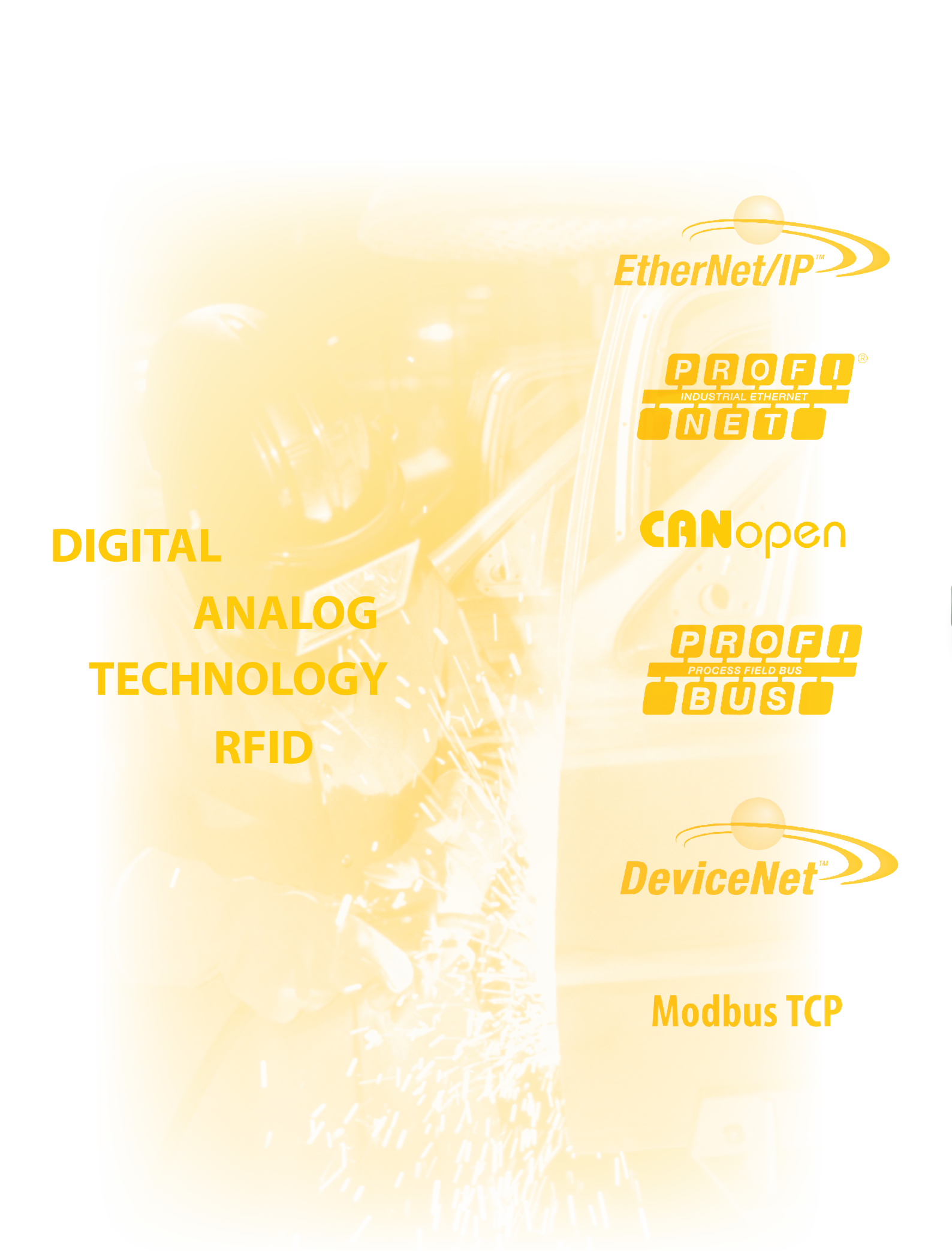

DIGITAL
ANALOG
TECHNOLOGY
RFID

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BL20 – Modular fieldbus I/O System in IP20

The BL20 I/O system –
The integrator for fieldbus, ident system, motor starter

Gateway – The system control

- The interface to the higher level control system
- Gateways e.g. for PROFIBUS-DP, CANopen, DeviceNet™, Ethernet/IP™ and Modbus TCP – also available as economy version

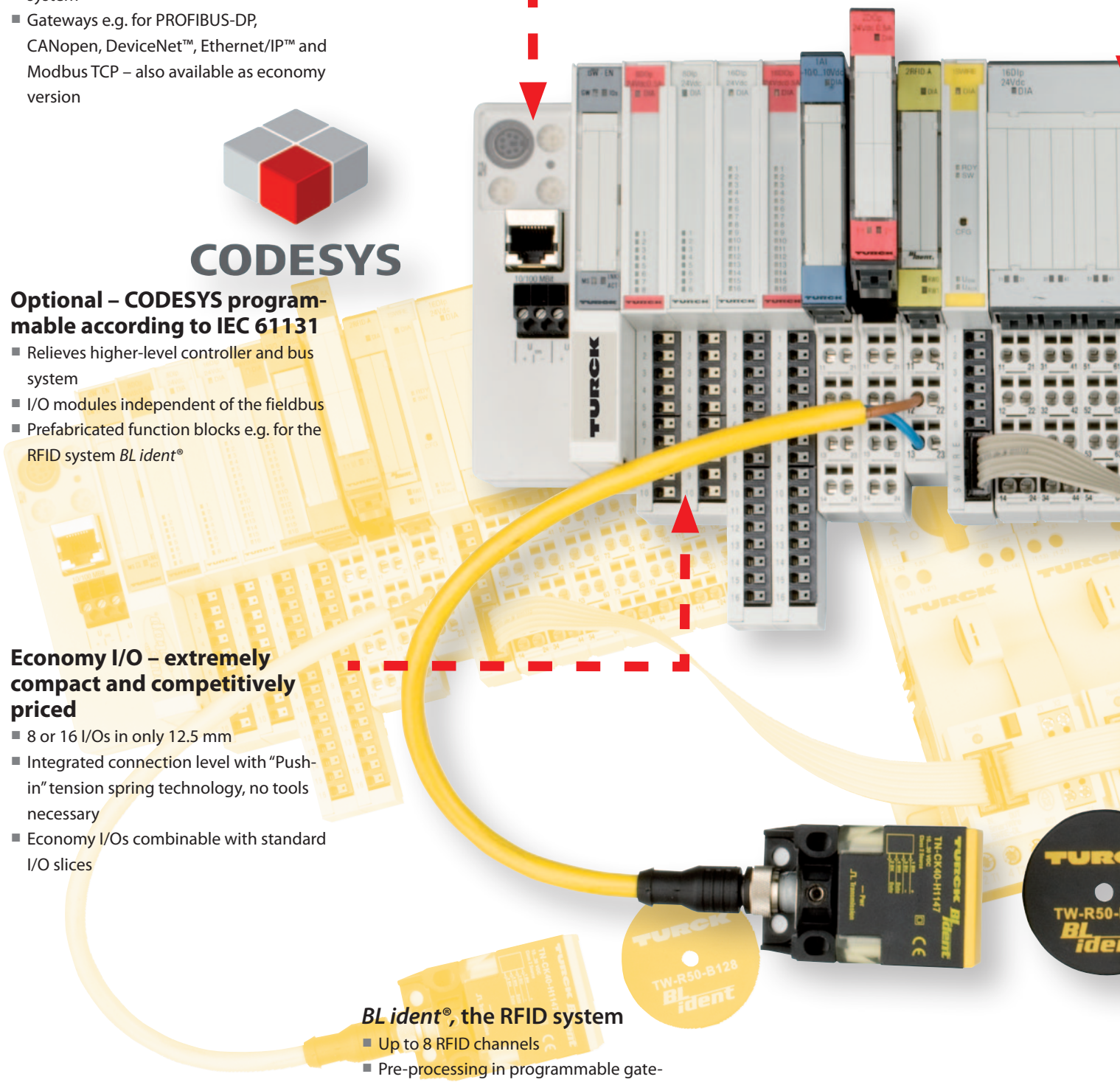
CODESYS

Optional – CODESYS programmable according to IEC 61131

- Relieves higher-level controller and bus system
- I/O modules independent of the fieldbus
- Prefabricated function blocks e.g. for the RFID system *BL ident*®

Economy I/O – extremely compact and competitively priced

- 8 or 16 I/Os in only 12.5 mm
- Integrated connection level with "Push-in" tension spring technology, no tools necessary
- Economy I/Os combinable with standard I/O slices



BL ident®, the RFID system

- Up to 8 RFID channels
- Pre-processing in programmable gateway relieves the higher-level controller.

EtherNet/IP™ PROFINET INDUSTRIAL ETHERNET Modbus TCP

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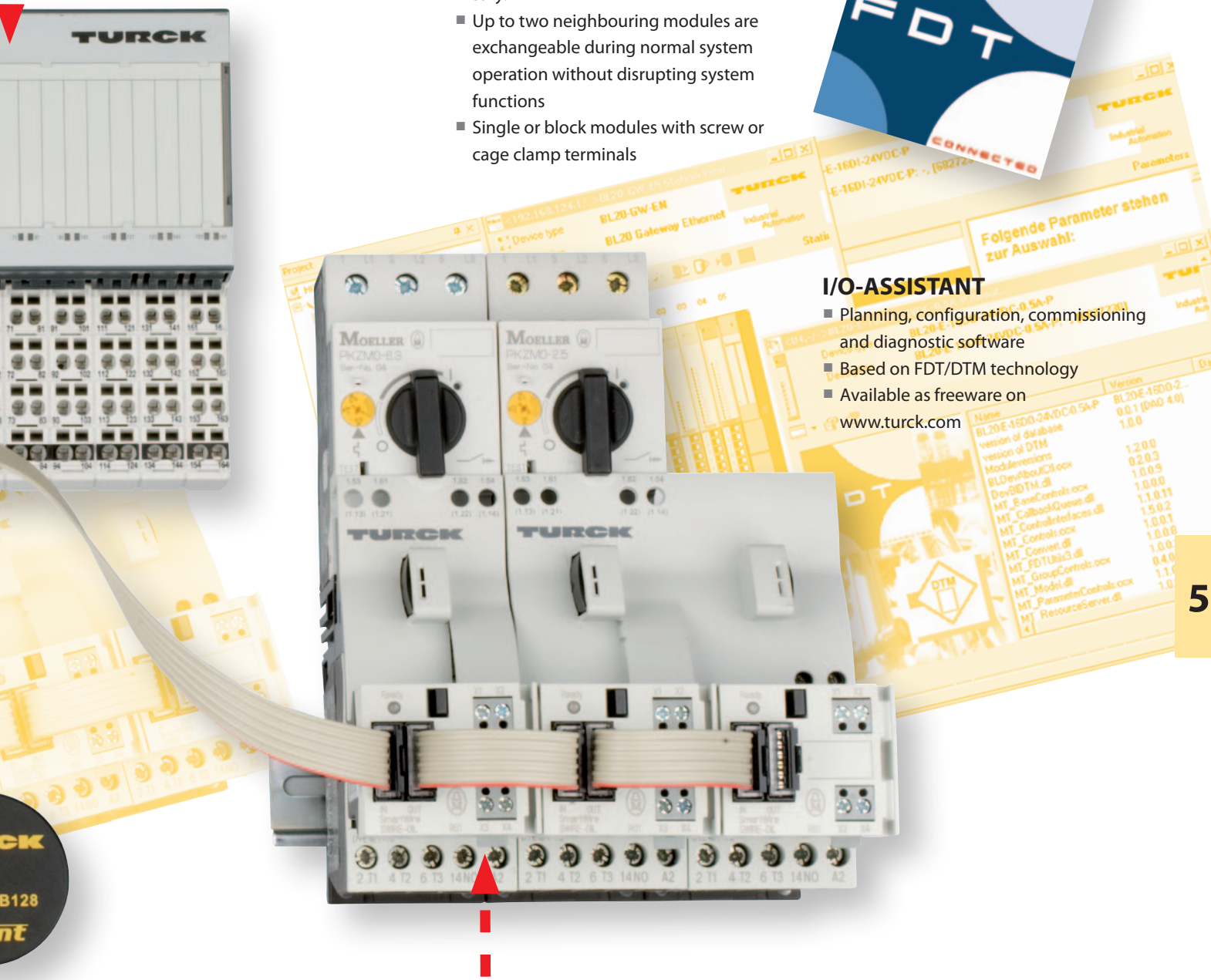
Standard I/O – multifunctional and system friendly

- Exchangeable electronic modules – disconnection of field wiring is not necessary.
- Up to two neighbouring modules are exchangeable during normal system operation without disrupting system functions
- Single or block modules with screw or cage clamp terminals



I/O-ASSISTANT

- Planning, configuration, commissioning and diagnostic software
- Based on FDT/DTM technology
- Available as freeware on www.turck.com

Motor starter

- 3 connection-slices per gateway
- Up to 16 devices per slice
- Simple wiring

CANopen

PROFI BUS PROCESS FIELD BUS

DeviceNet™

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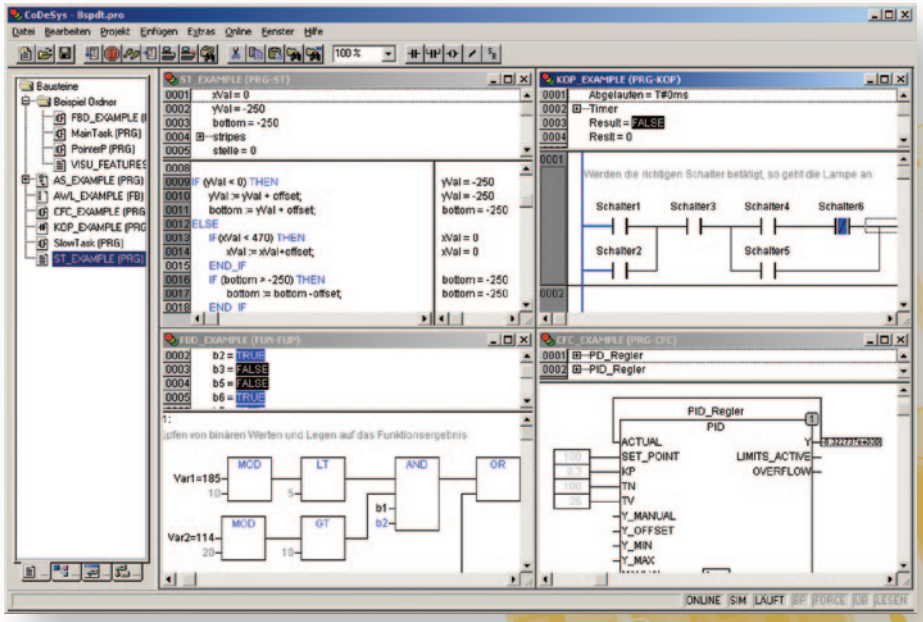
CODESYS

Easy programming with CODESYS according to IEC 61131-3

The programmable gateways become decentral control units with the CODESYS programming software. The graphical programming interface supports all IEC-61131-3 programming languages

- Statement list (STL)
- Ladder Diagram (LD)
- Continuous Function Chart (CFC)
- Structured Text (ST)
- Sequential Function Chart (AS)



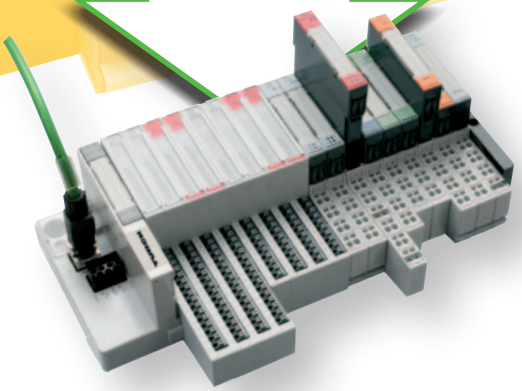
Simple connection

- Fast and simple networking of heterogeneous systems
- Standard transmission protocols such as TCP/IP and UDP/IP
- Global network variables
- Bidirectional data exchange between CODESYS systems
- No additional programming required

Data-exchange via Ethernet

Project planning and configuration

- Target Support Package as a driver for the target system
- Drag and Drop function for hardware configuration
- Standard editor for I/O configuration and parameterisation
- Symbolic display of variables for I/O addresses
- Numerous diagnostics and commissioning functions
- Function blocks e. g. for the RFID system *BL ident®*



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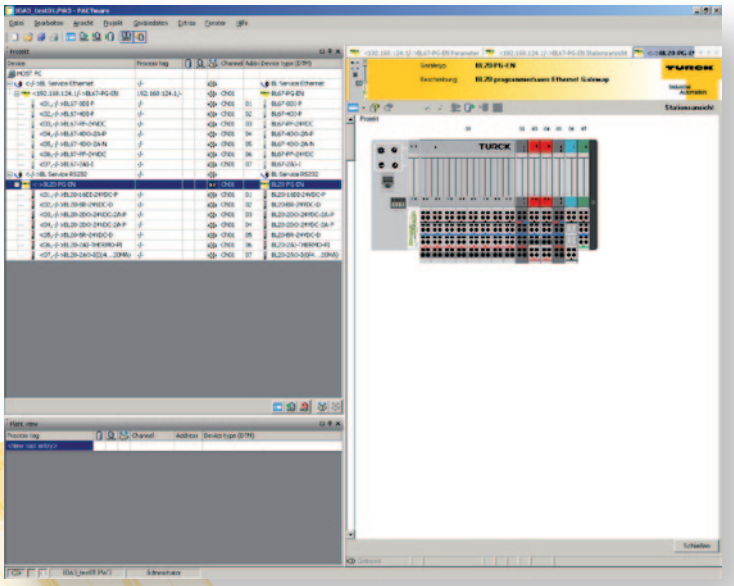
I/O-ASSISTANT

TURCK
Industrial Automation

Easy parameterisation with the I/O-ASSISTANT on the basis of FDT/DTM technology

- System configuration, parameterisation and diagnostics with a graphical interface based on FDT/DTM technology
- DTMs can be integrated in any FDT frame application for configuration, commissioning and maintenance
- I/O-ASSISTANT and DTMs are available as freeware on www.turck.com



Description

The configuration software I/O-ASISSTANT supports you in planning and implementation of your I/O system. No matter if you are online or offline, the I/O-ASSISTANT simplifies configuration and parameterisation of the modules.

This software is also extremely helpful in system set-up and testing.

Functions

- Supporting software tool
- Selection of the required modules
- Offline planning and configuration of BL20 modules
- Configuration, parameterisation and commissioning of individual modules
- Reading and setting of process data
- Commissioning help for testing the wiring and sensors without PLC
- Realistic display of configured BL20 components
- Automatic documentation of configured BL20 systems

5

BL20 Electronic modules – Type code and colour code

Electronic module – Type code

Marking	Designation	Examples
GWBR	Gateway with integrated supply	BL20-**GWBR**-PBDP
PBDP	PROFIBUS-DP	BL20-GWBR-**PBDP**
E	ECONOMY modules	BL20-**E**-8DI-24VDC-P
BL20-8/-E-8	Number of channels	BL20-E-**8**DI-24VDC-P
BR	Bus refreshing modules	BL20-**BR**-24VDC-D
PF, D	Power feeding modules, with diagnostics	BL20-**PF**-24VDC-D
DI	Digital input module	BL20-2**DI**-24VDC-P
N	npn	BL20-2DI-24VDC-**N**
P	pnp	BL20-2DI-24VDC-**P**
DO	Digital output module	BL20-2**DO**-24VDC-2A-P
R	Relay module	BL20-2DO-**R**-NC
CO	Change over	BL20-2DO-R-**CO**
NC	Normally closed	BL20-2DO-R-**NC**
NO	Normally open	BL20-2DO-R-**NO**
AI	Analogue input module	BL20-1**AI**-U(-10/0...+10VDC)
PT/NI	Analogue input module for the connection of resistance thermometers Ni100 and Ni1000 as well as Pt100, Pt500 and Pt1000 in 2-wire and 3-wire technology	BL20-2AI-**PT/NI**-2/3
PI	Analogue input module for the connection of thermocouples with cold junction compensation	BL20-2AI-THERMO-**PI**
AO	Analogue output module	BL20-1**AO**-I(0/4...20MA)
CNT	Counter module	BL20-1**CNT**-24VDC

Electronic modules – Colour code

Electronic module	Colour code
Gateway	dusty grey
Bus refreshing modules 24 VDC	dusty grey
Power feeding modules 24 VDC	dusty grey
Power feeding modules 120/230 VAC	orange brown
Digital input modules	light grey
Analogue input modules	pigeon blue
Digital output modules	strawberry red
Analogue output modules	pale green
Relay modules	pastel orange
Technology modules (counter module)	zinc yellow

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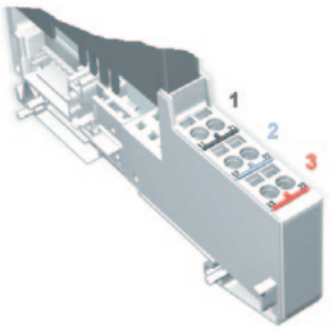
BL20 Base modules – Type code

BL20 – S3T – SBB

Example: BL20-S3T-SBB



Device series
(BL20) BL20 system

Device design
(S) Slice design
(B) Block design
(P) Base module for power supply

Number of connection levels
(3) 3 connection levels

Connection technology
(T) Tension spring connection
(S) Screw connection

Connection level
3 **(B)** bridged conections (bridged connectors)

Connection level
2 **(B)** bridged conections (bridged connectors)

Connection level
1 **(S)** non-bridged connections (single connectors)

5

BL20 – Combination options

Electronic modules and base modules

Digital input modules	Ident-no.	Base modules with tension spring connection	BL20-S3T-SBB	BL20-S3T-SBC	BL20-S4T-SBBC	BL20-S4T-SBBS	BL20-S4T-SBCS	BL20-S4T-SBBS-CJ	BL20-S6T-SBBSBB	BL20-S6T-SBCSBC	BL20-B3T-SBB	BL20-B3T-SBC	BL20-B4T-SBBC	BL20-B6T-SBBSBB	BL20-B6T-SBCSBC	BL20-P3T-SBB	BL20-P3T-SBB-B	BL20-P4T-SBBC	BL20-P4T-SBBC-B	Page
			6827044	6827058	6827050	6827046	6827063	6827048	6827052	6827064	6827054	6827061	6827056	6827065	6827218	6827036	6827040	6827038	6827042	
BL20-2DI-120/230VAC-P	6827011		✔		✔															366
BL20-4DI-24VDC-P	6827012					✔		✔												368
BL20-4DI-24VDC-N	6827013					✔		✔												370
BL20-4DI-NAMUR	6827212					✔														372
BL20-16DI-24VDC-P	6827014									✔		✔								376
BL20-32DI-24VDC-P	6827015												✔							380
Analogue input modules																				
BL20-2AI-I(0/4...20MA)	6827021		✔			✔														388
BL20-2AI-U(-10/0...+10VDC)	6827022		✔			✔														392
BL20-2AI-PT/NI-2/3	6827017		✔			✔														394
BL20-2AI-THERMO-PI	6827020							✔												396
BL20-4AI-U/I	6827217								✔											398
BL20-2AIH-I	6827331					✔														390
Digital output modules																				
BL20-2DO-24VDC-0,5A-N	6827025			✔			✔													402
BL20-2DO-24VDC-2A-P	6827026			✔			✔													404
BL20-2DO-120/230VAC-0.5A	6827137			✔			✔													406
BL20-4DO-24VDC-0,5A-P	6827023						✔			✔											414
BL20-16DO-24VDC-0,5A-P	6827027											✔								418
BL20-32DO-24VDC-0,5A-P	6827220													✔						420
Analogue output modules																				
BL20-2AO-I(0/4...20MA)	6827034		✔																	422
BL20-2AO-U(-10/0...+10VDC)	6827033		✔																	426
BL20-2AOH-I	6827332					✔														424
Relay modules																				
BL20-2DO-R-NC	6827028					✔	✔													410
BL20-2DO-R-NO	6827029					✔	✔													408
BL20-2DO-R-CO	6827030					✔														412
Technology modules																				
BL20-1RS232	6827169					✔														430
BL20-1RS485/422	6827165					✔														432
BL20-1SSI	6827166					✔														434
Power supply modules															1	2	1	2		
BL20-BR-24VDC-D	6827006														✔	✔	✔	✔		368
BL20-PF-24VDC-D	6827007														✔		✔			370
BL20-PF-120/230VAC-D	6827008														✔		✔			372
***BL ident*® RFID modules**																				
BL20-2RFID-A	6827233					✔														438
BL20-2RFID-S	6827306					✔														440

[1] Base module with gateway power supply
[2] Base module for module refresh within the station

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Base modules with screw connections	Ident-no.	6827045	6827059	6827051	6827047	6827060	6827049	6827053	6827066	6827055	6827062	6827057	6827067	6827219	6827037	6827041	6827039	6827043	
		BL20-S3S-SBB	BL20-S3S-SBC	BL20-S4S-SBBC	BL20-S4S-SBBS	BL20-S4S-SBCS	BL20-S4S-SBBS-CJ	BL20-S6S-SBBSBB	BL20-S6S-SBCSBC	BL20-B3S-SBB	BL20-B3S-SBC	BL20-B4S-SBBC	BL20-B6S-SBBSBB	BL20-B6S-SBCSBC	BL20-P3S-SBB	BL20-P3S-SBB-B	BL20-P4S-SBBC	BL20-P4S-SBBC-B	Page
		✔		✔															366
					✔			✔												368
					✔			✔												370
					✔															372
									✔		✔									376
												✔								380
		✔			✔															388
		✔			✔															392
		✔			✔															394
							✔													396
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					✔															390
			✔			✔														402
			✔			✔														404
			✔			✔														406
						✔		✔												414
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		✔																		422
		✔																		426
					✔															424
					✔	✔														410
					✔	✔														408
					✔															412
					✔															430
					✔															432
					✔															434
														1	2	1	2			
														✔	✔	✔	✔			368
														✔		✔				370
														✔		✔				372
				✔																438
				✔																440

ECONOMY modules

Digital input modules – series ECO (base module integrated)		Page
BL20-E-8DI-24VDC-P	6827227	382
BL20-E-16DI-24VDC-P[3]	6827231	383
Digital output modules – series ECO (base module integrated)		
BL20-E-8DO-24VDC-0,5A-P	6827226	416
BL20-E-16DO-24VDC-0,5A-P	6827230	417
Analogue input modules – series ECO (base module integrated)		
BL20-E-8AI-U/I-4PT/NI	6827325	400
Analogue output modules – series ECO (base module integrated)		
BL20-E-4AO-U/I	6827328	428
Technology modules – series ECO (base module integrated)		
BL20-E-2CNT-2PWM	6827341	436
SWIRE communication module – series ECO (base module integrated)		
BL20-E-1SWIRE	6827251	442

5

BL20 – System supply

General system power supply

The BL20 system features two power circuits:

- The internal module bus feeds the module electronics and the gateway.
- The field supply feeds all connected fieldbus devices.

Forming potential groups

Bus-Refreshing modules as well as Power-Feeding modules can be used for the creation of potential groups. Modules with 24 VDC and 120/230 VAC field supply should not be used in the same potential group. The use of digital input modules for 120/230 VAC requires the creation of a separate potential group with the Power-Feeding module BL20-PF-120/230VAC-D.

Module bus supply

The voltage supply for the module bus is integrated in current BL20 gateways. If the module bus is not sufficiently supplied (max. 1.5 A), a second Refreshing-Module has to be applied – see chapter **Supply concept** on the next page .

NOTE: Bus-Refreshing modules can not be used in combination with the Economy gateway for PROFIBUS-DP.

Field supply

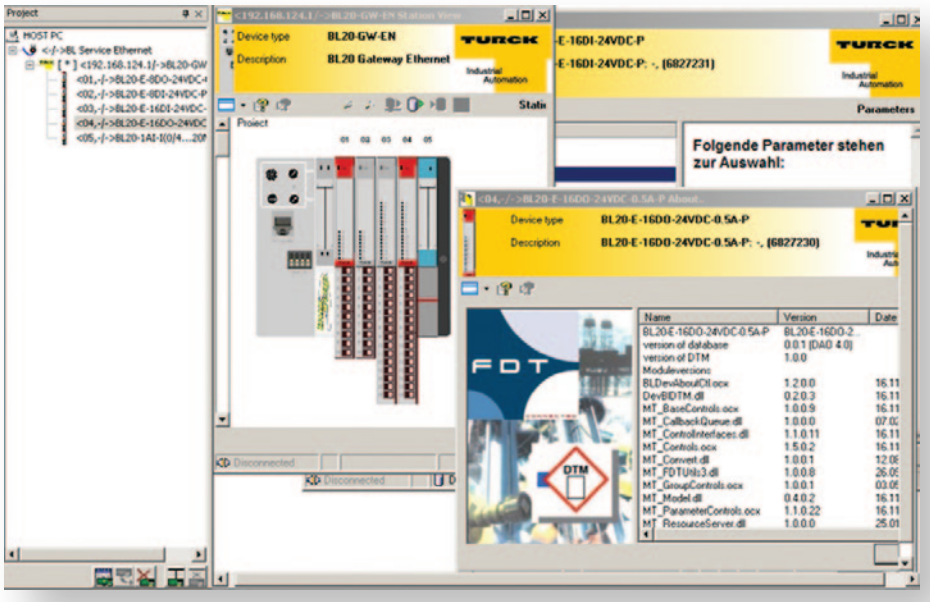
The field supply is provided by the gateway. A Power-Feeding module has to be used if the field supply of fieldbus nodes reaches 10 A or a new potential group is required (see section to the left).

System planning

For the planning of many complex BL20 stations, different factors have to be considered. For example rated current consumption of the modules, number of modules, parameters and data volume and possible restrictions imposed by the higher level fieldbus.

The I/O-ASSISTANT (p. 339), which can be downloaded from our website checks all relevant parameters and simplifies project planning considerably.

The I/O-ASSISTANT is also able to generate dimension drawings and documentation of the stations. Reading and setting of I/Os is also possible which proves very helpful for commissioning. Furthermore, module parameters can be set.



[1] I_{MB} : current via the module bus

[2] I_{EL} : electrical operating current (field supply)

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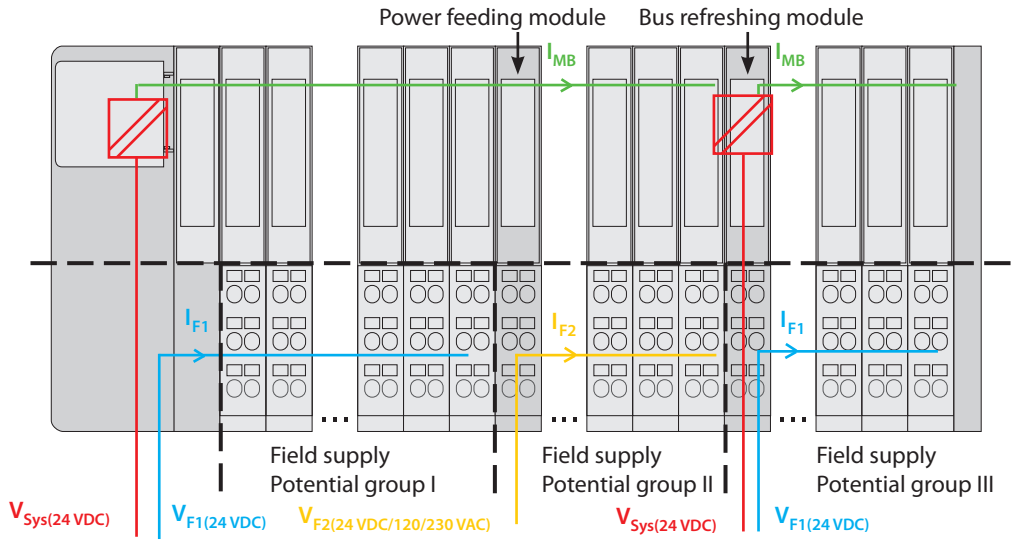
BL20 – Power supply concept

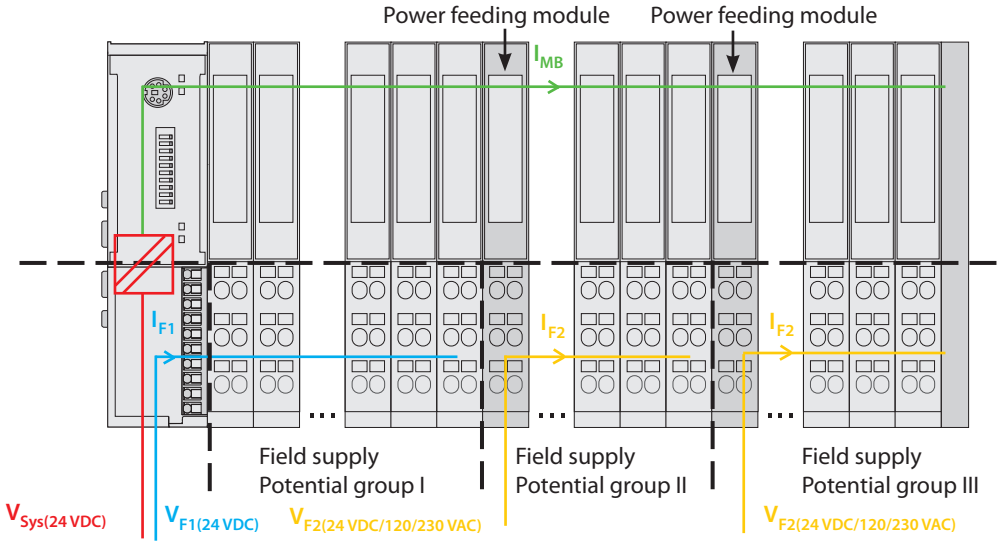
Standard gateways (with integrated power supply)



V_{MB} = Internal module bus
V_{Sys} = System supply
V_{F1} = Field supply 1
V_{F2} = Field supply 2

I_{MBmax} = 1.5 A
I_{F1max} = 10 A
I_{F2max} = 10 A

Economy gateway for PROFIBUS-DP (with integrated power supply)

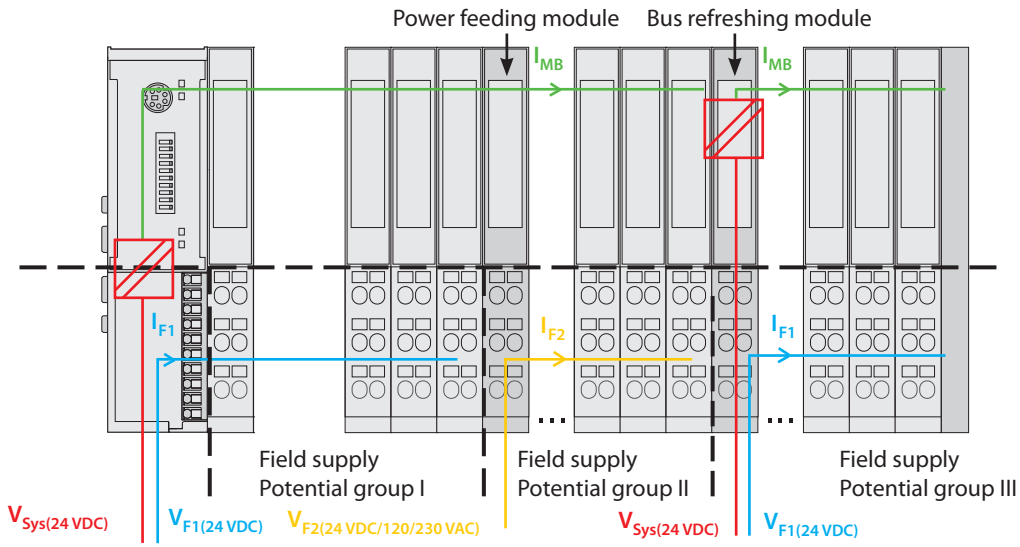


V_{MB} = Internal module bus
V_{Sys} = System supply
V_{F1} = Field supply 1
V_{F2} = Field supply 2

I_{MBmax} = 1 A
I_{F1max} = 10 A
I_{F2max} = 10 A

Note: No application of bus refreshing module possible with Economy Gateway for PROFIBUS-DP.

Economy gateway for DeviceNet™ and CANopen (with integrated power supply)



V_{MB} = Internal module bus
V_{Sys} = System supply
V_{F1} = Field supply 1
V_{F2} = Field supply 2

I_{MBmax} = 0.7 A
I_{F1max} = 10 A
I_{F2max} = 10 A

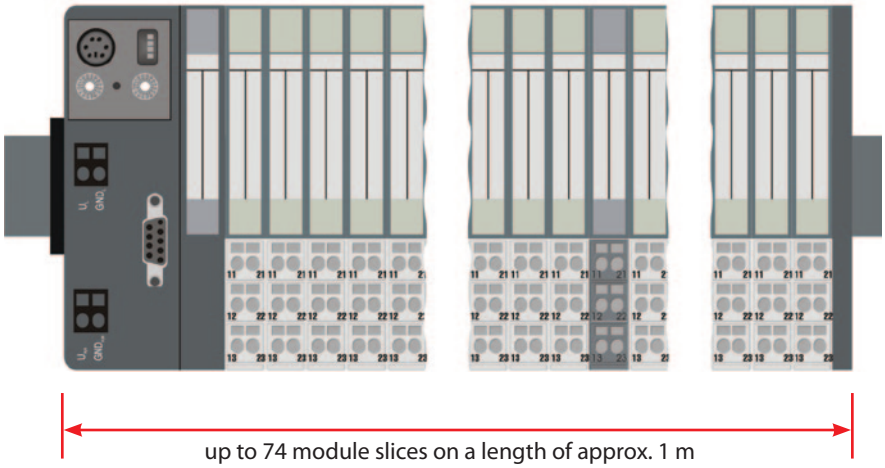
5

BL20 – Maximum system extension

Maximum system extension

The maximum number of modules depends on the respective system configuration. Important thereby is the current consumption of the different I/O modules as well as the required address space and the fieldbus used. The tables below show some of the limitations for different fieldbuses.

The configuration software I/O- ASSISTANT takes these and all other relevant parameters into consideration and generates a warning message if appropriate.



A BL20 station consists of a gateway and a maximum of 74 modules (approximately 1 m length of rail including end bracket and end plate). With the use of block modules, the maximum number of modules is correspondingly reduced
(1 block module corresponds to approximately 8 slice modules).

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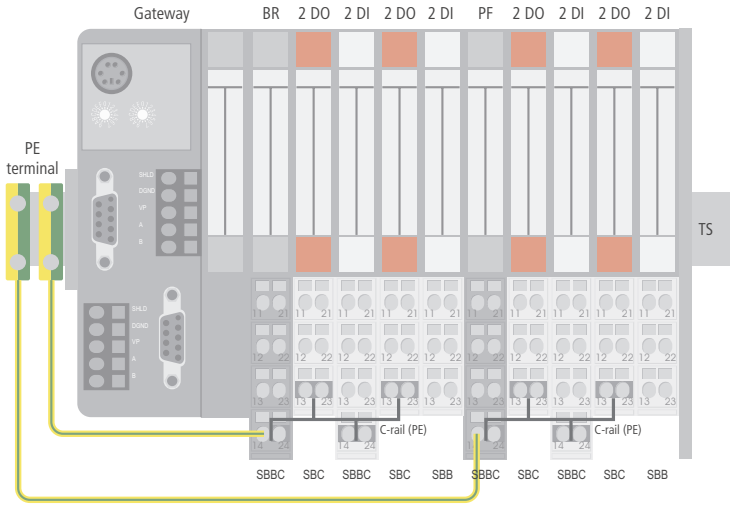
C-rail (cross connection)

The C-rails run through all I/O base modules. The C-rail of the base modules for power distribution modules is mechanically separated; thus potentially isolating the adjoining supply groups.

Using the C-rail as a protective earth

The C-rail can be used as required in the application, for example, as a protective earth (PE). In this case, the PE connection of each power distribution module must be connected to the mounting rail via an additional PE terminal (see accessories), which is available as an accessory.



Access to C-rail

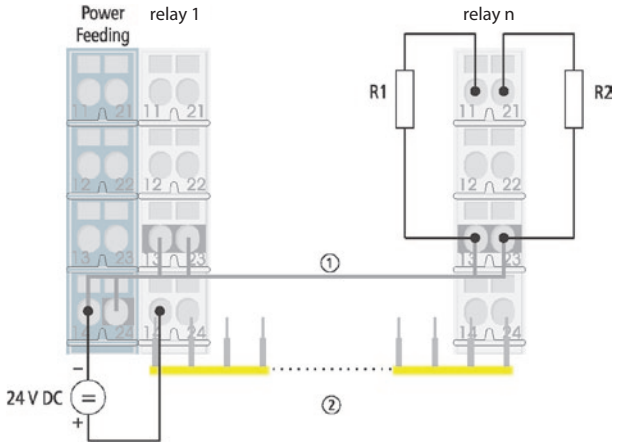
Access to the C-rail is made via base modules with a C in their designation, for example: BL20-S4T-SBCS. The corresponding connection level is indicated by a thick black line on all base modules for BL20 I/O modules.

With base modules for power distribution modules, the black line is above the connection 24 only. This makes clear that the C-rail is separated from the adjoining potential group to its left. A maximum load of 24 VDC to the C-rail is allowed, but never 120/230 VAC.

Using the C-rail with relay modules

The C-rail can be used to supply a common voltage when relay modules are to be used. To accomplish this, the load voltage (24 VDC) is connected to a power distribution module with the base module BL20-P4x-SBBC using either tension springs or screw connections. All the following relay modules are supplied with 24 VDC via the C-rail (see ①, Fig. below). The cross-connection of the individual relay modules is achieved using the cross-connector QVR (see ②, Fig. below).

If the C-rail is to be used for the joint supply of voltage to relay modules, then there must subsequently be a further power distribution module used for the potential isolation of the following BL20 modules. The C-rail can again be put on other uses (for example, as a PE) once the potential isolation has been made.



BL20 – General technical data

BL20 modules – technical data	
Supply voltage/auxiliary power	
Nominal value (provided for other modules)	24 VDC
Residual ripple	according to EN 61131-2
Electrical isolation (U_L[2] to U_{SYS}[3]/ U_L to fieldbus/U_{SYS} to fieldbus)	yes, via opto-couplers
Ambient temperature	
Horizontal mounting ambient temperature	0 … +55 °C
Vertical mounting ambient temperature	0 … +55 °C
Storage temperature	-25 … +85 °C
Relative humidity to EN 61131-2/EN 50178	5 … 95 % (indoor), Level RH-2, no condensation (storage at 45 °C, no functional test)
Corrosive gases	
SO_2	10 ppm (rel. humidity < 75 %, no condensation)
H_2S	1.0 ppm (rel. humidity < 75 %, no condensation)
Vibration resistance	
10 to 57 Hz, constant amplitude 0.075 mm, 1 g	yes
57 to 150 Hz, constant amplitude 1 g	yes
Vibration type	Variable frequency runs at a rate of change of 1 octave/min
Vibration duration	20 variable frequency runs per coordinate axis
Shock resistance as per IEC 68-2-27	18 shocks, half-sine 15 g peak value/11 ms, for both ±-directions per spatial coordinate
Repeated shock resistance as per IEC 68-2-29	1000 shocks, half sine 25 g peak value/6 ms, for both ±-directions per spatial coordinate
Drop and topple	
Fall height (weight < 10 kg)	1.0 m
Fall height (weight 10 to 40 kg)	0.5 m
Test runs	7
Electromagnetic compatibility (EMC) as per EN 50082-2 (Industrial)	
Static electricity as per EN 61000-4-2	
Air discharge (direct)	8 kV
Relay discharge (indirect)	4 kV
Electromagnetic HF fields as per EN 61000-4-3 and ENV 50204	10 V/m
Conducted interference, induced by HF fields as per EN 61000-4-6	10 V
Radiated interference as per EN 50081-2 (industrial)	to EN 55011 class A[1], group 1

[1] Use in residential areas may lead to functional errors. Additional suppression measures are necessary!
[2] U_L : Field supply
[3] U_{SYS} : System supply

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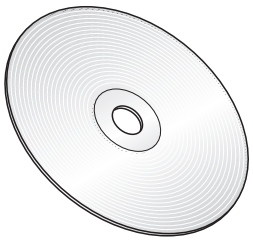
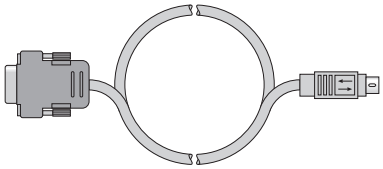
BL20 – General technical data

BL20 stations – approvals and tests	
Approvals	CE cULus UL
Tests (EN 61131-2)	
Cold	DIN IEC 68-2-1, temperature -25 °C, duration 96 h; device not operational
Dry heat	DIN IEC 68-2-2, temperature +85 °C, duration 96 h; device not operational
Damp heat, cyclic	DIN IEC 68-2-30, temperature +55 °C, duration 2 cycles of 12 h; device operational
Temperature change	DIN IEC 68-2-14, temperature 0 to +55 °C, duration 2 cycles, temperature change per minute; device operational
Operating life MTBF	120000 h
Extraction/insertion cycles for electronics modules	20
Pollution level as per IEC 664 (EN 61131)	2
Degree of protection (IEC 60529/EN 60529)	IP20

Base modules – technical data		
	BL20 Base module	**BL20 ECONOMY module**
Degree of protection (IEC 60529/EN 60529)	IP20	IP20
Stripped length	8 mm	8 mm
Max. cross-section at terminal	0.5…2.5 mm²	0.14…1.5 mm²
Conductors to be clamped		
"e" solid H 07V-U	0.5…2.5 mm²	0.25…1.5 mm²
"f" stranded H 07V-K	0.5…1.5 mm²	0.25…1.5 mm²
"f" with core-end ferrules to DIN 46228/1 (ferrules are crimped gas-tight)	0.5…1.5 mm²	0.25…1.5 mm²
on wire end sleeves with plastic collar	0.25…0.75mm²	0.25…0.75 mm²
Finger test to IEC 947-1/1988	A1	A1
Rating data in accordance with VDE 0611 part 1/8.92/IEC 947-7-1/ 1989		
Rated voltage	250 V	250 V
Rated current	17.5 A	17.5 A
Rated cross-section	1.5 mm²	1.5 mm²
Rated surge voltage	4 kV	4 kV
Pollution degree	2	2
Connection method in TOP direction	Tension spring connector or screw terminal	Tension spring connector

BL20 – Special accessories

Figure	Description	Type	Ident-No.
	Configuration, commissioning and diagnosticsoftware for modular fieldbus I/O systems freeware for download on http://www.turck.com	**I/O-ASSISTANT**	–
	RS232 adapter cable for connection to configuration software I/O ASSISTANT, 9-pole SUB-D connector, cable length 2.5 m	**I/O-ASSISTANT-Kabel-BL20/BL67**	6827133

User manuals
The user manual for BL20 systems is only available as PDF file and can be downloaded on **www.turck.com**

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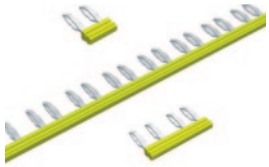
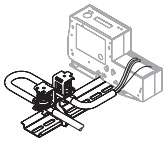
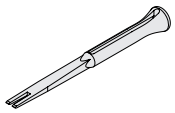
Designation	Description (per packing unit)	Type	Ident-No.
Labels 	for labelling electronic modules		
	DIN A5 sheets, slice, perforated (laser print) 5 × 57 labels	BL20-LABEL/SCHEIBE	6827070
	DIN A5 sheets, block, perforated (laser print) 5 × 6 labels	BL20-LABEL/BLOCK	6827071
Markers 	for labeling base modules, color identification for clear recognition of potentials in the connection level of the base modules (strip of 10 × 6):		
	blue	BL20-ANBZ-BL	6827072
	red	BL20-ANBZ-RT	6827073
	green	BL20-ANBZ-GN	6827074
	black	BL20-ANBZ-SW	6827075
	brown	BL20-ANBZ-BR	6827076
	red/blue	BL20-ANBZ-RT/BL-BED	6827077
	green/yellow	BL20-ANBZ-GN/GE-BED	6827078
	white	BL20-ANBZ-WS	6827079
Jumpers for relays (QVR) 	for bridging the 4th connection level (14/24) of base modules for relays /10 pcs.		
	1 grid	BL20-QV/1	6827104
	2 grid	BL20-QV/2	6827105
	3 grid	BL20-QV/3	6827106
	4 grid	BL20-QV/4	6827107
	5 grid	BL20-QV/5	6827108
	6 grid	BL20-QV/6	6827109
	7 grid	BL20-QV/7	6827110
	8 grid	BL20-QV/8	6827111

BL20 – Special accessories

Designation	Description (per packing unit)	Type	Ident-No.
End plate 	mechanical termination of the BL20 station on the right-hand side, included with gateways	BL20-ABPL	6827123
End bracket, black 	mechanical fixing of the BL20 station, 2 pcs., included with gateways	BL20-WEW-35/2-SW	6827124
Shield terminal 	Shield terminal	BS3511/KLBUE4-31.5	6827342
tension spring operating tool 	tension spring operating tool	ZBW5	6827129

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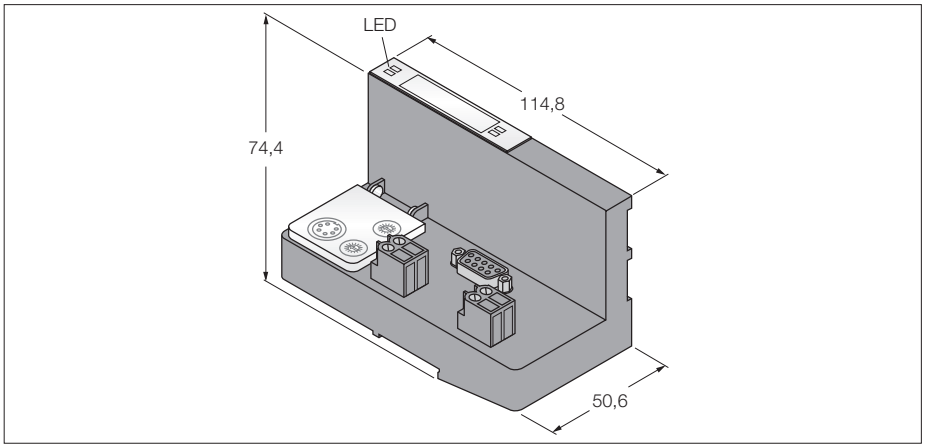
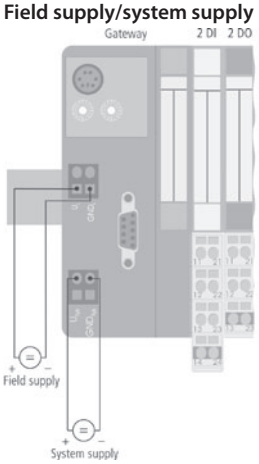
Gateway for BL20 I/O system
Interface for PROFIBUS-DP incl. supply
BL20-GW-DPV1



- Rotary coding switch for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and PROFIBUS-DPV0/DPV1
- 12 Mbps
- 9-pole sub-D female connector

Type	BL20-GW-DPV1
Ident-No.	6827234
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 430 mA
Max. field supply current	10 A
Max. system supply current	1.5 A
Voltage supply connection	screw connection
Fieldbus transmission rate	9.6 kbps up to 12 Mbps
Fieldbus addressing range	1…99
Fieldbus addressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	1 × female sub-D connector
Voltage supply connection	screw connection
Fieldbus connection	external
Number of diagnostic bytes	3
Number of parameter bytes	5
Operating temperature	0 to +55 °C

Field supply/system supply



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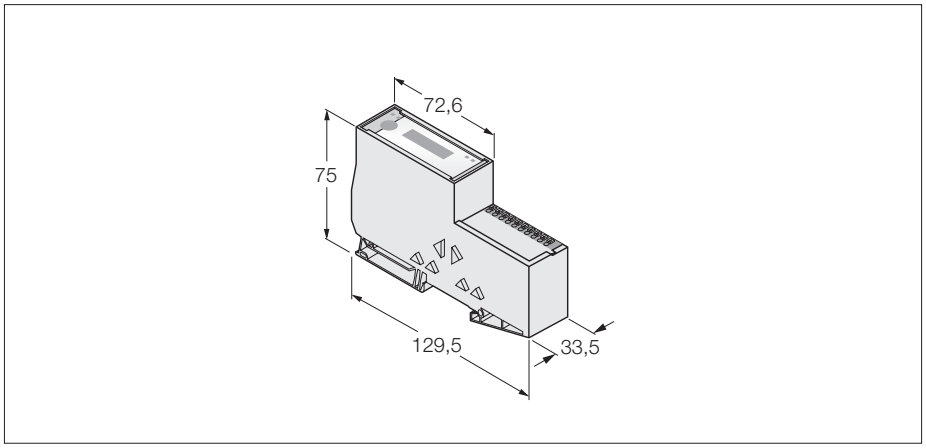
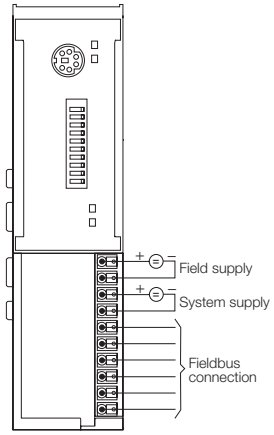
Gateway for BL20 I/O system
Interface for PROFIBUS-DP
BL20-E-GW-DP



- DIP switch rotary for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and PROFIBUS-DPV0/DPV1
- 12 Mbit/s
- Push-in clamps

Type	BL20-E-GW-DP
Ident-No.	6827250
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 430 mA
Max. field supply current	10 A
Max. system supply current	1 A
Voltage supply connection	Push-in clamps
Fieldbus transmission rate	9.6 kbps up to 12 Mbps
Fieldbus addressing range	1…126
Fieldbus addressing	per DIP switch
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	push-in clamps
Voltage supply connection	push-in clamps
Fieldbus connection	per DIP switch
Number of diagnostic bytes	3
Number of parameter bytes	5
Operating temperature	0 to +55 °C

Field supply/system supply



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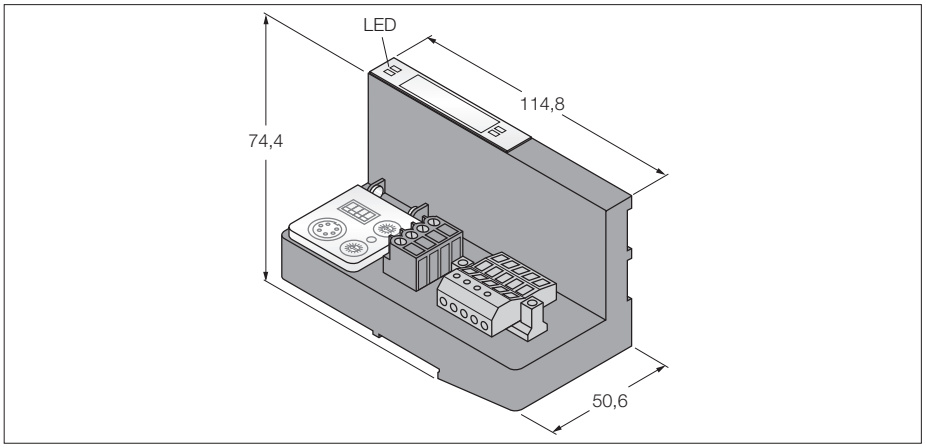
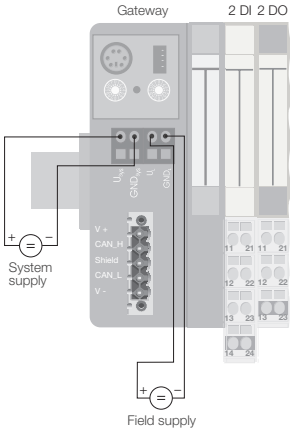
Gateway for BL20 I/O system
Interface for DeviceNet™ incl. supply
BL20-GWBR-DNET



- Rotary coding switch for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and DeviceNet™
- 125 / 250 / 500 kbps
- The connection to DeviceNet is established via an Open-Style-Connector

Type	BL20-GWBR-DNET
Ident-No.	6827168
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 250 mA
Max. field supply current	10 A
Max. system supply current	1.5 A
Voltage supply connection	screw connection
Fieldbus transmission rate	125/250/500 kbps, DIP switch
Fieldbus addressing range	0…63
Fieldbus addressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	open connector
Voltage supply connection	screw connection
Fieldbus connection	external
Operating temperature	0 to +55 °C

Field supply/system supply



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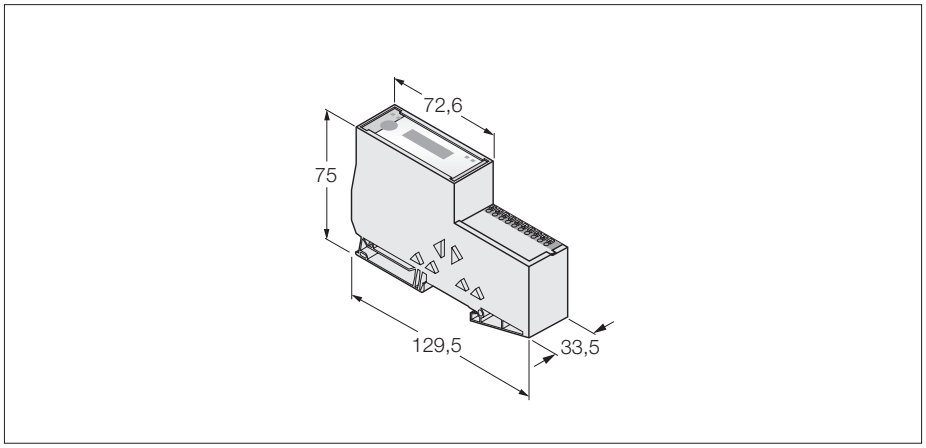
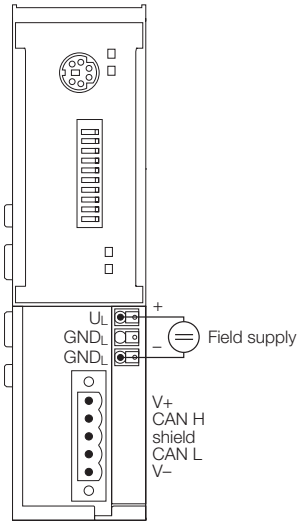
Gateway for BL20 I/O system
Interface for DeviceNet™
BL20-E-GW-DN



- DIP switch rotary for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and DeviceNet™
- 125 / 250 / 500 kbps
- The connection to DeviceNet™ is established via an Open-Style-Connector

Type	BL20-E-GW-DN
Ident-No.	6827301
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 250 mA
Max. field supply current	10 A
Max. system supply current	0.7 A
Voltage supply connection	Push-in clamps
Fieldbus transmission rate	125…500 kbps
Fieldbus addressing range	0…63
Fieldbus addressing	per DIP switch
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	open connector
Fieldbus connection	per DIP switch
Operating temperature	0 to +55 °C

Field supply/system supply



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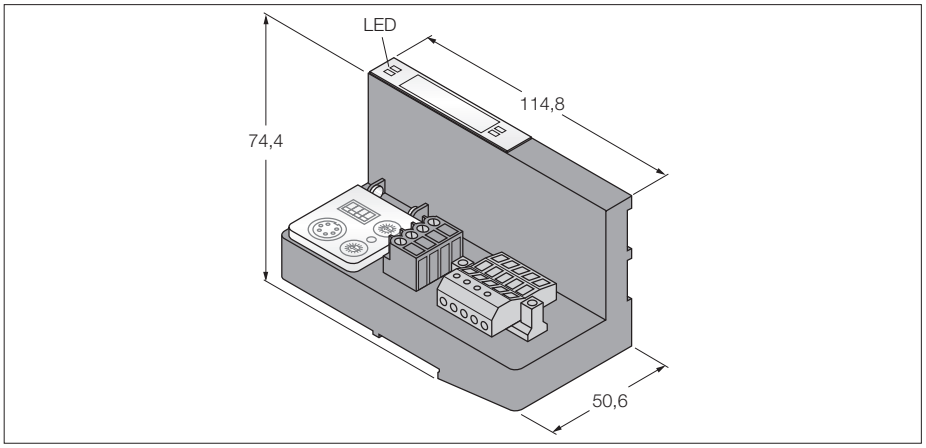
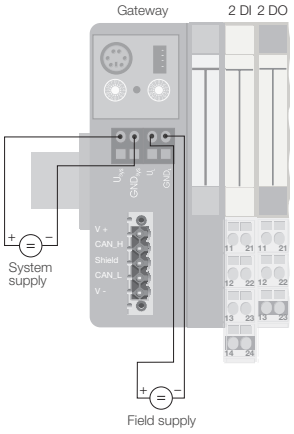
Gateway for BL20 I/O system
Interface for CANopen incl. supply
BL20-GWBR-CANOPEN



- Rotary coding switch for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between BL20 system and CAN bus
- 20 kbps up to 1000 kbps
- The connection to CANopen is established via an Open-Style-Connector

Type	BL20-GWBR-CANOPEN
Ident-No.	6827167
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 350 mA
Max. field supply current	10 A
Max. system supply current	1.5 A
Voltage supply connection	screw connection
Fieldbus transmission rate	20 to 1000 kbps, DIP switch
Fieldbus addressing range	1…99
Fieldbus addressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	open connector
Voltage supply connection	screw connection
Fieldbus connection	external
Operating temperature	0 to +55 °C

Field supply/system supply



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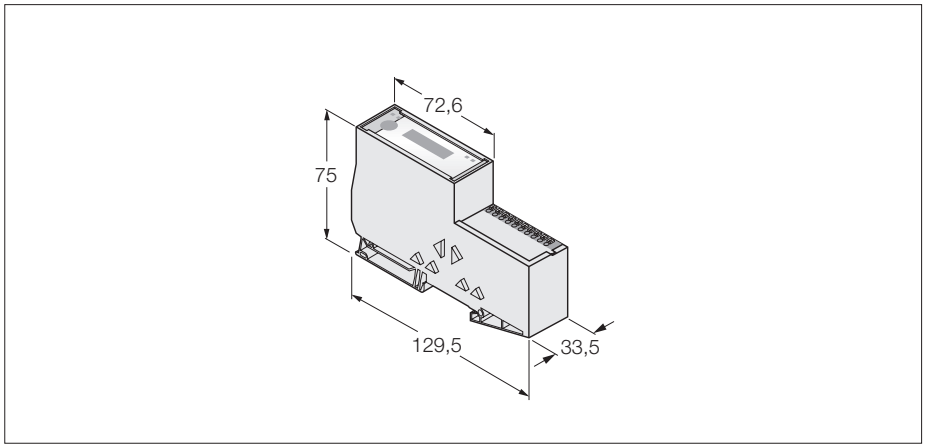
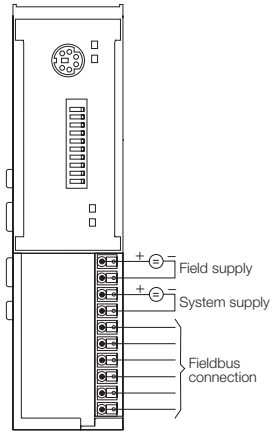
Gateway for BL20 I/O system
Interface for CANopen
BL20-E-GW-CO



- DIP switch rotary for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and CANopen
- 1 Mbps
- Push-in clamps

Type	BL20-E-GW-CO
Ident-No.	6827252
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 350 mA
Max. field supply current	10 A
Max. system supply current	0.7 A
Voltage supply connection	push-in clamps
Fieldbus transmission rate	20 kbps to 1 Mbps
Fieldbus addressing range	1…63
Fieldbus addressing	per DIP switch
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	push-in clamps
Fieldbus connection	per DIP switch
Number of diagnostic bytes	3
Number of parameter bytes	5
Operating temperature	0 to +55 °C

Field supply/system supply



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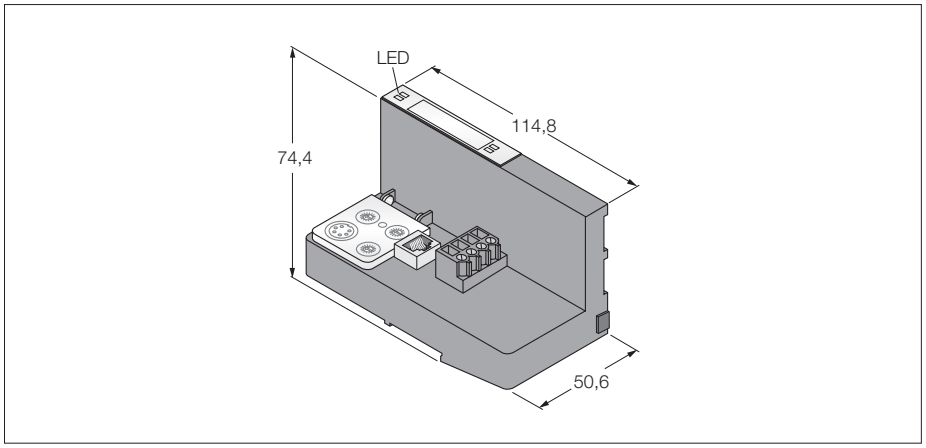
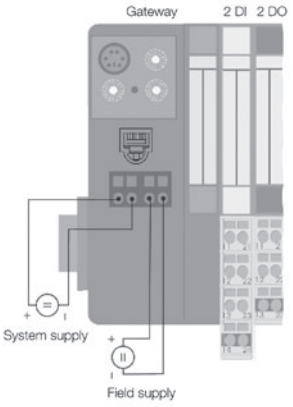
Gateway for BL20 I/O system
Interface for MODBUS TCP incl. supply
BL20-GW-EN



- Rotary coding switch for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and MODBUS TCP
- 10/100 Mbps
- RJ45 socket

Type	BL20-GW-EN
Ident-No.	6827237
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 500 mA
Max. field supply current	10 A
Max. system supply current	1.5 A
Voltage supply connection	screw connection
Fieldbus transmission rate	10/100 Mbps
Fieldbus addressing	rotary switch, BOOTP, DHCP, IO-ASSISTANT
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	RJ45 socket
Voltage supply connection	screw connection
Operating temperature	0 to +55 °C

Field supply/system supply



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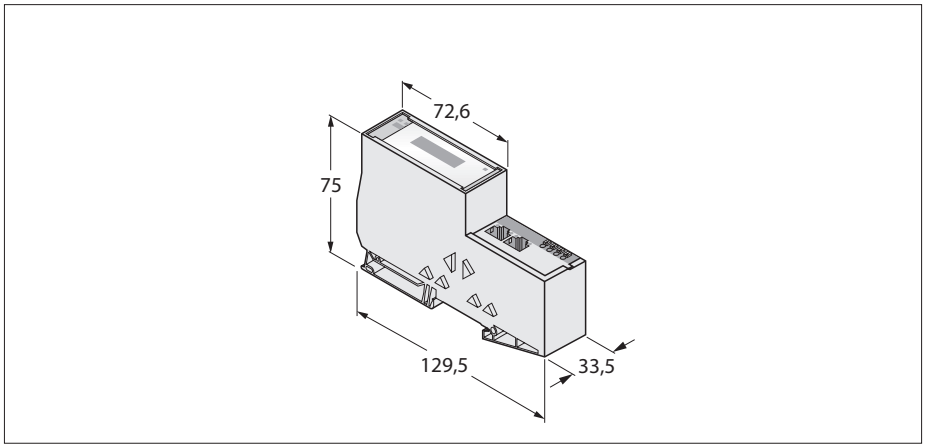
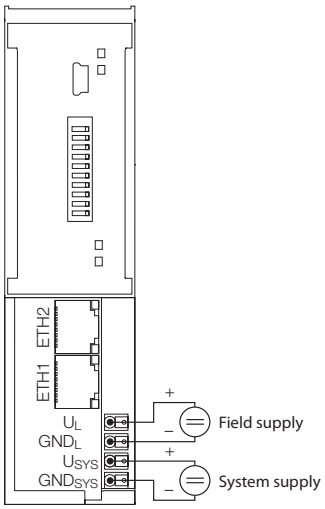
Gateway for BL20 I/O system
Multi-protocol interface for Ethernet
BL20-E-GW-EN



Type	BL20-E-GW-EN
Ident-No.	6827329
Supply voltage	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 200 mA
Max. system supply current	0.4 A
Max. load current Io	10 A
Voltage supply connection	push-in clamps
System data	
Transmission rate	10/100 Mbps; Full/Half Duplex; Auto Negotiation; Auto Crossing
Connection technology Ethernet	2 × RJ45, female
Protocol detection/changeover	automatic
Service interface	Mini-USB, Ethernet
Web server	in preparation
Modbus TCP	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of connections	6
EtherNet/IP™	(available Q1/2013*)
Addressing	acc. to EtherNet/IP™ specification
Quick Connect (QC)	< 150 ms
Device Level Ring (DLR)	supported
Number of connections	6
PROFINET IO	(available Q1/2013*)
Addressing	DCP
Conformance Class	B (RT)
MinCycleTime	1 ms
Fast Startup	< 150 ms
Diagnostics	acc. to PROFINET IO Alarm Handling
Topology detection	supported
Automatic addressing	supported
Operating temperature	0 to +55 °C

- DIP switch rotary for adjustment of the node address
- Degree of protection IP20
- LEDs for display of supply voltage, common alarm and bus errors
- Multiprotocol interface between the BL20 system and the Ethernet protocols Modbus TCP and EtherNet/IP™ and PROFINET IO
- EtherNet/IP™ supports QuickConnect (QC)
- PROFINET IO supports fast start-up (FSU)
- Integrated switch 10/100 Mbps
- Two RJ45 males for fieldbus connection
- Push-in clamps for connection of power supply

Field supply/system supply



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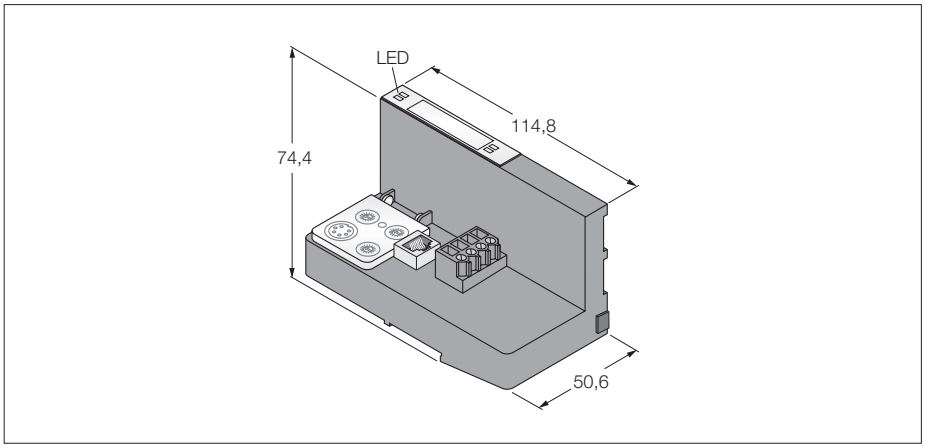
* The current device firmware supports Modbus TCP, the EtherNet/IP™ and PROFINET IO protocols will be included in phase 2

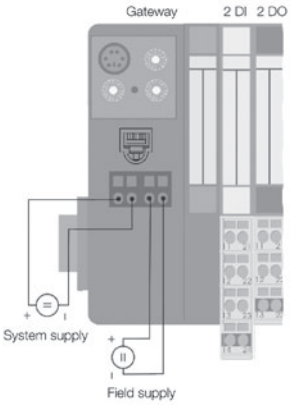
Gateway for BL20 I/O system
Interface for EtherNet/IP™ supply inclusive
BL20-GW-EN-IP



- Rotary coding switch for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and EtherNet/IP
- 10/100 Mbps
- RJ45 socket

Type	BL20-GW-EN-IP
Ident-No.	6827247
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 500 mA
Max. field supply current	10 A
Max. system supply current	1.5 A
Voltage supply connection	screw connection
Fieldbus transmission rate	10/100 Mbps
Fieldbus addressing	rotary switch, BOOTP, DHCP, IO-ASSISTANT
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	RJ45 socket
Voltage supply connection	screw connection
Operating temperature	0 to +55 °C

Field supply/system supply



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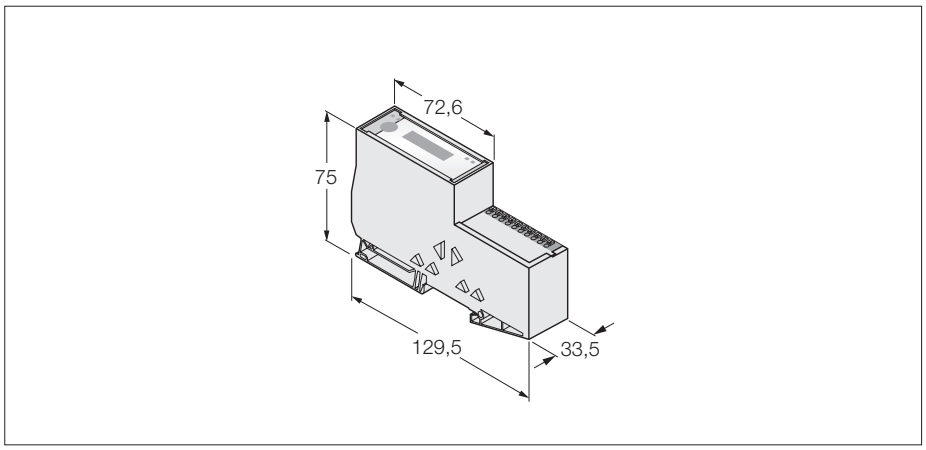
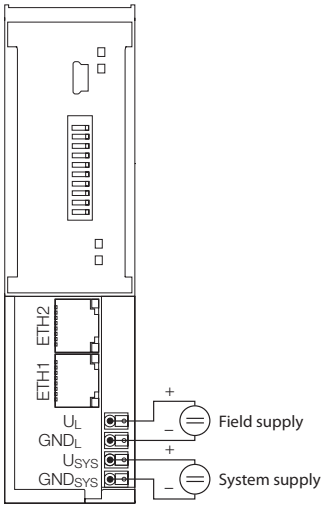
Gateway for BL20 I/O system
Interface for EtherNet/IP™ supply inclusive
BL20-E-GW-EN-IP



- DIP switch rotary for adjustment of the node address
- Degree of protection IP20
- 2 × end brackets BL20-WEW35/2-SW
- 1 × end plate BL20-ABPL
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and EtherNet/IP™
- 10/100 Mbps
- Integrated switch
- 2 × RJ45 socket

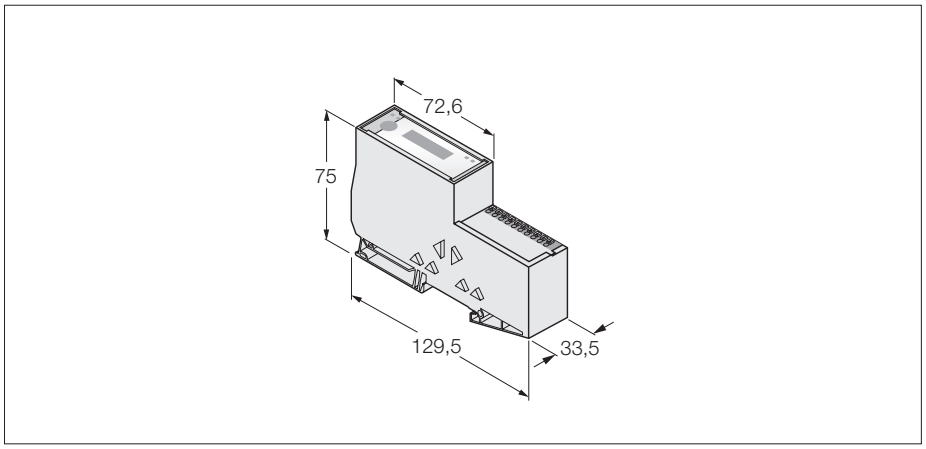
Type	BL20-E-GW-EN-IP
Ident-No.	6827330
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 250 mA
Max. field supply current	10 A
Max. system supply current	0.4 A
Voltage supply connection	push-in clamps
Fieldbus transmission rate	10/100 Mbps
Fieldbus addressing	per DIP switch
Service interface	Mini USB
Fieldbus connection technology	RJ45 socket
Operating temperature	0 to +55 °C
Approvals	CE, cULus, Zone2, ClassI, Div.2

Field supply/system supply



5

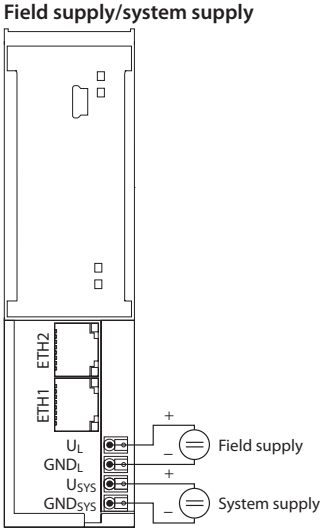
Gateway for BL20 I/O system
High-feature interface for PROFINET IO (RT/IRT)
BL20-E-GW-PN



- Degree of protection IP20
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and PROFINET IO (IRT)
- Interface between BL20 system and PROFINET IO RT/IRT
- Supports topology recognition and LLDP
- Integrated switch 10/100 Mbps
- Two RJ45 males for fieldbus connection
- Push-in clamps for connection of power supply

Type	BL20-E-GW-PN
Ident-No.	6827377
System power supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 200 mA
Max. system supply current	0.8 A
Max. load current I_o	10 A
Voltage supply connection	push-in clamps
System data	
Transmission rate	10/100 Mbps; Full/Half Duplex; Auto Negotiation; Auto Crossing
Connection technology Ethernet	2 × RJ45, female
Protocol detection/changeover	automatic
Service interface	Mini USB
Web server	in preparation
PROFINET	
Addressing	DCP
Conformance Class	C (IRT)
MinCycleTime	1 ms
Fast Startup	< 150 ms
Diagnostics	acc. to PROFINET Alarm Handling
Topology detection	supported
Automatic addressing	supported
Media Redundancy Protocol (MRP)	in preparation
Max. number of I/O modules	72
Operating temperature	0 to +55 °C

Field supply/system supply



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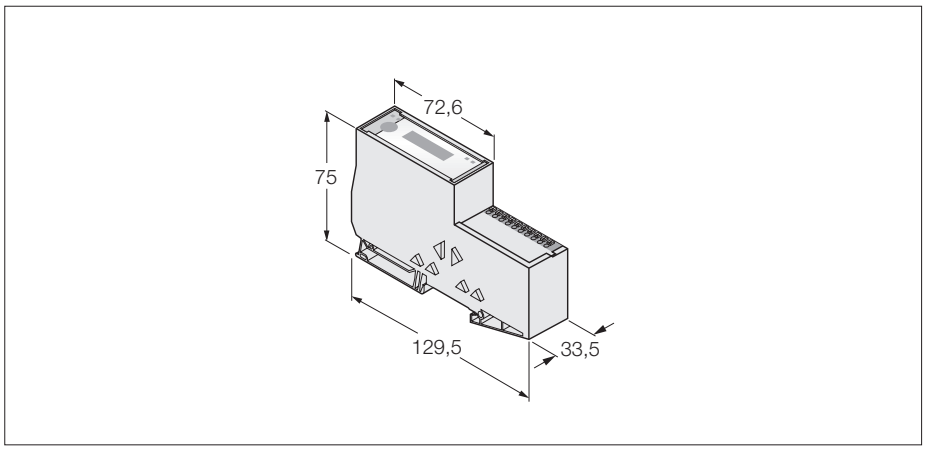
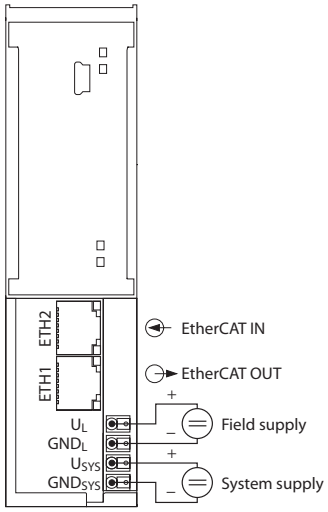
Gateway for BL20 I/O system
Interface for EtherCAT
BL20-E-GW-EC



- Degree of protection IP20
- LEDs for display of supply voltage, common alarm and bus errors
- Interface between the BL20 system and PROFINET IO (IRT)
- Interface between the BL20 system and EtherCAT
- Modular Device Profile (MDP) Support
- 10/100 Mbps, Auto MDIX
- Two RJ45 males for fieldbus connection
- Push-in clamps for connection of power supply

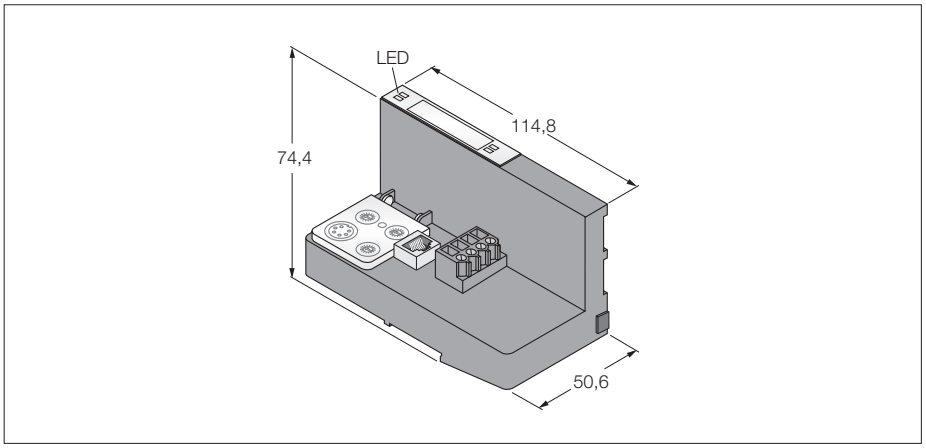
Type	BL20-E-GW-EC
Ident-No.	6827380
System power supply	24 VDC / 5 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 200 mA
Max. system supply current	0.8 A
Max. load current I_o	10 A
Voltage supply connection	push-in clamps
System data	
Transmission rate	10/100 Mbps; Full/Half Duplex; Auto Negotiation; Auto Crossing
Connection technology Ethernet	2 × RJ45, female
Protocol detection/changeover	automatic
Service interface	Mini USB
Web server	in preparation
EtherCAT	
Addressing	automatic
MinCycleTime	250 µs
Diagnostics	CoE Emergencies, DiagnosisHistory
CAN over EtherCAT	acc. to Modular Device Profile
Max. number of I/O modules	72
Operating temperature	0 to +55 °C

Field supply/system supply



5

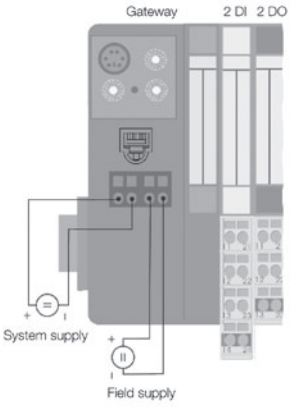
Programmable gateway for the BL20 I/O system
Interface for MODBUS TCP incl. supply
BL20-PG-EN



- Programmable acc.to IEC 61131-3 with CODESYS
- Ethernet and RS232 programmable interface
- 512 kByte program memory
- 32 Bit RISC processor
- < 1 ms for 1000 instructions
- 3 decimally coded rotary switches
- Degree of protection IP20
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface for MODBUS TCP
- 10/100 Mbps

Type	BL20-PG-EN
Ident-No.	6827249
System power supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 500 mA
Max. field supply current	10 A
Max. system supply current	1.5 A
Voltage supply connection	screw connection
Fieldbus transmission rate	10/100 Mbps
Fieldbus addressing	rotary switch, BOOTP, DHCP, IO-ASSISTANT
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	RJ45 socket
Voltage supply connection	screw connection
PLC data	
Programming	CODESYS V2.3
Released for CODESYS version	V 2.3.6.4
Programming languages	IEC 61131-3 (IL, LD, FBD, SFC, ST)
Application tasks	1
Number of POUs	1024
Programming interface	RS232 interface, Ethernet
	RISC
	32 bit
Cycle time	< 1 ms for 1000 IL commands (without I/O cycle)
Program memory	512 kByte
Data memory	512 kByte
Input data	4 kByte
Output data	4 kByte
Non-volatile memory	16 kByte
Operating temperature	0 to +55 °C

Field supply/system supply



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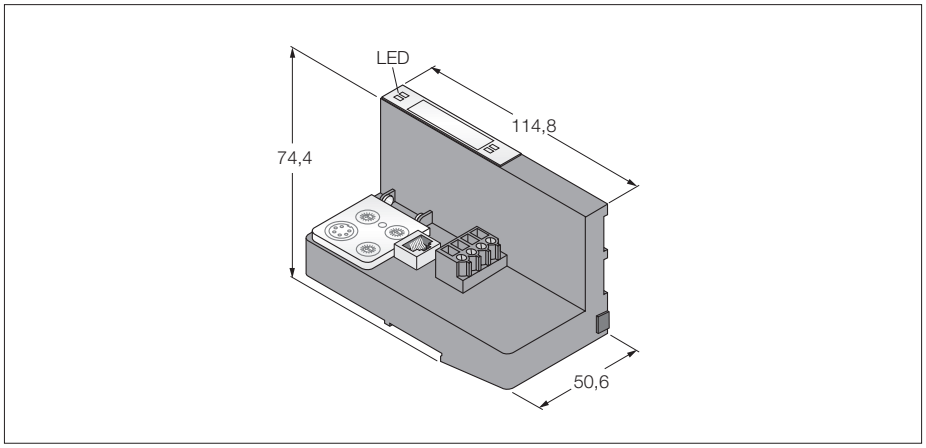
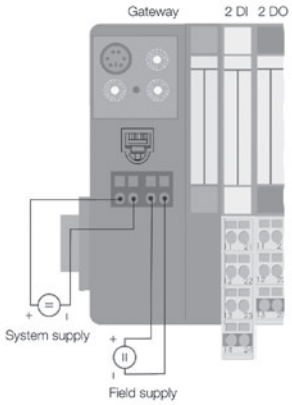
Programmable gateway for the BL20 I/O system
Interface for EtherNet/IP™ supply inclusive
BL20-PG-EN-IP



- Programmable acc.to IEC 61131-3 with CODESYS
- Ethernet and RS232 programmable interface
- 512 kByte program memory
- 32 Bit RISC processor
- < 1 ms for 1000 instructions
- 3 decimally coded rotary switches
- Degree of protection IP20
- With integrated supply
- LEDs for display of supply voltage, common alarm and bus errors
- Interface for EtherNet/IP™
- 10/100 Mbps

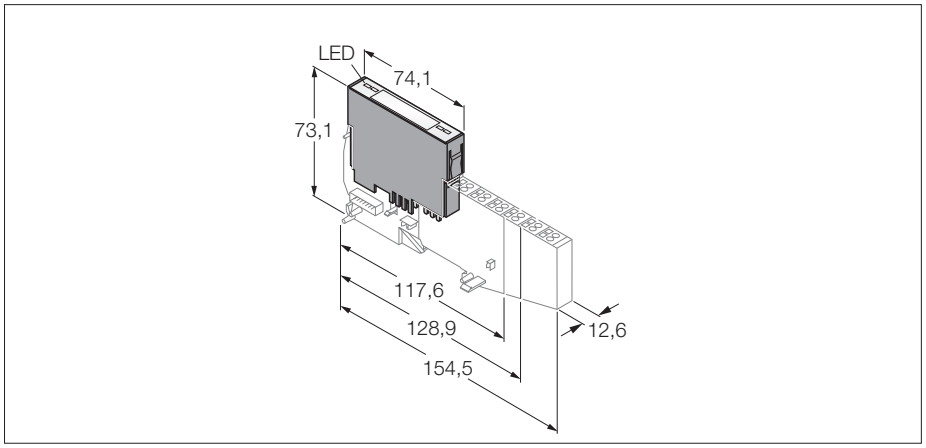
Type	BL20-PG-EN-IP
Ident-No.	6827248
System power supply	24 VDC
Admissible range	18…30 VDC
Rated current from module bus	≤ 500 mA
Max. field supply current	10 A
Max. system supply current	1.5 A
Voltage supply connection	screw connection
Fieldbus transmission rate	10/100 Mbps
Fieldbus addressing	rotary switch, BOOTP, DHCP, IO-ASSISTANT
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	RJ45 socket
Voltage supply connection	screw connection
PLC data	
Programming	CODESYS V2.3
Released for CODESYS version	V 2.3.6.4
Programming languages	IEC 61131-3 (IL, LD, FBD, SFC, ST)
Application tasks	1
Number of POUs	1024
Programming interface	RS232 interface, Ethernet
	RISC
	32 bit
Cycle time	< 1 ms for 1000 IL commands (without I/O cycle)
Program memory	512 kByte
Data memory	512 kByte
Input data	4 kByte
Output data	4 kByte
Non-volatile memory	16 kByte
Operating temperature	0 to +55 °C

Field supply/system supply



5

BL20 electronic module
Bus refreshing module with diagnostics
BL20-BR-24VDC-D



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of system status, field supply and diagnostic information
- Can be used to form potential groups
- Power supply of the BL20 I/O module and the gateway with a nominal system voltage of 5 VDC via the internal module bus
- Field supply featuring a rated voltage of 24 VDC

Type	BL20-BR-24VDC-D
Ident-No.	6827006
System power supply	24 VDC / 5 VDC
Field supply	24 VDC
Admissible range	18…30 VDC
Max. field supply current	10 A
Max. system supply current	1.5 A
Number of diagnostic bits	4
Operating temperature	0 to +55 °C

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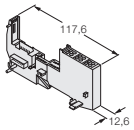
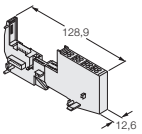
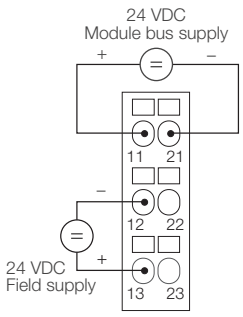
Compatible base modules

Dimensions	Type	Connection
	**6827036 BL20-P3T-SBB** Tension spring connection, with gateway supply **6827037 BL20-P3S-SBB** Screw connection, with gateway supply Is placed on the right side of the gateway (for gateways without integrated power supply). **6827040 BL20-P3T-SBB-B** Tension spring connection, without gateway supply **6827041 BL20-P3S-SBB-B** Screw connection, without gateway supply Is applied to bigger BL20 systems in order to supply the module bus if required.	F186
Dimensions	**Type**	**Connection**
	**6827038 BL20-P4T-SBBC** Tension spring connection, C rail, with gateway supply **6827039 BL20-P4S-SBBC** Screw connection, C rail, with gateway supply Is placed on the right side of the gateway (for gateways without integrated power supply). **6827042 BL20-P4T-SBBC-B** Tension spring connection, C rail, without gateway supply **6827043 BL20-P4S-SBBC-B** Screw connection, C rail, without gateway supply Is applied to bigger BL20 systems in order to supply the module bus if required.	F187

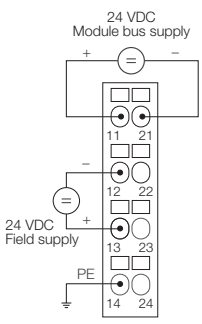
5

Connection

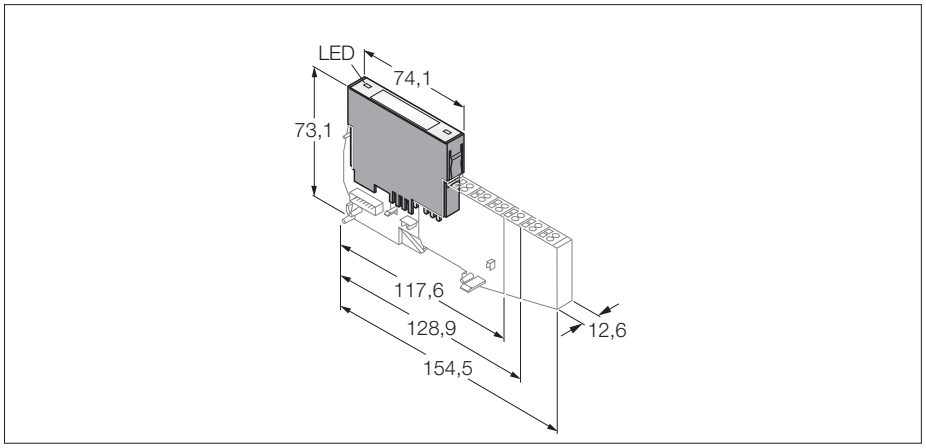
F186 - Wiring diagram



F187 - Wiring diagram



BL20 electronic module
Power feeding module with diagnostics
BL20-PF-24VDC-D



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of system status, field supply and diagnostic information
- Can be used to form potential groups
- Field supply featuring a rated voltage of 24 VDC

Type	BL20-PF-24VDC-D
Ident-No.	6827007
Field supply	24 VDC
Rated current from module bus	≤ 28 mA
Max. field supply current	10 A
Number of diagnostic bits	4
Operating temperature	0 to +55 °C

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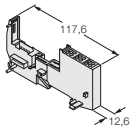
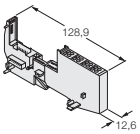
BL20 electronic module
Power feeding module with diagnostics
BL20-PF-24VDC-D

Compatible base modules

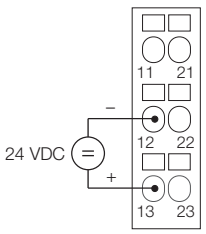
Dimensions	Type	Connection
	**6827036 BL20-P3T-SBB** Tension spring connection **6827037 BL20-P3S-SBB** Screw connection	F188

Dimensions	Type	Connection
	**6827038 BL20-P4T-SBBC** Tension spring connection, access to C rail **6827039 BL20-P4S-SBBC** Screw connection, access to C rail	F189

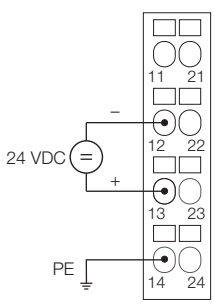
5

Connection

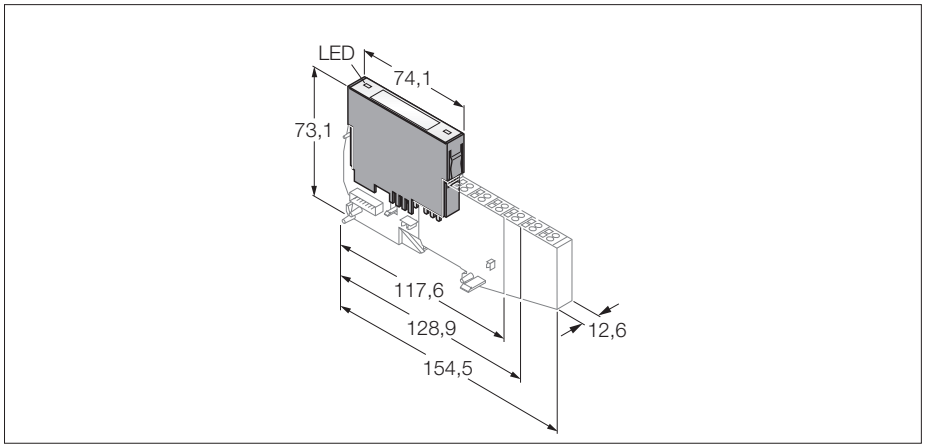
F188 - Wiring diagram



F189 - Wiring diagram



BL20 electronic module
Power feeding module with diagnostics
BL20-PF-120/230VAC-D



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of system status, field supply and diagnostic information
- Can be used to form potential groups
- Field supply featuring a rated voltage of 120/230 VAC

Type	BL20-PF-120/230VAC-D
Ident-No.	6827008
Field supply	120 / 230 VAC
Rated current from module bus	≤ 25 mA
Max. field supply current	10 A
Number of diagnostic bits	4
Operating temperature	0 to +55 °C

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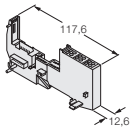
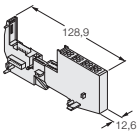
BL20 electronic module
Power feeding module with diagnostics
BL20-PF-120/230VAC-D

Industrial Automation

Compatible base modules

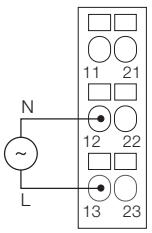
Dimensions	Type	Connection
	**6827036 BL20-P3T-SBB** Tension spring connection **6827037 BL20-P3S-SBB** Screw connection	F190

Dimensions	Type	Connection
	**6827038 BL20-P4T-SBBC** Tension spring connection, access to C rail **6827039 BL20-P4S-SBBC** Screw connection, access to C rail	F191

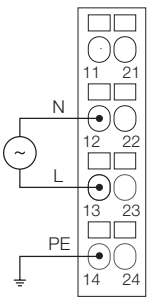
5

Connection

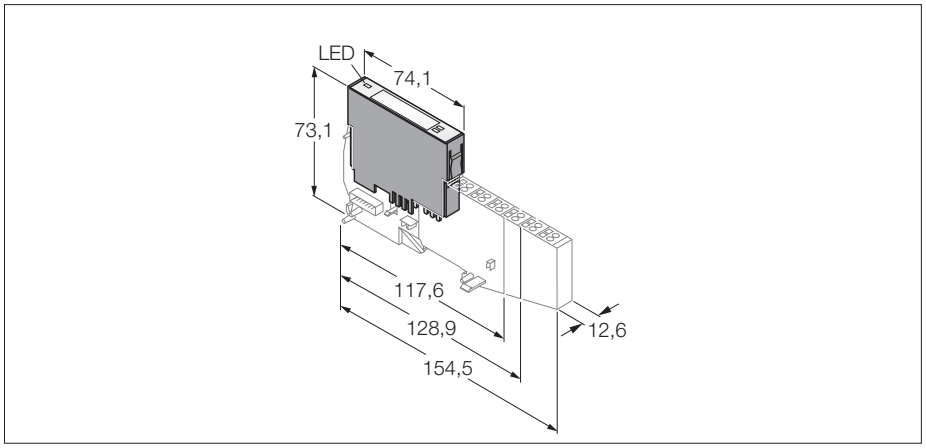
F190 - Wiring diagram



F191- - Wiring diagram



BL20 electronic module
2 digital inputs
BL20-2DI-120/230VAC-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 digital inputs, 120/230 VAC

Type	BL20-2DI-120/230VAC-P
Ident-No.	6827011
Number of channels	2
Rated voltage from the supply terminal	120 / 230 VAC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 28 mA
Power loss, typical	≤ 1 W
Inputs	
Low level signal voltage	0 V…20 VAC
High level signal voltage	79 VAC…265 VAC
Frequency range	47.5 Hz to 63 Hz
Low level signal current	0 mA…1 mA
High level signal current	3 mA…10 mA
Input delay	< 20 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

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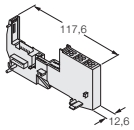
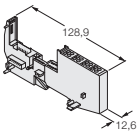
BL20 electronic module
2 digital inputs
BL20-2DI-120/230VAC-P

Industrial Automation

Compatible base modules

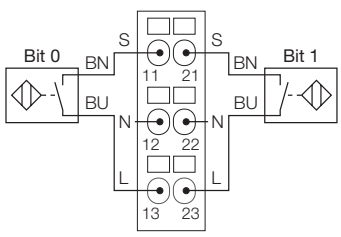
Dimensions	Type	Connection
	**6827044 BL20-S3T-SBB** Tension spring connection **6827045 BL20-S3S-SBB** Screw connection	F196

Dimensions	Type	Connection
	**6827050 BL20-S4T-SBBC** Tension spring connection, access to C rail **6827051 BL20-S4S-SBBC** Screw connection, access to C rail	F197

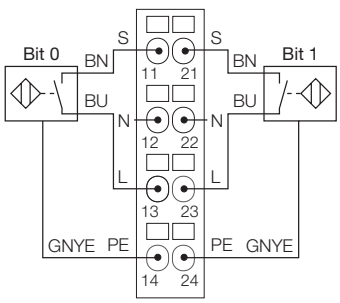
5

Connection

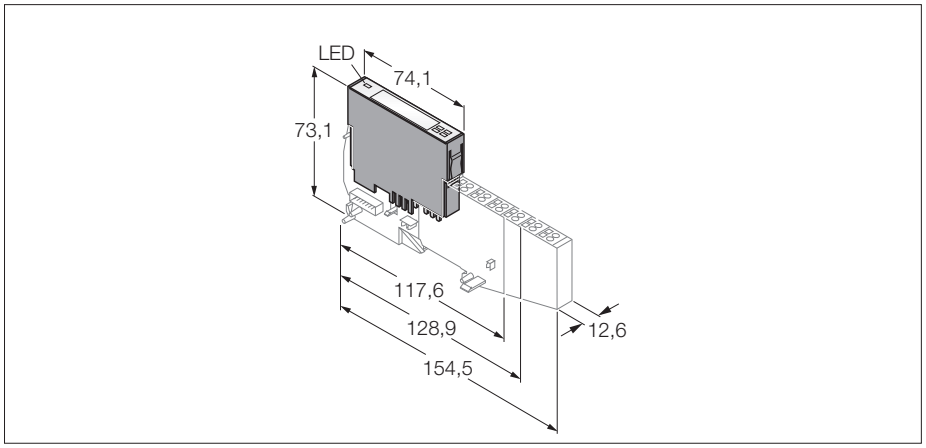
F196 - Wiring diagram



F197 - Wiring diagram



BL20 electronic module
4 digital inputs
BL20-4DI-24VDC-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 4 digital inputs, 24 VDC
- pnp

Type	BL20-4DI-24VDC-P
Ident-No.	6827012
Number of channels	4
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 40 mA
Rated current from module bus	≤ 28 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	pnp
Low level signal voltage	-30 V … +5 V
High level signal voltage	15 V … 30 V
Low level signal current	0 mA … 1.5 mA
High level signal current	2 mA … 10 mA
Input delay	< 0.2 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

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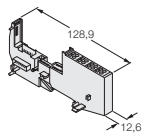
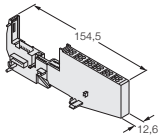
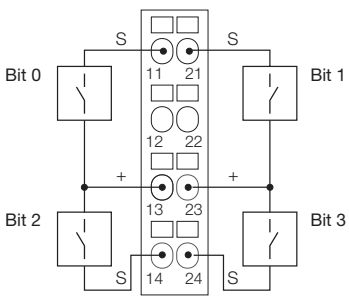
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F198

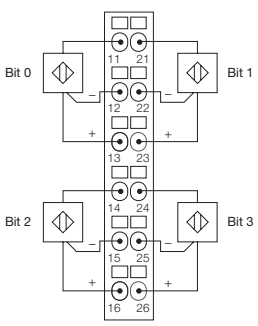
Dimensions	Type	Connection
	**6827052 BL20-S6T-SBBSBB** Tension spring connection **6827053 BL20-S6S-SBBSBB** Screw connection	F199

Connection

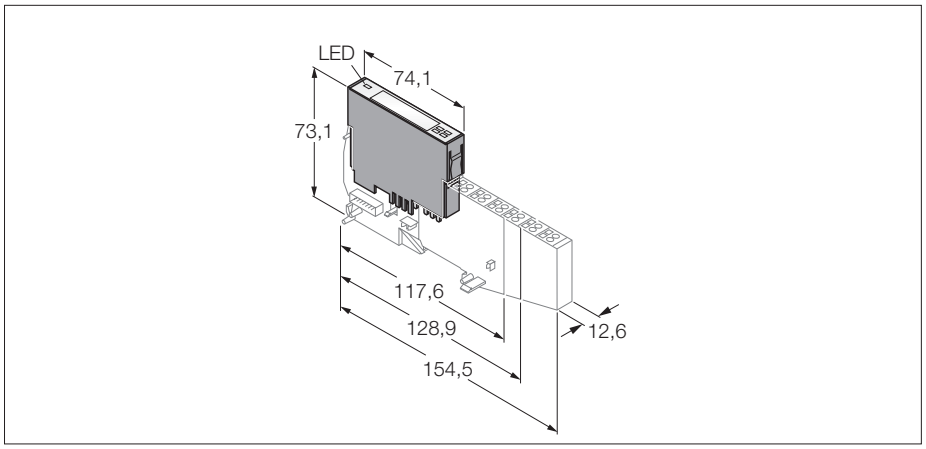
F198 - Wiring diagram



F199 - Wiring diagram



BL20 electronic module
4 digital inputs
BL20-4DI-24VDC-N



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 4 digital inputs, 24 VDC
- npn

Type	BL20-4DI-24VDC-N
Ident-No.	6827013
Number of channels	4
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 40 mA
Rated current from module bus	≤ 28 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	npn
Low level signal voltage	> 13 V
High level signal voltage	0 V … +5 V
Low level signal current	0…1.2 mA
High level signal current	1.3…6 mA
Input delay	< 0.2 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

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BL20 electronic module
4 digital inputs
BL20-4DI-24VDC-N

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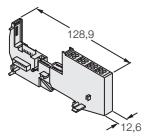
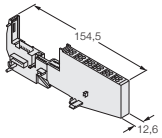
Industrial Automation

Compatible base modules

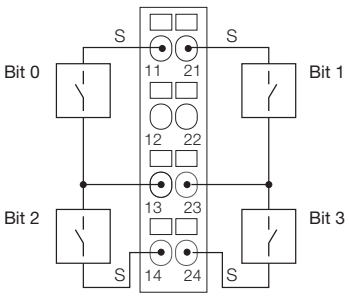
Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F200

Dimensions	Type	Connection
	**6827052 BL20-S6T-SBBSBB** Tension spring connection **6827053 BL20-S6S-SBBSBB** Screw connection	F201

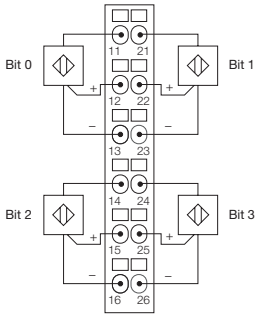
5

Connection

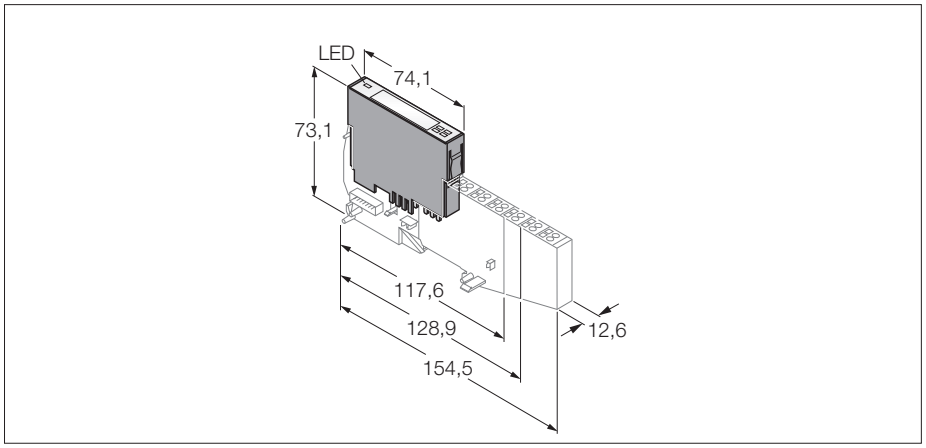
F200 - Wiring diagram



F201 - Wiring diagram



BL20 electronic module
4 digital inputs
BL20-4DI-NAMUR



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 4 NAMUR inputs acc. to EN 60947-5-6

Type	BL20-4DI-NAMUR
Ident-No.	6827212
Number of channels	4
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 30 mA
Rated current from module bus	≤ 40 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	NAMUR according to EN60947-5-6
No-load voltage	8.2…8.6 VDC
Input - status	switch on threshold: 1.74 mA
	switch off threshold: 1.45 mA
Input wire-break	switch on threshold: 0.08 mA
	switch off threshold: 0.12 mA
Input - short-circuit	switch on threshold: 6.2 mA
	switch off threshold: 5.9 mA
Input delay	0.25 or 2.5 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

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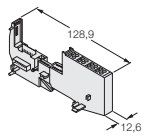
BL20 electronic module
4 digital inputs
BL20-4DI-NAMUR

Industrial Automation

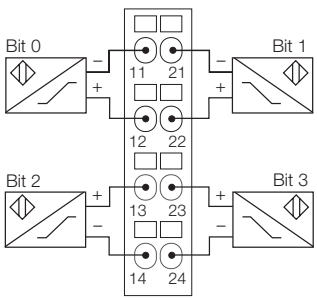
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F200

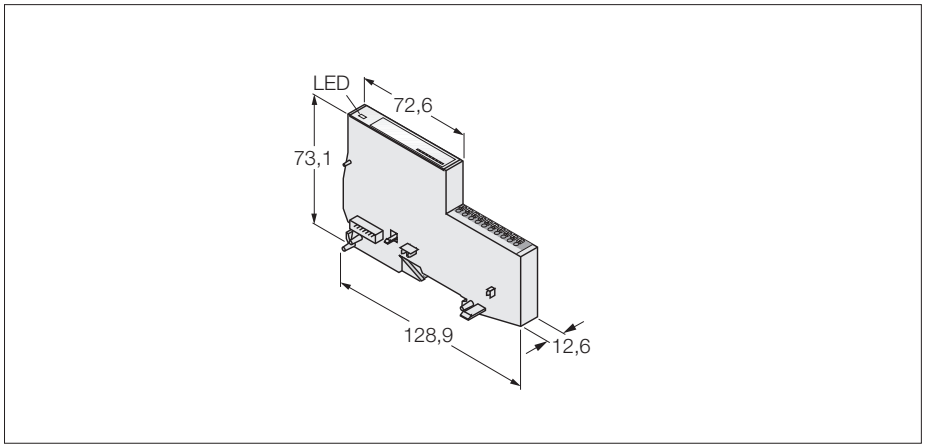
5

Connection

F200 - Wiring diagram



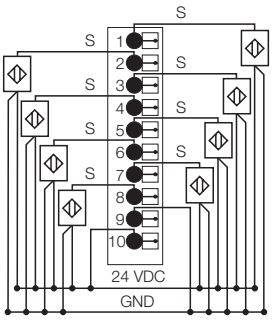
BL20 Economy Module
8 digital inputs
BL20-E-8DI-24VDC-P



- Independent of the type of fieldbus used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 8 digital inputs, 24 VDC
- pnp

Type	BL20-E-8DI-24VDC-P
Ident-No.	6827227
Number of channels	8
Rated voltage from the supply terminal	24 VDC
Admissible range	18…30 VDC
Rated current from field supply	≤ 2 mA
Rated current from module bus	≤ 15 mA
Power loss, typical	≤ 1.5 W
Inputs	
Input type	pnp
Low level signal voltage	-30 V … +5 V
High level signal voltage	11 V … 30 V
Low level signal current	-1 mA … 1.5 mA
High level signal current	2 mA … 5 mA
Input delay	< 0.2 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

Terminal connection



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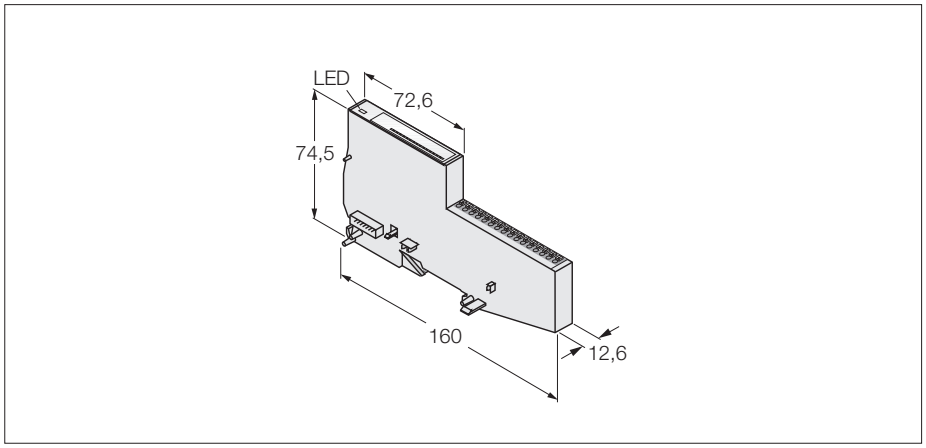
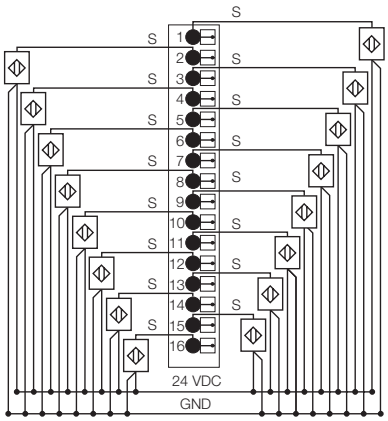
BL20 Economy Module
16 digital inputs
BL20-E-16DI-24VDC-P



- Independent of the type of fieldbus used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 16 digital inputs, 24 VDC
- pnp

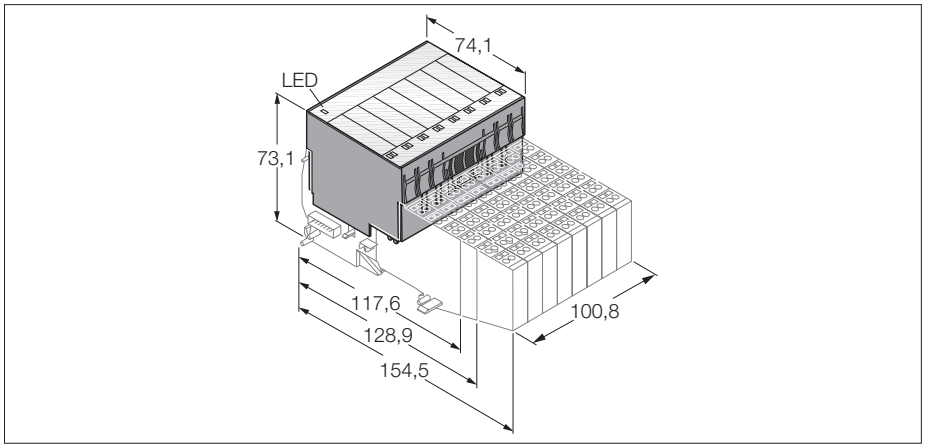
Type	BL20-E-16DI-24VDC-P
Ident-No.	6827231
Number of channels	16
Rated voltage from the supply terminal	24 VDC
Admissible range	18…30 VDC
Rated current from field supply	≤ 3 mA
Rated current from module bus	≤ 15 mA
Power loss, typical	≤ 1.5 W
Inputs	
Input type	pnp
Low level signal voltage	-30 V … +5 V
High level signal voltage	11 V … 30 V
Low level signal current	-1 mA … 1.5 mA
High level signal current	2 mA … 5 mA
Input delay	< 0.3 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

Terminal connection



5

BL20 electronic module
16 digital inputs
BL20-16DI-24VDC-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 16 digital inputs, 24 VDC
- pnp

Type	BL20-16DI-24VDC-P
Ident-No.	6827014
Number of channels	16
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 40 mA
Rated current from module bus	≤ 45 mA
Power loss, typical	≤ 2.5 W
Inputs	
Input type	pnp
Low level signal voltage	-30 V … +5 V
High level signal voltage	15 V … 30 V
Low level signal current	0 mA … 1.5 mA
High level signal current	2 mA … 10 mA
Input delay	< 0.2 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

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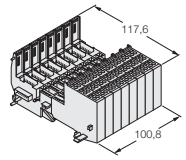
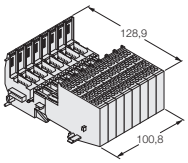
BL20 electronic module
16 digital inputs
BL20-16DI-24VDC-P

Industrial Automation

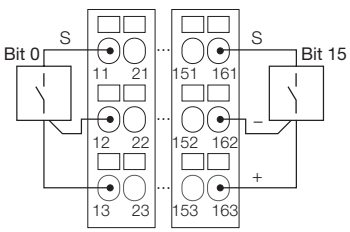
Compatible base modules

Dimensions	Type	Connection
	**6827054 BL20-B3T-SBB** Tension spring connection **6827055 BL20-B3S-SBB** Screw connection	F203
Dimensions	**Type**	**Connection**
	**6827056 BL20-B4T-SBBC** Tension spring connection, access to C rail **6827057 BL20-B4S-SBBC** Screw connection, access to C rail	F204

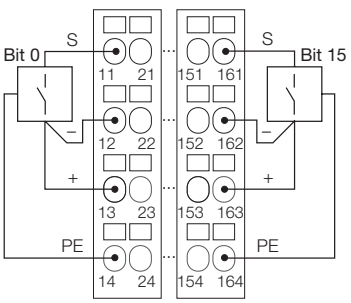
5

Connection

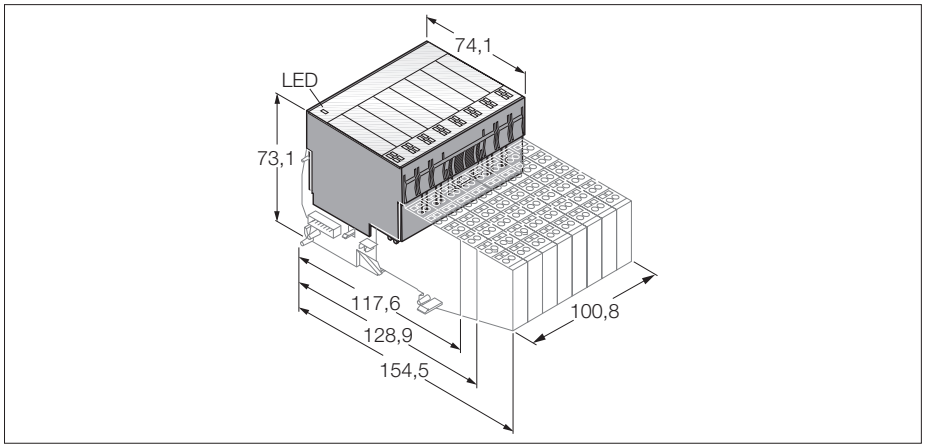
F203 - Wiring diagram



F204 - Wiring diagram



BL20 electronic module
32 digital inputs
BL20-32DI-24VDC-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 32 digital inputs, 24 VDC
- pnp

Type	BL20-32DI-24VDC-P
Ident-No.	6827015
Number of channels	32
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 30 mA
Rated current from module bus	≤ 45 mA
Power loss, typical	≤ 4.2 W
Inputs	
Input type	pnp
Low level signal voltage	-30 V … +5 V
High level signal voltage	15 V … 30 V
Low level signal current	< 1.5 mA
High level signal current	2 mA … 10 mA
Input delay	< 0.2 ms
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

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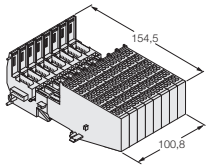
BL20 electronic module
32 digital inputs
BL20-32DI-24VDC-P

Industrial Automation

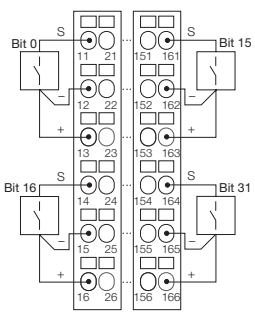
Compatible base modules

Dimensions	Type	Connection
	**6827065 BL20-B6T-SBBSBB** Tension spring connection **6827067 BL20-B6S-SBBSBB** Screw connection	F205

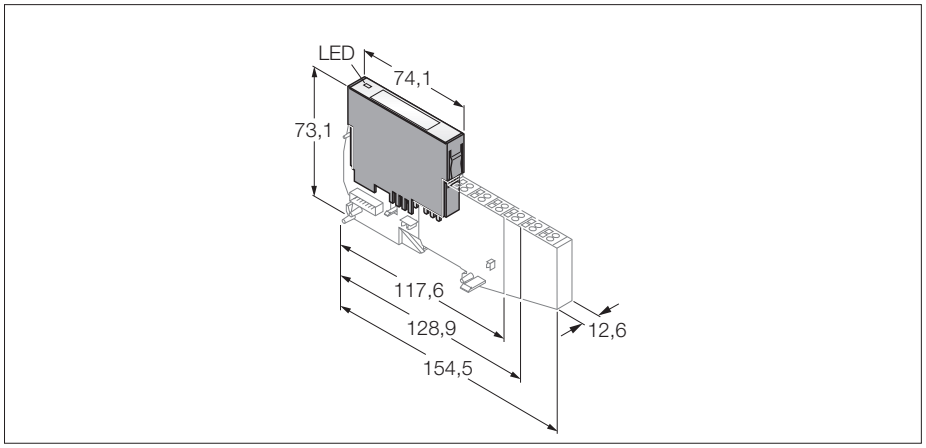
5

Connection

F205 - Wiring diagram



BL20 electronic module
2 analog inputs
BL20-2AI-I(0/4...20MA)



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog inputs 0/4…20 mA

Type	BL20-2AI-I(0/4...20MA)
Ident-No.	6827021
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Max. input current	50 mA
Rated current from field supply	≤ 12 mA
Rated current from module bus	≤ 35 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	0/4…20 mA
Input resistance	< 0.125
Max. input current	50 mA
Electrical isolation	electronics for the field level
Maximum limiting frequency, analog	< 50 Hz
Basic fault limit at 23 °C	< 0.2 %
Repeatability	0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Measuring principle	Delta Sigma
Measured-value display	16 bit signed integer 12 bit full range left justified
Number of diagnostic bytes	2
Number of parameter bytes	2
Operating temperature	0 to +55 °C

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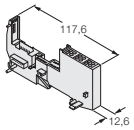
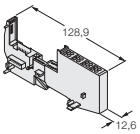
BL20 electronic module
2 analog inputs
BL20-2AI-I(0/4...20MA)

Industrial Automation

Compatible base modules

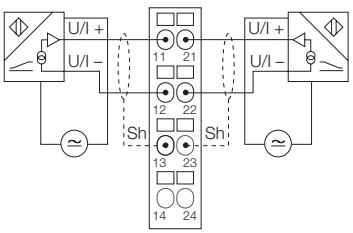
Dimensions	Type	Connection
	**6827044 BL20-S3T-SBB** Tension spring connection with external sensor supply **6827045 BL20-S3S-SBB** Screw connection with external sensor supply	F210

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F211, F212

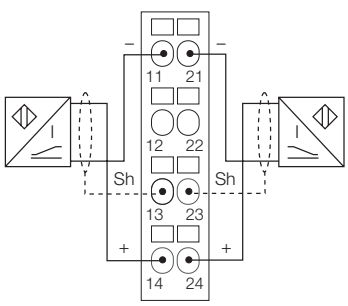
5

Connection

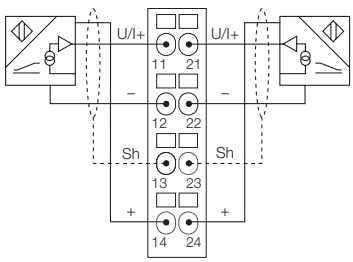
F210 - Wiring diagram



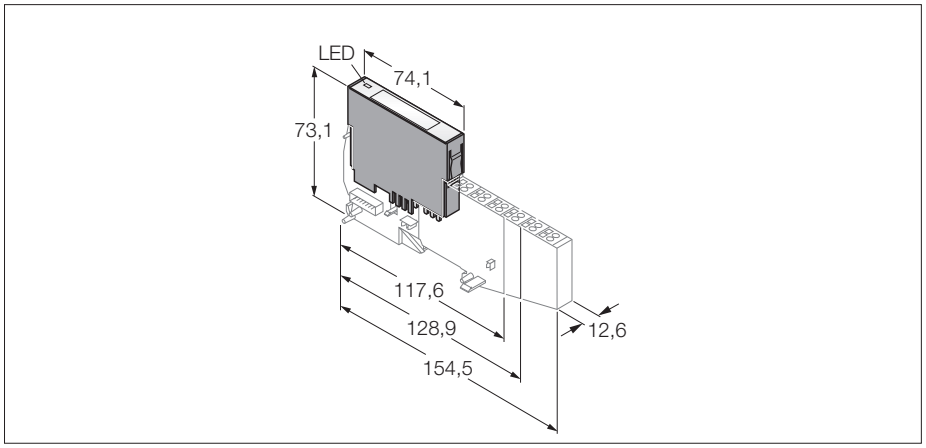
F211 - 2-wire technology



F212 - 3-wire technology



BL20 electronic module
2 analog inputs
BL20-2AIH-I



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog inputs 0/4…20 mA
- HART®

Type	BL20-2AIH-I
Ident-No.	6827331
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Max. input current	24 mA
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 30 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	0/4…20 mA
Input resistance	> 250
Max. input current	24 mA
Electrical isolation	500 V electronics to field level, 500 V channel to channel
Maximum limiting frequency, analog	< 50 Hz
Basic fault limit at 23 °C	< 0.1 %
Repeatability	0.1 %
Temperature coefficient	< 150 ppm/°C of full scale
Resolution	16 Bit
Measuring principle	Delta Sigma
Measured-value display	16 bit signed integer ,NE43(PA), Extended
Number of diagnostic bytes	4
Number of parameter bytes	8
Operating temperature	0 to +55 °C

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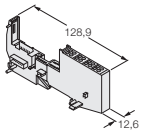
BL20 electronic module
2 analog inputs
BL20-2AIH-I

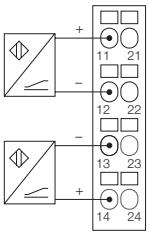
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F271, F272

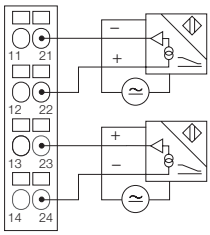
5

Connection

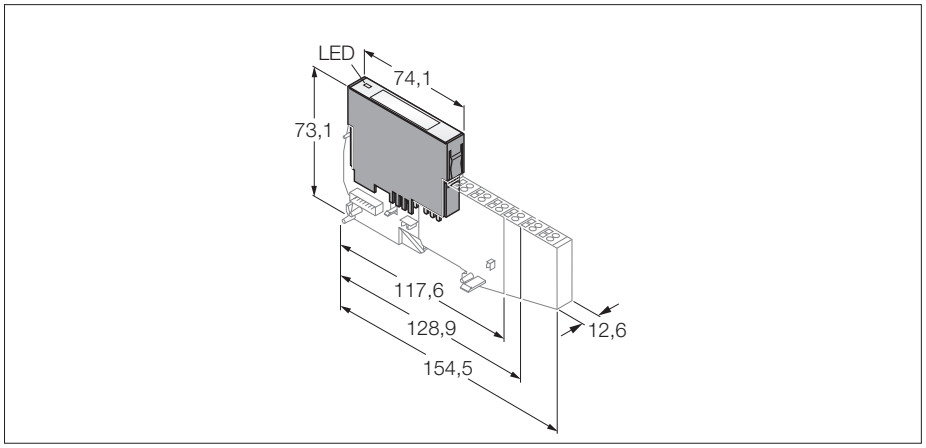
F272 - 2-wire technology



F271 - 4-wire technology



BL20 electronic module
2 analog inputs
BL20-2AI-U(-10/0...+10VDC)



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog input -10/0…+10 VDC

Type	BL20-2AI-U(-10/0...+10VDC)
Ident-No.	6827022
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 12 mA
Rated current from module bus	≤ 35 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	-10/0…+10 VDC
Input resistance	< 98,5
Max. input voltage	35 V constant
Electrical isolation	electronics for the field level
Maximum limiting frequency, analog	< 50 Hz
Basic fault limit at 23 °C	< 0.2 %
Repeatability	0.05 %
Temperature coefficient	< 150 ppm/°C of full scale
Resolution	16 Bit
Measuring principle	Delta Sigma
Measured-value display	16 bit signed integer 12 bit full range left justified
Number of diagnostic bytes	2
Number of parameter bytes	2
Operating temperature	0 to +55 °C

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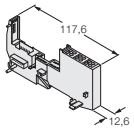
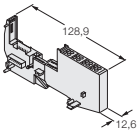
BL20 electronic module
2 analog inputs
BL20-2AI-U(-10/0...+10VDC)

Industrial Automation

Compatible base modules

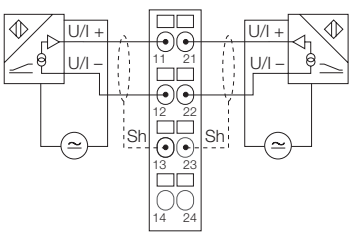
Dimensions	Type	Connection
	**6827044 BL20-S3T-SBB** Tension spring connection with external sensor supply **6827045 BL20-S3S-SBB** Screw connection with external sensor supply	F210

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F211, F212

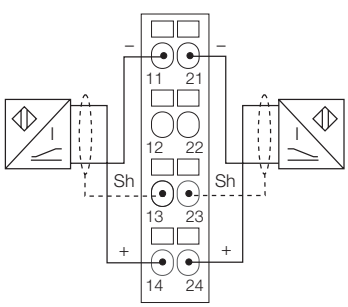
5

Connection

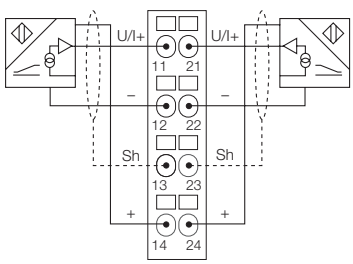
F210 - Wiring diagram



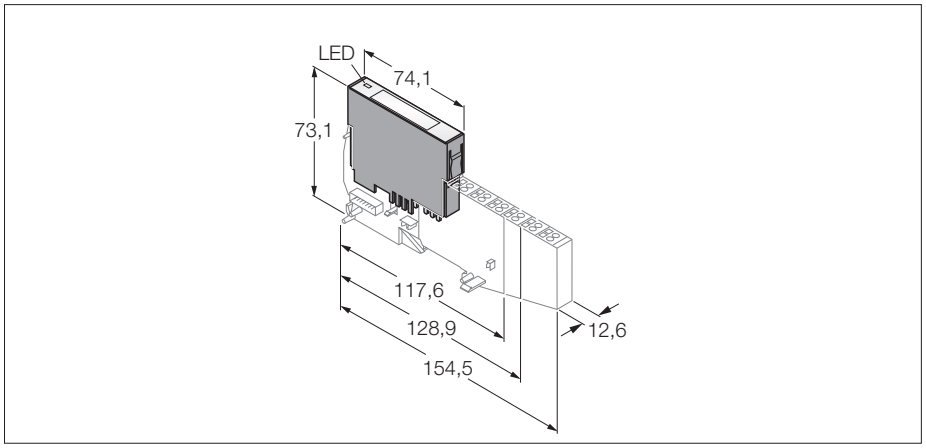
F211 - 2-wire technology



F212 - 3-wire technology



BL20 electronic module
2 analog inputs for temperature measurement
BL20-2AI-PT/NI-2/3



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog inputs for PT100, PT500 and PT1000 as well as for Ni100 and Ni1000

Type	BL20-2AI-PT/NI-2/3
Ident-No.	6827017
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 30 mA
Rated current from module bus	≤ 45 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	PT100, PT500, PT1000, Ni100, Ni1000
Electrical isolation	electronics for the field level
Basic fault limit at 23 °C	< 0.2 %
Repeatability	0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Measured-value display	16 bit signed integer 12 bit full range left justified
Cycle time	≤ 130 ms
Measuring current	< 1 mA
Number of diagnostic bytes	2
Number of parameter bytes	4
Operating temperature	0 to +55 °C

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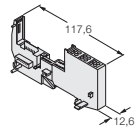
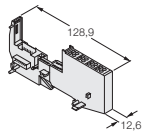
BL20 electronic module
2 analog inputs for temperature measurement
BL20-2AI-PT/NI-2/3

Industrial Automation

Compatible base modules

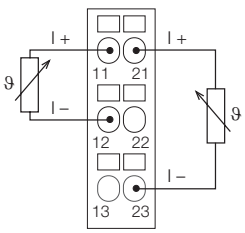
Dimensions	Type	Connection
	**6827044 BL20-S3T-SBB** Tension spring connection **6827045 BL20-S3S-SBB** Screw connection	F213

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F214

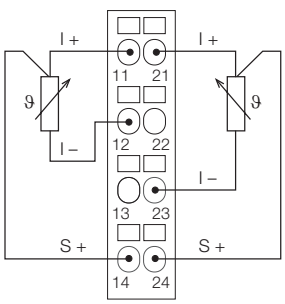
5

Connection

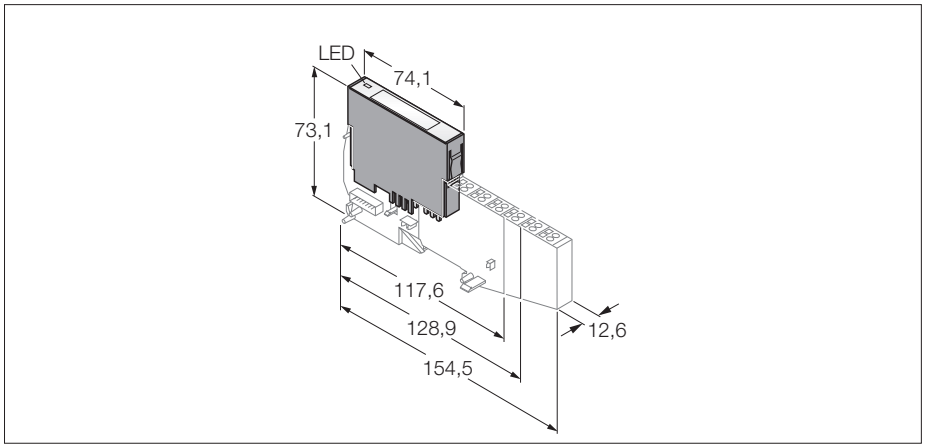
F213 - 2-wire technology



F214 - 3-wire technology



BL20 electronic module
2 analog inputs for temperature measurement
BL20-2AI-THERMO-PI



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog inputs for connection of thermoelements, types B, E, J, K, N, R, S and T
- Base module with internal cold junction point compensation

Type	BL20-2AI-THERMO-PI
Ident-No.	6827020
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 30 mA
Rated current from module bus	≤ 45 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	types B, E, J, K, N, R, S, T
Electrical isolation	electronics for the field level
Voltage resolution	+-50mV: < 2µV
Basic fault limit at 23 °C	< 0.2 %
Repeatability	0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Measured-value display	16 bit signed integer 12 bit full range left justified
Cycle time	≤ 60 ms
Number of diagnostic bytes	2
Number of parameter bytes	2
Operating temperature	0 to +55 °C

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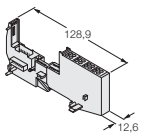
BL20 electronic module
2 analog inputs for temperature measurement
BL20-2AI-THERMO-PI

Industrial Automation

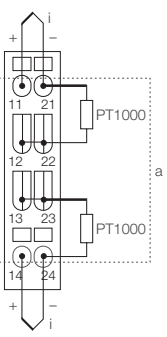
Compatible base modules

Dimensions	Type	Connection
	**6827048 BL20-S4T-SBBS-CJ** Tension spring connection **6827049 BL20-S4S-SBBS-CJ** Screw connection	F215

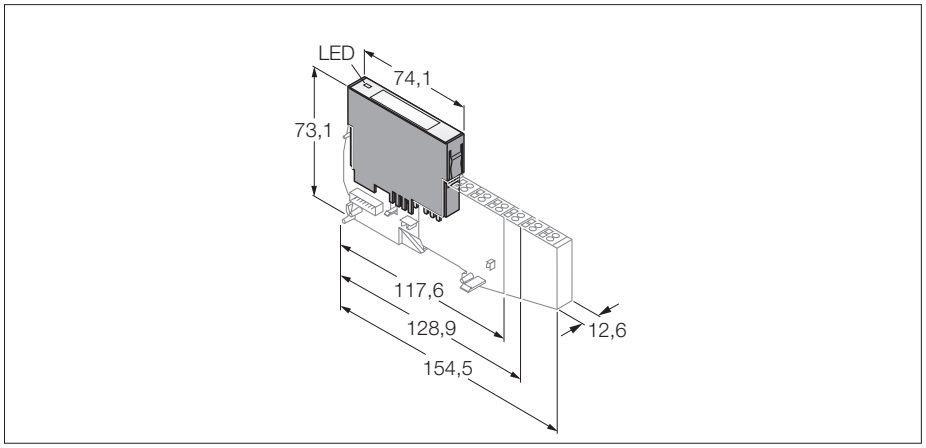
5

Connection

F215 - Wiring diagram



BL20 electronic module
4 analog inputs
BL20-4AI-U/I



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 4 analog inputs
- 0/4…20 mA or –10/0…+10 VDC
- Selectable per channel

Type	BL20-4AI-U/I
Ident-No.	6827217
Number of channels	4
Rated voltage from the supply terminal	24 VDC
Max. input current	50 mA
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 50 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	0/4 … 20 mA or -10/0 … +10 VDC
Input resistance	< 62 Ω (current) or > 98.5 kΩ (voltage)
Max. input current	50 mA
Max. input voltage	35 V constant
Electrical isolation	electronics for the field level
Maximum limiting frequency, analog	< 20 Hz
Basic fault limit at 23 °C	< 0.3 %
Repeatability	0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Measuring principle	Delta Sigma
Number of diagnostic bytes	4
Number of parameter bytes	4
Operating temperature	0 to +55 °C

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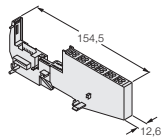
BL20 electronic module
4 analog inputs
BL20-4AI-U/I

Industrial Automation

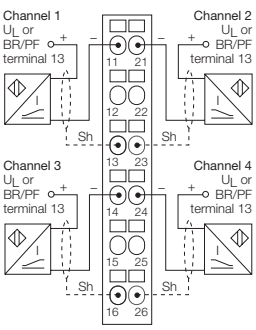
Compatible base modules

Dimensions	Type	Connection
	**6827064 BL20-S6T-SBCSBC** Tension spring connection **6827066 BL20-S6S-SBCSBC** Screw connection	F216, F217, F218

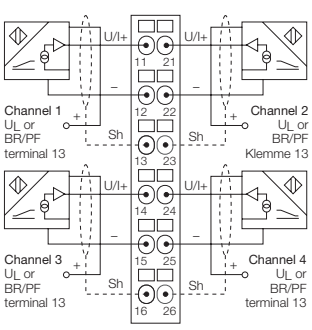
5

Connection

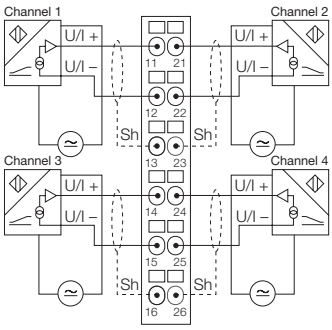
F216 - 2-wire technology



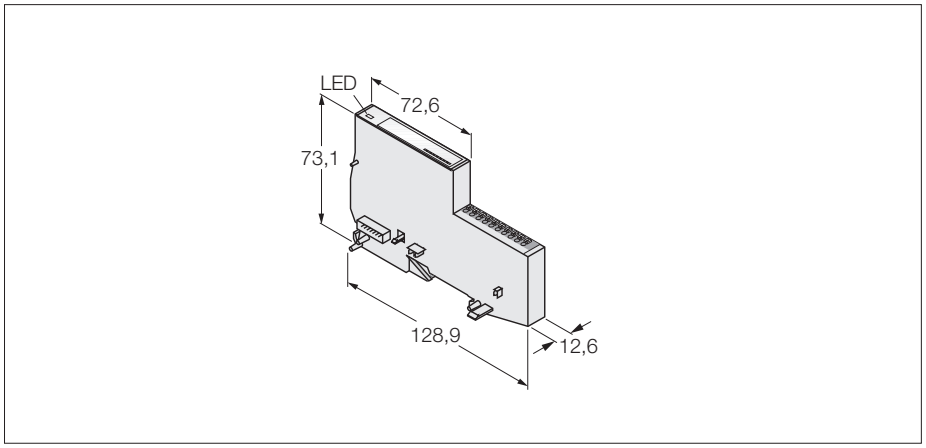
F217 - 3-wire technology



F218 - 4-wire technology



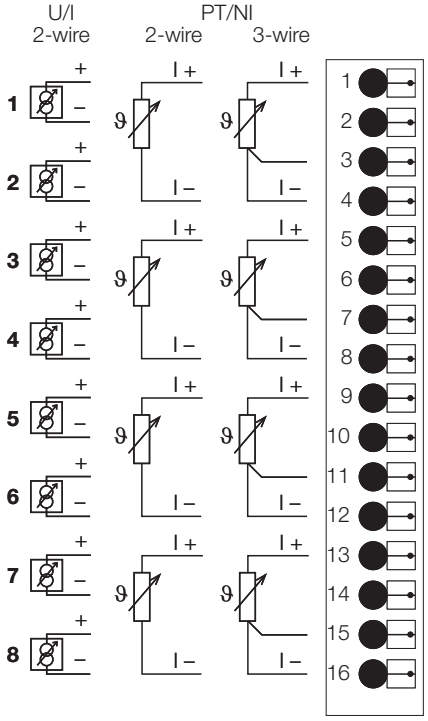
BL20 electronic module
8 2-wire analog inputs U/I resp.
4 2/3-wire PT/NI inputs
BL20-E-8AI-U/I-4PT/NI



- Independent of the type of fieldbus and connection technology used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 8 2-wire analog inputs U/I
- Passive inputs – external power supply
- 0…20mA, 4…20mA,-10…+10VDC or 0…+10VDC, selectable per channel, resp.
- 4PT/NI inputs (always 2 analog inputs are combined to a PT/Ni 2/3-wire input)

Type	BL20-E-8AI-U/I-4PT/NI
Ident-No.	6827325
Number of channels	8/4
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 35 mA
Rated current from module bus	≤ 35 mA
Power loss, typical	≤ 1 W
Inputs	
Input type	0/4…20 mA, -10/0…+10 VDC, PT100, PT200, PT500, PT1000, NI100, NI1000, 0…250 Ω, 0…400 Ω, 0…800 Ω, 0…2000 Ω, 0…4000 Ω
Input resistance	< 62 Ω (current) or > 98.5 kΩ (voltage)
Max. input current	50 mA
Max. input voltage	-20 VDC < U < 20 VDC (externally supplied)
Basic fault limit at 23 °C	< 0.2 %
Temperature coefficient	< 200 ppm/°C of full scale
Resolution	16 Bit
Measured-value display	16 bit signed integer 12 bit full range left justified
Conversion time	< (44 × [number of channels being activated during parametrization]) ms
Number of diagnostic bytes	8
Number of parameter bytes	8
Operating temperature	0 to +55 °C

Terminal connection



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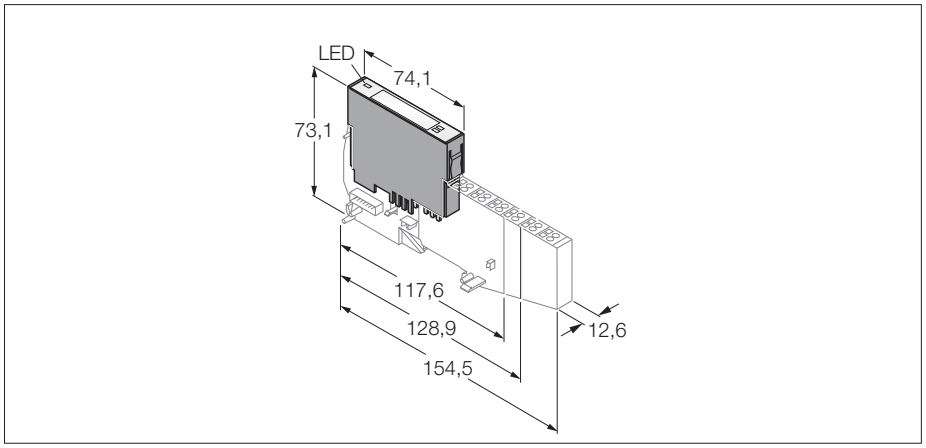
BL20 electronic module
2 digital outputs
BL20-2DO-24VDC-0.5A-N



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 digital outputs, 24 VDC
- 0.5 A max.
- npn

Type	BL20-2DO-24VDC-0.5A-N
Ident-No.	6827025
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 32 mA
Power loss, typical	≤ 1 W
Outputs	
Output type	npn
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.1 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Load resistance, inductive	< 1.2 H
Lamp load	< 12 W
Switching frequency, resistive	< 100 Hz
Inductive switching frequency	< 2 Hz
Switching frequency, lamp load	< 10 Hz
Short-circuit protection	yes
Simultaneity factor	1
Electrical isolation	electronics for the field level
Number of diagnostic bits	2
Operating temperature	0 to +55 °C

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BL20 electronic module
2 digital outputs
BL20-2DO-24VDC-0.5A-N

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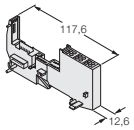
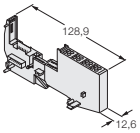
Industrial Automation

Compatible base modules

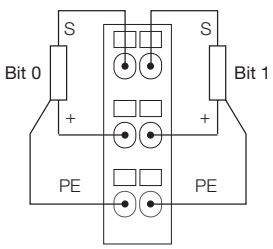
Dimensions	Type	Connection
	**6827058 BL20-S3T-SBC** Tension spring connection, access to C rail **6827059 BL20-S3S-SBC** Screw connection, access to C rail	F221

Dimensions	Type	Connection
	**6827063 BL20-S4T-SBCS** Tension spring connection, access to C rail **6827060 BL20-S4S-SBCS** Screw connection, access to C rail	F222

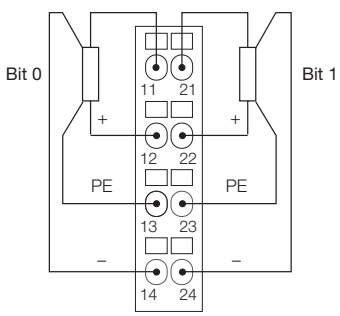
5

Connection

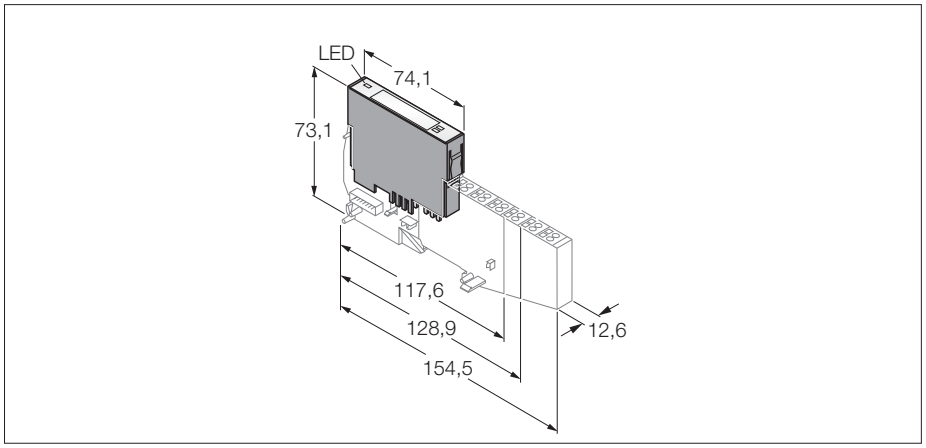
F221 - Wiring diagram



F222 - Wiring diagram



BL20 electronic module
2 digital outputs
BL20-2DO-24VDC-2A-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 digital outputs, 24 VDC
- 2 A max.
- pnp

Type	BL20-2DO-24VDC-2A-P
Ident-No.	6827026
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 50 mA
Rated current from module bus	≤ 33 mA
Power loss, typical	≤ 1 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	2 A
Output delay	0.1 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 12 Ω
Load resistance, inductive	< 1.2 H
Lamp load	< 6 W
Switching frequency, resistive	< 5000 Hz
Switching frequency, lamp load	< 10 Hz
Short-circuit protection	yes
Simultaneity factor	1
Electrical isolation	electronics for the field level
Number of diagnostic bits	2
Operating temperature	0 to +55 °C

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BL20 electronic module
2 digital outputs
BL20-2DO-24VDC-2A-P

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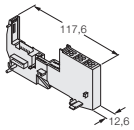
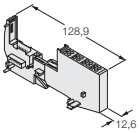
Industrial Automation

Compatible base modules

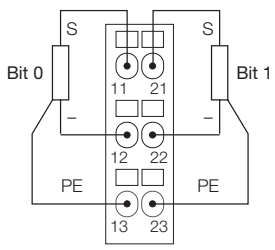
Dimensions	Type	Connection
	**6827058 BL20-S3T-SBC** Tension spring connection, access to C rail **6827059 BL20-S3S-SBC** Screw connection, access to C rail	F219

Dimensions	Type	Connection
	**6827063 BL20-S4T-SBCS** Tension spring connection, access to C rail **6827060 BL20-S4S-SBCS** Screw connection, access to C rail	F220

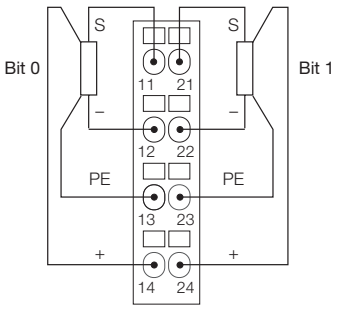
5

Connection

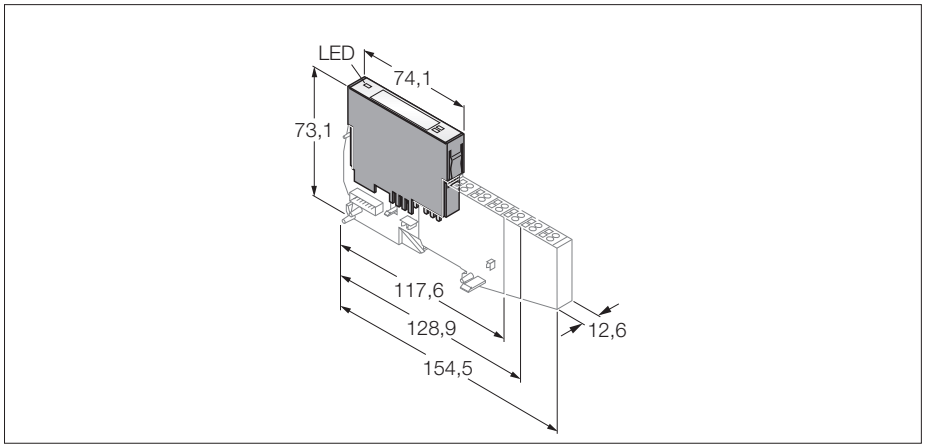
F219 - Wiring diagram



F220 - Wiring diagram



BL20 electronic module
2 digital outputs
BL20-2DO-120/230VAC-0.5A



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 digital outputs, 120/230 VAC
- 0.5 A max.

Type	BL20-2DO-120/230VAC-0.5A
Ident-No.	6827137
Number of channels	2
Rated voltage from the supply terminal	120 / 230 VAC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 35 mA
Power loss, typical	≤ 1 W
Outputs	
Output voltage	120 / 230 VAC
Output current per channel	0.5 A
Output delay	0.1 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Load resistance, inductive	< 1.2 H
Short-circuit protection	yes
Simultaneity factor	1
Electrical isolation	electronics for the field level
Number of diagnostic bits	2
Operating temperature	0 to +55 °C

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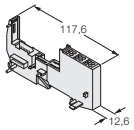
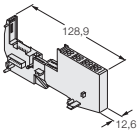
BL20 electronic module
2 digital outputs
BL20-2DO-120/230VAC-0.5A

TURCK
Industrial Automation

Compatible base modules

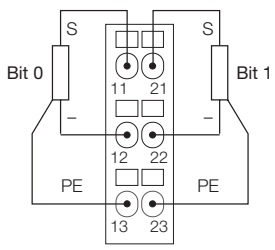
Dimensions	Type	Connection
	**6827058 BL20-S3T-SBC** Tension spring connection, access to C rail **6827059 BL20-S3S-SBC** Screw connection, access to C rail	F219

Dimensions	Type	Connection
	**6827063 BL20-S4T-SBCS** Tension spring connection, access to C rail **6827060 BL20-S4S-SBCS** Screw connection, access to C rail	F220

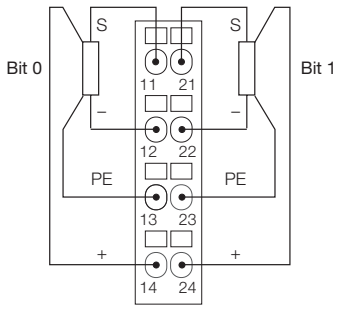
5

Connection

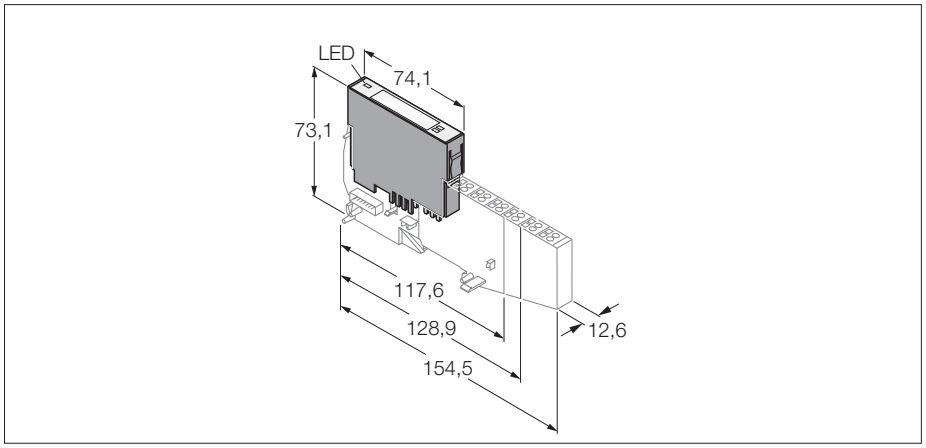
F219 - Wiring diagram



F220 - Wiring diagram



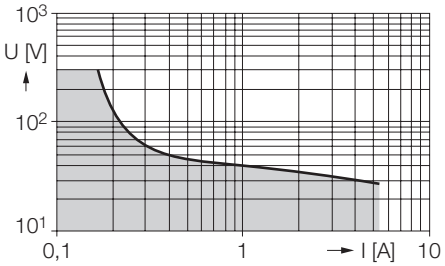
BL20 electronic module
relay module, 2 × normally open
BL20-2DO-R-NO



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 normally open channels

Type	BL20-2DO-R-NO
Ident-No.	6827029
Number of channels	2, normally open
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 28 mA
Power loss, typical	≤ 1 W
Outputs	
Load type	resistive, inductive, lamp load
Rated load voltage	230/30 VAC/DC
Simultaneity factor	1
Life at 230 VAC, 5A	100000
Life at 230 VAC, 0.5A	1000000
Output current with DC voltage (resistive)	see load limit curve
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

Load limit curve



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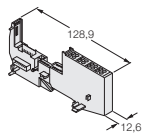
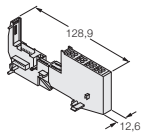
BL20 electronic module
relay module, 2 × normally open
BL20-2DO-R-NO

Compatible base modules

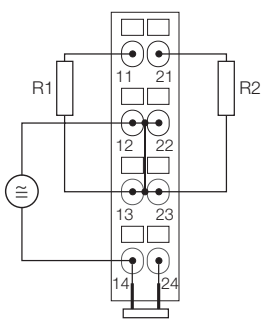
Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection With externally applied supply and cross connected root 1) Jumpered in the electronics 2) cross-connection via QVR in the base	F223, F225

Dimensions	Type	Connection
	**6827063 BL20-S4T-SBCS** Tension spring connection **6827060 BL20-S4S-SBCS** Screw connection With supply via C rail and cross connected root 1) C rail 2) cross-connection via QVR in the base; max. 8 relay modules	F224, F226

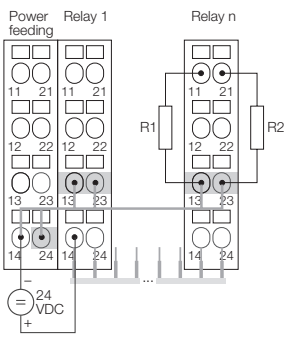
5

Connection

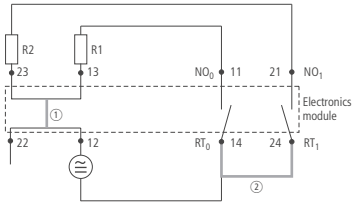
F223 - Wiring diagram



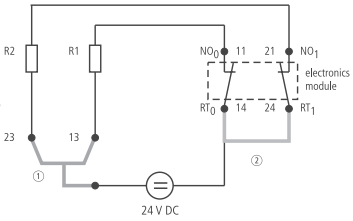
F224 - Wiring diagram



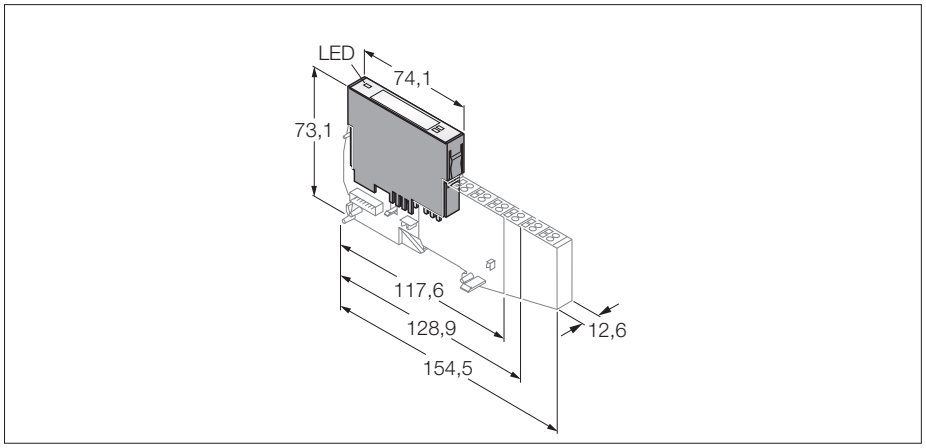
F225 - module wiring diagram



F226 - module wiring diagram



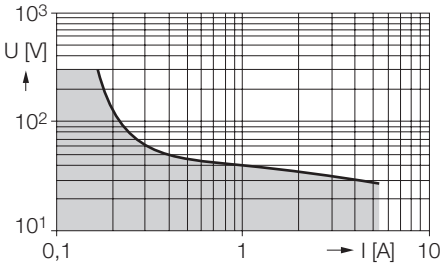
BL20 electronic module
relay module, 2 × normally closed
BL20-2DO-R-NC



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 normally closed channels

Type	BL20-2DO-R-NC
Ident-No.	6827028
Number of channels	2, normally closed
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 28 mA
Power loss, typical	≤ 1 W
Outputs	
Load type	resistive, inductive, lamp load
Rated load voltage	230/30 VAC/DC
Simultaneity factor	1
Life at 230 VAC, 5A	100000
Life at 230 VAC, 0.5A	1000000
Output current with DC voltage (resistive)	see load limit curve
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

Load limit curve



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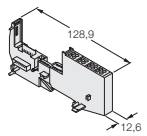
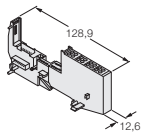
BL20 electronic module
relay module, 2 × normally closed
BL20-2DO-R-NC

Compatible base modules

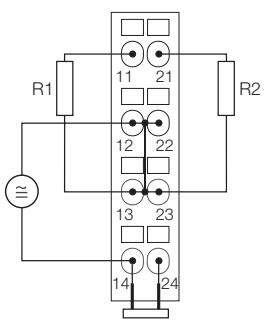
Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection With externally applied supply and cross connected root 1) Jumpered in the electronics 2) cross-connection via QVR in the base	F223, F227

Dimensions	Type	Connection
	**6827063 BL20-S4T-SBCS** Tension spring connection **6827060 BL20-S4S-SBCS** Screw connection With supply via C rail and cross connected root 1) C rail 2) cross-connection via QVR in the base; max. 8 relay modules	F224, F228

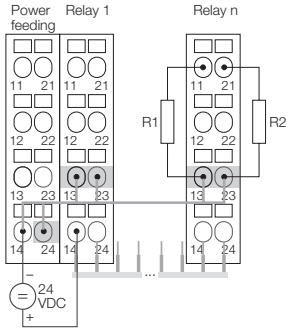
5

Connection

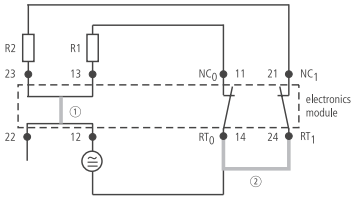
F223 - Wiring diagram



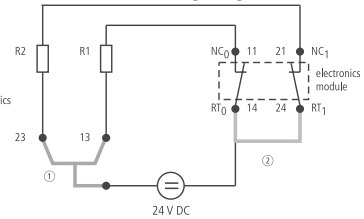
F224 - Wiring diagram



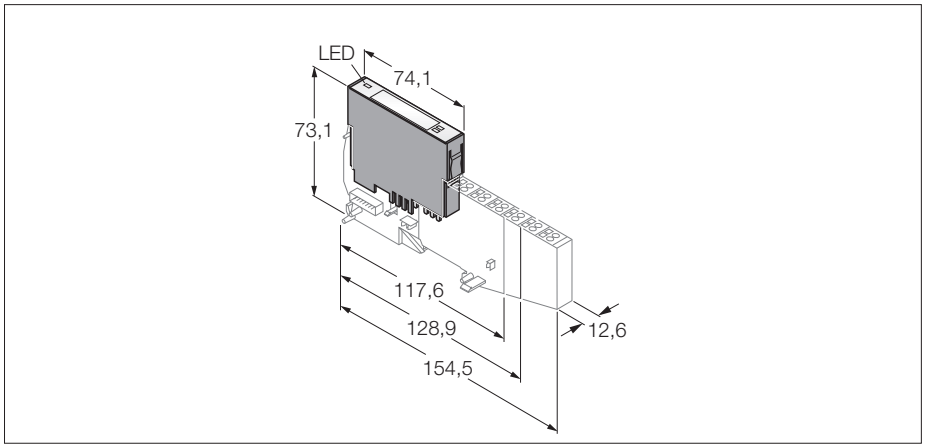
F227 - module wiring diagram



F228 - module wiring diagram



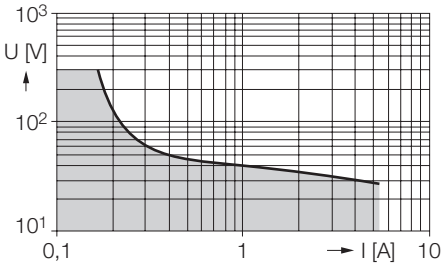
BL20 electronic module
relay module, 2 × change-over
BL20-2DO-R-CO



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 change-over channels

Type	BL20-2DO-R-CO
Ident-No.	6827030
Number of channels	2, change-over, galvanically isolated
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 28 mA
Power loss, typical	≤ 1 W
Outputs	
Load type	resistive, inductive, lamp load
Rated load voltage	230/30 VAC/DC
Simultaneity factor	1
Life at 230 VAC, 5A	100000
Life at 230 VAC, 0.5A	1000000
Output current with DC voltage (resistive)	see load limit curve
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

Load limit curve



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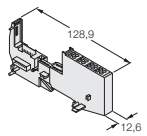
BL20 electronic module
relay module, 2 × change-over
BL20-2DO-R-CO

Industrial Automation

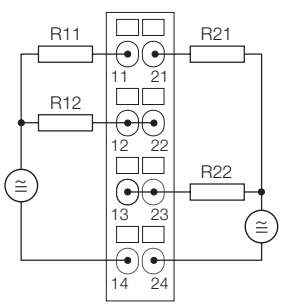
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F229, F230

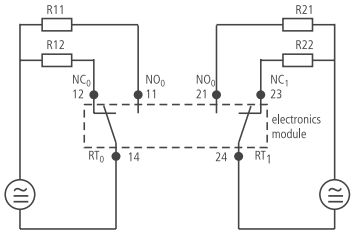
5

Connection

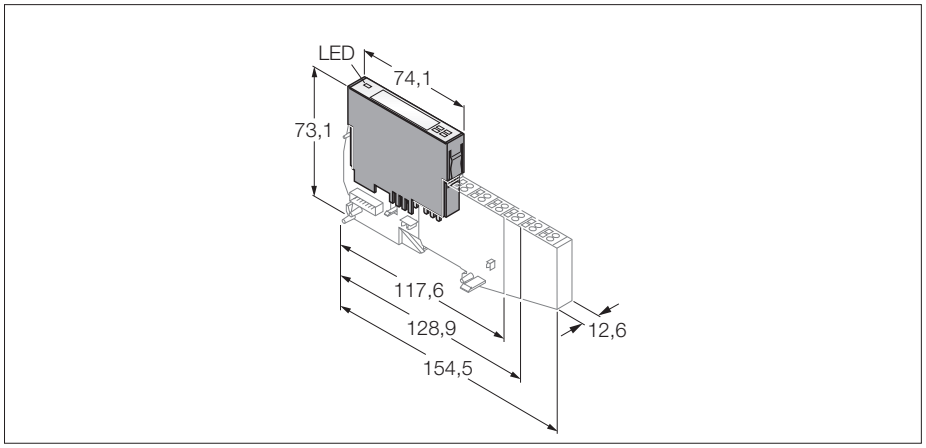
F229 - Wiring diagram



F230 - module wiring diagram



BL20 electronic module
4 digital outputs
BL20-4DO-24VDC-0.5A-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 4 digital outputs, 24 VDC
- 0.5 A max.
- pnp

Type	BL20-4DO-24VDC-0.5A-P
Ident-No.	6827023
Number of channels	4
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 25 mA
Rated current from module bus	≤ 30 mA
Power loss, typical	≤ 1 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.25 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Load resistance, inductive	< 1.2 H
Lamp load	< 6 W
Switching frequency, resistive	< 5000 Hz
Inductive switching frequency	< 2 Hz
Switching frequency, lamp load	< 10 Hz
Short-circuit protection	yes
Simultaneity factor	1
Electrical isolation	electronics for the field level
Number of diagnostic bits	1
Operating temperature	0 to +55 °C

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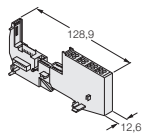
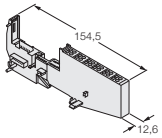
Compatible base modules

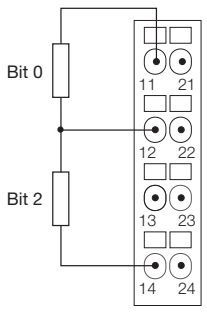
Dimensions	Type	Connection
	**6827063 BL20-S4T-SBCS** Tension spring connection, access to C rail **6827060 BL20-S4S-SBCS** Screw connection, access to C rail	F231

Dimensions	Type	Connection
	**6827064 BL20-S6T-SBCSBC** Tension spring connection, access to C rail **6827066 BL20-S6S-SBCSBC** Screw connection, access to C rail	F232

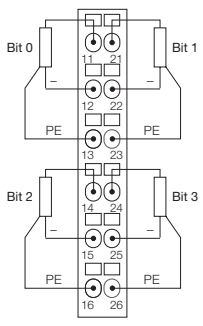
5

Connection

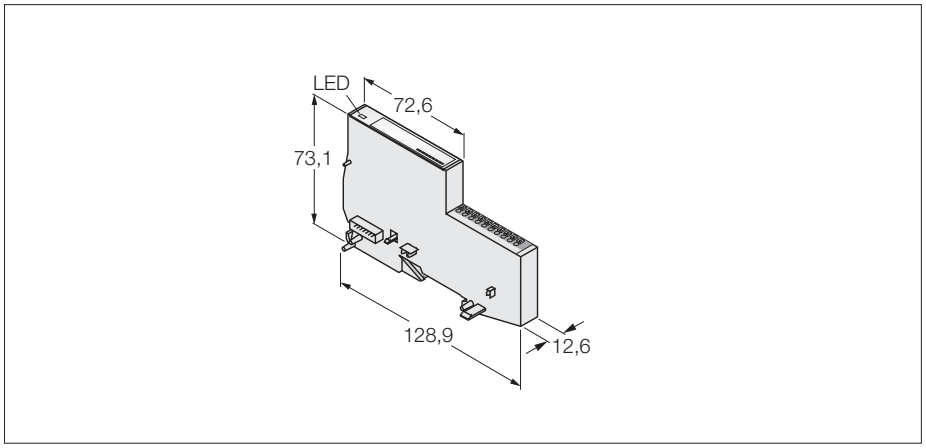
F231 - Wiring diagram



F232 - Wiring diagram



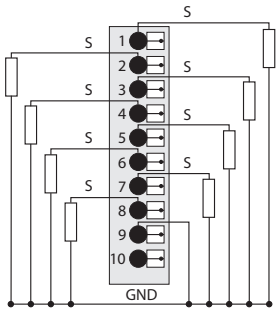
BL20 Economy Module
8 digital outputs
BL20-E-8DO-24VDC-0.5A-P



- Independent of the type of fieldbus used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 8 digital outputs, 24 VDC
- 0.5 A max.
- pnp

Type	BL20-E-8DO-24VDC-0.5A-P
Ident-No.	6827226
Number of channels	8
Rated voltage from the supply terminal	24 VDC
Admissible range	18…30 VDC
Rated current from field supply	≤ 3 mA
Rated current from module bus	≤ 15 mA
Power loss, typical	≤ 1.5 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.3 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Lamp load	< 6 W
Switching frequency, resistive	< 100 Hz
Switching frequency, lamp load	< 10 Hz
Short-circuit protection	yes
Simultaneity factor	1
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

Terminal connection



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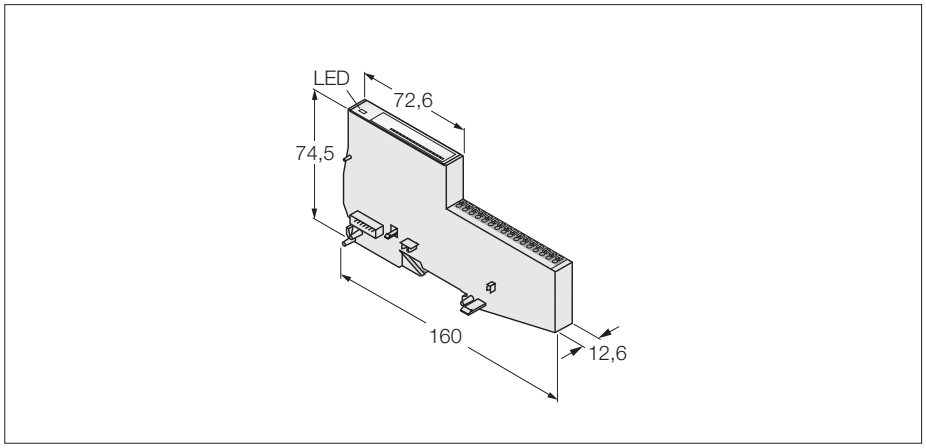
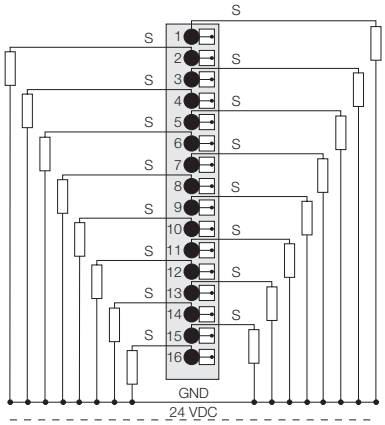
BL20 Economy Module
16 digital outputs
BL20-E-16DO-24VDC-0.5A-P



- Independent of the type of fieldbus used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 16 digital outputs, 24 VDC
- 0.5 A max.
- pnp

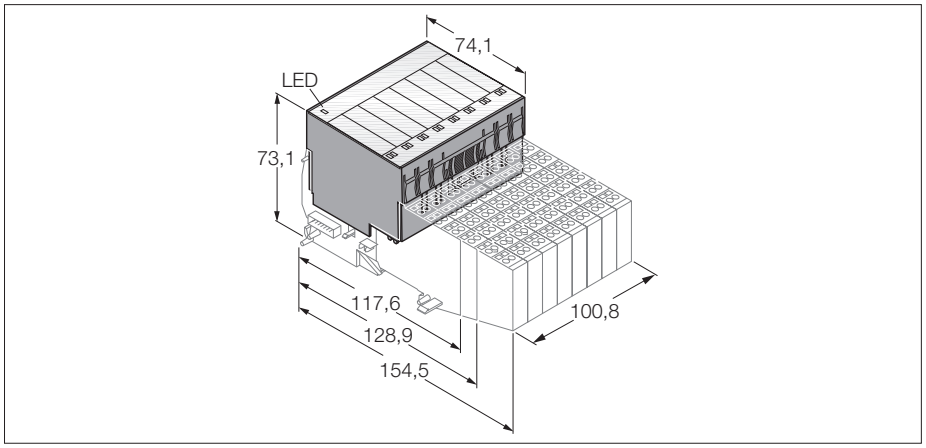
Type	BL20-E-16DO-24VDC-0.5A-P
Ident-No.	6827230
Number of channels	16
Rated voltage from the supply terminal	24 VDC
Admissible range	18…30 VDC
Rated current from field supply	≤ 3 mA
Rated current from module bus	≤ 25 mA
Power loss, typical	≤ 1.5 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.3 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Lamp load	< 6 W
Switching frequency, resistive	< 100 Hz
Switching frequency, lamp load	< 10 Hz
Short-circuit protection	yes
Simultaneity factor	0.5
Electrical isolation	electronics for the field level
Operating temperature	0 to +55 °C

Terminal connection



5

BL20 electronic module
16 digital outputs
BL20-16DO-24VDC-0.5A-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 16 digital outputs, 24 VDC
- 0.5 A max.
- pnp

Type	BL20-16DO-24VDC-0.5A-P
Ident-No.	6827027
Number of channels	16
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 50 mA
Rated current from module bus	≤ 120 mA
Power loss, typical	≤ 4 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.1 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Load resistance, inductive	< 1.2 H
Lamp load	< 3 W
Switching frequency, resistive	< 100 Hz
Short-circuit protection	yes
Simultaneity factor	1
Electrical isolation	electronics for the field level
Number of diagnostic bits	4
Operating temperature	0 to +55 °C

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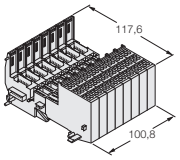
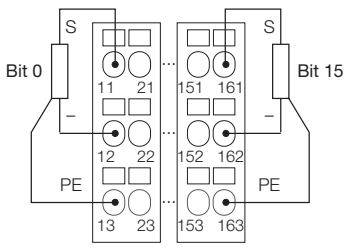
Compatible base modules

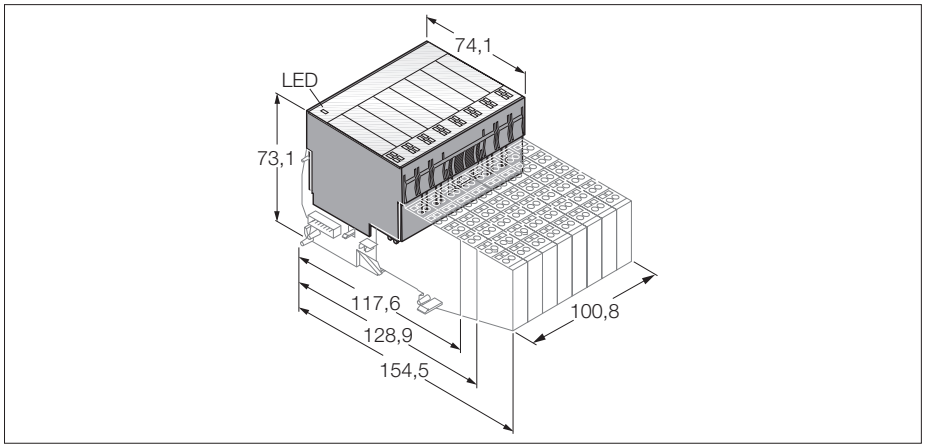
Dimensions	Type	Connection
	**6827061 BL20-B3T-SBC** Tension spring connection, access to C rail **6827062 BL20-B3S-SBC** Screw connection, access to C rail	F233

Connection

F233 - Wiring diagram



BL20 electronic module
32 digital outputs
BL20-32DO-24VDC-0.5A-P



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 32 digital outputs, 24 VDC
- 0.5 A max.
- pnp

Type	BL20-32DO-24VDC-0.5A-P
Ident-No.	6827220
Number of channels	32
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 50 mA
Rated current from module bus	≤ 120 mA
Power loss, typical	≤ 4 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.3 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Load resistance, inductive	< 1.2 H
Lamp load	< 6 W
Switching frequency, resistive	< 100 Hz
Short-circuit protection	yes
Simultaneity factor	1
Electrical isolation	electronics for the field level
Number of diagnostic bits	8
Operating temperature	0 to +55 °C

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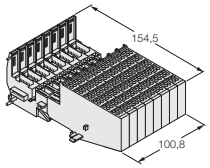
BL20 electronic module
32 digital outputs
BL20-32DO-24VDC-0.5A-P

Industrial Automation

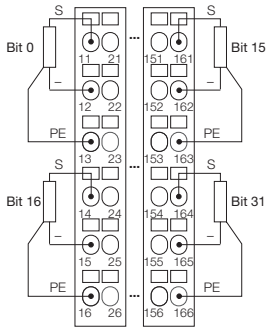
Compatible base modules

Dimensions	Type	Connection
	**6827218 BL20-B6T-SBCSBC** Tension spring connection, access to C rail **6827219 BL20-B6S-SBCSBC** Screw connection, access to C rail	F234

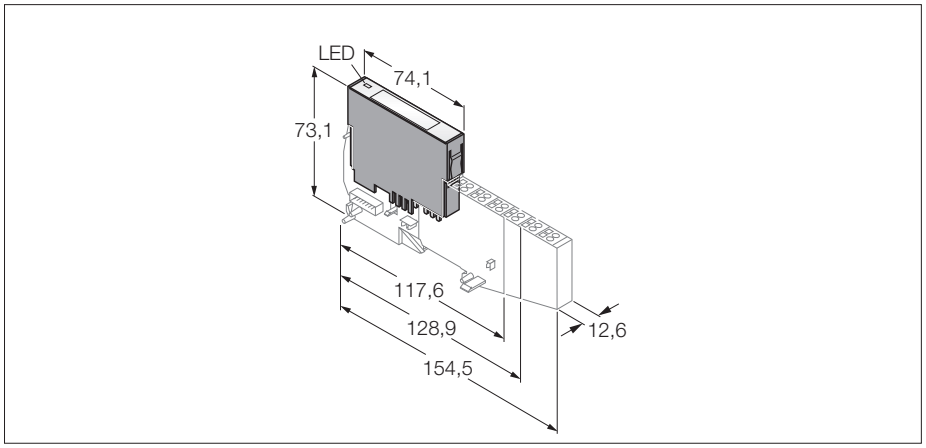
5

Connection

F234 - Wiring diagram



BL20 electronic module
2 analog outputs
BL20-2AO-I(4...20MA)



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog outputs 0/4…20 mA

Type	BL20-2AO-I(4...20MA)
Ident-No.	6827034
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 50 mA
Rated current from module bus	≤ 40 mA
Power loss, typical	≤ 1 W
Outputs	
Output type	0/4…20 mA
Load resistance, resistive	< 0.45 kΩ
Load resistance, inductive	< 1 mH
Electrical isolation	electronics for the field level
Transmission frequency	< 200 Hz
Basic fault limit at 23 °C	< 0.2 %
Repeatability	0.05 %
Temperature coefficient	< 150 ppm/°C of full scale
Resolution	16 Bit
Measured-value display	16 bit signed integer 12 bit full range left justified
Number of parameter bytes	6
Operating temperature	0 to +55 °C

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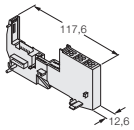
BL20 electronic module
2 analog outputs
BL20-2AO-I(4...20MA)

Industrial Automation

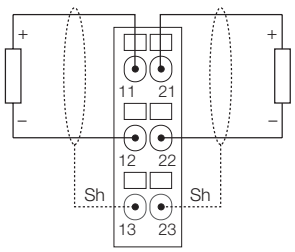
Compatible base modules

Dimensions	Type	Connection
	**6827044 BL20-S3T-SBB** Tension spring connection **6827045 BL20-S3S-SBB** Screw connection	F236

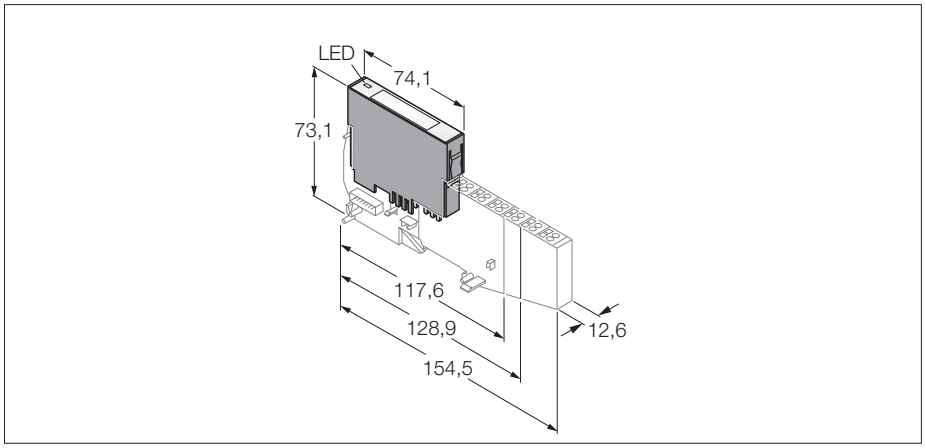
5

Connection

F236 - Wiring diagram



BL20 electronic module
2 analog outputs
BL20-2AOH-I



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog outputs 0/4…20 mA
- HART®

Type	BL20-2AOH-I
Ident-No.	6827332
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 30 mA
Power loss, typical	≤ 1 W
Outputs	
Output type	0/4…20 mA
Load resistance, resistive	< 0.60 kΩ
Load resistance, inductive	< 1 mH
Electrical isolation	Electronics to field level, channel to channel
Basic fault limit at 23 °C	< 0.2 %
Repeatability	0.05 %
Temperature coefficient	< 150 ppm/°C of full scale
Resolution	16 Bit
Measured-value display	16 bit signed integer NE43(PA), Extended
Cycle time	≤ 250 ms
Number of parameter bytes	12
Operating temperature	0 to +55 °C

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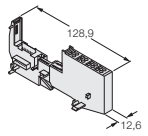
BL20 electronic module
2 analog outputs
BL20-2AOH-I

Industrial Automation

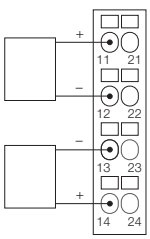
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F286

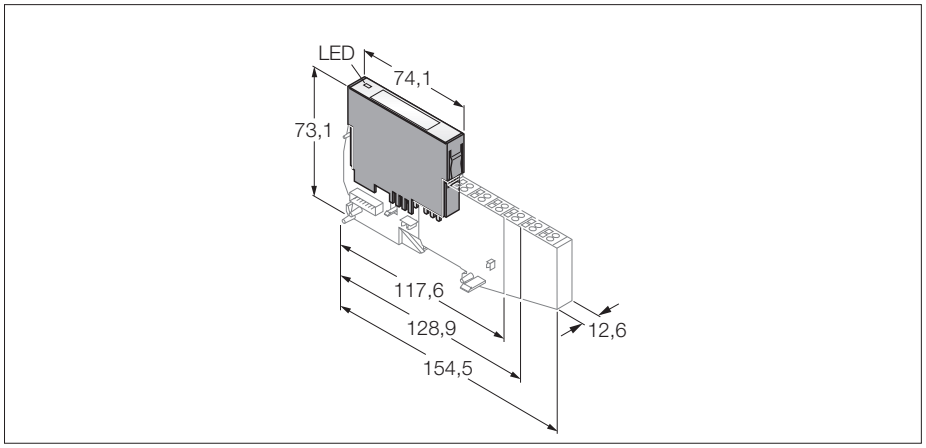
5

Connection

F286 - Wiring diagram



BL20 electronic module
2 analog outputs
BL20-2AO-U(-10/0...+10VDC)



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 analog input -10/0…+10 VDC

Type	BL20-2AO-U(-10/0...+10VDC)
Ident-No.	6827033
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 50 mA
Rated current from module bus	≤ 43 mA
Power loss, typical	≤ 1 W
Outputs	
Output type	-10/0…+10 VDC
Load resistance, resistive	> 1 kΩ
Load resistance, capacitive	> 1 µF
Electrical isolation	electronics for the field level
Transmission frequency	< 100 Hz
Basic fault limit at 23 °C	< 0.2 %
Repeatability	0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Measured-value display	16 bit signed integer 12 bit signed integer left justified 12 bit full range left justified
Number of parameter bytes	6
Operating temperature	0 to +55 °C

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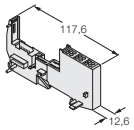
BL20 electronic module
2 analog outputs
BL20-2AO-U(-10/0...+10VDC)

Industrial Automation

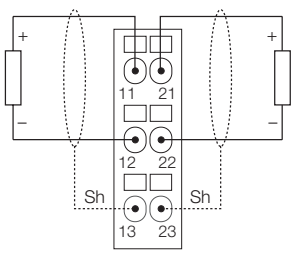
Compatible base modules

Dimensions	Type	Connection
	**6827044 BL20-S3T-SBB** Tension spring connection **6827045 BL20-S3S-SBB** Screw connection	F236

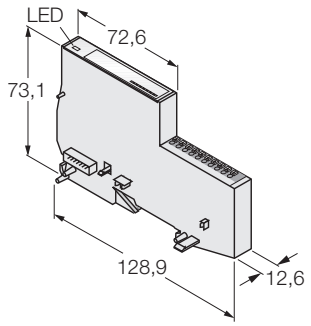
5

Connection

F236 - Wiring diagram



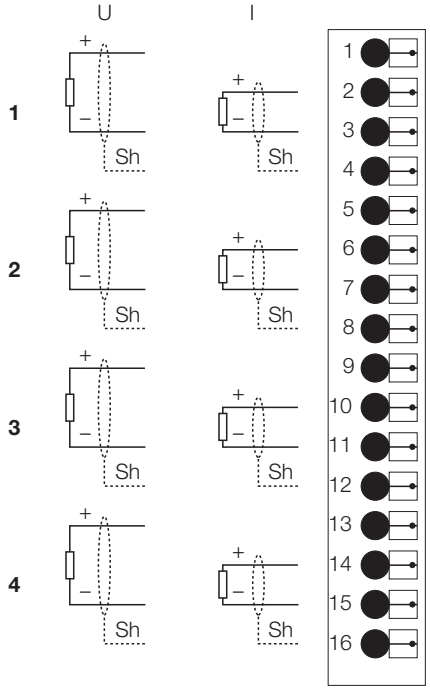
BL20 Economy Module
4 analog outputs
BL20-E-4AO-U/I



- Independent of the type of fieldbus used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 4 analog outputs
- 0…20 mA, 4…20 mA,-10…+10 VDC or 0…+10VDC,
- Selectable per channel

Type	BL20-E-4AO-U/I
Ident-No.	6827328
Number of channels	4
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 130 mA
Rated current from module bus	≤ 50 mA
Power loss, typical	≤ 2.6 W
Outputs	
Output type	0…20 mA, 4…20 mA, -10…+10 VDC or 0…+10 VDC
Load resistance, resistive	< 0.45 (current) or > 1 (voltage) kΩ
Load resistance, inductive	< 0.01 (voltage) mH
Load resistance, capacitive	< 1 (current) µF
Electrical isolation	electronics for the field level
Basic fault limit at 23 °C	< 0.2 %
Measured-value display	16 bit signed integer
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Cycle time	≤ 50 ms
Number of diagnostic bytes	4
Number of parameter bytes	12
Operating temperature	0 to +55 °C

Terminal connection



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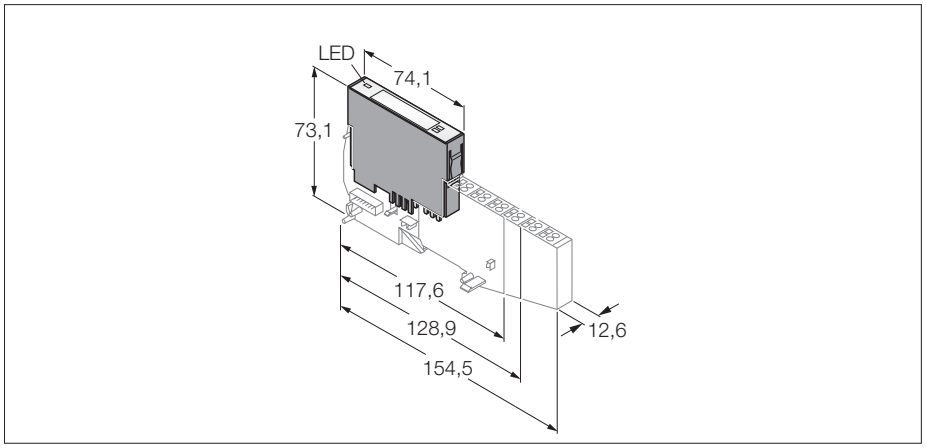
BL20 electronic module
RS232 interface
BL20-1RS232



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- Transmission of serial data via RS232 interface
- For connection of different devices, such as printers, scanners or bar code readers

Type	BL20-1RS232
Ident-No.	6827169
Number of channels	1
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 25 mA
Rated current from module bus	≤ 140 mA
Power loss, typical	≤ 1 W
Inputs / Outputs	
Transmission level active (U RS1)	-15 to -3 VDC
Transmission level inactive (URSO)	3 to 15 VDC
Common-mode range (UGL)	-7 to 12 VDC
Transmission signals	RxD, TxD, RTS, CTS
Data buffer received	128 Byte
Send data buffer	64 Byte
Connection type	full duplex
Transmission rate	300 to 115200 bps
Parameter	transmission rate, diagnostics, data bits, stop bits, XON - character, XOFF - character, parity, flow control
Cable length	15 m
Electrical isolation	isolation of electronics and field level via opto-couplers
Number of diagnostic bytes	1
Number of parameter bytes	4
Operating temperature	0 to +55 °C

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BL20 electronic module
RS232 interface
BL20-1RS232

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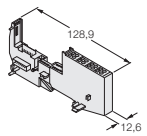
Industrial Automation

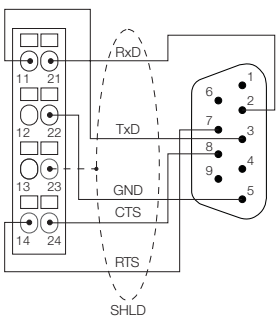
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F238

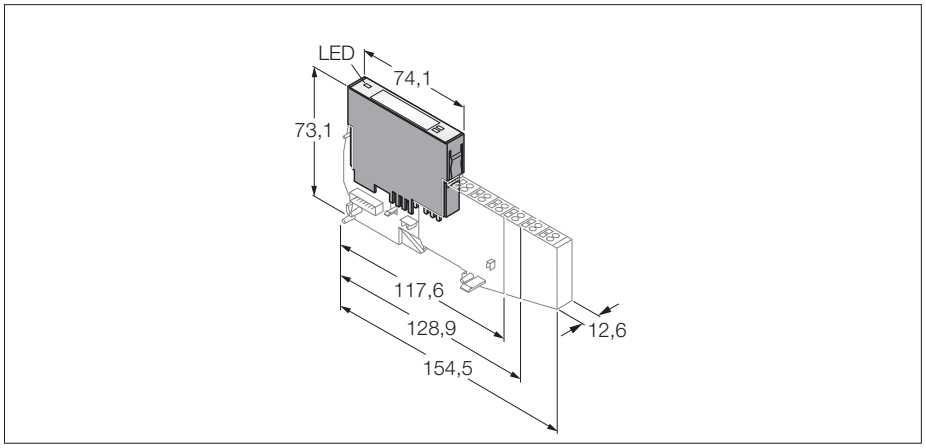
5

Connection

F238 - Wiring diagram



BL20 electronic module
RS485/422 interface
BL20-1RS485/422



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- Transmission of serial data via RS485/422 interface
- For connection of different devices, such as printers, scanners or bar code readers

Type	BL20-1RS485/422
Ident-No.	6827165
Number of channels	1
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 25 mA
Rated current from module bus	≤ 60 mA
Power loss, typical	≤ 1 W
Inputs / Outputs	
Transmission signals	TxD, RxD
Data buffer received	128 Byte
Send data buffer	64 Byte
Connection type	2-wire half duplex or 4-wire full duplex
Transmission rate	300 to 115200 bps
Parameter	RS485/422, transmission rate, diagnostics, data bits, stop bits, XON - character, XOFF - character, parity, flow control
Cable length	30 m
Line impedance	120 Ω
Bus termination	external
Electrical isolation	isolation of electronics and field level via opto-couplers
Number of diagnostic bytes	1
Number of parameter bytes	4
Operating temperature	0 to +55 °C

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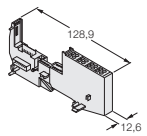
BL20 electronic module
RS485/422 interface
BL20-1RS485/422

Industrial Automation

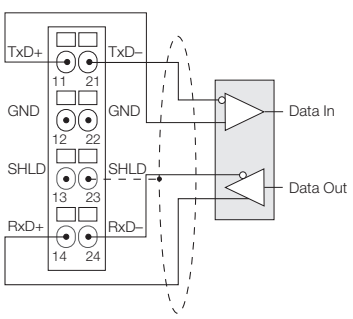
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F239, F240

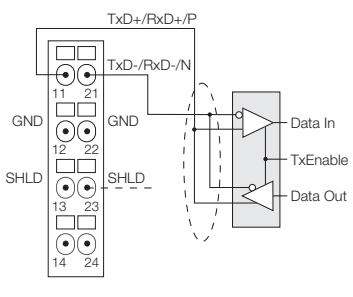
5

Connection

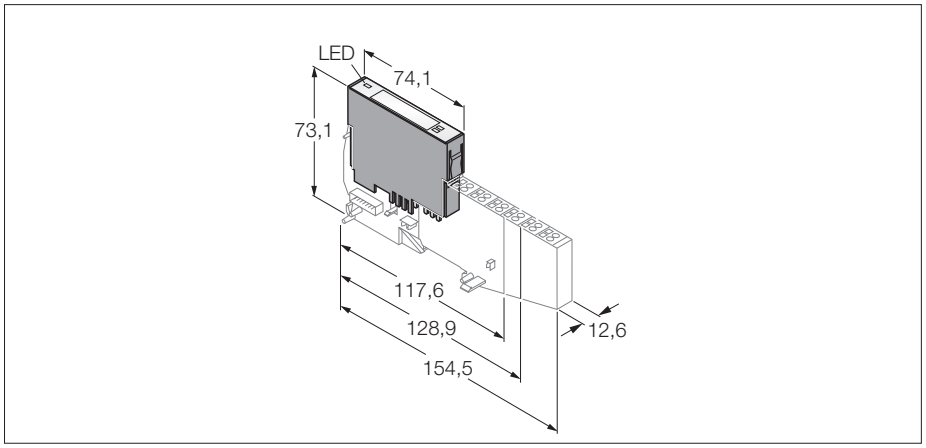
F239 - wiring diagram for RS422



F240 - wiring diagram for RS485



BL20 electronic module
connection of SSI sensors
BL20-1SSI



- Independent of the type of fieldbus and connection technology used
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- Connection of SSI sensors
- Maximum bit transmission rate 1 Mbps

Type	BL20-1SSI
Ident-No.	6827166
Number of channels	1
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 25 mA
Rated current from module bus	≤ 50 mA
Power loss, typical	≤ 1 W
Inputs / Outputs	
Transmission signals	CL, D
Connection type	4-wire full duplex (clock output/signal input)
Transmission rate	62.5 kbps up to 1 Mbps
Parameter	transmission rate, diagnostics, data format (binary / GRAY coded), data frame bits (1-32), number of invalid bits (LSB: 0-15, MSB 0-7)
Cable length	30 m
Electrical isolation	isolation of electronics and field level via opto-couplers
Number of diagnostic bytes	1
Number of parameter bytes	4
Operating temperature	0 to +55 °C

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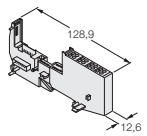
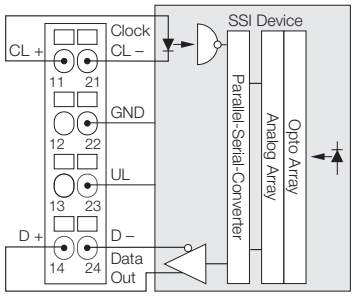
Compatible base modules

Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F241

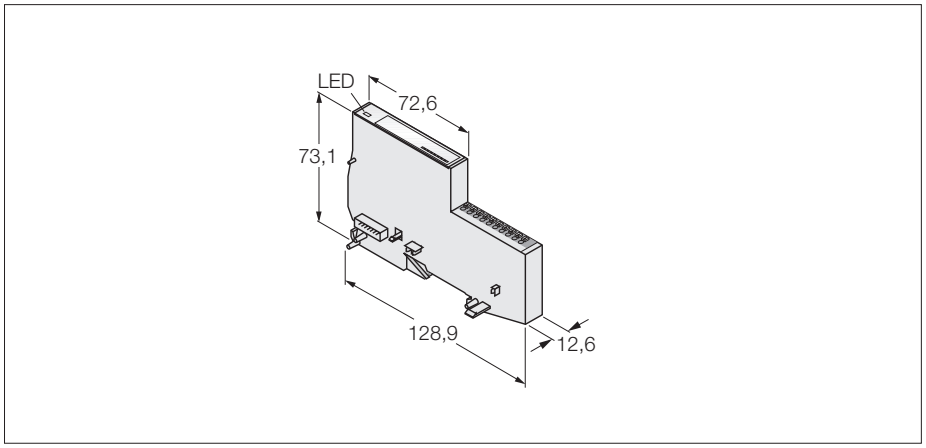
Connection

F241 - Wiring diagram



5

BL20 Economy Module
2 × counter/encoder channels, 2 × PWM outputs
BL20-E-2CNT-2PWM



- Independent of the type of fieldbus used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- 2 × counter/encoder channels 200 kHz
- 2 digital outputs 20kHz / 0.5A
- 2 PWM outputs 20kHz / 0.5A
- Counting mode: Continuous, single or periodic count
- Measuring mode: Frequency, rotation speed or period duration measurement

Type	BL20-E-2CNT-2PWM
Ident-No.	6827341
Number of channels	4
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 20 mA
Rated current from module bus	≤ 50 mA
Power loss, typical	≤ 1 W
Electrical isolation	isolation of electronics and field level via opto-couplers
Low level signal voltage	0…1 VDC / 0…4.5 VDC
High level signal voltage	3.5…30 VDC / 7.5…30 VDC
Low level signal current	0…0.1 mA / 0…0.4 mA
High level signal current	0.3…3 mA / 0.6…3mA
Filter on	> 16 µs (62,5 kHz)
Filter off	< 2.5 µs (200 kHz)
Outputs	
Output type	PNP
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.2 ms
Load type	resistive, inductive, lamp load
Lamp load	< 10 W
Switching frequency	≤ 20000 Hz
Switching frequency, resistive	< 100 Hz
Inductive switching frequency	< 2 Hz
Switching frequency, lamp load	< 10 Hz
Short-circuit protection	yes
Simultaneity factor	1
Number of diagnostic bytes	1
Number of parameter bytes	15
Operating temperature	0 to +55 °C

Terminal connection

Counter 1	1	A1 / DI1 (200kHz)
	2	B1 / DI2 (200kHz)
	3	Z1 / DI3 (10kHz)
	4	$+U_B$
	5	GND
Counter 2	6	A2 / DI4 (200kHz)
	7	B2 / DI5 (200kHz)
	8	Z2 / DI6 (10kHz)
	9	$+U_B$
	10	GND
PWM 1	11	P1 (0,5A / 20kHz)
	12	Direction / DO1 (0,5A)
	13	GND
PWM 2	14	P2 (0,5A / 20kHz)
	15	Direction / DO2 (0,5A)
	16	GND

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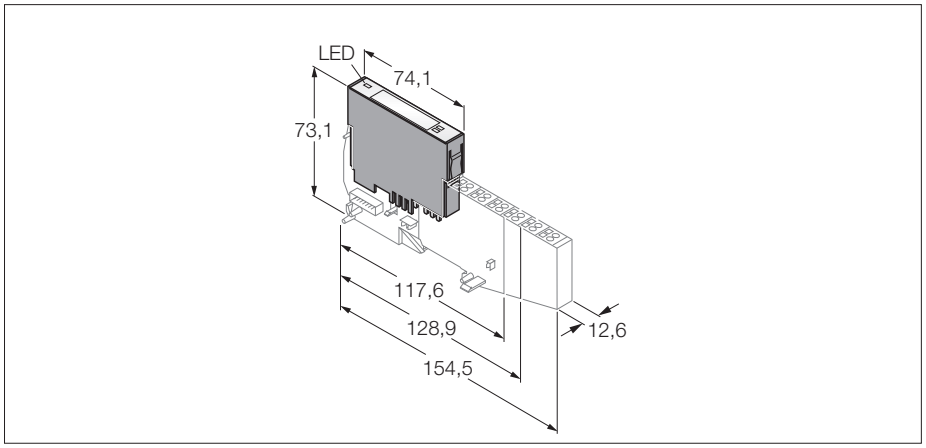
RFID system
Interface for connection of *BL ident*® write-read heads (HF/UHF)
BL20-2RFID-A



- This module is used together for example with the gateway BL20-GW-DPV1
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- Connection of 2 *BL ident*® write-read heads
- Mixed operation of HF and UHF write-read heads
- transmission rate: 115.2 kbps
- Cable length: 50 m maximum

Type	BL20-2RFID-A
Ident-No.	6827233
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 100 mA
Rated current from module bus	≤ 30 mA
Power loss, typical	≤ 1 W
Inputs / Outputs	
Transmission rate	115.2 kbps
Cable length	50 m
Electrical isolation	isolation of electronics and field level via opto-couplers
Simultaneity factor	1
Sensor supply	0.25 A per channel, short-circuit proof
Number of diagnostic bytes	4
Number of parameter bytes	8
Number of input bytes	4
Number of output bytes	4
Operating temperature	0 to +55 °C

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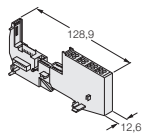
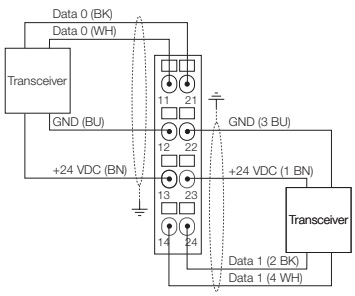
Compatible base modules

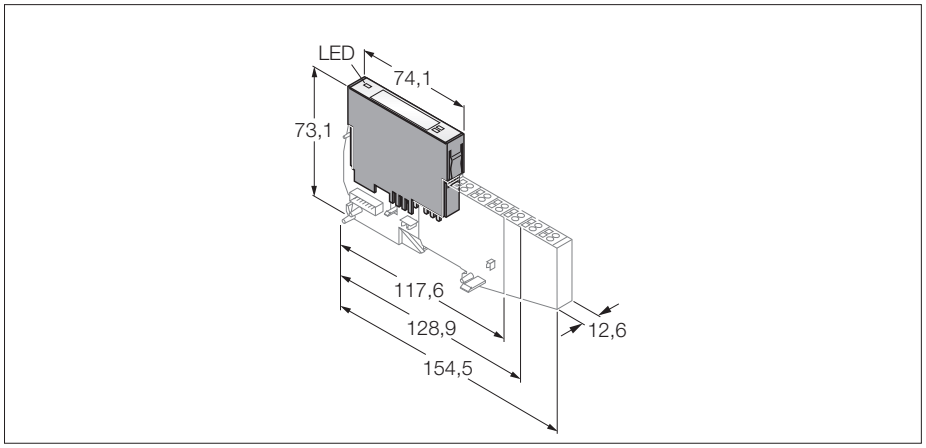
Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F242

Connection

F242 - Wiring diagram (…/S2500)



RFID system
Interface for connection of *BL ident*® write-read heads (HF/UHF)
BL20-2RFID-S



- No special software (function module) is necessary for integration in the PLC systems
- 8 byte user data per read / write cycle
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- Connection of 2 *BL ident*® write-read heads
- Mixed operation of HF and UHF write-read heads
- Transmission rate: 115.2 kbps
- Cable length: 50 m maximum

Type	BL20-2RFID-S
Ident-No.	6827306
Number of channels	2
Rated voltage from the supply terminal	24 VDC
Rated current from field supply	≤ 100 mA
Rated current from module bus	≤ 30 mA
Power loss, typical	≤ 1 W
Inputs / Outputs	
Transmission rate	115.2 kbps
Cable length	50 m
Electrical isolation	isolation of electronics and field level via opto-couplers
Simultaneity factor	1
Sensor supply	0.25 A per channel, short-circuit proof
Number of diagnostic bytes	4
Number of parameter bytes	8
Number of input bytes	24
Number of output bytes	24
Operating temperature	0 to +55 °C

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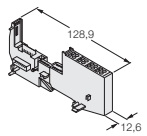
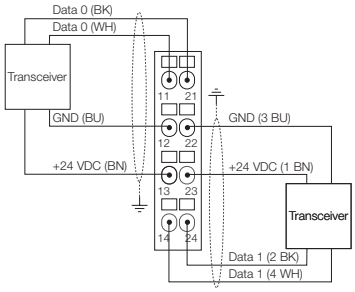
RFID system
Interface for connection of *BL ident*® write-read heads (HF/UHF)
BL20-2RFID-S

Compatible base modules

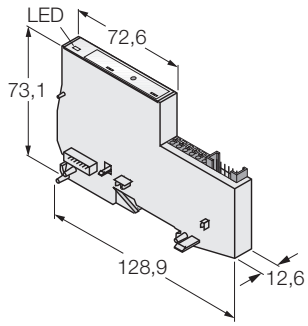
Dimensions	Type	Connection
	**6827046 BL20-S4T-SBBS** Tension spring connection **6827047 BL20-S4S-SBBS** Screw connection	F242

Connection

F242 - Wiring diagram (…/S2500)



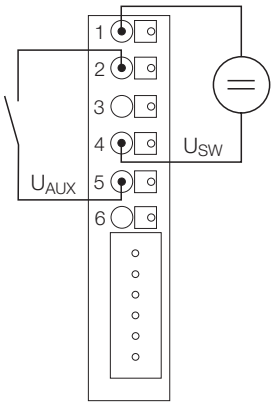
BL20 Economy Module
SWIRE communication module
BL20-E-1SWIRE



- Independent of the type of fieldbus used
- Electronics and connection technology in an single housing
- Tension spring connection technology
- Degree of protection IP20
- LEDs for display of status and diagnostics
- Electronics galvanically isolated from the field level via opto-couplers
- Supports the connection of a SWIRE branch.
- Maximum 16 nodes per SWIRE branch
- Maximum 3 SWIRE modules per BL20 station

Type	BL20-E-1SWIRE
Ident-No.	6827251
Number of channels	1 SWIRE branch
Admissible range	18…30 VDC
Voltage supply for contactor	24 VDC
Voltage supply for contactor	3 A
Rated current from module bus	≤ 60 mA
Electrical isolation	isolation of electronics and field level via opto-couplers
Number of diagnostic bytes	8
Number of parameter bytes	24
Operating temperature	0 to +55 °C

Terminal connection



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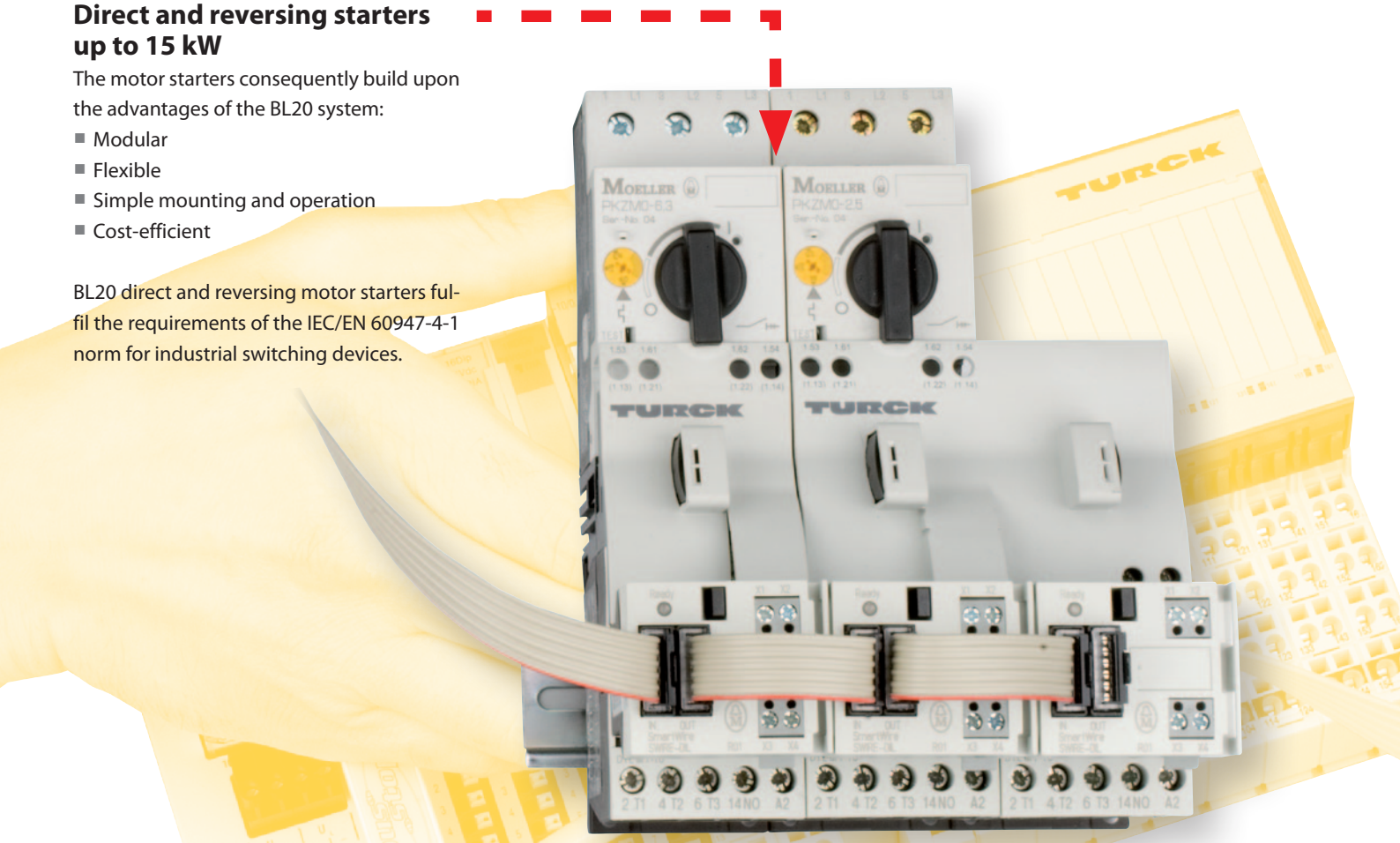
BL20 motor starter –
Save switching and protection of motors

Direct and reversing starters up to 15 kW

The motor starters consequently build upon the advantages of the BL20 system:

- Modular
- Flexible
- Simple mounting and operation
- Cost-efficient

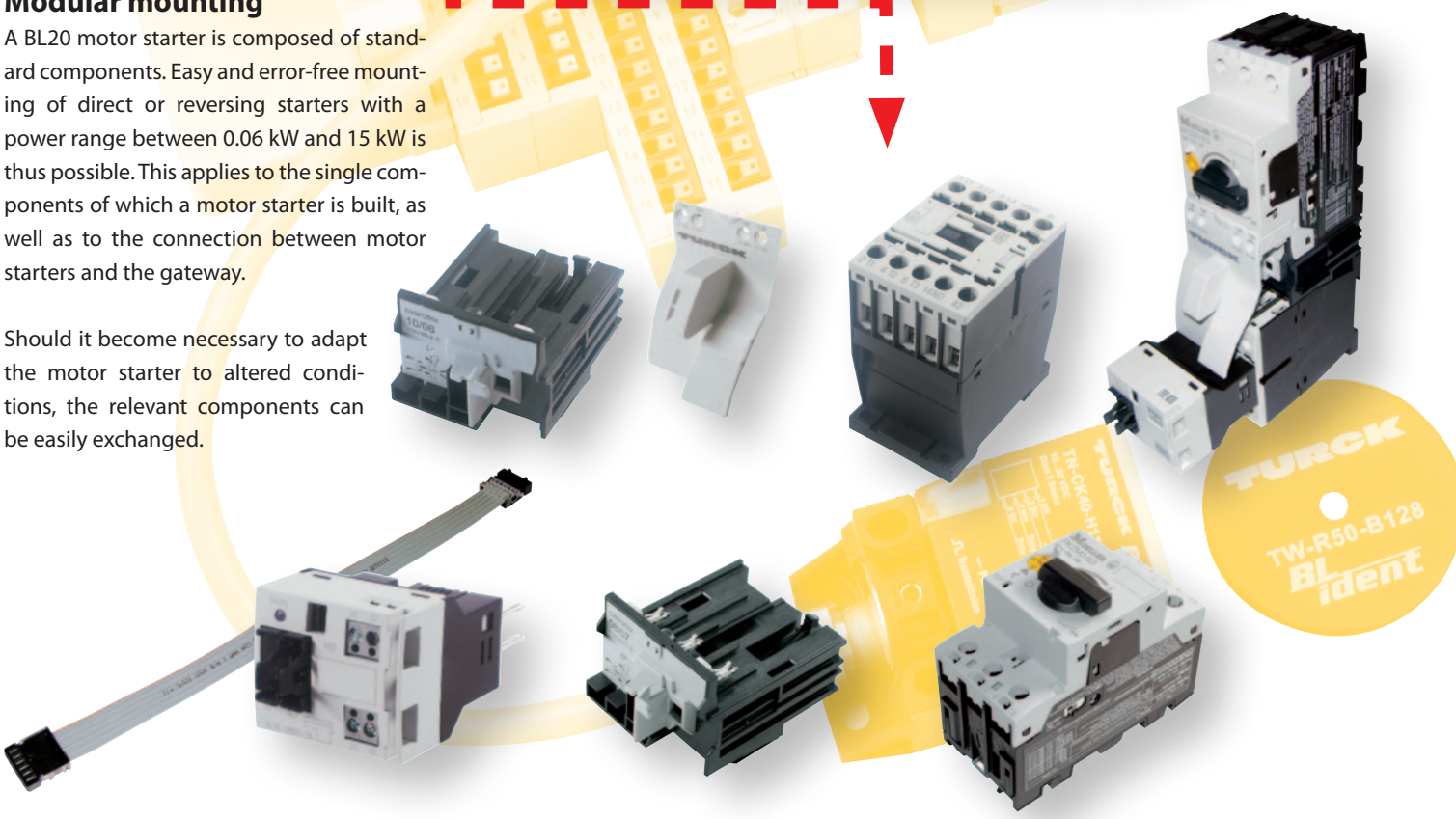
BL20 direct and reversing motor starters fulfil the requirements of the IEC/EN 60947-4-1 norm for industrial switching devices.



Modular mounting

A BL20 motor starter is composed of standard components. Easy and error-free mounting of direct or reversing starters with a power range between 0.06 kW and 15 kW is thus possible. This applies to the single components of which a motor starter is built, as well as to the connection between motor starters and the gateway.

Should it become necessary to adapt the motor starter to altered conditions, the relevant components can be easily exchanged.



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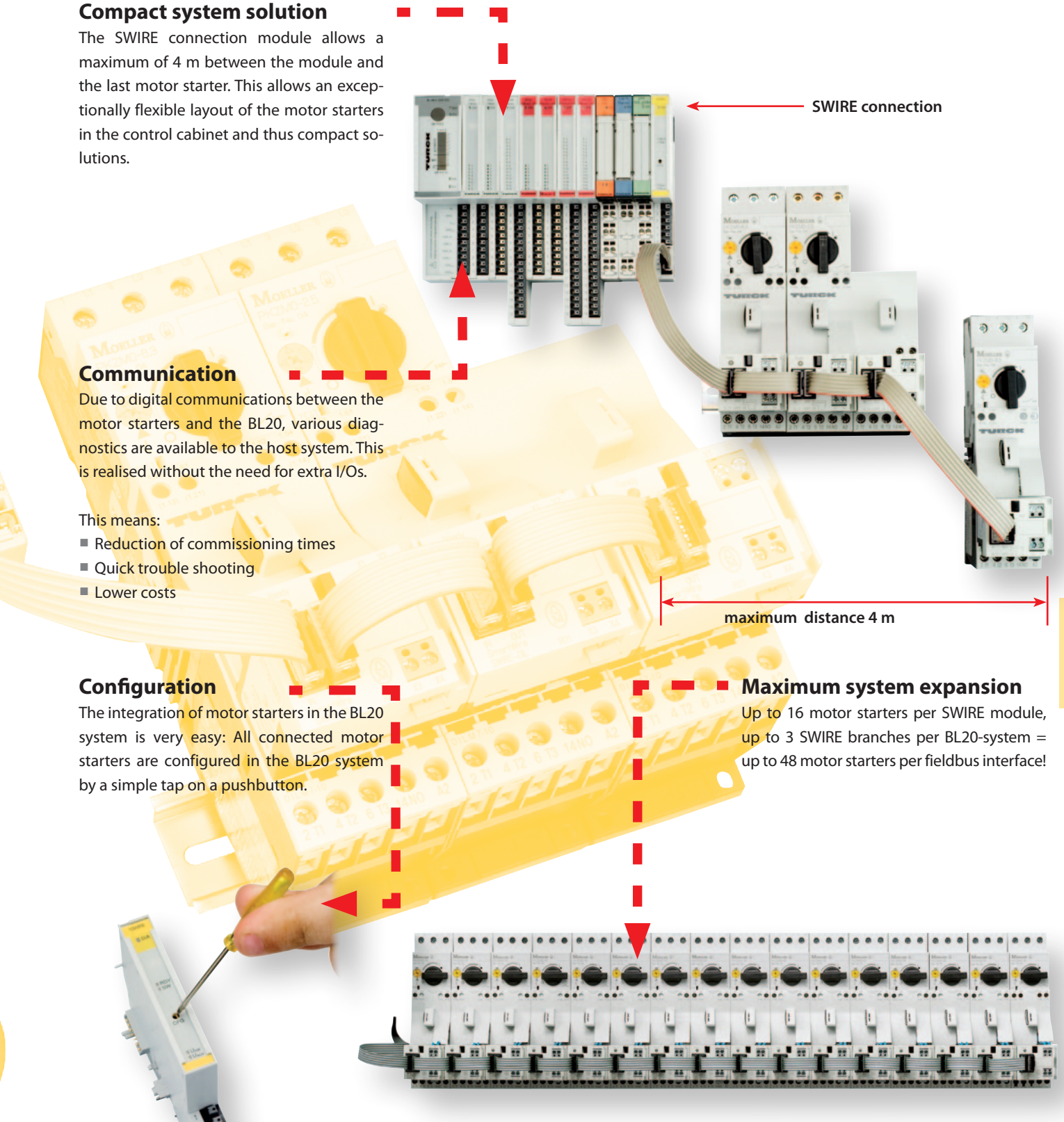
Compact system solution

The SWIRE connection module allows a maximum of 4 m between the module and the last motor starter. This allows an exceptionally flexible layout of the motor starters in the control cabinet and thus compact solutions.



Communication

Due to digital communications between the motor starters and the BL20, various diagnostics are available to the host system. This is realised without the need for extra I/Os.

This means:

- Reduction of commissioning times
- Quick trouble shooting
- Lower costs

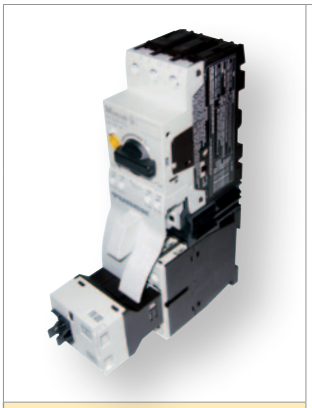
Configuration

The integration of motor starters in the BL20 system is very easy: All connected motor starters are configured in the BL20 system by a simple tap on a pushbutton.

Maximum system expansion

Up to 16 motor starters per SWIRE module, up to 3 SWIRE branches per BL20-system = up to 48 motor starters per fieldbus interface!

BL20 motor starter –
Selection guide direct starter

	=		+		+		
Rated operating performance		**Motor protection switch**		**Auxiliary switch for motor protection switch**		**SWIRE communication module**	
AC-3 , 380 V…415 V							
P, kW / hp				5 pcs / package		5 pcs /package	
0.06 / 0.08		PKZM0-0,25 6827283					
0.09 / 0.12		PKZM0-0,4 6827282					
0.12 / 0.16		PKZM0-0,63 6827280					
0.18 / 0.24		PKZM0-0,63 6827280					
0.25 / 0.33		PKZM0-1 6827279					
0.37 / 0.5		PKZM0-1,6 6827255					
0.55 / 0.74		PKZM0-1,6 6827255					
0.75 / 1		PKZM0-2,5 6827256					
1.1 / 1.5		PKZM0-4 6827257		NHI-E-10L-PKZ0 (5pcs) 6827254		BL20-SWIRE-DIL(5pcs) 6827291	
1.5 / 2		PKZM0-4 6827257					
2.2 / 2.95		PKZM0-6,3 6827258					
3 / 4		PKZM0-10 6827259					
4 / 5.4		PKZM0-10 6827259					
5.5 / 7.38		PKZM0-12 6827260					
7.5 / 10		PKZM0-16 6827284					
7.5 / 10		PKZM0-16 6827284					
11 / 15		PKZM0-25 6827285					
15 / 20		PKZM0-32 6827261					

* These power contactors require a different wiring set as mentioned here

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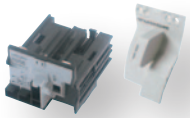
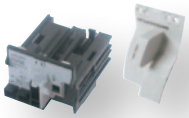
	Type "1" coordination In type "1" coordination, the contactor or soft starter must not endanger persons or the installation in the event of a short-circuit and does not have to be capable of continued use without repairs or parts replacements.				Type "2" coordination In type "2" coordination, the contactor or soft starter must not endanger persons or the installation in the event of a short-circuit and must be capable of continued use without repairs or parts replacements.			
	+ 		+ 		+ 		+ 	
	Power contactor		Wiring set		Power contactor		Wiring set	
	Aux. contact				Aux. contact			
	1 × N. C.	1 × N. O.			1 × N. C.	1 × N.O.		
	DILM7-01(24VDC) 6827541	DILM7-10(24VDC) 6827267	BL20-PKZM0-XDM12 6827262		DILM7-01(24VDC) 6827541	DILM7-10(24VDC) 6827267	BL20-PKZM0-XDM12 6827262	
	DILM9-01(24VDC) 6827543	DILM9-10(24VDC) 6827268						
	DILM12-01(24VDC) 6827542	DILM12-10(24VDC) 6827278			DILM17-01(RDC24)* 6827298	DILM17-10(RDC24)* 6827297	BL20-PKZM0-XDM32 6827263	
	DILM15-01(24VDC) 6827538	DILM15-10(24VDC) 6827287						
	DILM17-01(RDC24)* 6827298	DILM17-10(RDC24)* 6827297						
	DILM25-01(RDC24)* 6827539	DILM25-10(RDC24)* 6827281	BL20-PKZM0-XDM32 6827263		DILM25-01(RDC24)* 6827539	DILM25-10(RDC24)* 6827281		
	DILM32-01(RDC24)* 6827540	DILM32-10(RDC24)* 6827270			DILM32-01(RDC24)* 6827540	DILM32-10(RDC24)* 6827270		

or

5

BL20 motor starter –
Selection guide reversing starter

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+ 2 ×

Rated operating performance	Motor protection switch	Auxiliary switch for motor protection switch	SWIRE communication module
AC-3 , 380 V…415 V			
P, kW / hp		5 pcs / package	5 pcs / package
0.06 / 0.08	PKZM0-0,25 6827283		
0.09 / 0.12	PKZM0-0,4 6827282		
0.12 / 0.16	PKZM0-0,63 6827280		
0.18 / 0.24	PKZM0-0,63 6827280		
0.25 / 0.33	PKZM0-1 6827279		
0.37 / 0.5	PKZM0-1,6 6827254		
0,55 / 0,74	PKZM0-1,6 6827254		
0.75 / 1	PKZM0-2,5 6827256		
1.1 / 1.5	PKZM0-4 6827257		
1.5 / 2	PKZM0-4 6827257	NHI-E-10L-PKZ0 (5pcs) 6827254	BL20-SWIRE-DIL(5pcs) 6827291
2.2 / 2.95	PKZM0-6,3 6827258		
3 / 4	PKZM0-10 6827259		
4 / 5.4	PKZM0-10 6827259		
5.5 / 7.38	PKZM0-12 6827260		
7.5 / 10	PKZM0-16 6827284		
7.5 / 10	PKZM0-16 6827284		
11 / 15	PKZM0-25 6827285		
15 / 20	PKZM0-32 6827261		

* These power contactors require a different wiring set as mentioned here

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Type "1" coordination In type "1" coordination, the contactor or soft starter must not endanger persons or the installation in the event of a short-circuit and does not have to be capable of continued use without repairs or parts replacements.					Type "2" coordination In type "2" coordination, the contactor or soft starter must not endanger persons or the installation in the event of a short-circuit and must be capable of continued use without repairs or parts replacements.				
+2× 		+ 	+ 		+2× 		+ 	+ 	
Power contactor			Wiring set	Mech. interlock	Power contactor			Wiring set	Mech. interlock
Aux. contact					Aux. contact				
1 × N. C.	1 × N. O.				1 × N. C.	1 × N. O.			
DILM7-01(24VDC) 6827541	DILM7-10(24VDC) 6827267		BL20-PKZM0-XRM12 6827264	DILM12-XMV 6827269	DILM7-01(24VDC) 6827541	DILM7-10(24VDC) 6827267		BL20-PKZM0-XRM12 6827264	DILM12-XMV 6827269
DILM9-01(24VDC) 6827543	DILM9-10(24VDC) 6827268				DILM17-01(RDC24)* 6827298	DILM17-10(RDC24)* 6827297		BL20-PKZM0-XRM32 6827286	DILM32-XMV 6827545
DILM12-01(24VDC) 6827542	DILM12-10(24VDC) 6827278				DILM25-01(RDC24)* 6827539	DILM25-10(RDC24)* 6827281			
DILM17-01(RDC24)* 6827298	DILM17-10(RDC24)* 6827297		BL20-PKZM0-XRM32 6827286	DILM32-XMV 6827545	DILM32-01(RDC24)* 6827540	DILM32-10(RDC24)* 6827270			
DILM25-01(RDC24)* 6827539	DILM25-10(RDC24)* 6827281								
DILM32-01(RDC24)* 6827540	DILM32-10(RDC24)* 6827270								

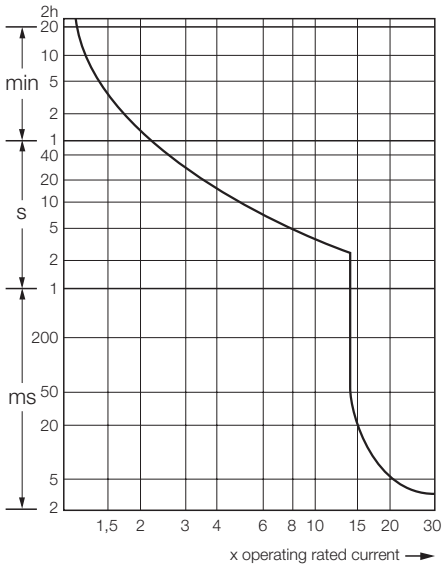
or

5

BL20 motor starter –
Technical specification motor protection switch

Type	Ident-no.	Max. rated operating performance					Rated continuous current	Setting range overload release	Short circuit release
		AC3							
		220 V	380 V	440 V	500 V	660 V			
		230 V	400V			690 V			
		240 V	415 V						
		P [kW]					I_u [A]	I_r [A]	I_m [A]
PKZM0-0,25	6827283		0.06	0.06	0.06	0.12	0.25	0.16…0.25	3.5
PKZM0-0,4	6827282	0.06	0.09	0.12	0.12	0.18	0.4	0.25…0.4	5.6
PKZM0-0,63	6827280	0.09	0.12	0.18	0.25	0.25	0.63	0.4…0.63	6.8
PKZM0-1	6827279	0.12	0.25	0.25	0.37	0.55	1	0.63…1	14
PKZM0-1,6	6827254	0.25	0.55	0.55	0.75	1.1	1.6	1…1.6	22
PKZM0-2,5	6827256	0.37	0.75	1.1	1.1	1.5	2.5	1.6…2.5	35
PKZM0-4	6827257	0.75	1.5	1.5	2.2	3	4	2.5…4	56
PKZM0-6,3	6827258	1.1	2.2	3	3	4	6.3	4…6.3	88
PKZM0-10	6827259	2.2	4	4	4	7.5	10	6.3…10	140
PKZM0-12	6827260	3	5.5	5.5	5.5	11	12	8…12	168
PKZM0-16	6827284	4	7.5	9	9	12.5	16	10…16	224
PKZM0-25	6827285	5.5	12.5	12.5	15	22	25	20…25	350
PKZM0-32	6827261	7.5	15	15	22	30	32	25…32	448

Tripping characteristic for motor protection switch PKZM0-…



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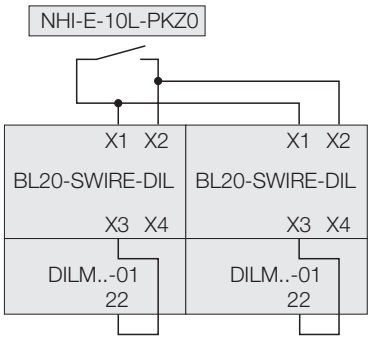
BL20 motor starter – Technical specification power contactor

Industrial Automation

Type	Ident-no.	Rated operating current	Max. rated operating performance three-phase AC motor 50…60 Hz						$I_{th} = I_e$, AC-1 at 60 °C, open	Contact-complement
		AC-3	AC-3			AC-4				
		380 V	220 V	380 V	660 V	220 V	380 V	660 V		
		400 V	230 V	400 V	690 V	230 V	400 V	690 V		
		I_e [A]	P [kW]			P [kW]			$I_{th} = I_e$ [A]	N. O./ N. C.
DILM7-01(24VDC)	6827541	7	2.2	3	3.5	1	2.2	2.9	20	N. C.
DILM7-10(24VDC)	6827267	7	2.2	3	3.5	1	2.2	2.9	20	N. O.
DILM9-01(24VDC)	6827543	9	2.5	4	4.5	1.5	2.5	3.6	20	N. C.
DILM9-10(24VDC)	6827268	9	2.5	4	4.5	1.5	2.5	3.6	20	N. O.
DILM12-01(24VDC)	6827542	12	3.5	5.5	6.5	2	3	4.4	20	N. C.
DILM12-10(24VDC)	6827278	12	3.5	5.5	6.5	2	3	4.4	20	N. O.
DILM15-01(24VDC)	6827538	15.5	4	7.5	7	2	3	4.4	20	N. C.
DILM15-10(24VDC)	6827287	15.5	4	7.5	7	2	3	4.4	20	N. O.
DILM17-01(RDC24)	6827298	18	5	7.5	11	2.5	4.5	6.5	35	N. C.
DILM17-10(RDC24)	6827297	18	5	7.5	11	2.5	4.5	6.5	35	N. O.
DILM25-01(RDC24)	6827539	25	7.5	11	14	3.5	6	8.5	40	N. C.
DILM25-10(RDC24)	6827281	25	7.5	11	14	3.5	6	8.5	40	N. O.
DILM32-01(RDC24)	6827540	32	10	15	17	4	7	10	40	N. C.
DILM32-10(RDC24)	6827270	32	10	15	17	4	7	10	40	N. O.

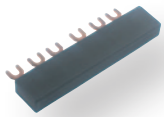
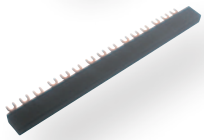
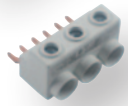
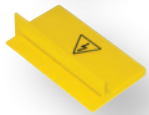
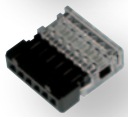
5

Electrical interlock wiring for reversing starters



Power contactors with a N. C. output are obligatory for the electrical interlock of reversing starters. The wiring is implemented by the user as shown on the left. All other necessary connections are implemented with pluggable bridges which are included in the wiring sets.

BL20 motor starter – Accessories

Figure	Description	Type	Ident-no.
	Three-phase current rail, insulated, U_e = 690 V, I_u = 63 A, extension enabled by rotated mounting, length 90 mm	**B3.0/2-PKZ0**	6827099
	Three-phase current rail, insulated, U_e = 690 V, I_u = 63 A, extension enabled by rotated mounting, length 180 mm	**B3.0/4-PKZ1**	6827098
	Input terminal for three-phase current rail, insulated, U_e = 690 V, I_u = 63 A,	**BK25/3-PKZ0**	6827134
	No-load connection cover for non-assigned connections at three-phase current rails 20 pcs/ package	**H-B3-PKZ0(20pcs)**	6827544
	SWIRE power module. For power supply of SWIRE branches. Is applied when groups of motor starters have to be disconnected. Max. 4 Power modules per SWIRE branch.	**BL20-SWIRE-PF**	6827288
	Terminating connector for SWIRE-branches, no electrical function 25 pcs / package	**BL20-SWIRE-CAB-000 (25pcs)**	6827292
	SWIRE connection cable, length 85 mm 25 pcs / package	**BL20-SWIRE-CAB-008 (25pcs)**	6827274
	SWIRE connection cable, length 110 mm 25 pcs / package	**BL20-SWIRE-CAB-011 (25pcs)**	6827275
	SWIRE connection cable, length 150 mm 5 pcs / package	**BL20-SWIRE-CAB-015 (5pcs)**	6827293
	SWIRE connection cable, length 250 mm 5 pcs / package	**BL20-SWIRE-CAB-025 (5pcs)**	6827276
	SWIRE connection cable, length 500 mm	**BL20-SWIRE-CAB-050**	6827296
	SWIRE connection cable, length1000 mm	**BL20-SWIRE-CAB-100**	6827294
	SWIRE connection cable, length 2000 mm	**BL20-SWIRE-CAB-200**	6827295
	Mechanical interlock for reversing starters with power contactors DILM7-DILM15	**DILM12-XMV**	6827269
	Mechanical interlock for reversing starters with power contactors DILM17-DILM32	**DILM32-XMV**	6827545

User manuals
The user manual for BL20 systems is only available as PDF file and can be downloaded on **www.turck.com**

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