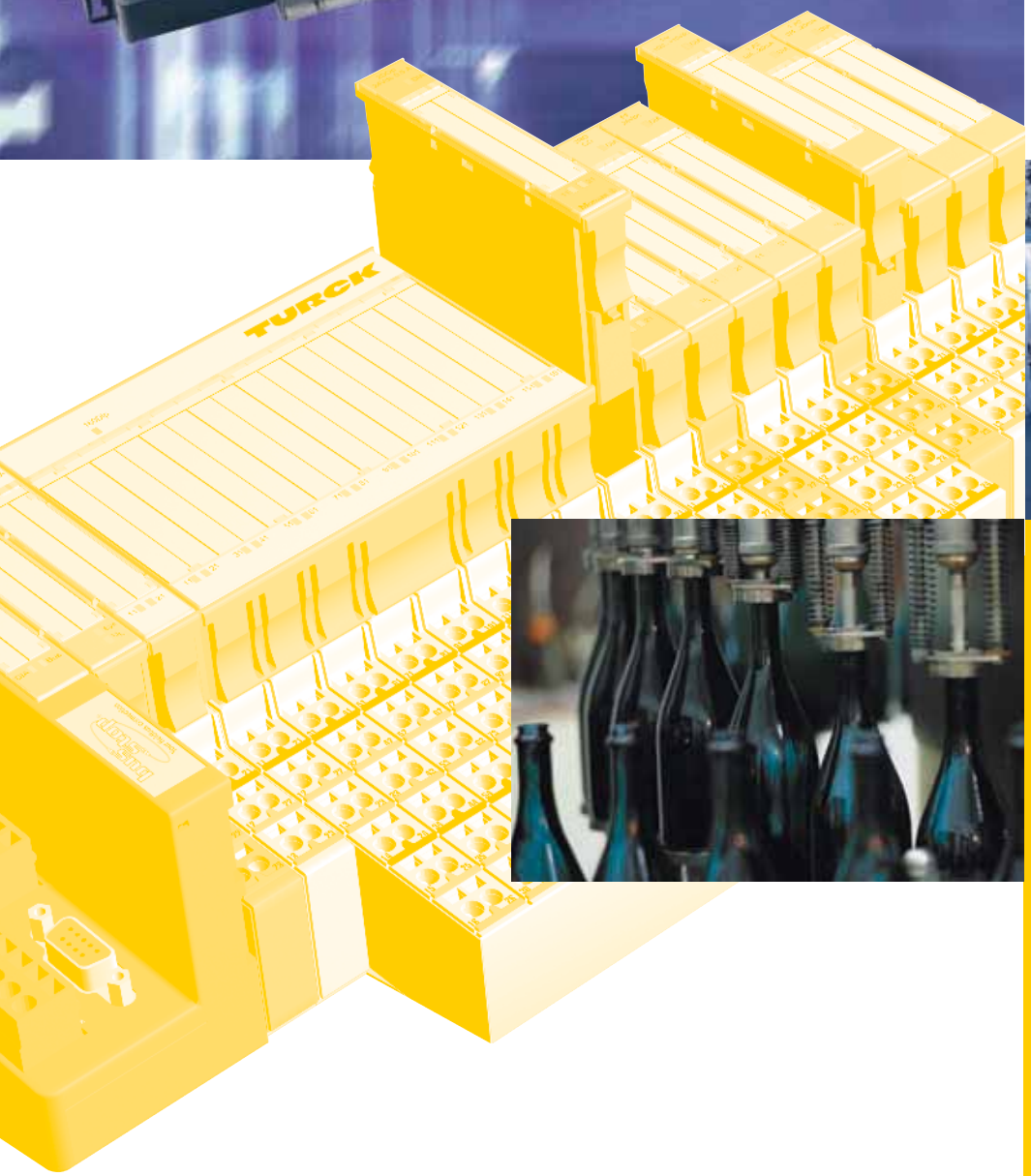
TURCK

Industrial
Automation

BL20 – MODULAR I/O BUS-TERMINAL SYSTEM



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THE BL20 I/O SYSTEM: OPEN, MODULAR, FLEXIBLE

Open, modular and extremely flexible:
Our universal bus terminal system BL20 is designed to plan and implement tailor-made IP20 I/O solutions.

All types of signals are freely combinable
Independently of the type of fieldbus, the user is able to combine all types of I/O modules and to configure the required I/0 channels bit-by-bit: whether analogue or digital signals, 1, 2, 4, 16 or 32 channels or block and slice versions. The customer only has to buy the exact number of channels needed – a really cost-effective solution right from the start!

Power supply modules may also be freely combined. Moreover, it is permitted to configure application-specific potential groups anywhere within the BL20 system.

Fieldbus independence through gateways
The BL20 I/O system is designed for integration into all major field-buses. Gateways are the link between the fieldbus system and the I/O modules. They control the entire data communication. Based on this concept, the system is open to new bus technologies and is thus a safe investment. All you need to do is to exchange the gateway – you can continue to use the I/O modules.

Compact and safe system design
Each BL20 station consists of a bus coupler and of the corresponding electronics and base modules which are required. The base modules can be simply clipped on using a DIN mounting rail; the electronics modules are also clipped onto the base modules without the requirement to use tools. Base and electronics modules are mechanically coded and thus simple and safe to allocate.

Electronic modules

- Incorporate versatile I/O functions
- Are now also available with NAMUR inputs
- Communicate with the gateway via the internal module bus
- Are independent of the higher-level fieldbus
- May be inserted independently of the field wiring
- 1, 2 and 4-channel slice modules or 16 and 32-channel block modules available
- Provide type-specific colour coding
- Available as technology modules with serial interface and SSI input

Motor starter

- Motor starter functionality with integrated contactor as well as a motor protective switch
- For direct integration in the fieldbus station

Gateway

- For connection of BL20 devices to the fieldbus
- Supports PROFIBUS-DP, DeviceNet™, CANopen fieldbus protocols
- Coordinates the complete process data communication
- Fieldbus connection via direct wiring or via fieldbus-specific connectors, e.g. SUB-D
- Transfers diagnosis data to the higher level control-system
- Now also with integrated power supply
- For setting of fieldbus addresses
- Integrated interface for software I/O-ASSISTANT

PROFI® PROCESS FIELD BUS BUS

CANopen

DeviceNet™

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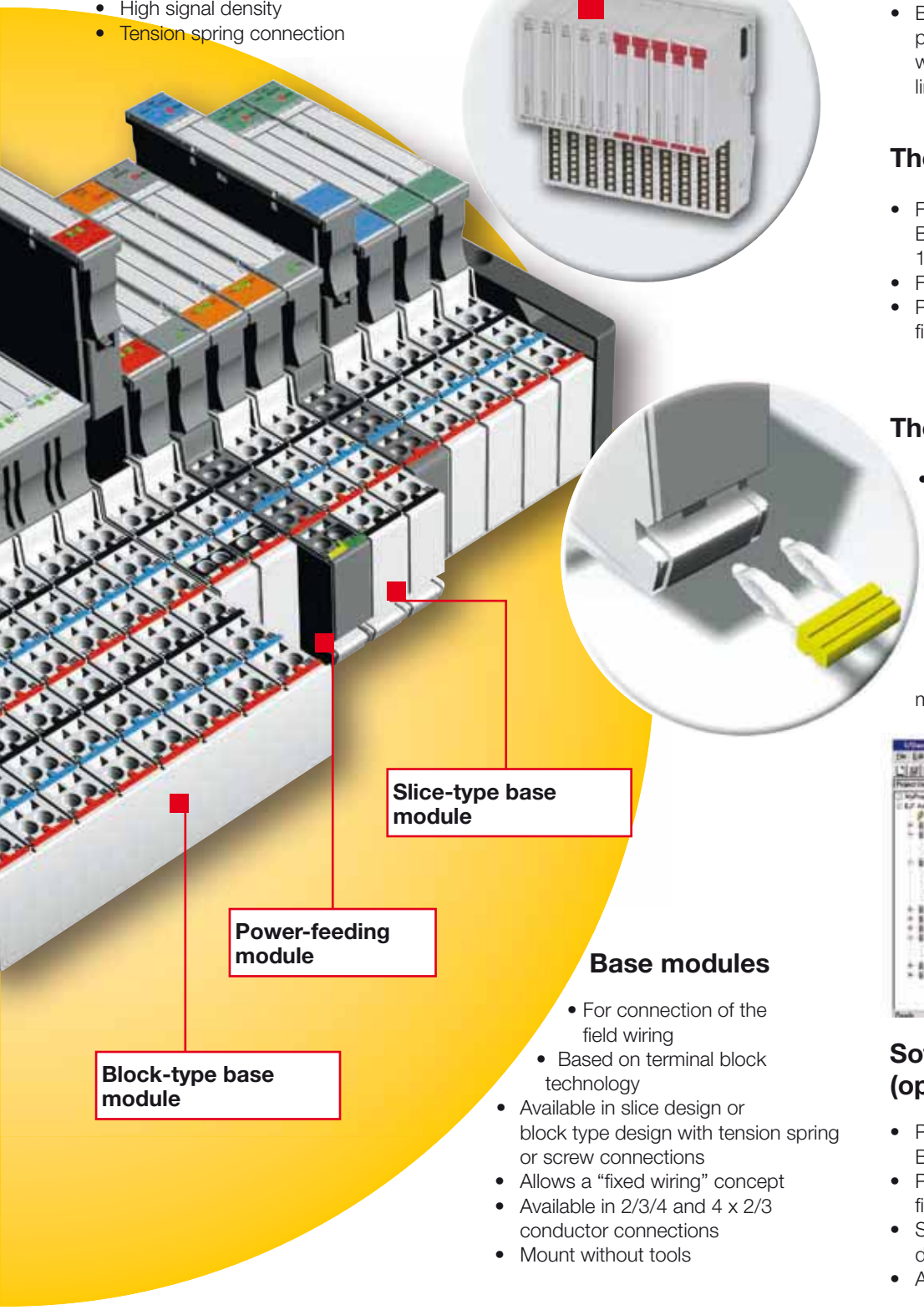
ECONOMY modules

- Electronics and connection technology in a single housing
- High signal density
- Tension spring connection



Base modules

- For connection of the field wiring
- Based on terminal block technology
- Available in slice design or block type design with tension spring or screw connections
- Allows a “fixed wiring” concept
- Available in 2/3/4 and 4 x 2/3 conductor connections
- Mount without tools

The relay modules

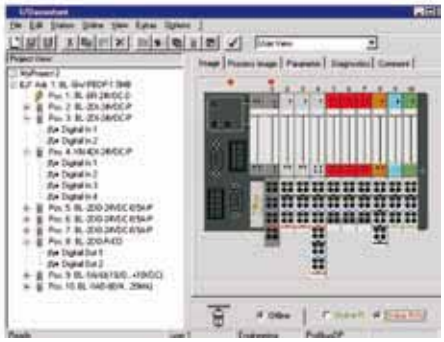
- For direct supply in combination with certain base modules (e.g BL20-S4T-SBCS)
- Bridging of the relay’s common potential and reduction of wiring through cross connection links (e.g. BL20-QV/1)

The power feeding module

- For field supply of the BL20 modules with 24 VDC or 120/230 VAC
- For assembly of potential groups
- Provides diagnostic functions: fieldbus voltage monitoring

The bus refreshing module

- For system supply of the BL20 modules and the gateway via the internal module bus
- For field supply of the modules with 24 VDC
- For assembly of potential groups
- Provides diagnostic functions: monitoring of the field voltage, the module bus supply and module overload



Software I/O-ASSISTANT (optional)

- Planning and engineering of the BL20, BL67 and piconet® stations
- Parameterisation of the proposed fieldbus stations
- Support of commissioning and diagnostics
- Automatic documentation

TYPE CODE
COLOURS

Elektronic modules – Module coding

Marking	Designations	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	Digitale 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
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

Base modules – Type codes

Example: BL20-S3T-SBB

	BL20-S3T-SBB:	**BL20** – BL20 I/O system
	BL20-**S**3T-SBB:	**S** – Slice design
		B – Block design
		P – Base module for power supply
	BL20-S**3**T-SBB:	**3** – Number of connection levels
	BL20-S3**T**-SBB:	**T** – Tension spring connection
		S – Screw connections
1	BL20-S3T-**S**BB:	**S** – Connection level: non-bridged connections (single connectors)
2	BL20-S3T-S**B**B:	**B** – Connection level: bridged connections (bridged connectors)
3	BL20-S3T-SB**B**:	**B** – Connection level: bridged connections (bridged connectors)

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

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ECONOMY modules

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[3] Available from the 2nd quarter 2006

PROFIBUS-DP

- **Open fieldbus standard according to EN 50170**
- **Transmission medium: 2-wire cable, twisted, shielded**
- **Transmission technology: RS485**
- **Bus topology: line structure with bus termination on both ends**
- **Bus access mode: Master-Slave/Master-Master with "Token Passing"**
- **32 stations per segment, 126 stations max.**
- **Repeater modules for signal regeneration**
- **Addressing via coding switches**
- **Configuration/parameterisation of devices via standardised device data base files (GSD files = Gerätestammdaten-Dateien)**

PROFIBUS (**Pro**cess **Fi**eld **Bus**) is a standardised and open communication fieldbus. It complies with EN 50170 and consists of three different protocol profiles:

– PROFIBUS-FMS (Fieldbus Message Specification) is primarily designed for data exchange between programmable logic controllers (PLCs or PCs).
– PROFIBUS-DP (Decentral Periphery) is designed for fast data exchange between the central control and the remote field devices
– PROFIBUS-PA (Process Automation) is an intrinsically safe network for the process industry.

BL67 components support PROFIBUS-DP. Within the PROFIBUS-DP network, the central control (e.g. the PLC) communicates with the remote input and output stations via a fast serial connection. Data are mainly exchanged cyclically.

PROFIBUS-DP systems excel in their fast system response times. At a transmission rate of 12 Mbps, 512 bit input and 512 bit output data can be transferred, for instance, in less than 2 ms to 32 stations.

Configuration/Parameterisation
The address setting of the modules can be freely selected from 1...125 via three decimal coded rotary switches.

ATTENTION:
The PROFIBUS-DP addresses 000, 126 and 127 are reserved and may not be used for the BL20 I/O-System.

The system speed corresponds to the transmission rate set via the PROFIBUS master. The transmission speed is automatically detected by the BL20 modules (auto baud).

The manufacturer provides device data base files (GSD files = Gerätestammdaten) for the individual PROFIBUS stations for configuration. TURCK additionally offers the I/O-ASSISTANT, a helpful software tool for configuration, parameterisation and

Transmission speed	Length of bus line (max.)	Max. numbers of repeaters [1]	Max. numbers of stations
9,6...93,75 kbps	1200 m	2	126
187,5 kbps	1000 m	2	126
500 kbps	400 m	4	126
1500 kbps	200 m	6	126
3000...12000 kbps	100 m	9	126

[1] At maximum transmission speed up to 9 repeaters of the TURCK series REP-DP 0002 can be connected in series (applicable to DP-profile bus parameters). If more repeaters are to be cascaded, the bus timing parameters must be adapted accordingly by the user.

System data PROFIBUS-DP

Number of I/O stations	126 (incl. repeaters)
Number of I/O points	approx. 6000, dependening on master
Transmission medium	shielded twisted copper cable, 2 x 0.34 mm²

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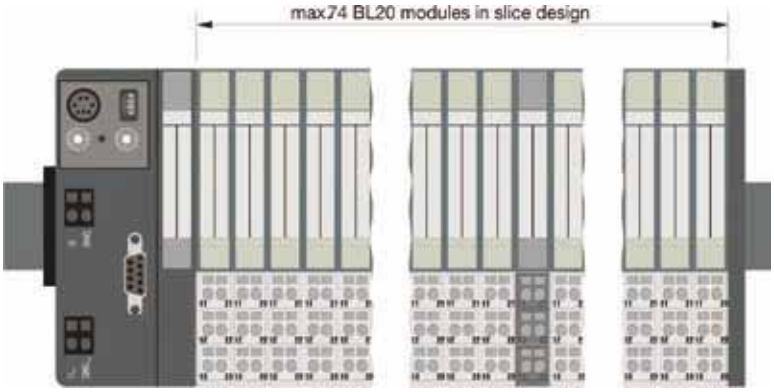
Maximum system extension BL20 station

A BL20 station can consist of a gateway for PROFIBUS-DP and a maximum of 74 slice 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)



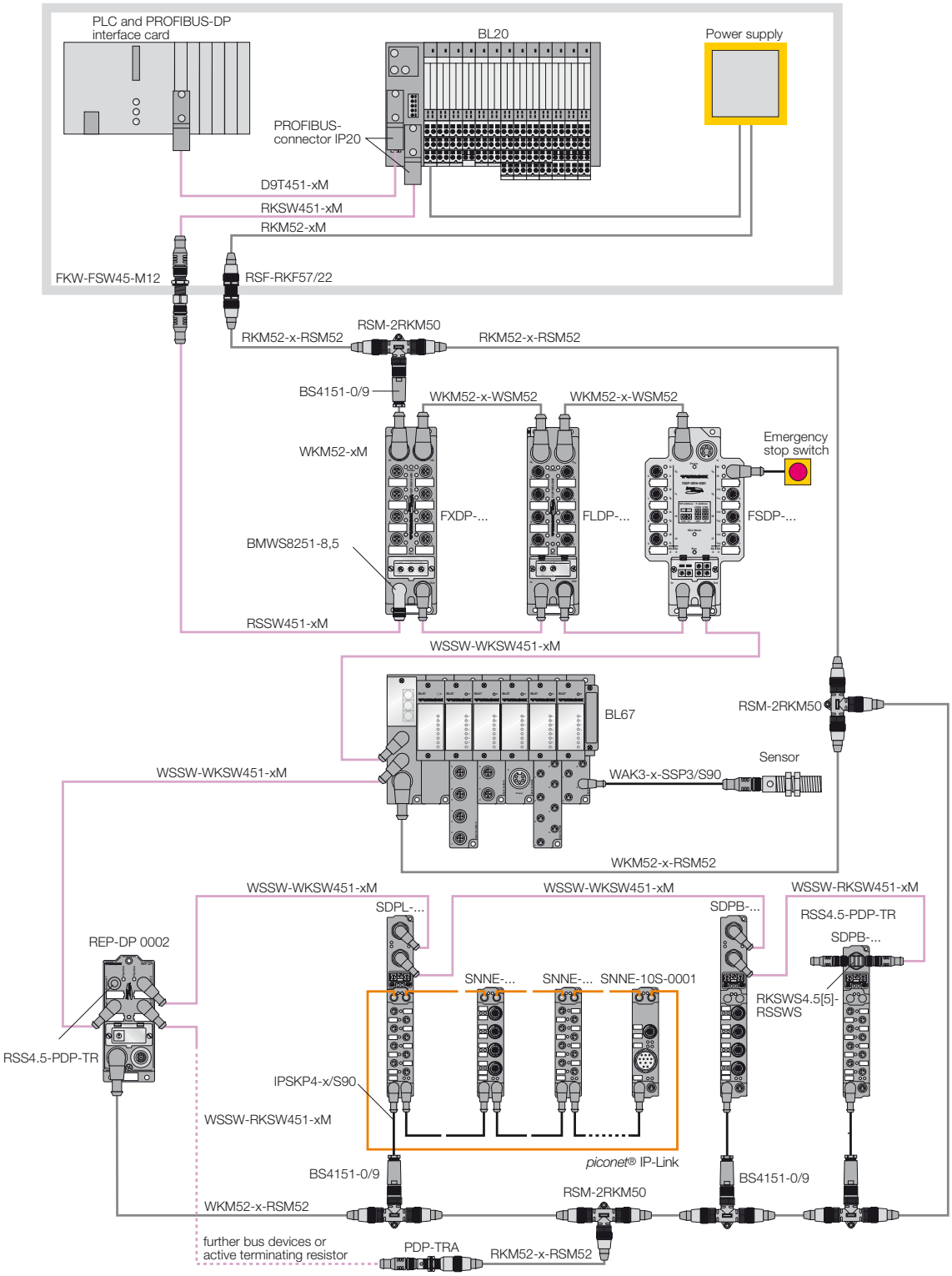
PROFIBUS-DP system expansion– maximum configuration of a BL20 station		
BL20 Module types	**Number of channels (max. per station)**	**Number of modules (max. per station)**
Digital inputs, 4 DI	288	72
Digital inputs, 4DI NAMUR	112	28
Digital inputs, 16 DI	128	8
Digital inputs, 32 DI	256	8
Digital inputs, 2 DO-R	144	72
Digital inputs, 4 DO	288	72
Digital outputs, 16 DO	128	8
Digital outputs, 32 DO	256	8
Analogue inputs, 2 AI-I	78	39
Analogue inputs, 2 AI-U	78	39
Analogue inputs, 4 AI-U/I	112	28
Analogue inputs, 2 AI-PT/NI	56	28
Analogue inputs, 2 AI-THERMO	76	38
Analogue outputs, 2 AO-I	38	19
Analogue outputs, 2 AO-U	38	19
Counter module, 1 CNT	7	7
Serial interface, 1 RS232	22	22
Serial interface, 1 RS485/422	22	22
Encoder, 1 SSI	22	22

The maximum number of modules is dependent on the respective system configuration. The maximum number on the module bus may be limited as the maximum current consumption on the module bus may not exceed 1.5 A (refer to the “Rated current consumption” table, page 20).
A limitation may also result if modules with extensive process, parameter and diagnostic data are used. The I/O-ASSISTANT engineering software takes this fact into consideration and issues a warning message if appropriate.

Application example: TURCK fieldbus components for PROFIBUS-DP

The application schematic outlines a model PROFIBUS-DP network based on the components offered by TURCK. Alongside the BL20 fieldbus stations described in the catalogue, TURCK offers further modular bus components which excel in flexibility and user-friendly set-up and configuration (BL67 and *piconet*®) and compact fieldbus components) (FXDP and FLDP) for the IP67 environment.

Premoulded cables in various designs, as well as field-wireable connectors, feed-through receptacles for cabinet mounting, flange connectors, tees, terminating resistors and repeaters are available for network construction.



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DeviceNet™

- **Open fieldbus standard according to EN 50325**
- **Transmission medium: cable, 2 x 2 wires, twisted shielded, for data transmissionand for power supply (24 V)**
- **Transmission technology: CAN**
- **Bus topology: Line structure (bus termination on both ends) with drop lines**
- **Bus access mode: Multi-master system with CSMA/CA access mode, network-wide multi/broadcasting**
- **Use of repeaters in order to extend the length of the trunk and drop line**
- **Max. 64 nodes (incl. master)**
- **Addressing via coding switch**
- **Configuration/parameterisation of the devices via standardised EDS files (Electronic Data sheets)**

DeviceNet™ is an open, standardised bus system according to EN 50325 and is based on the CAN specification (Controller Area Network). As a multimaster system DeviceNet™ provides the following I/O communication modes:

- Polling: the master module cyclically sends output data to all subordinate slaves and receives input data via the response message.
- Change of state: telegrams are not sent constantly, but only if the contents has changed, i.e. the process image/ mapping is only transferred when it changes.
- Cyclic: the nodes automatically send data after a certain cycle time
- Strobed: the scanner requests input data via a broadcast message to all bus nodes.

The bus length depends on the transmission speed (125, 250 or 500 kbps) as shown below in the table.

Due to this especially efficient usage of the bus capacities, it is possible to achieve short response times, particularly in the change-of-state mode (despite relatively low data rates).

Configuration/Parameterisation
Module addresses from 0...63 are adjusted via two decimally coded rotary switches. The system speed corresponds to the transmission rate set via the master. The transmission speed is automatically detected by the BL20 modules (auto baud).

The manufacturer provides EDS files (EDS = Electronic Data Sheet) for configuration of the individual DeviceNet™ nodes. DeviceNet™ devices are parameterised via acyclic services (Explicit Messaging). TURCK additionally offers the I/O-ASSISTANT, a helpful software tool for configuration, parameterisation and set-up of the individual modules.

DeviceNet™ – Transmission speed and bus lengths

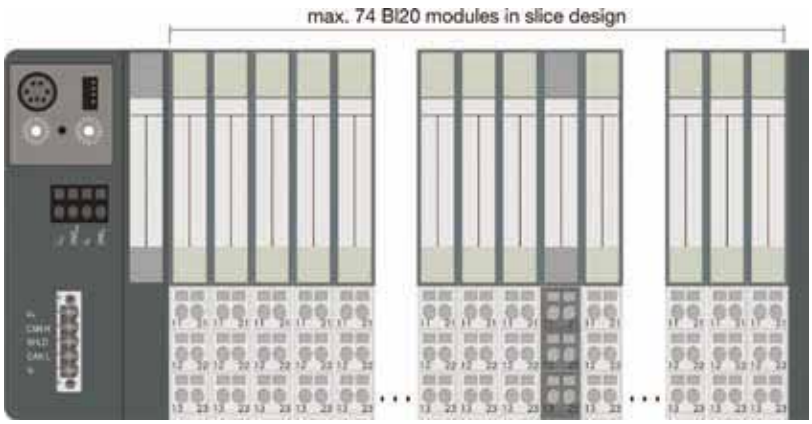
Transmission speed	Bus cables – max. length				Drop lines – max. length		Max. No. of nodes
	Flat Cable	Thick Cable	Mid Cable	Thin Cable	(per drop)	(total)	
125 kbps	420 m	500 m	300 m	100 m	6 m	156 m	64
250 kbps	200 m	250 m	250 m	100 m	6 m	78 m	64
500 Kbps	75 m	100 m	100 m	100 m	6 m	39 m	64

System data DeviceNet™

Number of nodes	64 (incl. master)
Number of I/O points	depending on control system
Transmission medium	shielded twisted copper cable, at least 2 x 2 x 0.21 mm^2
I/O communication types	polling, change of state, cyclic, strobed

Maximum system extension BL20 station

A BL20 station can consist of a gateway for PROFIBUS-DP and a maximum of 74 slice 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)



DeviceNet™ system expansion – maximum configuration of a BL20 station		
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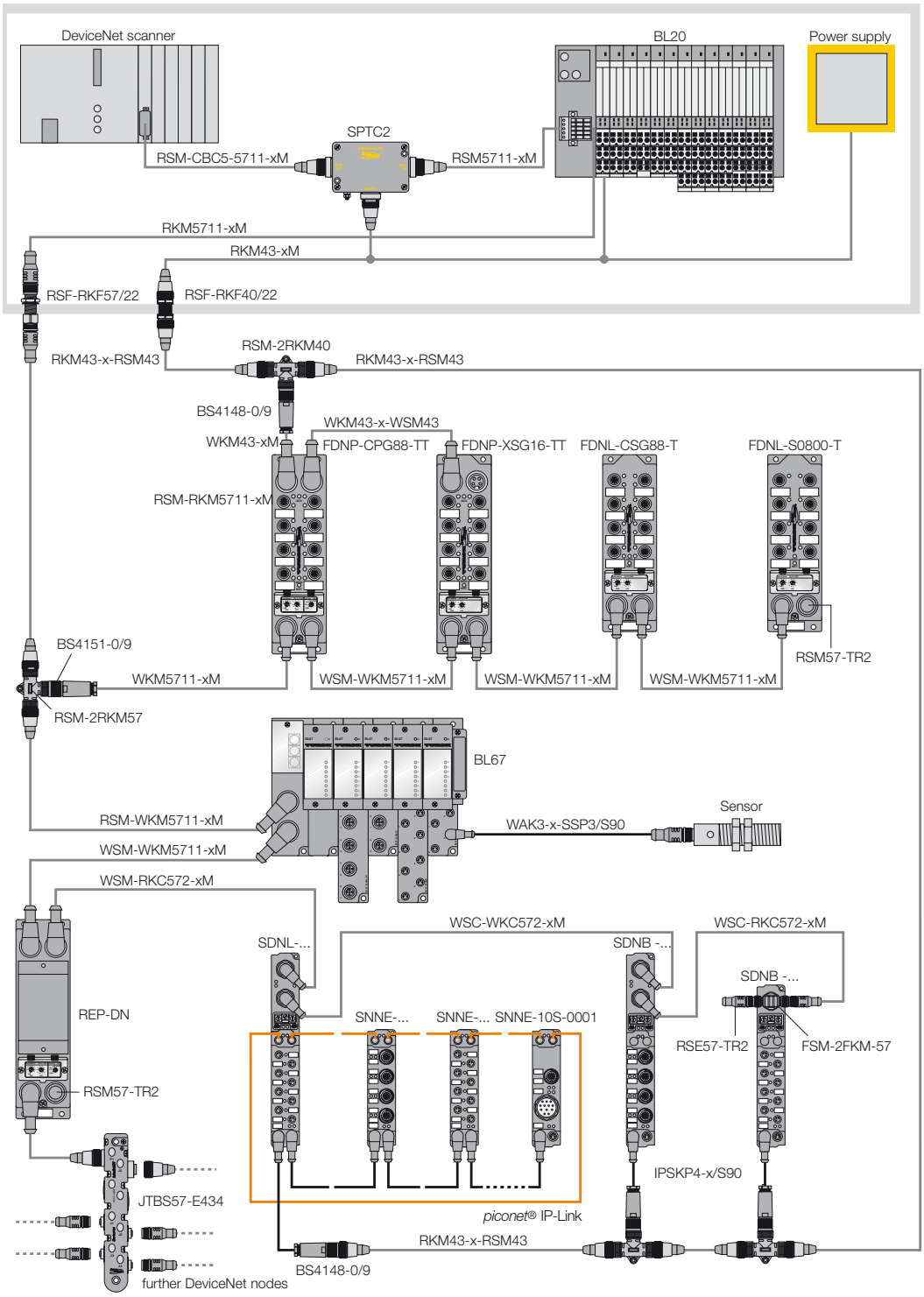
Digital inputs, 4DI NAMUR	288	72
Digital inputs, 16 DI	128	8
Digital inputs, 32 DI	256	8
Digital outputs, 2 DO-R	144	72
Digital outputs, 4 DO	288	72
Digital outputs, 16 DO	128	8
Digital outputs, 32 DO	256	8
Analogue inputs, 2 AI-I	126	63
Analogue inputs, 2 AI-U	126	63
Analogue inputs, 4 AI-U/I	124	31
Analogue inputs, 2 AI-PT/NI	126	63
Analogue inputs, 2 AI-THERMO	126	63
Analogue outputs, 2 AO-I	126	63
Analogue outputs, 2 AO-U	126	63
Counter module, 1 CNT	31	31
Serial interface, 1 RS232	31	31
Serial interface, 1 RS485/422	31	31
Encoder, 1 SSI	31	31

The maximum number of modules is dependent on the respective system configuration. The maximum number on the module bus may be limited as the maximum current consumption on the module bus may not exceed 1.5 A (refer to the “Rated current consumption” table, page 20).
A limitation may also result if modules with extensive process, parameter and diagnostic data are used. The I/O-ASSISTANT engineering software takes this fact into consideration and issues a warning message if appropriate.

Application example: TURCK fieldbus components for DeviceNet™

The application schematic outlines a model DeviceNet™ network based on the components offered by TURCK. Alongside the BL20 fieldbus stations described in the catalogue, TURCK offers further modular bus components which excel in flexibility and user-friendly set-up and configuration (BL67 and *piconet*®) and compact fieldbus components) (FDNX) for the IP67 environment.

Premoulded cables in various designs, as well as field-wireable connectors, feed-through receptacles for cabinet mounting, flange connectors, tees, terminating resistors and repeaters are available for network construction.



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CANopen

- **Open fieldbus standard according to EN 50325-4**
- **Transmission medium: cable, 2 x 2 wires, twisted shielded, for data transmission and for power supply (24 V)**
- **Transmission technology: CAN**
- **Bus topology: Line structure (bus termination on both ends) with drop lines**
- **Bus access mode: Multi-master system with CSMA/CA access mode, network-wide multi/broadcasting**
- **Max. 127 nodes (incl. repeaters)**
- **Addressing via coding switches**
- **Use of repeaters in order to extend the length of the trunk and drop line**
- **Configuration/parameterisation of the devices via standardised EDS files (Electronic Data sheets)**

CANopen defines different communication modes for the transmission of the process data (PDOs):

- Event-controlled: Messages are sent as soon as the contents has changed. Therefore, the process image/mapping is not transferred permanently; only the modifications are transmitted.
- Cyclic synchronous mode: The modules are requested to accept the output data received and to send new input data via a SYNC telegram.
- Request-controlled: The modules are triggered to send their input data via a CAN data request message.

BL20 components are suited for all I/O communication modes.
CANopen devices are parameterised via SDOs. These are primarily used to transfer parameters during device configuration and to transmit longer data fields.
Due to effective usage of the bus bandwidth CANopen offers short system response times at a relatively low transmission speed (max. 1 Mbps).

Configuration/Parameterisation
Module addresses ranging from 1...99 are adjusted via two decimally coded rotary switches. The system speed corresponds to the transmission rate set via the master. The transmission speed is automatically detected by the BL20 modules (auto baud).

The manufacturer provides EDS files (EDS = Electronic Data Sheet) for configuration of the individual CANopen nodes. TURCK additionally offers the I/O-ASSISTANT, a helpful software tool for configuration, parameterisation and set-up of the individual modules.

The CAN user layer CANopen consists of device profiles, which standardise the data contents of the respective device categories, and of communication profiles. The communication profile determines the method of data exchange between the devices. In this context one differentiates between real time data (process data objects – PDO) and parameter data (service data objects – SDO).

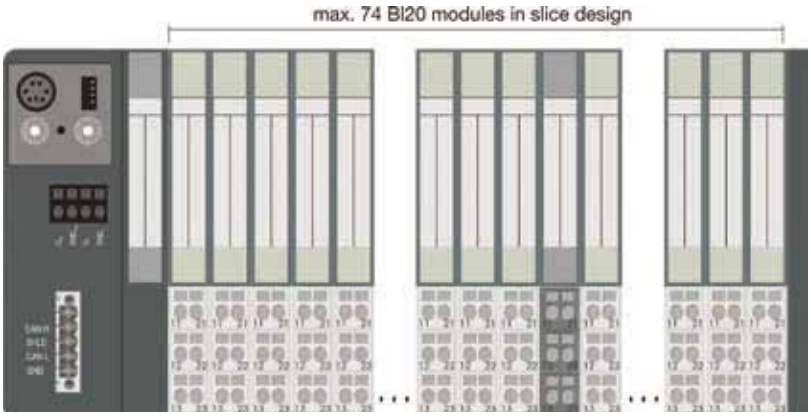
Transmission speed	Bus trunk line (max.)	Max. number of nodes
10 kbps	5000 m	127
20 kbps	2500 m	127
50 kbps	1000 m	127
125 kbps	500 m	127
250 kbps	250 m	127
500 kbps	100 m	127
800 kbps	50 m	127
1000 kbps	25 m	127

System data CANopen

Number of I/O stations	127 (incl. repeaters)
Number of I/O points	depending on control system
Transmission medium	shielded twisted copper cable, at least 2 x 2 x 0.21 mm²

Maximum system extension BL20 station

A BL20 station can consist of a gateway for PROFIBUS-DP and a maximum of 74 slice 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)



CANopen system expansion – maximum configuration of a BL20 station

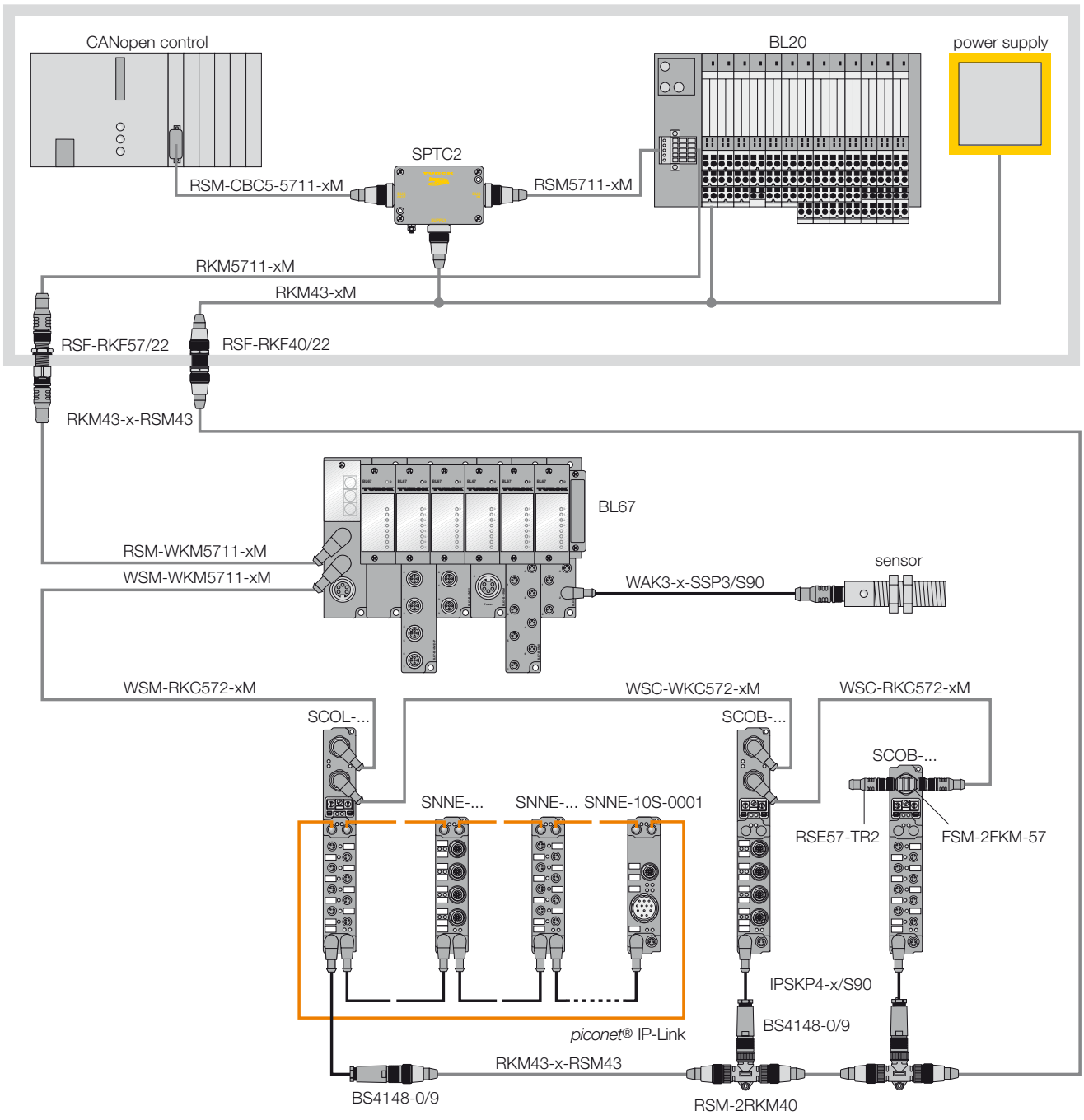
BL20 Module type	No. of channels (max. per station)	No. of modules (max. per station)
Digital inputs, 4 DI	288	72
Digital inputs, 4DI NAMUR	288	72
Digital inputs, 16 DI	128	8
Digital inputs, 32 DI	256	8
Digital outputs, 2 DO-R	144	72
Digital outputs, 4 DO	288	72
Digital outputs, 16 DO	128	8
Digital outputs, 32 DO	256	8
Analogue inputs, 2 AI-I	144	72
Analogue inputs, 2 AI-U	144	72
Analogue inputs, 4 AI-U/I	288	72
Analogue inputs, 2 AI-PT/NI	142	71
Analogue inputs, 2 AI-THERMO	142	71
Analogue outputs, 2 AO-I	142	71
Analogue outputs, 2 AO-U	144	72
Counter module, 1 CNT	71	71
Serial interface, 1 RS232	67	67
Serial interface, 1 RS485/422	70	70
Encoder, 1 SSI	71	71

The maximum number of modules is dependent on the respective system configuration. The maximum number on the module bus may be limited as the maximum current consumption on the module bus may not exceed 1.5 A (refer to the “Rated current consumption” table, page 20). A limitation may also result if modules with extensive process, parameter and diagnostic data are used. The I/O-ASSISTANT engineering software takes this fact into consideration and issues a warning message if appropriate.

Application example: TURCK fieldbus components for CANopen

The application schematic outlines a model CANopen network based on the components offered by TURCK. Alongside the BL20 fieldbus stations described in the catalogue, TURCK offers further modular bus components , excel in flexibility and user-friendly set-up and configuration (BL67 and *piconet*®) for the IP67 environment.

Premoulded cables in various designs, as well as field-wireable connectors, feed-through receptacles for cabinet mounting, flange connectors, tees, terminating resistors and repeaters are available for network construction.



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General system supply

The power supply to a BL20 station is fed via Power Feeding or Bus Refreshing modules, the latter also being responsible for the power supply to the internal module bus.
Bus Refreshing modules are used within a BL20 station (without gateway supply) if the system supply to the BL20 modules (nominal current I_{MB} > 1.5 A) is no longer sufficiently guaranteed.
These Bus Refreshing modules are to be combined with the base modules BL20-P3T-SBB-B or BL20-P4T-SBBC-B (tension clamp connections) or with the base modules BL20-P3S-SBB-B or BL20-P4S-SBBC-B (screw connections).
Power Feeding modules are used if the system supply to the BL20 modules (nominal current I_{EL} ≥ 10 A) is no longer sufficiently guaranteed.

System supply BL20 gateway

The gateways listed below already feature an integrated supply. The supply voltage is provided via screw connection both for the internal module bus and gateway, as well as for the field.
Thus no power supply module is required directly beside these gateways:

BL20-GWBR-PBDP	6827164
BL20-GWBR-DNET	6827168
BL20-GWBR-CANOPEN	6827168

For the other gateways the requirement for a bus refreshing module situated beside the gateway with the respective base module continues to apply
.

Nominal current consumption

The following table offers an overview of the nominal current consumption of the different BL20 types on the module bus:

Module	Supply I_{MB}[1]	Rated current consumption
Gateway PROFIBUS-DP		430 mA
Gateway DeviceNet™		250 mA
Gateway CANOPEN		350 mA
BL20-BR-24VDC-D	1500 mA	
BL20-PF-24VDC-D		28 mA
BL20-PF-120/230VAC-D		25 mA
BL20-2DI-24VDC-P		28 mA
BL20-2DI-24VDC-N		28 mA
BL20-2DI-120/230VAC-P		28 mA
BL20-4DI-24VDC-P		28 mA
BL20-4DI-24VDC-N		28 mA
BL20-4DI-NAMUR		40 mA
BL20-E-8DI-24VDC-P		30 mA
BL20-16DI-24VDC-P		45 mA
BL20-32DI-24VDC-P		45 mA
BL20-1AI-I(0/4..20MA)		41 mA
BL20-2AI-I(0/4..20MA)		35 mA
BL20-1AI-U (-10/0..+10VDC)		41 mA
BL20-2AI-U (-10/0..+10VDC)		35 mA
BL20-2AI-PT/NI-2/3		45 mA
BL20-2AI-THERMO-PI		45 mA
BL20-4AI-U/I		50 mA
BL20-2DO-24VDC-0,5A-P		32 mA
BL20-2DO-24VDC-0,5A-N		32 mA
BL20-2DO-24VDC-2A-P		33 mA
BL20-2DO-120/230VAC-0,5A		35 mA
BL20-4DO-24VDC-0,5A-P		30 mA
BL20-E-8DO-24VDC-0,5-P		30 mA
BL20-16DO-24VDC-0,5-P		120 mA
BL20-32DO-24VDC-0,5-P		120 mA
BL20-1AO-I(0/4..20MA)		39 mA
BL20-2AO-I(0/4..20MA)		40 mA
BL20-2A0-U (-10/0..+10VDC)		43 mA
BL20-2DO-R-NC		28 mA
BL20-2DO-R-NO		28 mA
BL20-2DO-R-CO		28 mA
BL20-1CNT-24VDC		40 mA
BL20-1RS232		140 mA
BL20-1RS485/422		140 mA
BL20-1SSI		50 mA

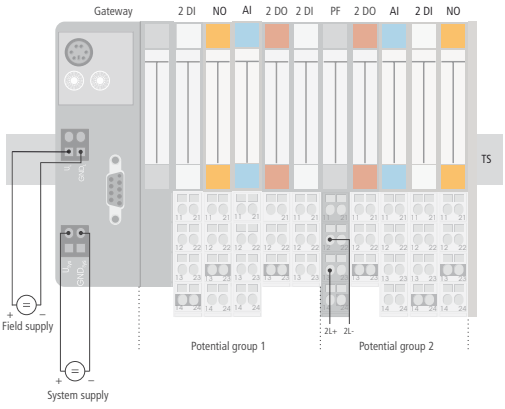
[1] I_{MB} : current via the module bus
[2] I_{EL} : electrical operating current (field supply)

System supply via module bus

The number of BL20 modules that can be supplied by a Bus Refreshing module via the internal module bus depends on the respective nominal current I_{MB} of the individual modules on the module bus.
The sum total of the nominal current inputs of the connected BL20 modules must not exceed 1.5 A.
If the software I/Oassistant is used, an error message is generated automatically via the <Station - Verify> as soon as the system supply via the module bus in no longer sufficiently guaranteed.
All Bus Refreshing modules used in a BL20 station are to be connected via the same ground potential.
The power supply to the module bus is fed via the connections 11 (plus) and 21 (ground) of the respective base module for the Bus Refreshing module

Creating potential groups

Both Bus Refreshing modules as well as Power Feeding modules can be used to create a potential group.
The potential isolation of the potential group on the left-hand side of the respective power distribution module is created by the base module.
It is not permitted for modules with 24 VDC and with 120/230 VAC field supply to be used in a joint potential group. Therefore, it must be observed that when using digital input modules for 120/230 VAC the Power Feeding module BL20-PF-120/230VAC-D is to be used to create a special potential group.



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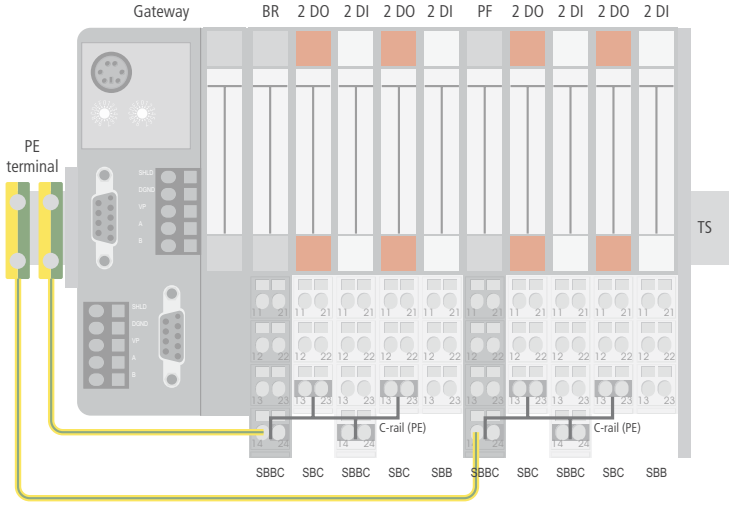
C-rail (cross connection)

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, which is available as an accessory.



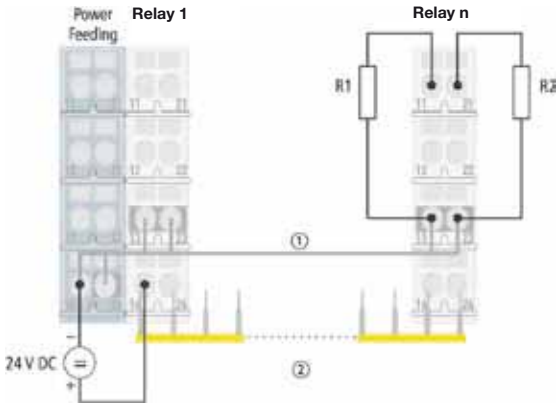
Access to the C-rail

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.
It is permitted to load the C-rail with a maximum of 24 V! Never with 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 with either tension clamp or screw connection. 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 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 optocouplers
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 axise
Shock resistance as per IEC 68-2-27	18 shocks, half-sine 15 g peak value/11 ms, jfor 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

BL20 stations – approvals and tests

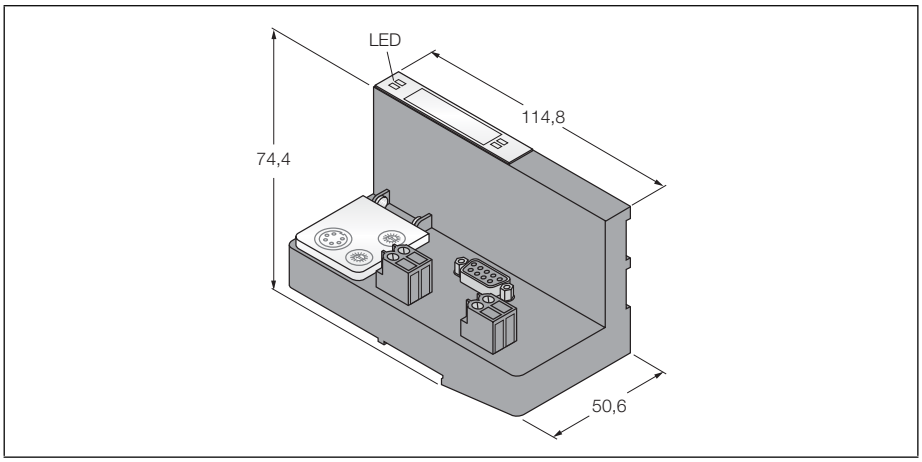
Approvals	CE cULus UL
Tests (EN 61131-2)	
Cold	DIN IEC 68-2-1, temperature -25 °C, duration 96 h; device not operational
Dry heat	DIN IEC 68-2-2, temperature +85 °C, duration 96 h; device not operational
Damp heat, cyclic	DIN IEC 68-2-30, temperature +55 °C, duration 2 cvycles of 12 h; device operational
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 … 0.75mm²
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

Gateway for BL20 I/O system
Interface for PROFIBUS-DP incl. supply
BL20-GWBR-PBDP

Industrial Automation



Type	BL20-GWBR-PBDP
Ident-No.	6827164
System supply	24 VDC/5 VDC
Field supply	24 VDC
Permissible range	according to EN 61131-2
Nominal current from module bus	430 mA
Max. field current supply	10 A
Max. system current supply	1.5 A
Transmission rate fieldbus	9.6 kbps...12 Mbps
Fieldbus addressing range	1...99
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	1 x female SUB-D connector
Power connection technology	screw connection
Fieldbus termination	external
No. of diagnostics bytes	3
No. of parameter bytes	5
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

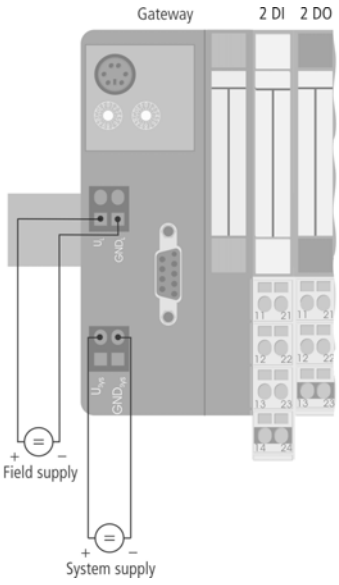
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **With integrated supply**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between BL20 system and PROFIBUS-DP**
- **12 Mbps**
- **9-pole sub-D connector**

Function principle

BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



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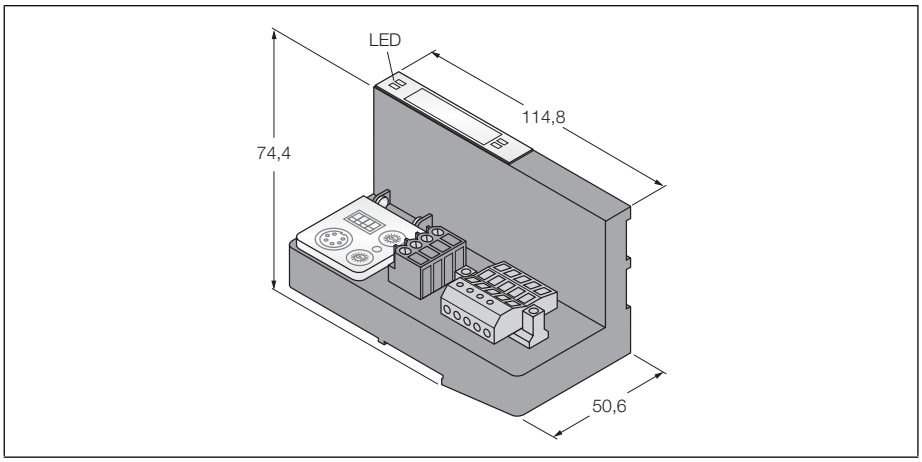
Gateway for BL20 I/O system
Interface for DeviceNet™ incl. supply
BL20-GWBR-DNET

Industrial Automation



Type	BL20-GWBR-DNET
Ident-No.	6827168
System supply	24 VDC/5 VDC
Field supply	24 VDC
Permissible range	according to EN 61131-2
Nominal current from module bus	250 mA
Max. field current supply	10 A
Max. system current supply	1.5 A
Transmission rate fieldbus	125/250/500 kbps, DIP switch
Fieldbus addressing range	0...63
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	open connector
Power connection technology	screw connection
Fieldbus termination	via DIP-Switch
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

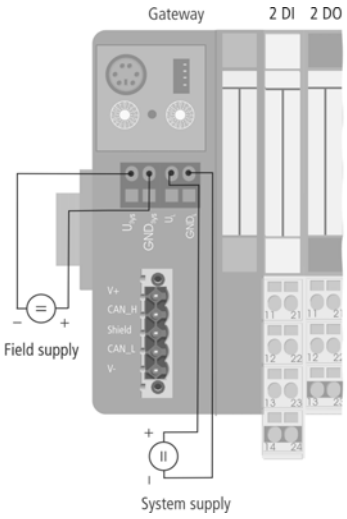
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **With integrated supply**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between the BL67 system and DeviceNet™**
- **125/250/500 kbps**
- **the connection to DeviceNet™ is established via an open-style connector**

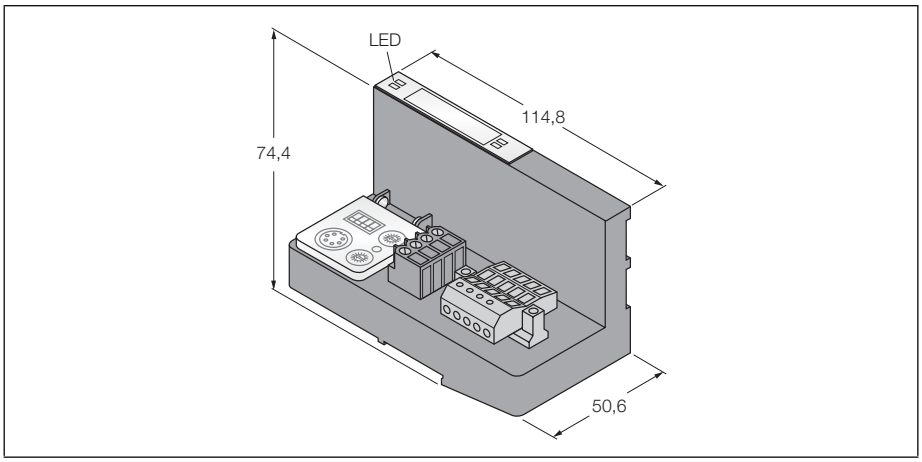
Function principle

BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



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**
- **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**

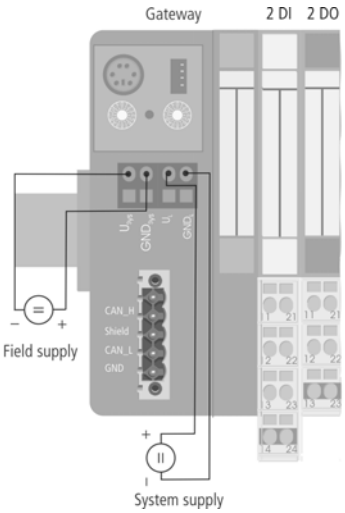
Type	BL20-GWBR-CANOPEN
Ident-No.	6827167
System supply	24 VDC / 5 VDC
Field supply	24 VDC
Permissible range	according to EN 61131-2
Nominal current from module bus	350 mA
Max. field current supply	10 A
Max. system current supply	1.5 A
Transmission rate fieldbus	20 to 1000 kbps, DIP switch
Fieldbus addressing range	1...99
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	open connector
Power connection technology	screw connection
Fieldbus termination	external
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

General technical data see from page 22 on

Function principle

BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



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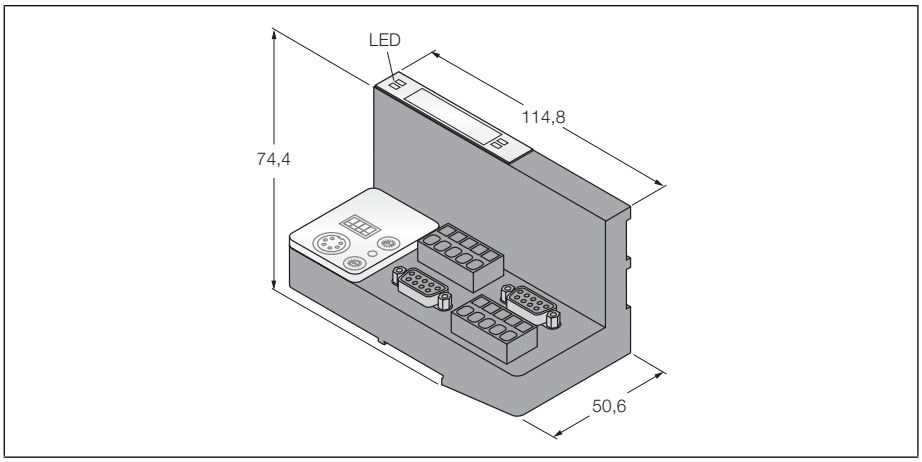
Gateway for BL20 I/O system
Interface for PROFIBUS-DP
BL20-GW-PBDP-1,5MB

Industrial Automation



Type	BL20-GW-PBDP-1,5MB
Ident-No.	6827000
Supply voltage	via BR module
Nominal current from module bus	430 mA
Transmission rate fieldbus	9.6 kbps...1.5 Mbps
Fieldbus addressing range	1...125
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	2 x female SUB-D connectors; 2 x tension springs
Fieldbus termination	extern
No. of diagnostics bytes	3
No. of parameter bytes	5
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

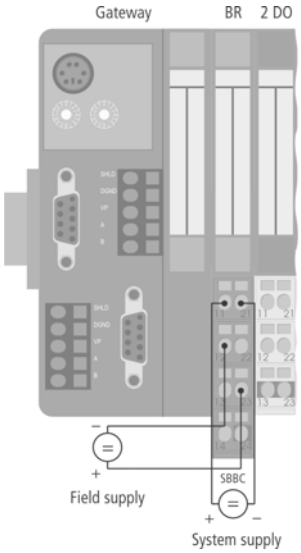
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between BL20 system and PROFIBUS-DP**
- **1,5 Mbps**
- **9-pole sub-D connectors or direct wiring via tension spring connection technology**

Function principle

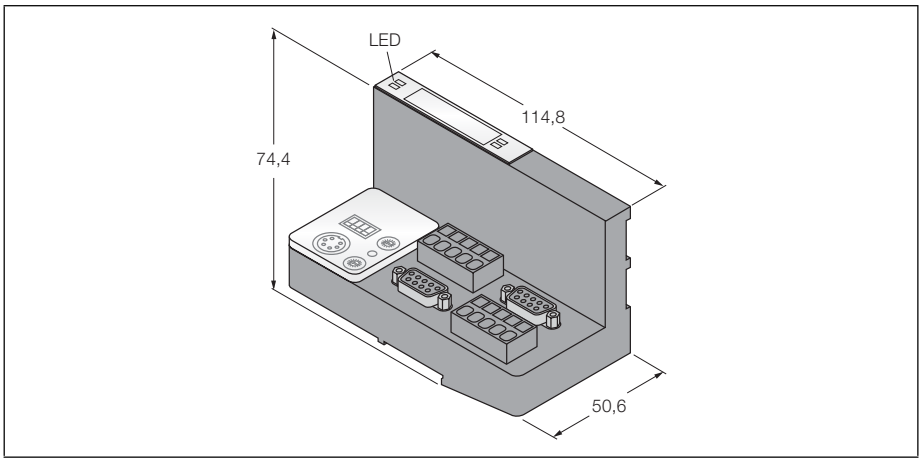
BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



Gateway for BL20 I/O system
Interface for PROFIBUS-DP
BL20-GW-PBDP-1,5MB-S

Industrial Automation



Type	BL20-GW-PBDP-1,5MB-S
Ident-No.	6827001
Supply voltage	via BR module
Nominal current from module bus	430 mA
Transmission rate fieldbus	9.6 kbps...1.5 Mbps
Fieldbus addressing range	1...125
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	2 x female SUB-D connectors; 2 x screw connections
Fieldbus termination	extern
No. of diagnostics bytes	3
No. of parameter bytes	5
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95% (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

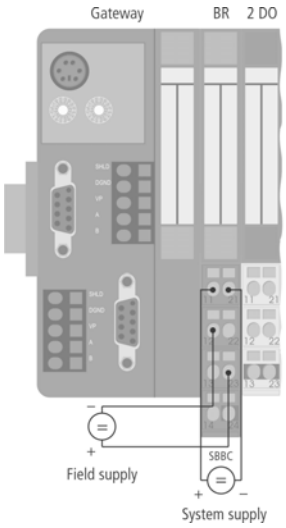
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between BL20 system and PROFIBUS-DP**
- **1,5 Mbps**
- **9-pole sub-D connectors or direct wiring via screw terminal connection technology**

Function principle

BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



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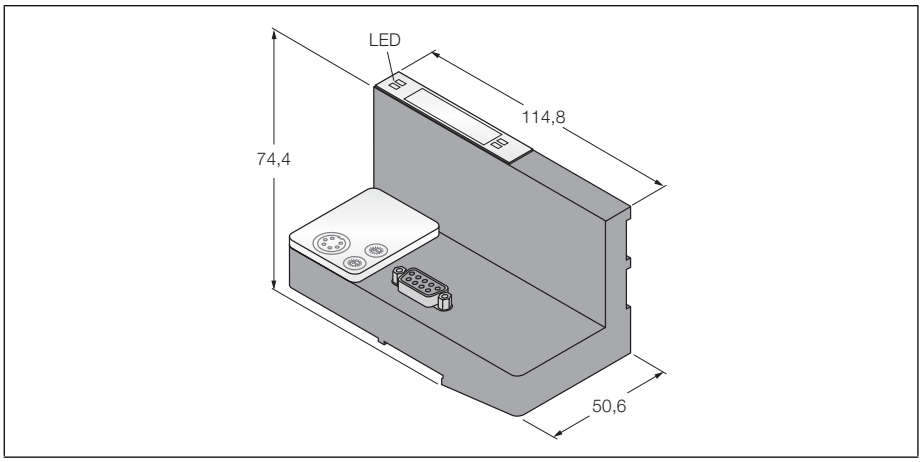
Gateway for BL20 I/O system
Interface for PROFIBUS-DP
BL20-GW-PBDP-12MB



Type	BL20-GW-PBDP-12MB
Ident-No.	6827002
Supply voltage	via BR module
Nominal current from module bus	430 mA
Transmission rate fieldbus	9.6 kbps...12 Mbps
Fieldbus addressing range	1...125
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	1 x female SUB-D connector
Fieldbus termination	extern
No. of diagnostics bytes	3
No. of parameter bytes	5
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

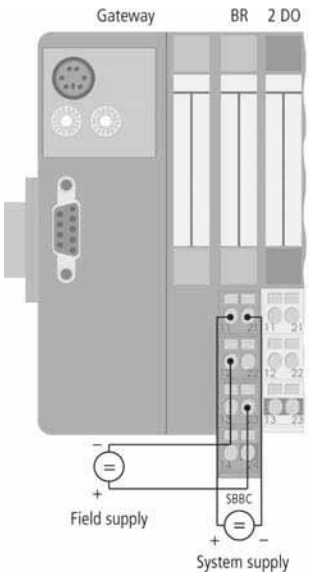
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between BL20 system and PROFIBUS-DP**
- **12 Mbps**
- **9-pole sub-D connector**

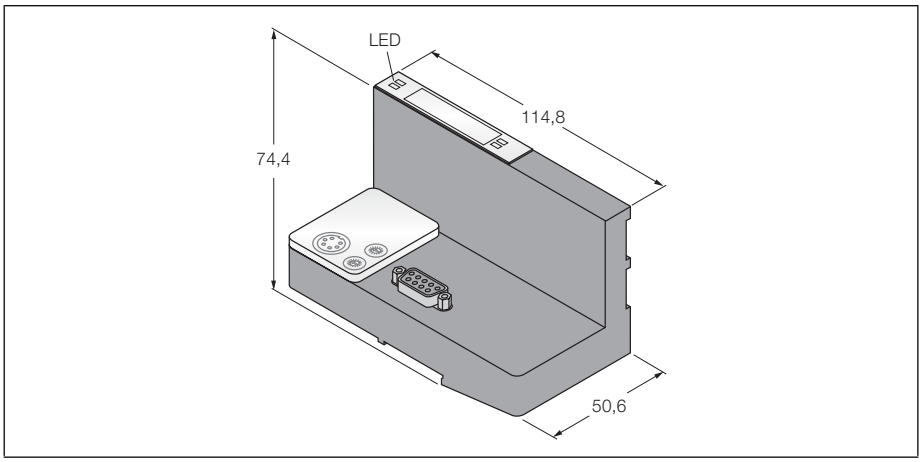
Function principle

BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



Gateway for BL20 I/O system
Interface for PROFIBUS-DP
BL20-GW-PBDP-12MB-STD



Type	BL20-GW-PBDP-12MB-STD
Ident-No.	6827003
Supply voltage	via BR module
Nominal current from module bus	430 mA
Transmission rate fieldbus	9.6 kbps...12 Mbps
Fieldbus addressing range	1...125
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	1 x female SUB-D connector
Fieldbus termination	extern
No. of diagnostics bytes	3
No. of parameter bytes	5
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

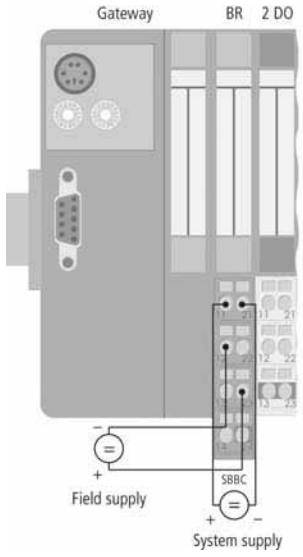
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between BL20 system and PROFIBUS-DP**
- **12 Mbps**
- **9-pole sub-D connector**
- **Max. 15 BL20 I/O modules, with a maximum of 4 in block design**
- **The I/O-ASSISTANT online functionality is only suited for firmware download**
- **Compressing of module process data is not supported**
- **Connection of technology, ECONOMY and 32 DO block modules not possible**

Function principle

BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



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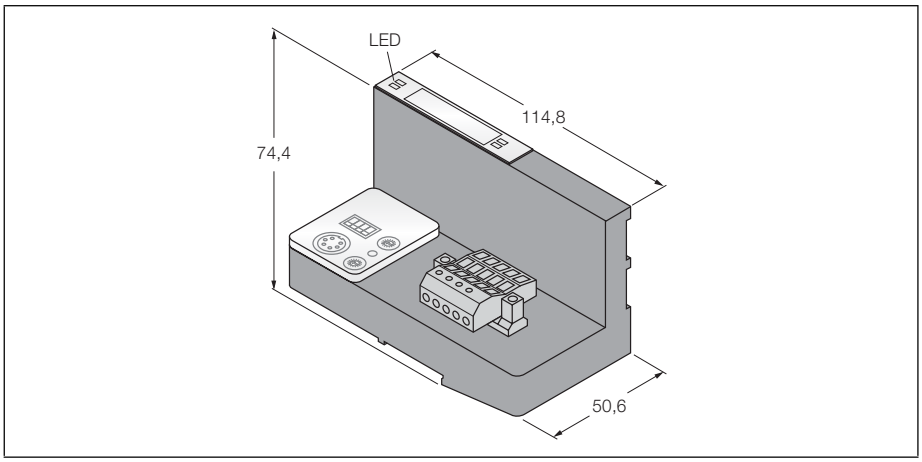
Gateway for BL20 I/O system
Interface for DeviceNet™
BL20-GW-DNET

Industrial Automation



Type	BL20-GW-DNET
Ident-No.	6827005
Supply voltage	via BR module
Nominal current from module bus	250 mA
Transmission rate fieldbus	125/250/500 kbps,
	2 decimally coded rotary switches
Fieldbus addressing range	0...63
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	open connector
Fieldbus termination	via DIP-Schalter
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2,
	without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31
	and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW,
	1 x end plate BL20-ABPL

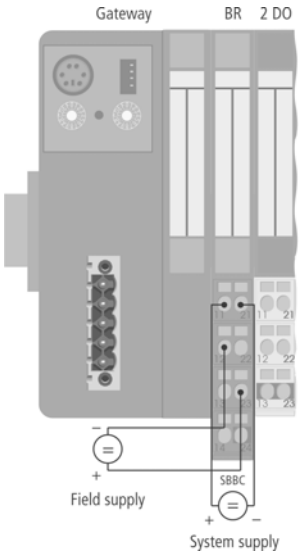
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between the BL67 system and DeviceNet™**
- **125/250/500 kbps**
- **The connection to DeviceNet is established via an open-style connector**

Function principle

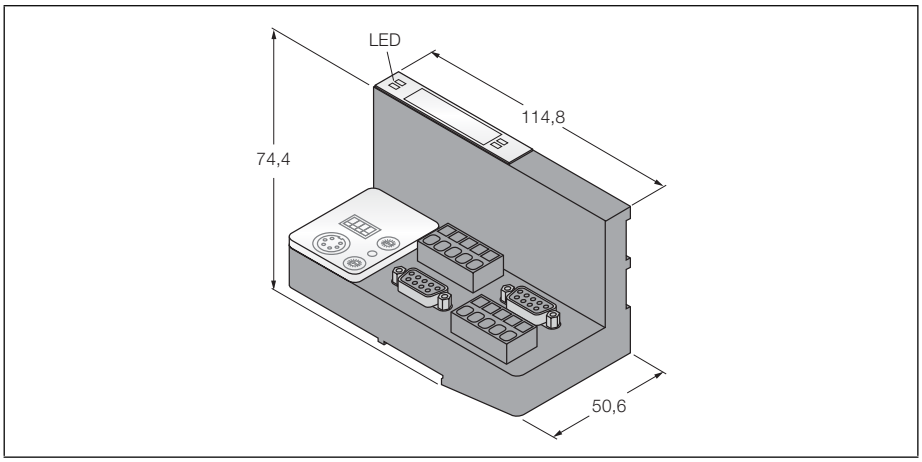
BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



Gateway for BL20 I/O system
Interface for CANopen
BL20-GW-CANOPEN

Industrial Automation



Type	BL20-GW-CANOPEN
Ident-No.	6827004
Supply voltage	via BR module
Nominal current from module bus	350 mA
Transmission rate fieldbus	20 to 1000 kbps, DIP switch
Fieldbus addressing range	1...127
Fieldbus adressing	2 rotary switches
Service interface	PS/2 socket for I/O-ASSISTANT
Fieldbus connection technology	2 x SUB-D; 2 x tension springs
Fieldbus termination	extern
Dimensions	50.6 x 114.8 x 74.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20
Included in delivery	2 x end brackets BL20-WEW-35/2-SW, 1 x end plate BL20-ABPL

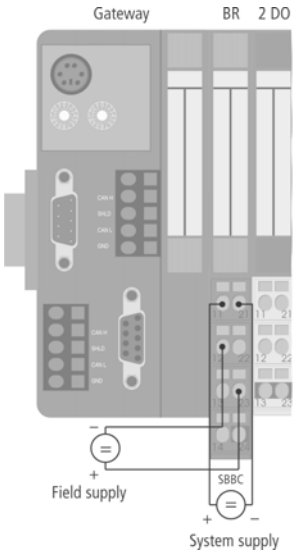
General technical data see from page 22 on

- **Rotary coding switch for adjustment of the node address**
- **Degree of protection IP20**
- **LEDs for display of supply voltage, common alarm and bus errors**
- **Interface between BL20 system and CAN bus**
- **20 kbps up to 1000 kbps**
- **9-pole sub-D connectors or direct wiring via tension spring connection technology**

Function principle

BL20 gateways are the head component of a BL20 station. They are designed to interface the modular fieldbus nodes to the higher level fieldbus (PROFIBUS-DP, DeviceNet™, CANopen).
All BL20 electronic modules communicate via the internal module bus, whose data are transferred to the fieldbus via the gateway, so that all I/O modules can be configured independently of the bus system.

Wiring diagram
Field supply/System supply



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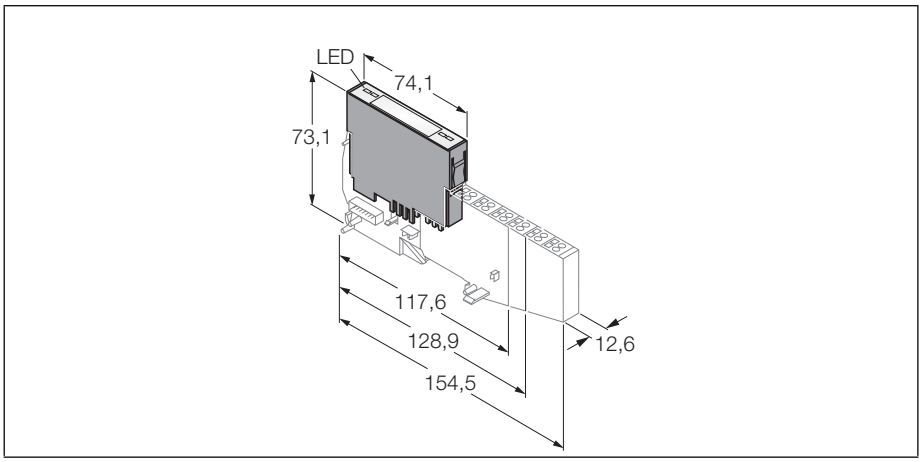
BL20 Electronic module
Bus refreshing module with diagnostics
BL20-BR-24VDC-D



Type	BL20-BR-24VDC-D
Ident-No.	6827006
System supply	24 VDC/5 VDC
Field supply	24 VDC
Permissible range	18...30 VDC
Max. field current supply	10 A
Max. system current supply	1.5 A
Number of diagnostics bits	4
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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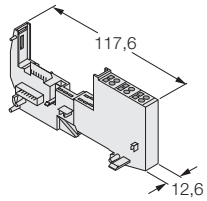
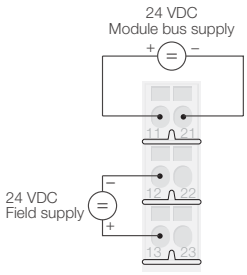
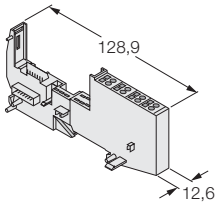
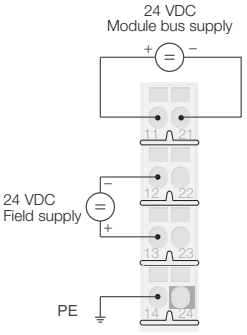
BL20 Electronic module
Bus refreshing module with diagnostics
BL20-BR-24VDC-D

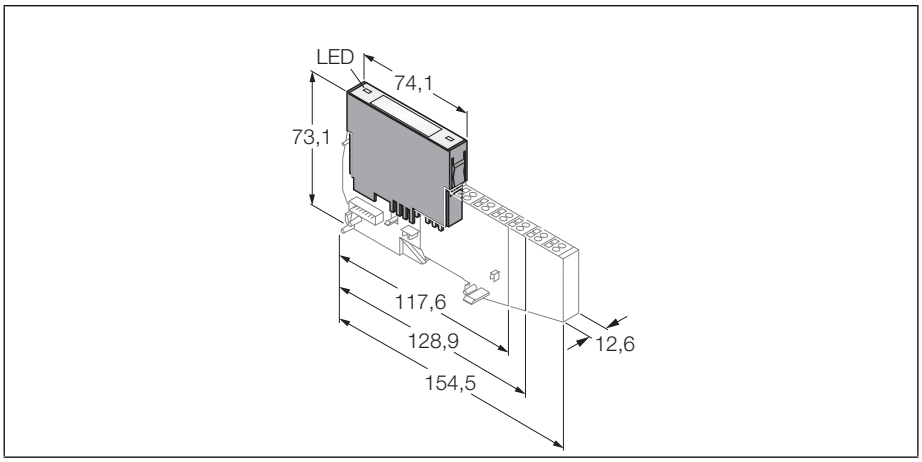
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-P3T-SBB** Ident-No. 6827036 tension spring connection, with gateway supply **BL20-P3S-SBB** Ident-No. 6827037 screw connection, with gateway supply **BL20-P3T-SBB-B** Ident-No. 6827040 tension spring connection, without gateway supply **BL20-P3S-SBB-B** Ident-No. 6827041 screw connection, without gateway supply	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-P4T-SBBC** Ident-No. 6827038 tension spring connection, C rail, with gateway supply **BL20-P4S-SBBC** Ident-No. 6827039 screw connection, C rail, with gateway supply **BL20-P4T-SBBC-B** Ident-No. 6827042 tension spring connection, C rail, without gateway supply **BL20-P4S-SBBC-B** Ident-No. 6827043 screw connection, C rail, without gateway supply	Wiring diagram 

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



Type	BL20-PF-24VDC-D
Ident-No.	6827007
Field supply	24 VDC
Permissible range	18...30 VDC
Nominal current from module bus	28 mA
Max. field current supply	10 A
Number of diagnostics bits	4
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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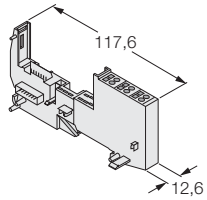
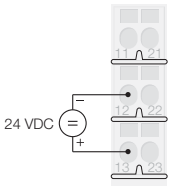
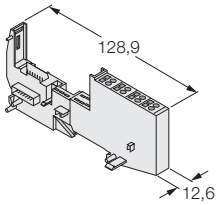
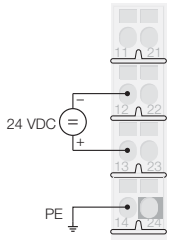
BL20 Electronic module
Power feeding module with diagnostics
BL20-PF-24VDC-D

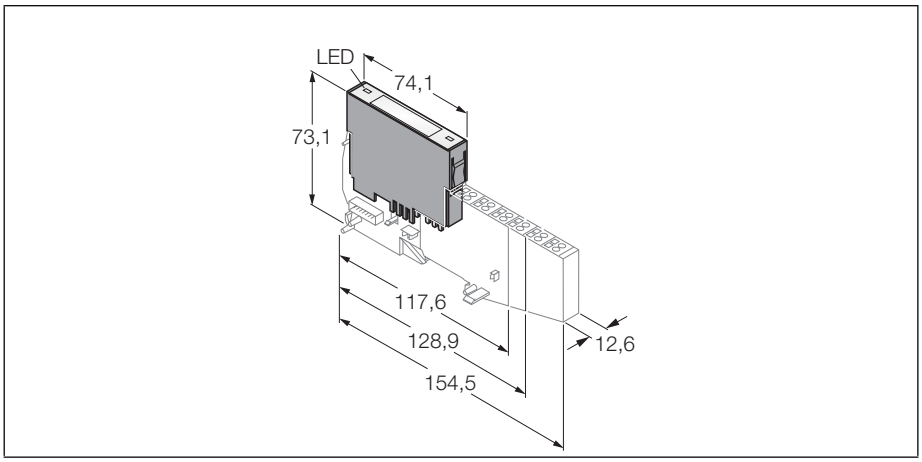
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-P3T-SBB** Ident-No. 6827036 tension spring connection, **BL20-P3S-SBB** Ident-No. 6827037 screw connection	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-P4T-SBBC** Ident-No. 6827038 tension spring connection, access to C rail **BL20-P4S-SBBC** Ident-No. 6827039 screw connection, access to C rail	Wiring diagram 

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



Type	BL20-PF-120/230VAC-D
Ident-No.	6827008
Field supply	120 / 230 VAC
Permissible range	acc. to EN 61131-2
Nominal current from module bus	25 mA
Max. field current supply	10 A
Number of diagnostics bits	4
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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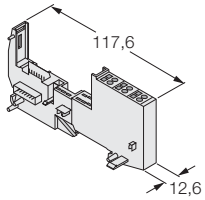
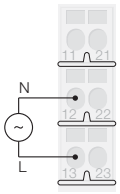
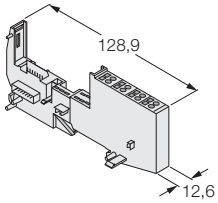
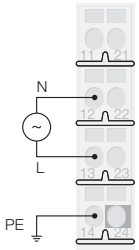
BL20 Electronic module
Power feeding module with diagnostics
BL20-PF-120/230VAC-D

Industrial Automation

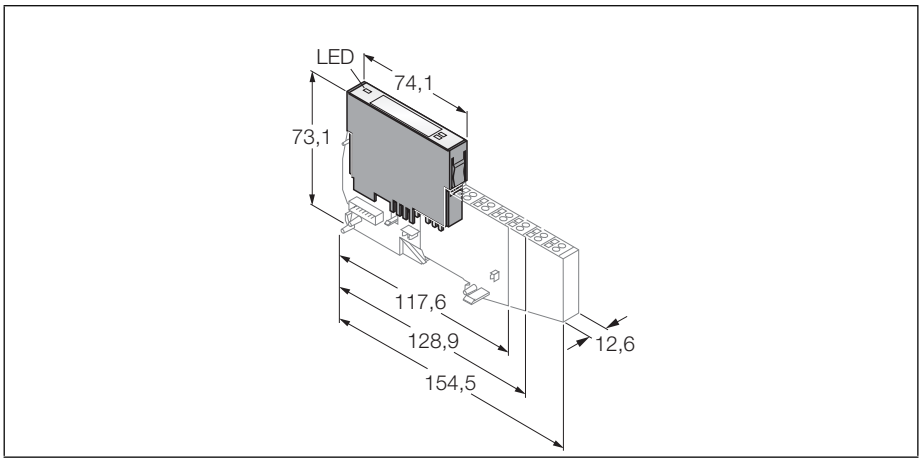
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-P3T-SBB** Ident-No. 6827036 tension spring connection **BL20-P3S-SBB** Ident-No. 6827037 screw connection	Wiring diagram 

Maßbild	Typ	Anschlussbelegung
	**BL20-P4T-SBBC** Ident-No. 6827038 tension spring connection, access to C rail **BL20-P4S-SBBC** Ident-No. 6827039 screw connection, access to C rail	Wiring diagram 

BL20 Electronic module
2 digital inputs
BL20-2DI-24VDC-P

Industrial Automation



Type	BL20-2DI-24VDC-P
Ident-No.	6827009
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal current from module bus	28 mA
Power loss, typical	0.7 W
Inputs	
Input type	pnp
Signal voltage low level	-30 V...+5 V
Signal voltage high level	15 V...30 V
Signal current low level	0 mA...1.5 mA
Signal current high level	2 mA...10 mA
Input filter	< 0.2 ms
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 digital inputs, 24 VDC**
- **pnp**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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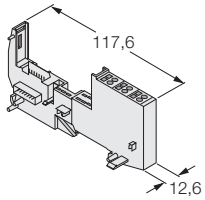
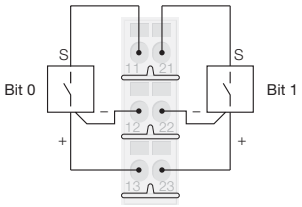
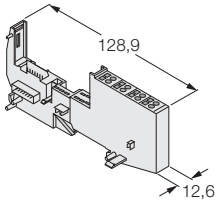
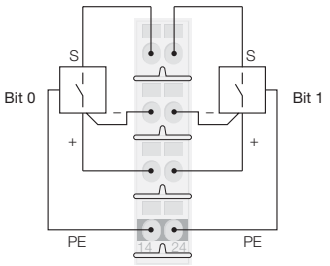
BL20 Electronic module
2 digital inputs
BL20-2DI-24VDC-P

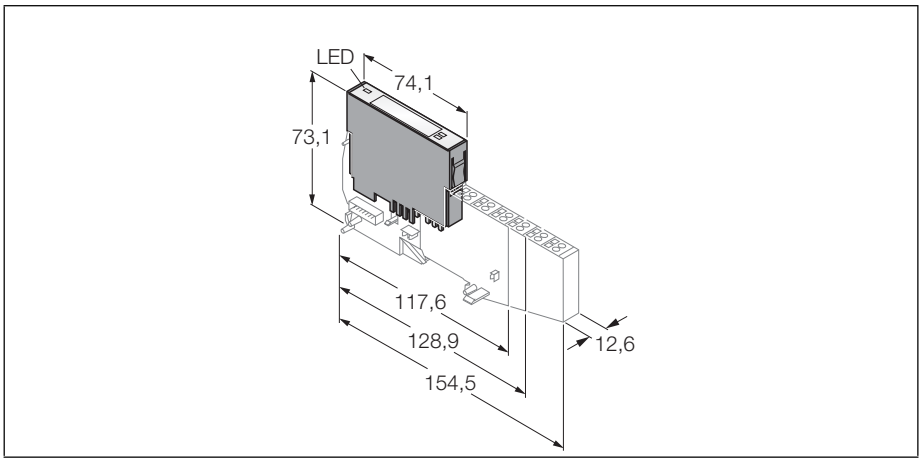
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connector, **BL20-S3S-SBB** Ident-No. 6827045 screw connection	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBC** Ident-No. 6827050 tension spring connector, access to C rail **BL20-S4S-SBBC** Ident-No. 6827051 tension spring connector, access to C rail	Wiring diagram 

BL20 Electronic module
2 digital inputs
BL20-2DI-24VDC-N



Type	BL20-2DI-24VDC-N
Ident-No.	6827010
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal current from module bus	28 mA
Power loss, typical	0.7 W
Inputs	
Input type	npn
Signal voltage low level	> 13 V
Signal voltage high level	0 V...+5 V
Signal current low level	0...1.2 mA
Signal current high level	1.3...6 mA
Input filter	< 0.2 ms
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 digital inputs, 24 VDC**
- **npn**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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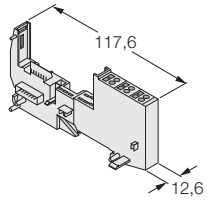
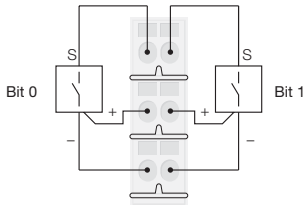
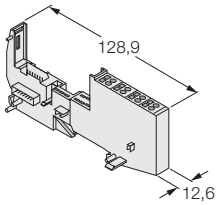
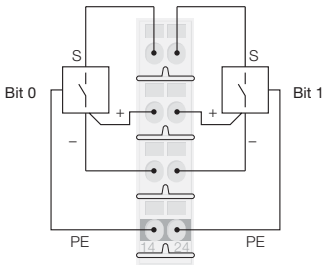
BL20 Electronic module
2 digital inputs
BL20-2DI-24VDC-N

Industrial Automation

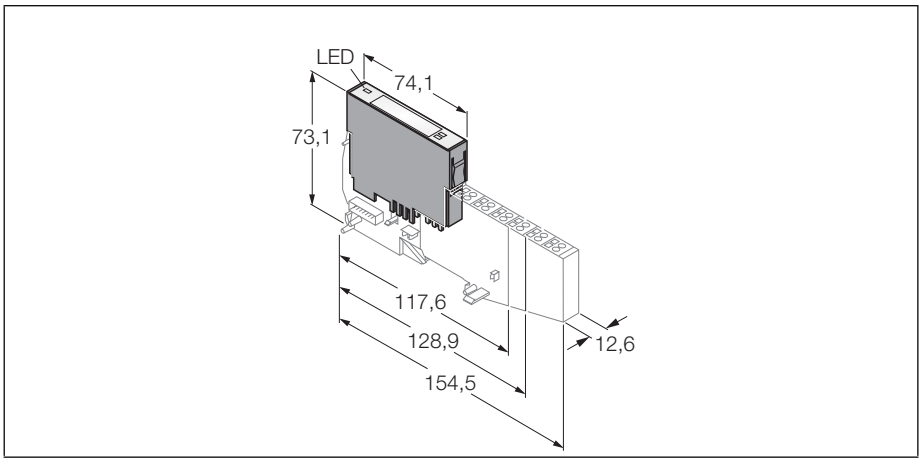
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection **BL20-S3S-SBB** Ident-No. 6827045 screw connection	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBC** Ident-No. 6827050 tension spring connection, access to C rail **BL20-S4S-SBBC** Ident-No. 6827051 screw connection, access to C rail	Wiring diagram 

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

Industrial Automation



Type	BL20-2DI-120/230VAC-P
Ident-No.	6827011
Number of channels	2
Nominal voltage through supply terminal	120 / 230 VAC
Nominal current from supply terminal	20 mA
Nominal current from module bus	28 mA
Power loss, typical	1 W
Inputs	
Signal voltage low level	0 V...20 VAC
Signal voltage high level	79 VAC...265 VAC
Frequency range	47.5 Hz bis 63 Hz
Signal current low level	0 mA...1 mA
Signal current high level	3 mA...10 mA
Input filter	< 20 ms
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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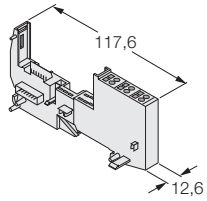
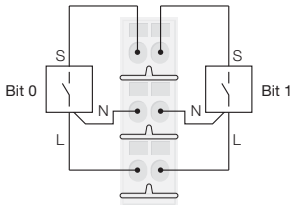
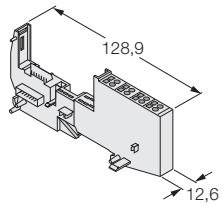
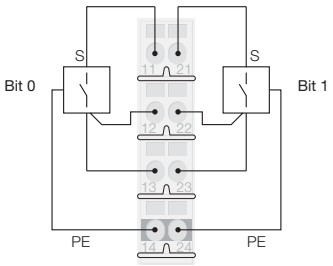
BL20 Electronic module
2 digital inputs
BL20-2DI-120/230VAC-P

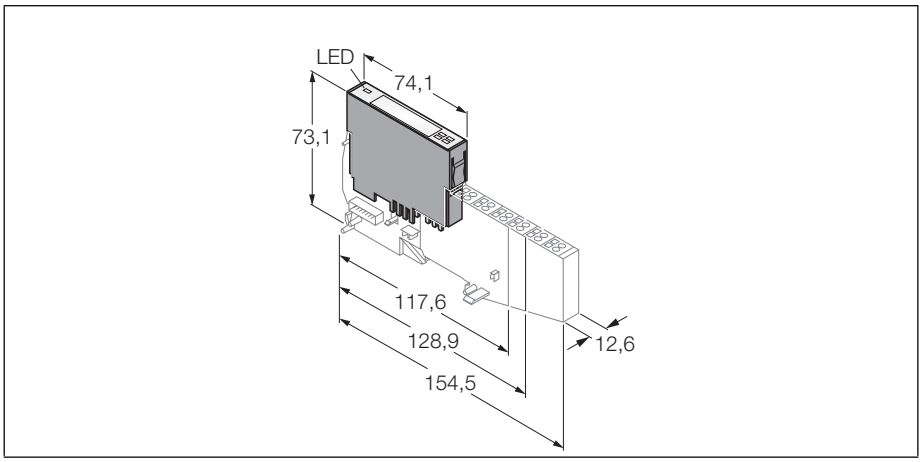
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection **BL20-S3S-SBB** Ident-No. 6827045 screw connection	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBC** Ident-No. 6827050 tension spring connection, access to C rail **BL20-S4S-SBBC** Ident-No. 6827051 screw connection, access to C rail	Wiring diagram 

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



Type	BL20-4DI-24VDC-P
Ident-No.	6827012
Number of channels	4
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	40 mA
Nominal current from module bus	28 mA
Power loss, typical	1 W
Inputs	
Input type	pnp
Signal voltage low level	-30 V...+5 V
Signal voltage high level	15 V...30 V
Signal current low level	0 mA...1.5 mA
Signal current high level	2 mA...10 mA
Input filter	< 0.2 ms
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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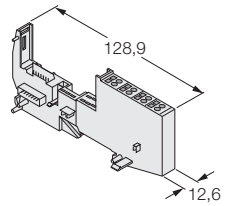
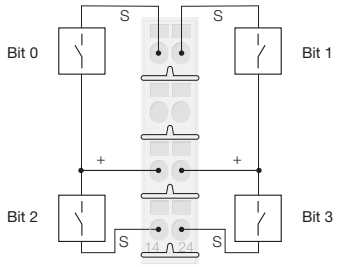
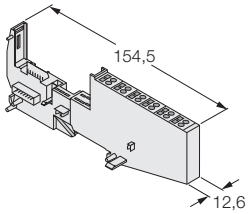
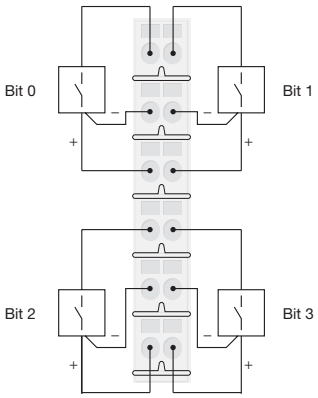
BL20 Electronic module
4 digital inputs
BL20-4DI-24VDC-P

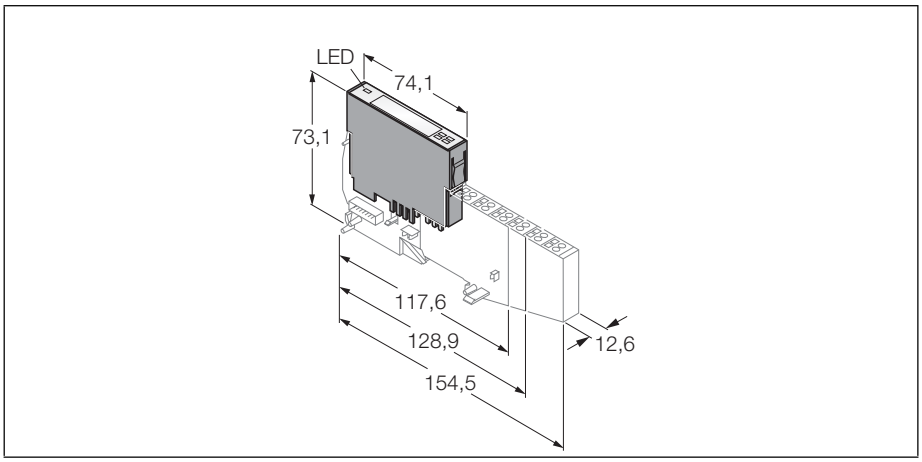
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S6T-SBBSBB** Ident-No. 6827052 tension spring connection **BL20-S6S-SBBSBB** Ident-No. 6827053 screw connection	Wiring diagram 

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



Type	BL20-4DI-24VDC-N
Ident-No.	6827013
Number of channels	4
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	40 mA
Nominal current from module bus	28 mA
Power loss, typical	1 W
Inputs	
Input type	npn
Signal voltage low level	> 13 V
Signal voltage high level	0 V...+5 V
Signal current low level	0...1.2 mA
Signal current high level	1.3...6 mA
Input filter	< 0.2 ms
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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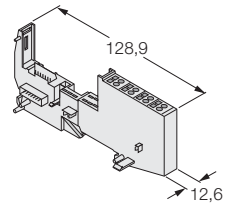
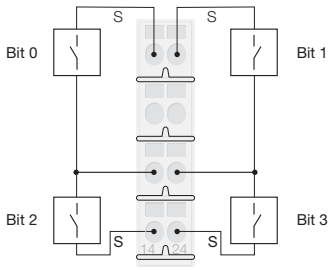
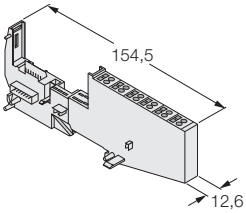
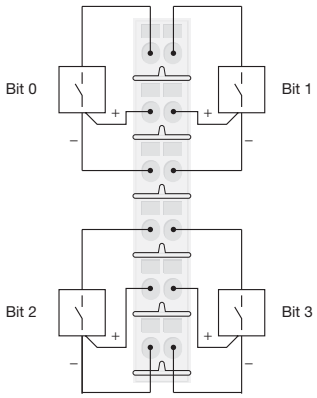
BL20 Electronic module
4 digital inputs
BL20-4DI-24VDC-N

Industrial Automation

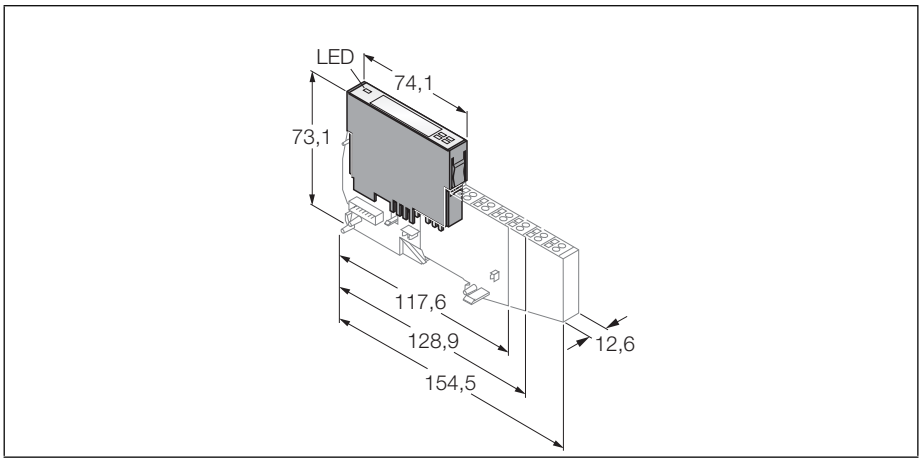
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S6T-SBBSBB** Ident-No. 6827052 tension spring connection **BL20-S6S-SBBSBB** Ident-No. 6827053 screw connection	Wiring diagram 

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

Industrial Automation



Type	BL20-4DI-NAMUR
Ident-No.	6827212
Number of channels	4
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	30 mA
Nominal current from module bus	40 mA
Power loss, typical	1 W
Inputs	
Input type	NAMUR
Signal voltage low level	-30 V...+5 V
Signal voltage high level	15 V...30 V
Signal current low level	0 mA...1.5 mA
Signal current high level	2 mA...10 mA
Input filter	0.25 or 2.5 ms
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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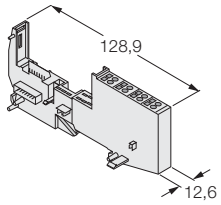
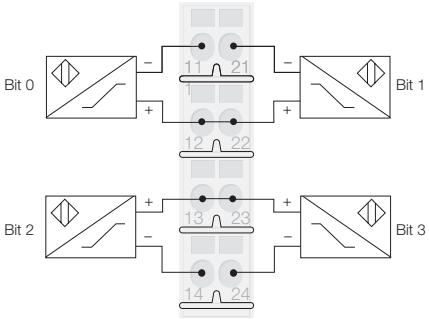
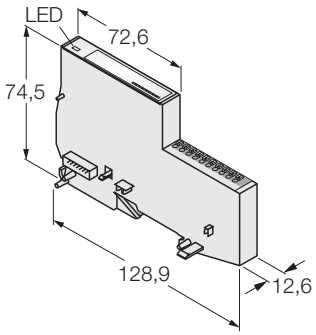
BL20 Electronic module
4 digital inputs
BL20-4DI-NAMUR

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connector **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram 

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

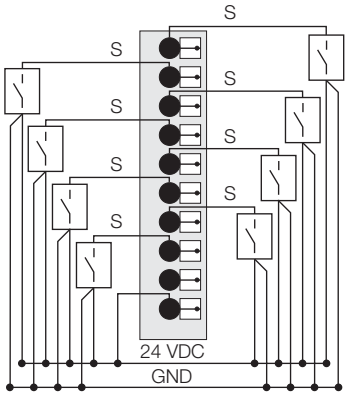


Type	BL20-E-8DI-24VDC-P
Ident-No.	6827227
Number of channels	8
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	2 mA
Nominal current from module bus	30 mA
Power loss, typical	1.5 W
Inputs	
Input type	pnp
Signal voltage low level	-30 V...+5 V
Signal voltage high level	11 V...30 V
Signal current low level	-1 mA...1.5 mA
Signal current high level	2 mA...5 mA
Input filter	< 0.2 ms
Potential isolation	electronics for the field level
Dimensions	12.6 x 128.6 x 74.6 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus used**
- **Electronics and connection technology in a 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**

Terminal connection



Function principle

With the BL20 Economy modules the electronics and connection technology is integrated into a single housing. Thus, the selection of a base module is unnecessary. Withing a station the Economy modules can be combined with the modules with separate electronics/connection technology, provided that the base modules feature tension spring connections.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

Hint

Economy module BL20-E-16DI-24VDC-P with 16 digital inputs available second quarter 2006.

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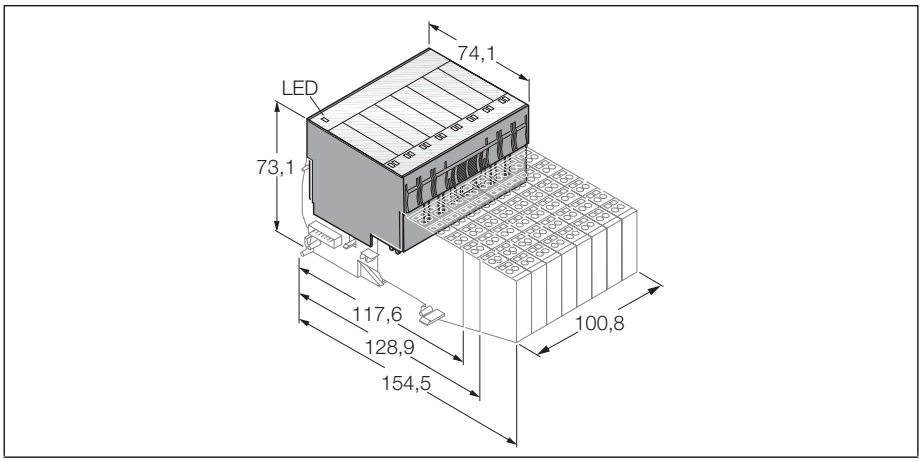
BL20 Electronic module
16 digital inputs
BL20-16DI-24VDC-P



Type	BL20-16DI-24VDC-P
Ident-No.	6827014
Number of channels	16
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	40 mA
Nominal current from module bus	45 mA
Power loss, typical	2.5 W
Inputs	
Input type	pnp
Signal voltage low level	-30 V...+5 V
Signal voltage high level	15 V...30 V
Signal current low level	0 mA...1.5 mA
Signal current high level	2 mA...10 mA
Input filter	< 0.2 ms
Potential isolation	electronics to the field level
Dimensions	100.8 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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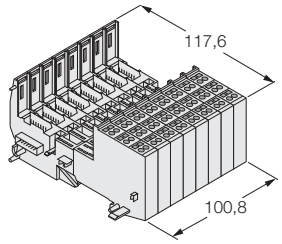
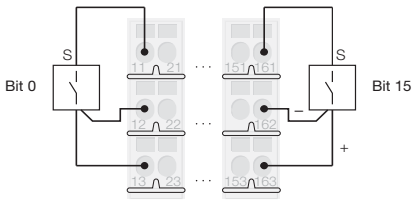
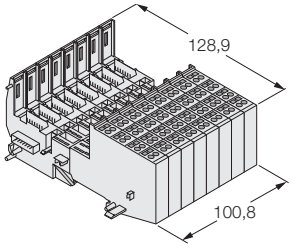
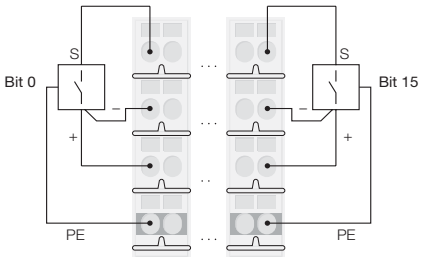
BL20 Electronic module
16 digital inputs
BL20-16DI-24VDC-P

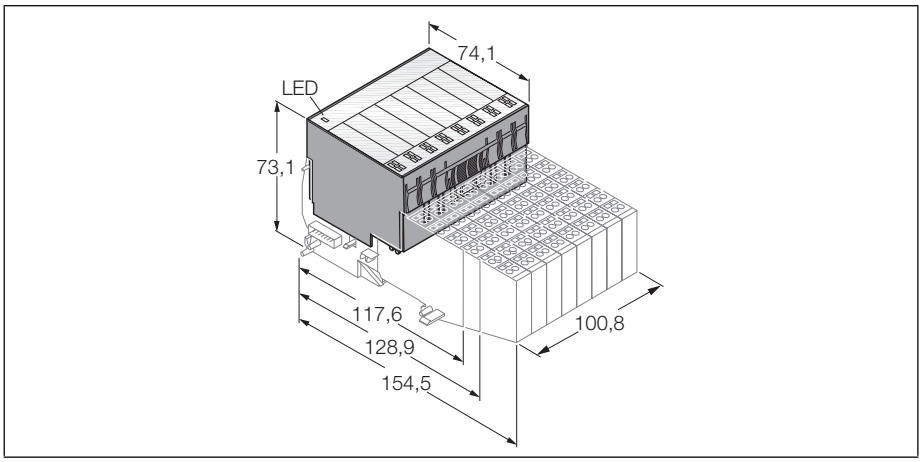
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-B3T-SBB** Ident-No. 6827054 tension spring connection **BL20-B3S-SBB** Ident-No. 6827055 screw connection	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-B4T-SBBC** Ident-No. 6827056 tension spring connection, access to C rail **BL20-B4S-SBBC** Ident-No. 6827057 screw connection, access to C rail	Wiring diagram 

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



Type	BL20-32DI-24VDC-P
Ident-No.	6827015
Number of channels	32
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	30 mA
Nominal current from module bus	45 mA
Power loss, typical	4.2 W
Inputs	
Input type	pnp
Signal voltage low level	-30 V...+5 V
Signal voltage high level	15 V...30 V
Signal current low level	< 1,5 mA
Signal current high level	2 mA...10 mA
Input filter	< 0.2 ms
Potential isolation	electronics to the field level
Dimensions	100.8 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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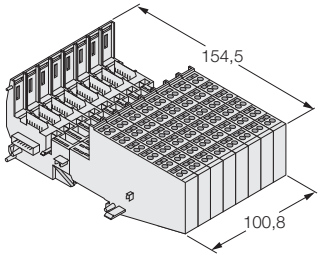
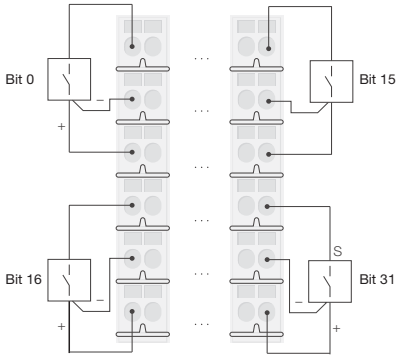
BL20 Electronic module
32 digital inputs
BL20-32DI-24VDC-P

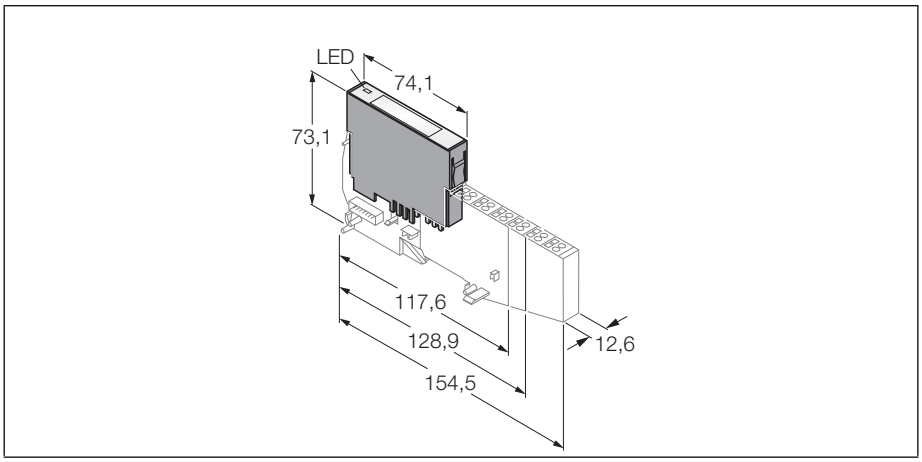
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-B6T-SBBSBB** Ident-No. 6827065 tension spring connection **BL20-B6S-SBBSBB** Ident-No. 6827067 screw connection	Wiring diagram 

BL20 Electronic module
1 analogue input
BL20-1AI-I(0/4...20MA)

Industrial Automation



Type	BL20-1AI-I(0/4...20MA)
Ident-No.	6827018
Number of channels	1
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal current from module bus	41 mA
Power loss, typical	1 W
Inputs	
Input type	0/4...20 mA
Input resistance	< 0.125 kΩ
Max. input current	50 mA
Potential isolation	electronics to the field level
Cut-off frequency	< 200 Hz
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.09 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	14 bit
Measuring principle	gradual approximation
Measurement value representation	16 bit signed integer 12 bit full range left-justified
No. of diagnostics bytes	1
No. of parameter bytes	1
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **1 analogue input 0/4...20 mA**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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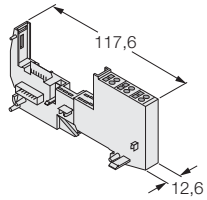
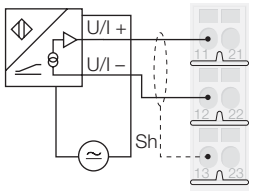
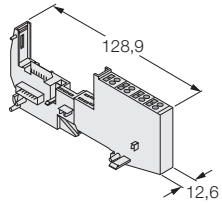
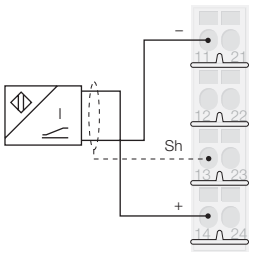
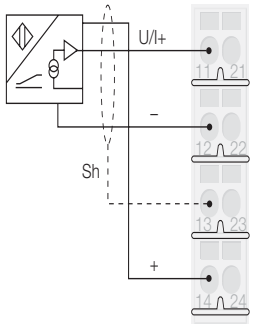
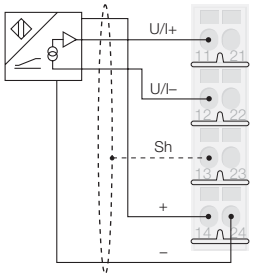
BL20 Electronic module
1 analogue input
BL20-1AI-I(0/4...20MA)

Industrial Automation

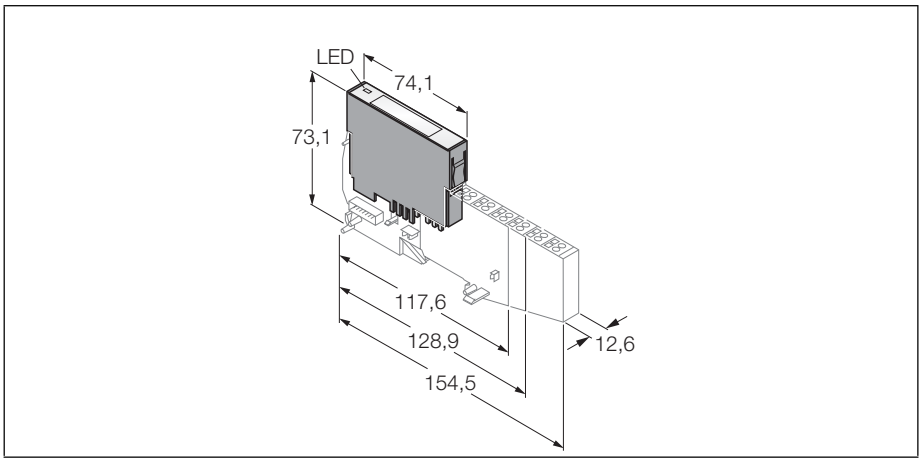
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection with external sensor supply **BL20-S3S-SBB** Ident-No. 6827045 screw connection with external sensor supply	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	2-wire technology  3-wire technology  4-wire technology 

BL20 Electronic module
2 analogue inputs
BL20-2AI-I(0/4...20MA)

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 analogue inputs 0/4...20 mA**

Type	BL20-2AI-I(0/4...20MA)
Ident-No.	6827021
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	12 mA
Nominal current from module bus	35 mA
Power loss, typical	1 W
Inputs	
Input type	0/4...20 mA
Input resistance	< 0.125 kΩ
Max. input current	50 mA
Potential isolation	electronics to the field level
Cut-off frequency	< 50 Hz
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	16 bit
Measuring principle	delta sigma
Measurement value representation	16 bit signed integer 16 bit full range left-justified
No. of diagnostics bytes	2
No. of parameter bytes	2
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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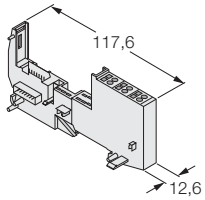
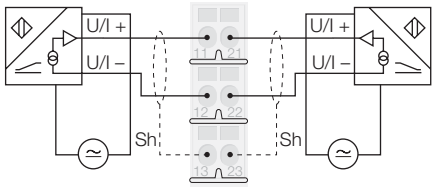
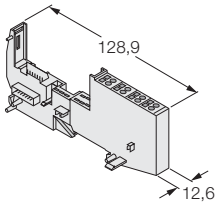
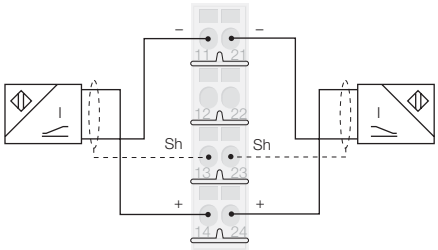
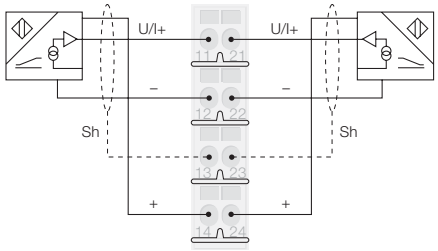
BL20 Electronic module
2 analogue inputs
BL20-2AI-I(0/4...20MA)

Industrial Automation

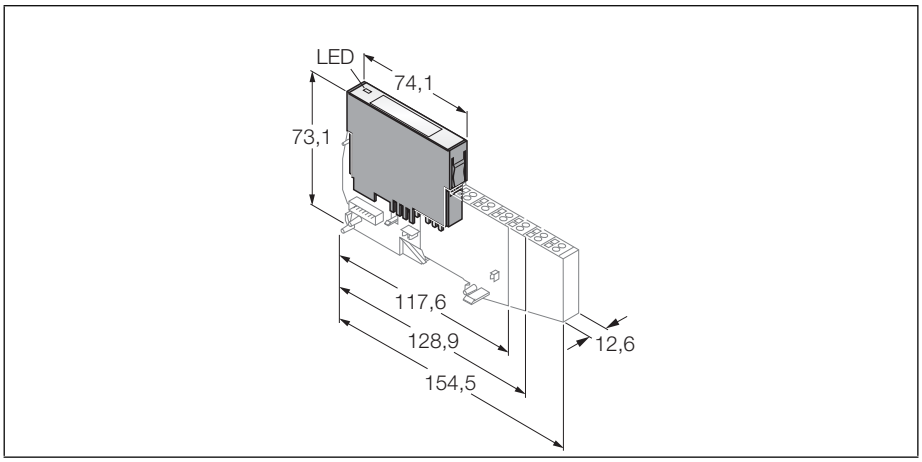
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection with external sensor supply **BL20-S3S-SBB** Ident-No. 6827045 screw connection with external sensor supply	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	2-wire technology  3-wire technology 

BL20 Electronic module
1 analogue input
BL20-1AI-U(-10/0...+10VDC)

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **1 analogue input -10/0...+10 VDC**

Type	BL20-1AI-U(-10/0...+10VDC)
Ident-No.	6827019
Number of channels	1
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal current from module bus	41 mA
Power loss, typical	1 W
Inputs	
Input type	-10/0...+10 VDC
Input resistance	< 98,5 kΩ
Max. input voltage	35 V permanent
Potential isolation	electronics to the field level
Cut-off frequency	< 200 Hz
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	14 bit
Measuring principle	gradual approximation
Measurement value representation	16 bit signed integer 12 bit signed integer left-justified 12 bit full range left-justified
No. of diagnostics bytes	1
No. of parameter bytes	1
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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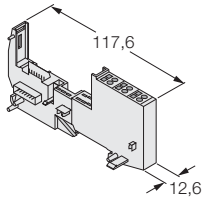
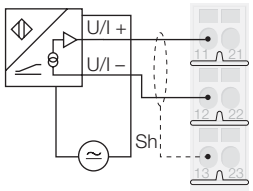
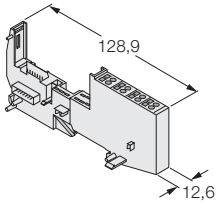
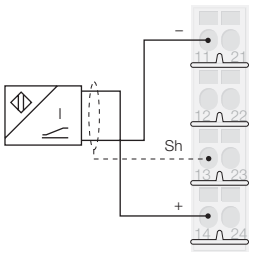
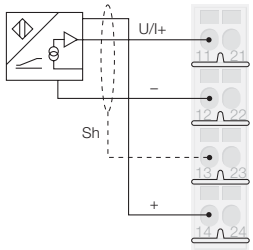
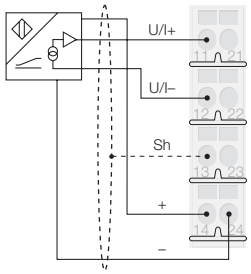
BL20 Electronic module
1 analogue input
BL20-1AI-U(-10/0...+10VDC)

Industrial Automation

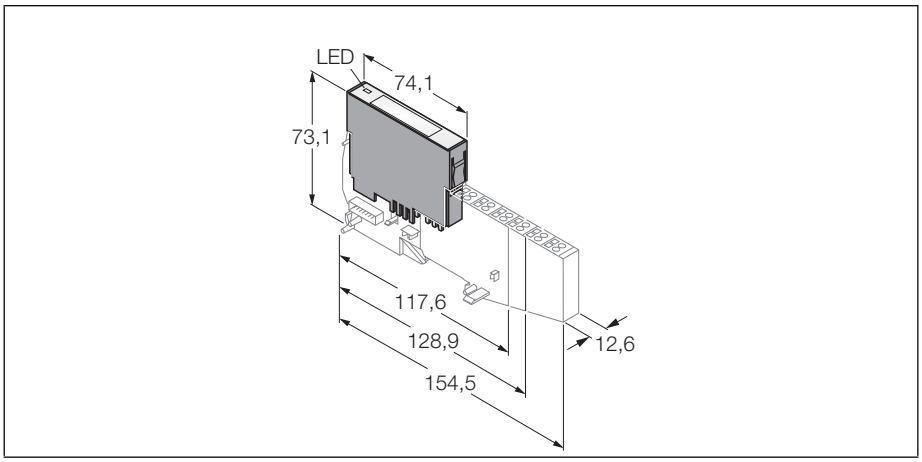
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection with external sensor supply **BL20-S3S-SBB** Ident-No. 6827045 screw connection with external sensor supply	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	2-wire technology  3-wire technology  4-wire technology 

BL20 Electronic module
2 analogue inputs
BL20-2AI-U(-10/0...+10VDC)

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 analogue inputs -10/0...+10 VDC**

Type	BL20-2AI-U(-10/0...+10VDC)
Ident-No.	6827022
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	12 mA
Nominal current from module bus	35 mA
Power loss, typical	1 W
Inputs	
Input type	-10/0 ... +10 VDC
Input resistance	< 98,5 kΩ
Max. input voltage	35 V permanent
Potential isolation	electronics to the field level
Cut-off frequency	< 50 Hz
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 150 ppm/°C of full scale
Resolution	16 bit
Measuring principle	delta sigma
Measurement value representation	16 bit signed integer 12 bit full range left-justified
No. of diagnostics bytes	2
No. of parameter bytes	2
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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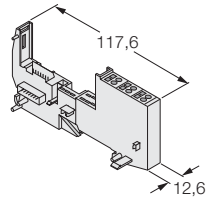
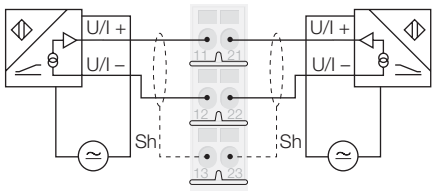
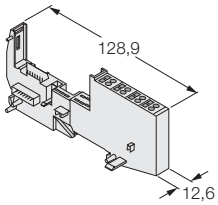
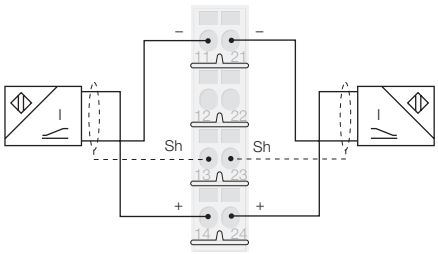
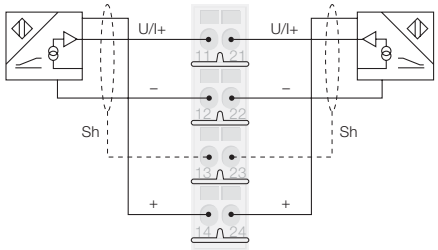
BL20 Electronic module
2 analogue inputs
BL20-2AI-U(-10/0...+10VDC)

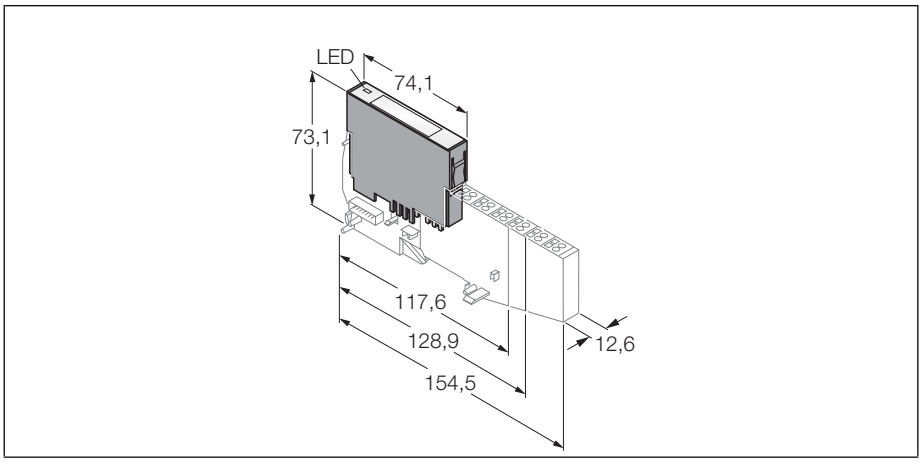
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection with external sensor supply **BL20-S3S-SBB** Ident-No. 6827045 screw connection with external sensor supply	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	2-wire technology  3-wire technology 

BL20 Electronic module
2 analogue inputs for temperature measurement
BL20-2AI-PT/NI-2/3



Type	BL20-2AI-PT/NI-2/3
Ident-No.	6827017
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	30 mA
Nominal current from module bus	45 mA
Power loss, typical	1 W
Inputs	
Input type	Pt100, Pt500, Pt1000, Ni100, Ni1000
Potential isolation	electronics to the field level
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	16 bit
Measurement value representation	16 bit signed integer 12 bit full range left-justified
Cycle time	130 ms
Measuring current	< 1 mA
No. of diagnostics bytes	2
No. of parameter bytes	4
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 analogue inputs for Pt100, Pt500 and Pt1000 as well as for Ni100 and Ni1000**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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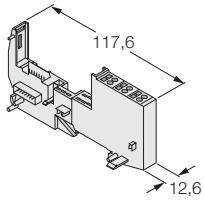
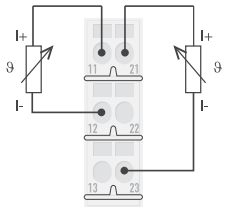
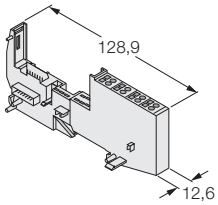
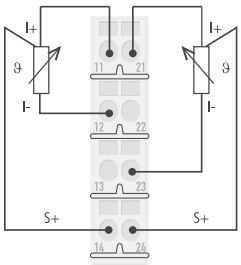
BL20 Electronic module
2 analogue inputs for temperature measurement
BL20-2AI-PT/NI-2/3

Industrial Automation

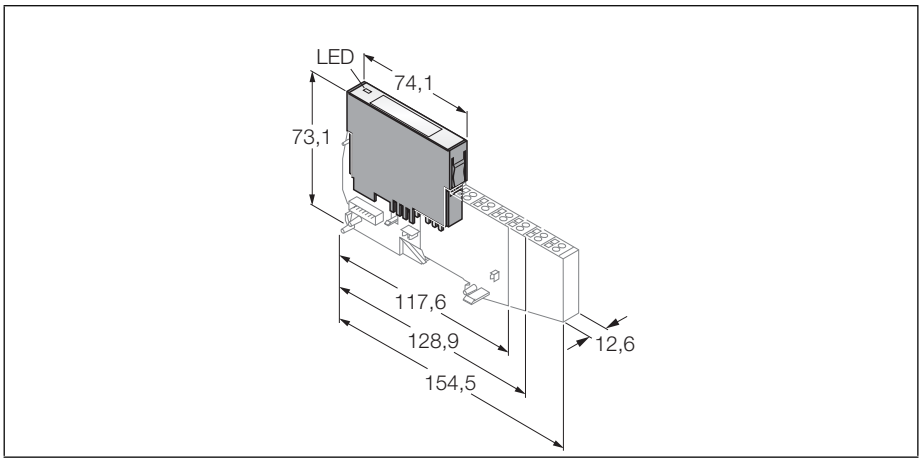
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection **BL20-S3S-SBB** Ident-No. 6827045 screw connection	2-wire technology 

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	3-wire technology 

BL20 Electronic module
2 analogue inputs for temperature measurement
BL20-2AI-THERMO-PI

Industrial Automation



Type	BL20-2AI-THERMO-PI
Ident-No.	6827020
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	30 mA
Nominal current from module bus	45 mA
Power loss, typical	1 W
Inputs	
Input type	types B, E, J, K, N, R, S, T
Potential isolation	electronics for the field level
Voltage resolution	± 50 mV: < 2 µV ± 100 mV: < 4 µV ± 500 mV: < 20 µV ± 1000 mV: < 50 µV
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	16 bit
Measurement value representation	16 bit signed integer 12 bit full range left-justified
Cycle time	60 ms
No. of diagnostics bytes	2
No. of parameter bytes	2
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

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

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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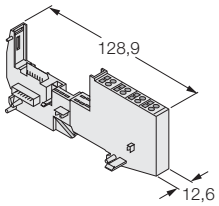
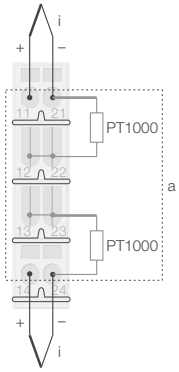
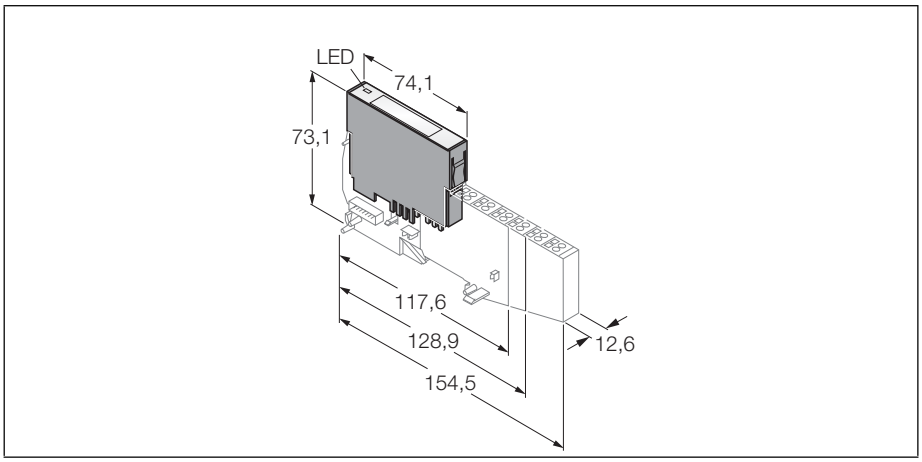
BL20 Electronic module
2 analogue inputs for temperature measurement
BL20-2AI-THERMO-PI

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS-CJ** Ident-No. 6827048 tension spring connection **BL20-S4S-SBBS-CJ** Ident-No. 6827049 screw connection	Wiring diagram 

BL20 Electronic module
4 analogue inputs
BL20-4AI-U/I



Type	BL20-4AI-U/I
Ident-No.	6827217
Number of channels	4
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal 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	< 0.062 or > 98.5 kΩ
Max. input current	50 mA
Max. input voltage	35 V permanent
Potential isolation	electronics to the field level
Cut-off frequency	< 20 Hz
Basic error at 23 °C	< 0.3 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	16 bit
Measuring principle	delta sigma
No. of diagnostics bytes	4
No. of parameter bytes	4
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **4 analogue inputs**
- **0/4...20 mA or 10/0...+10 V DC**
- **Selectable per channel**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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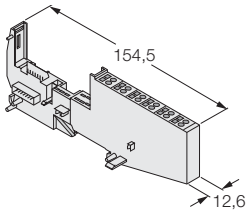
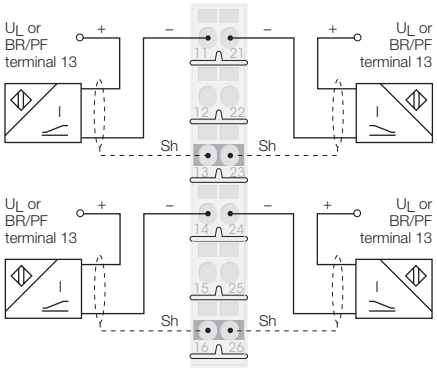
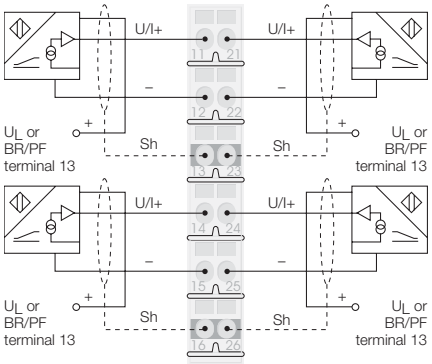
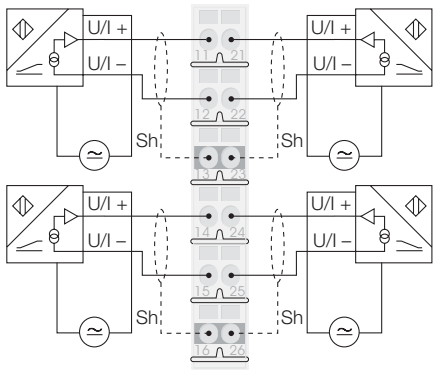
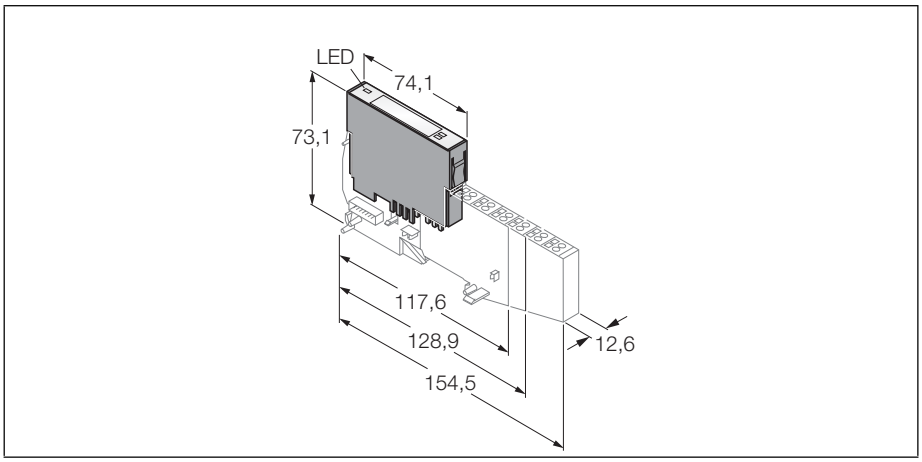
BL20 Electronic module
4 analogue inputs
BL20-4AI-U/I

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S6T-SBCSBC** Ident-No. 6827064 tension spring connection **BL20-S6S-SBCSBC** Ident-No. 6827066 screw connection	2-wire technology  3-wire technology  4-wire technology 

BL20 Electronic module
2 digital outputs
BL20-2DO-24VDC-0,5A-P

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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.**
- **pnp**

Type	BL20-2DO-24VDC-0,5A-P
Ident-No.	6827024
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal current from module bus	32 mA
Power loss, typical	1 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	100 µs
Load type	resistive, inductive, lamp load
Ohmic load resistance	> 48 Ω
Inductive load resistance	< 1.2 H
Lamp load	< 3 W
Ohmic switching frequency	< 5000 Hz
Lamp load switching frequency	< 10 Hz
Short-circuit protection	yes
Load factor	1
Potential isolation	electronics to the field level
Number of diagnostics bits	2
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration check	according to EN 61131
Shock testing	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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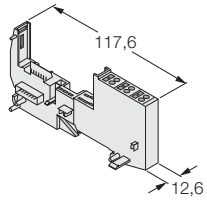
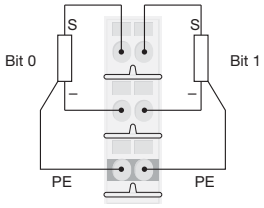
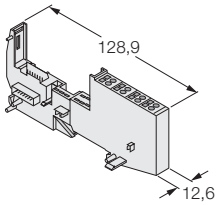
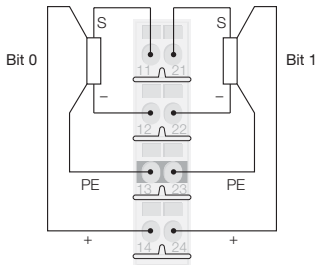
BL20 Electronic module
2 digital outputs
BL20-2DO-24VDC-0,5A-P

Industrial Automation

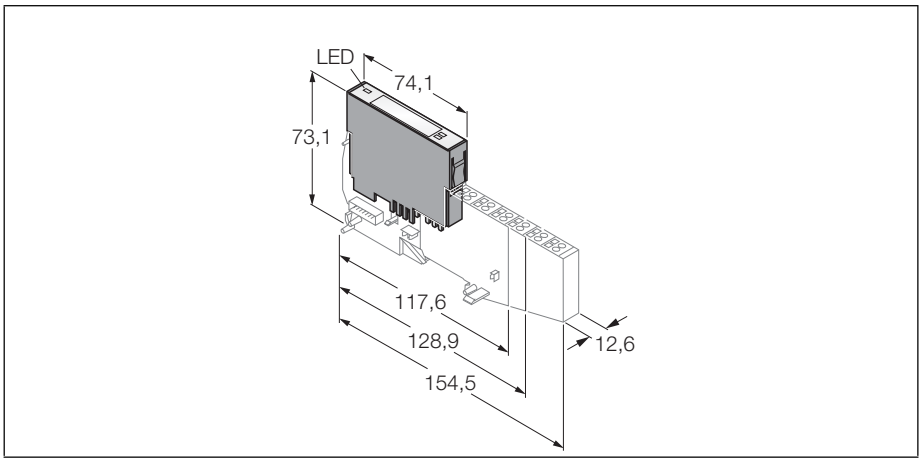
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBC** Ident-No. 6827058 tension spring connection, access to C rail **BL20-S3S-SBC** Ident-No. 6827059 screw connection, access to C rail	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBCS** Ident-No. 6827063 tension spring connection, access to C rail **BL20-S4S-SBCS** Ident-No. 6827060 screw connection, access to C rail	Wiring diagram 

BL20 Electronic module
2 digital outputs
BL20-2DO-24VDC-0,5A-N

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal 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	100 µs
Load type	resistive, inductive, lamp load
Ohmic load resistance	> 48 Ω
Inductive load resistance	< 1.2 H
Lamp load	< 12 W
Ohmic switching frequency	< 100 Hz
Inductive switching frequency	< 2 Hz
Lamp load switching frequency	< 10 Hz
Short-circuit protection	yes
Load factor	1
Potential isolation	electronics to the field level
Number of diagnostics bits	2
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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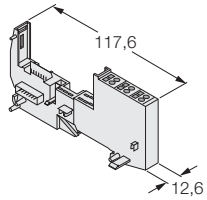
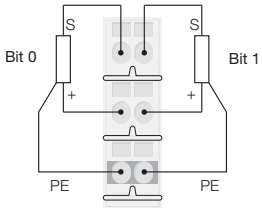
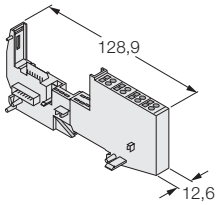
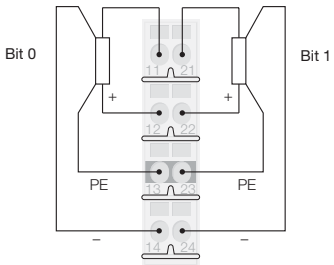
BL20 Electronic module
2 digital outputs
BL20-2DO-24VDC-0,5A-N

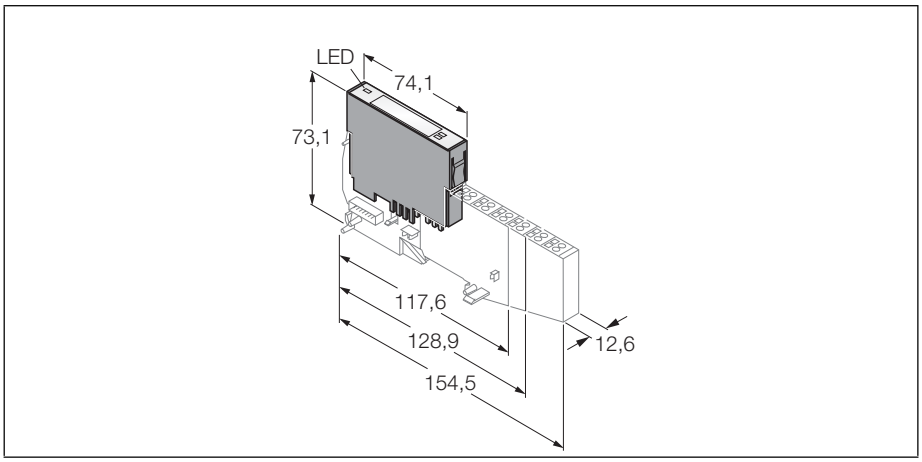
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBC** Ident-No. 6827058 tension spring connection, access to C rail **BL20-S3S-SBC** Ident-No. 6827059 screw connection, access to C rail	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBCS** Ident-No. 6827063 tension spring connection, access to C rail **BL20-S4S-SBCS** Ident-No. 6827060 screw connection, access to C rail	Wiring diagram 

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



Type	BL20-2DO-24VDC-2A-P
Ident-No.	6827026
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal 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	100 µs
Load type	resistive, inductive, lamp load
Ohmic load resistance	> 12 Ω
Inductive load resistance	< 1.2 H
Lamp load	< 6 W
Ohmic switching frequency	< 5000 Hz
Lamp load switching frequency	< 10 Hz
Short-circuit protection	yes
Load factor	1
Potential isolation	electronics to the field level
Number of diagnostics bits	2
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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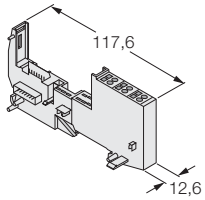
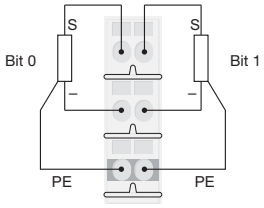
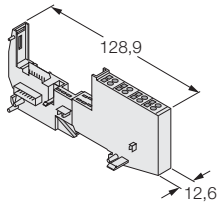
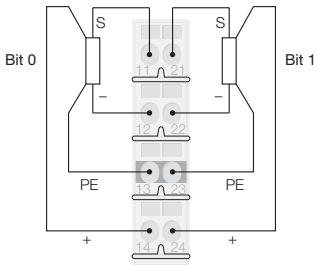
BL20 Electronic module
2 digital outputs
BL20-2DO-24VDC-2A-P

Industrial Automation

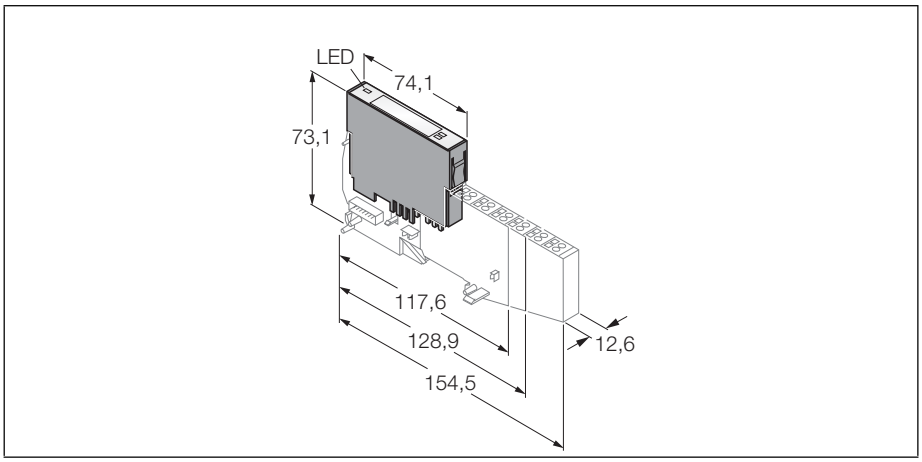
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBC** Ident-No. 6827058 tension spring connection, access to C rail **BL20-S3S-SBC** Ident-No. 6827059 screw connection, access to C rail	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBCS** Ident-No. 6827063 tension spring connection, access to C rail **BL20-S4S-SBCS** Ident-No. 6827060 screw connection, access to C rail	Wiring diagram 

BL20 Electronic module
2 digital outputs
BL20-2DO-120/230VAC-0,5A

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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
Nominal voltage through supply terminal	120 / 230 VAC
Nominal current from supply terminal	20 mA
Nominal current from module bus	35 mA
Power loss, typical	1 W
Outputs	
Output voltage	120 / 230 VAC
Output current per channel	0.5 A
Load type	resistive, inductive, lamp load
Ohmic load resistance	> 48 Ω
Inductive load resistance	< 1.2 H
Short-circuit protection	yes
Load factor	1
Potential isolation	electronics for the field level
Number of diagnostics bits	2
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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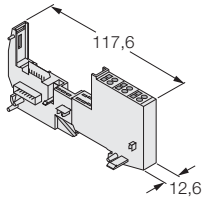
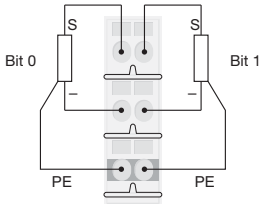
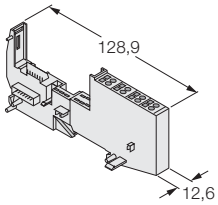
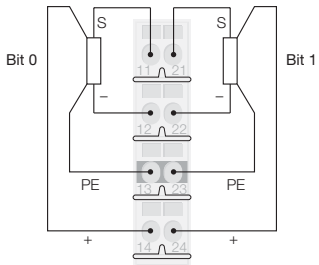
BL20 Electronic module
2 digital outputs
BL20-2DO-120/230VAC-0,5A

Industrial Automation

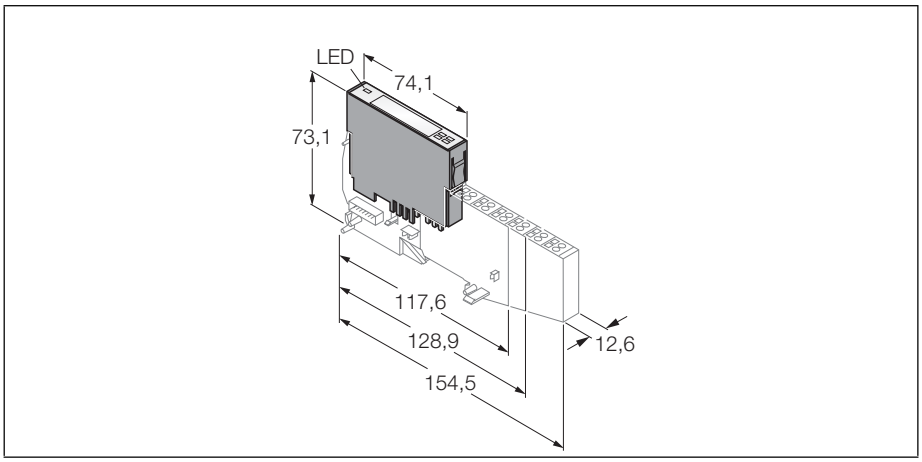
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBC** Ident-No. 6827058 tension spring connection, access to C rail **BL20-S3S-SBC** Ident-No. 6827059 screw connection, access to C rail	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBCS** Ident-No. 6827063 tension spring connection, access to C rail **BL20-S4S-SBCS** Ident-No. 6827060 screw connection, access to C rail	Wiring diagram 

BL20 Electronic module
4 digital outputs
BL20-4DO-24VDC-0,5A-P

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	25 mA
Nominal 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	250 µs
Load type	ohmic, inductive, lamp load
Ohmic load resistance	> 48 Ω
Inductive load resistance	< 1.2 H
Lamp load	< 6 W
Ohmic switching frequency	< 5000 Hz
Inductive switching frequency	< 2 Hz
Lamp load switching frequency	< 10 Hz
Short-circuit protection	yes
Load factor	1
Potential isolation	electronics to the field level
Number of diagnostics bits	1
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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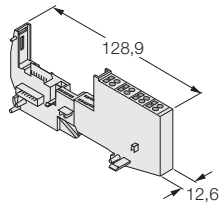
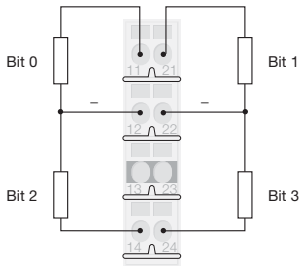
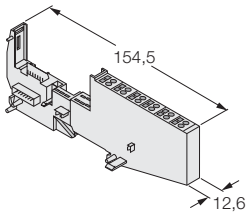
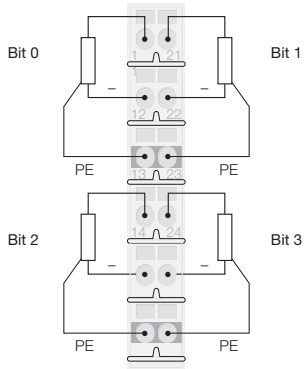
BL20 Electronic module
4 digital outputs
BL20-4DO-24VDC-0,5A-P

Industrial Automation

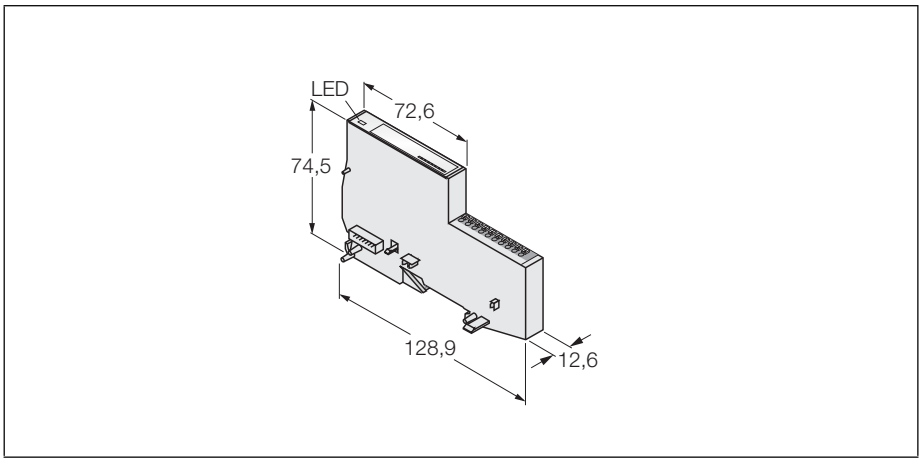
Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBCS** Ident-No. 6827063 tension spring connection, access to C rail **BL20-S4S-SBCS** Ident-No. 6827060 screw connection, access to C rail	Wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S6T-SBCSBC** Ident-No. 6827064 tension spring connection, access to C rail **BL20-S6S-SBCSBC** Ident-No. 6827066 screw connection, access to C rail	Wiring diagram 

BL20 Economy module
8 digital outputs
BL20-E-8DO-24VDC-0,5A-P

Industrial Automation

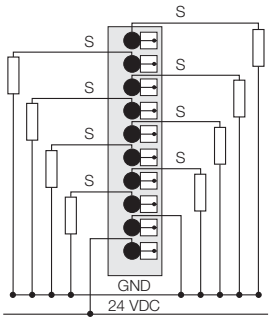


- **Independent of the type of fieldbus used**
- **Electronics and connection technology in a single housing**
- **Tension spring connection technology**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**

Type	BL20-E-8DO-24VDC-0,5A-P
Ident-No.	6827226
Number of channels	8
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	10 mA
Nominal current from module bus	30 mA
Power loss, typical	1.5 W
Outputs	
Output type	pnp
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	300 µs
Load type	resistive, inductive, lamp load
Ohmic load resistance	> 48 Ω
Lamp load	< 6 W
Ohmic switching frequency	< 100 Hz
Lamp load switching frequency	< 10 Hz
Short-circuit protection	yes
Load factor	1
Potential isolation	electronics to the field level
Dimensions	12.6 x 128.6 x 74.6 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Terminal connection



Function principle

With the BL20 Economy modules the electronics and connection technology is integrated into a single housing. Thus, the selection of a base module is unnecessary. Withing a station the Economy modules can be combined with the modules with separate electronics/connection technology, provided that the base modules feature tension spring connections.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

Hint

Economy module BL20-E-16DO-24VDC-P with 16 digital outputs available second quarter 2006.

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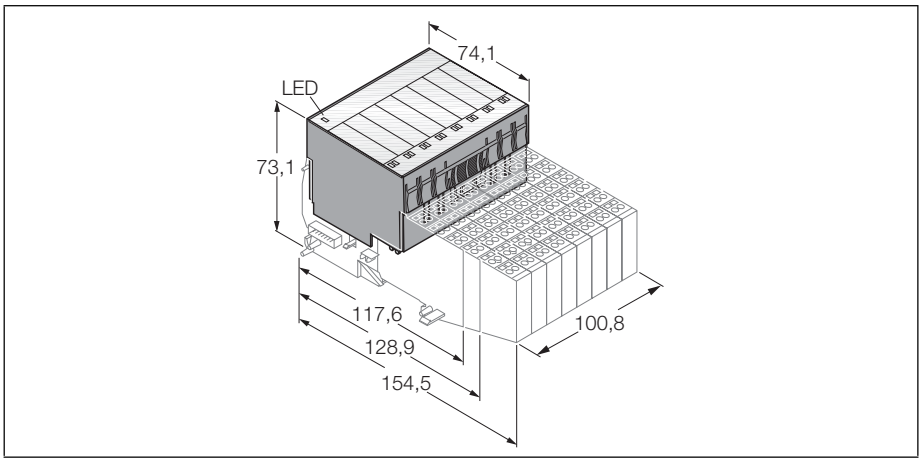
BL20 Electronic module
16 digital outputs
BL20-16DO-24VDC-0,5A-P



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal 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	100 µs
Load type	resistive, inductive, lamp load
Ohmic load resistance	> 48 Ω
Inductive load resistance	< 1.2 H
Lamp load	< 3 W
Ohmic switching frequency	< 100 Hz
Short-circuit protection	yes
Load factor	1
Potential isolation	electronics to the field level
Number of diagnostics bits	4
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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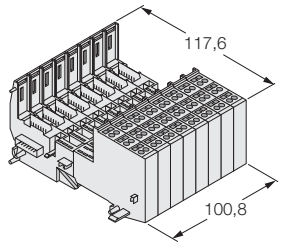
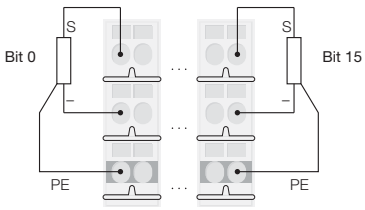
BL20 Electronic module
16 digital outputs
BL20-16DO-24VDC-0,5A-P

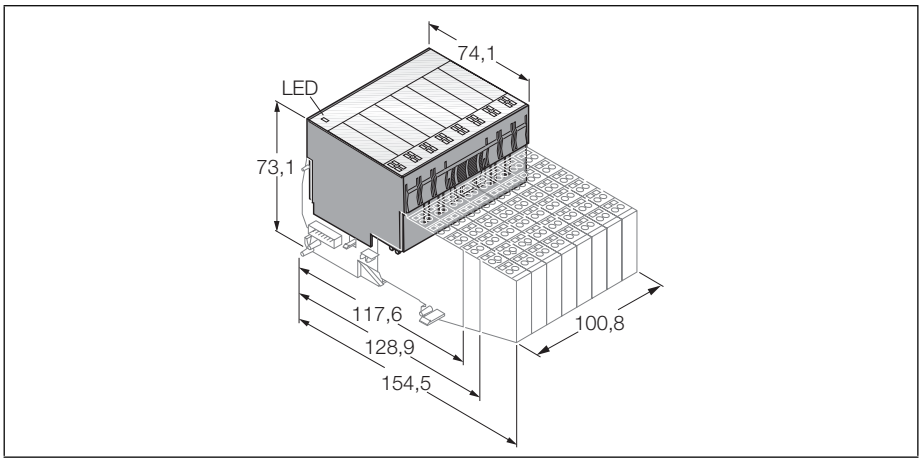
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-B3T-SBC** Ident-No. 6827061 tension spring connection, access to C rail **BL20-B3S-SBC** Ident-No. 6827062 screw connection, access to C rail	Wiring diagram 

BL20 Electronic module
32 digital outputs
BL20-32DO-24VDC-0,5A-P

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal 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	300 µs
Load type	resistive, inductive, lamp load
Ohmic load resistance	> 48 Ω
Inductive load resistance	< 1.2 H
Lamp load	< 6 W
Ohmic switching frequency	< 100 Hz
Load factor	1
Potential isolation	electronics to the field level
Number of diagnostics bits	8
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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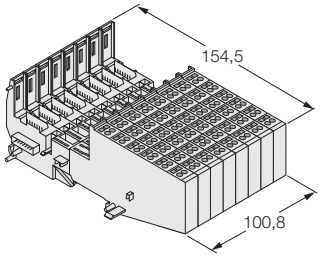
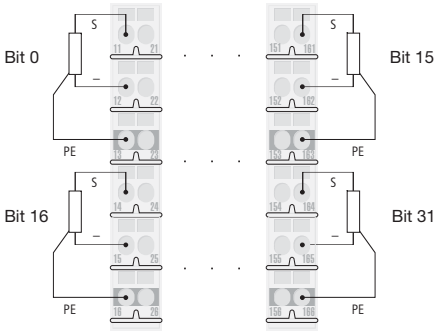
BL20 Electronic module
32 digital outputs
BL20-32DO-24VDC-0,5A-P

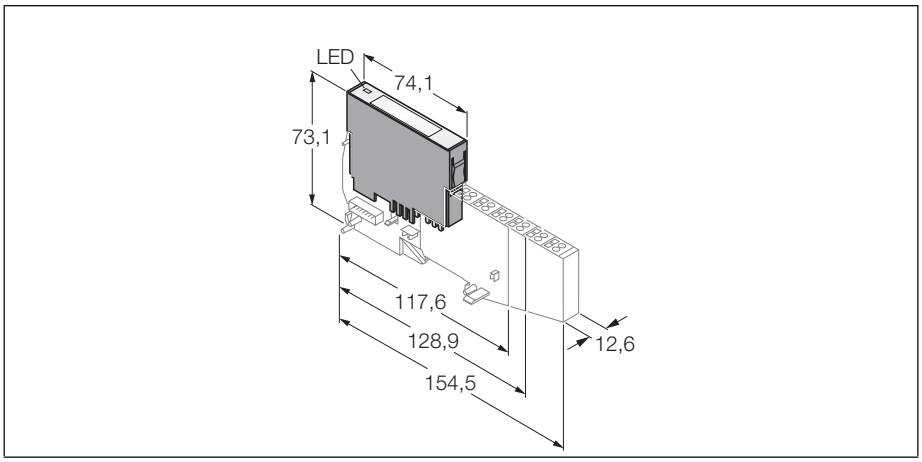
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-B6T-SBCSBC** Ident-No. 6827218 tension spring connection, access to C rail **BL20-B6S-SBCSBC** Ident-No. 6827219 screw connection, access to C rail	Wiring diagram 

BL20 Electronic module
1 analogue output
BL20-1AO-I(0/4...20MA)

Industrial Automation



Type	BL20-1AO-I(0/4...20MA)
Ident-No.	6827032
Number of channels	1
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal current from module bus	39 mA
Power loss, typical	1 W
Outputs	
Output type	0/4 ... 20 mA
Ohmic load resistance	< 0.45 kΩ
Inductive load resistance	< 1 mH
Potential isolation	electronics to the field level
Transmission frequency	< 200 Hz
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	16 bit
Measurement value representation	16 bit signed integer 12 bit full range left-justified
No. of parameter bytes	3
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **1 analogue output 0/4...20 mA**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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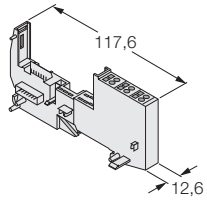
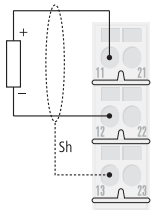
BL20 Electronic module
1 analogue output
BL20-1AO-I(0/4...20MA)

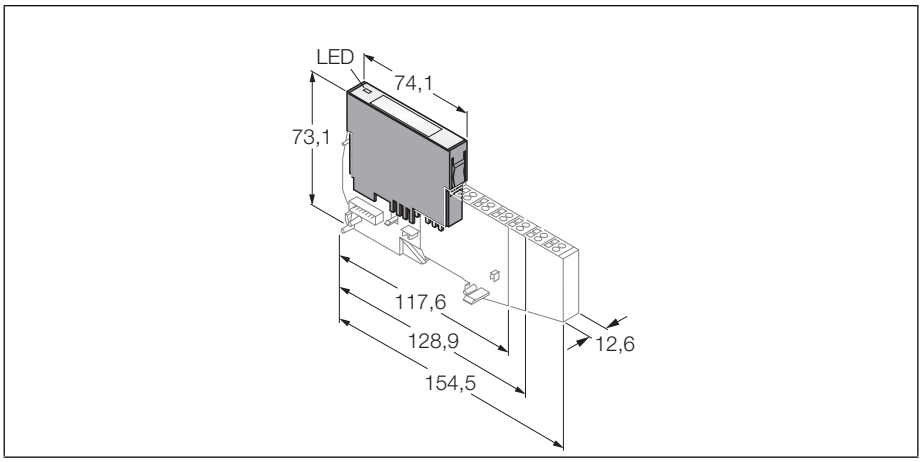
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection **BL20-S3S-SBB** Ident-No. 6827045 screw connection	wiring diagram 

BL20 Electronic module
2 analogue outputs
BL20-2AO-I(4...20MA)

Industrial Automation



Type	BL20-2AO-I(4...20MA)
Ident-No.	6827034
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal current from module bus	40 mA
Power loss, typical	1 W
Outputs	
Output type	0/4...20 mA
Ohmic load resistance	< 0.45 kΩ
Inductive load resistance	< 1 mH
Potential isolation	electronics to the field level
Transmission frequency	< 200 Hz
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 150 ppm/°C of full scale
Resolution	16 bit
Measurement value representation	16 bit signed integer 12 bit full range left-justified
No. of parameter bytes	6
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 analogue outputs 0/4...20 mA**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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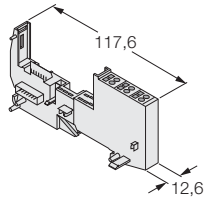
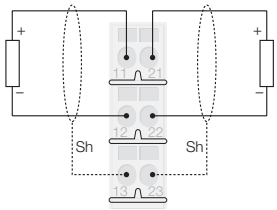
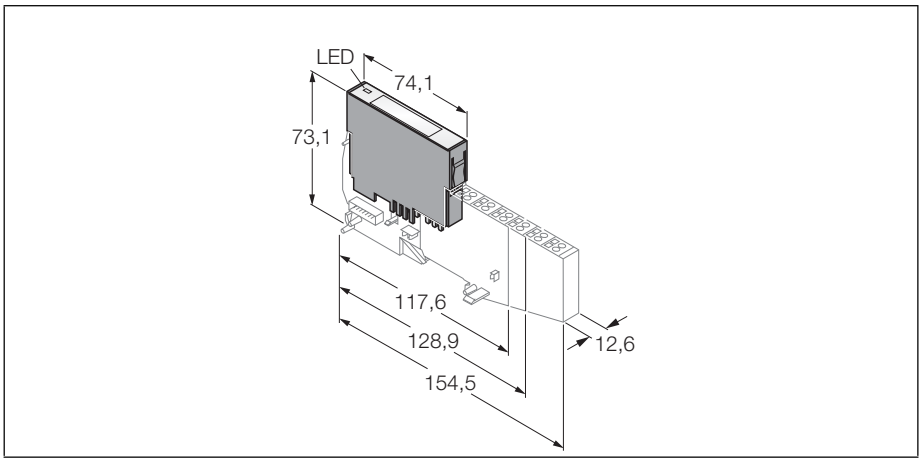
BL20 Electronic module
2 analogue outputs
BL20-2AO-I(4...20MA)

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection **BL20-S3S-SBB** Ident-No. 6827045 screw connection	Wiring diagram 

BL20 Electronic module
2 analogue outputs
BL20-2AO-U(-10/0...+10VDC)



Type	BL20-2AO-U(-10/0...+10VDC)
Ident-No.	6827033
Number of channels	2
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal current from module bus	43 mA
Power loss, typical	1 W
Outputs	
Output type	-10/0...+10 VDC
Ohmic load resistance	> 1 kΩ
Capactivie load resistance	> 1 µF
Potential isolation	electronics to the field level
Transmission frequency	< 100 Hz
Basic error at 23 °C	< 0.2 %
Repeat accuracy	0.05 %
Temperature coeffizient	< 300 ppm/°C of full scale
Resolution	16 bit
Measurement value representation	16 bit signed integer 12 bit signed integer left-justified 12 bit full range left-justified
No. of parameter bytes	6
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 analogue outputs -10/0...+10 VDC**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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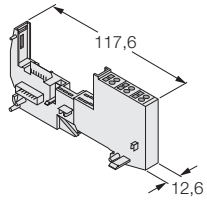
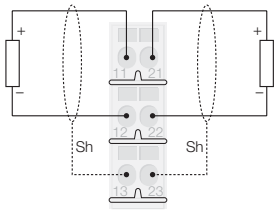
BL20 Electronic module
2 analogue outputs
BL20-2AO-U(-10/0...+10VDC)

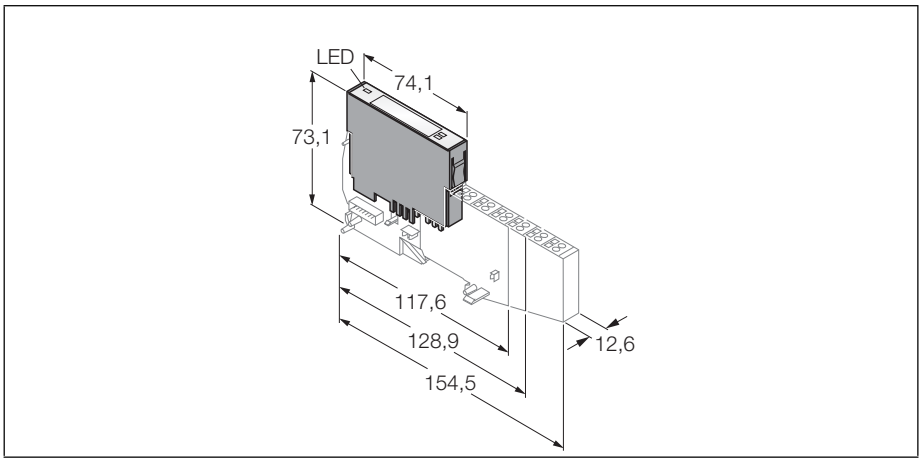
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S3T-SBB** Ident-No. 6827044 tension spring connection **BL20-S3S-SBB** Ident-No. 6827045 screw connection	Wiring diagram 

BL20 Electronic module
Relay module, 2 x normally closed
BL20-2DO-R-NC

Industrial Automation



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal current from module bus	28 mA
Power loss, typical	1 W
Outputs	
Load type	resistive, inductive, lamp load
Nominal load voltage	230/30 VAC/DC
Load factor	1
Life cycle with 230 VAC, 5A	100000
Life cycle with 230 VAC, 0.5A	1000000
Output curent with DC voltage (resistive)	see Load limit curve
Potential isolation	electronics for the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

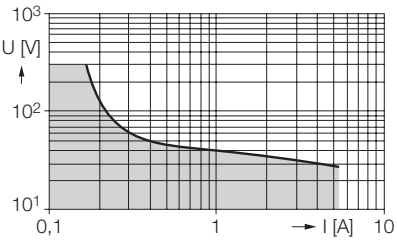
General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

Load limit curve

Definition: At 1000 switching cycles, a standing electric arc of > 10 ms may not occur.



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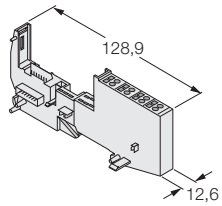
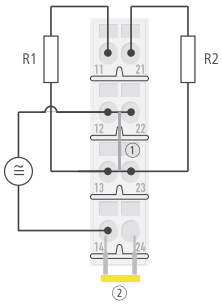
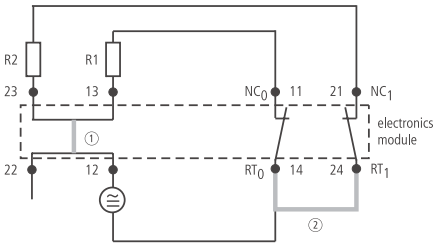
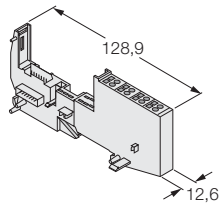
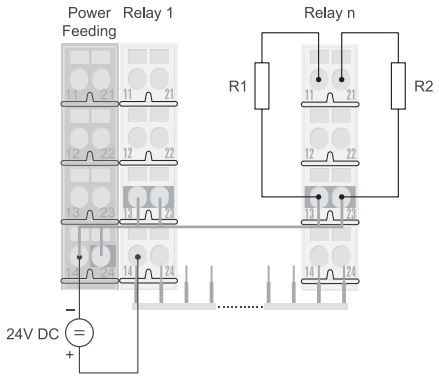
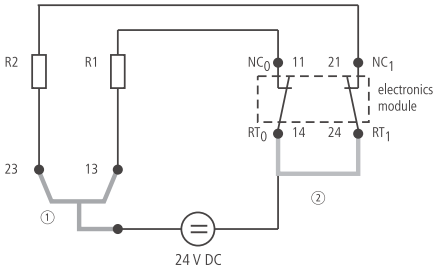
BL20 Electronic module
Relay module, 2 x normally closed
BL20-2DO-R-NC

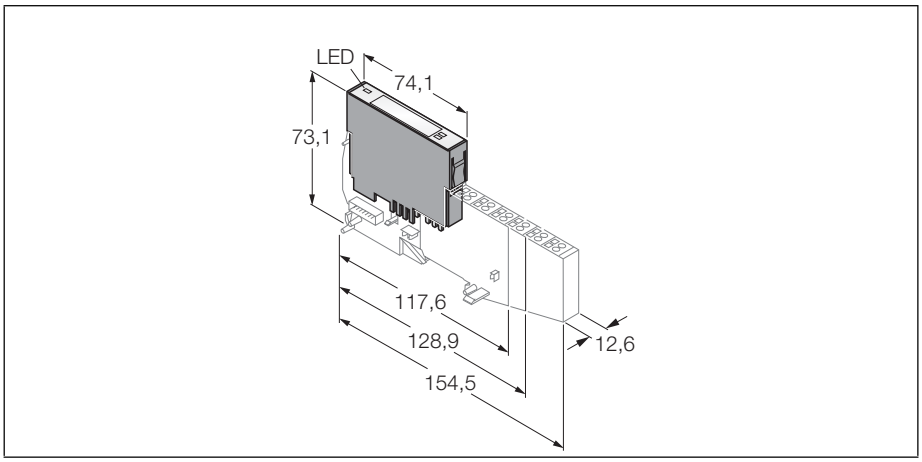
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection Comments with externally applied supply and cross connected root ① Jumpered in the electronics ② cross-connection via QVR in the base	Wiring diagram  Module wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBCS** Ident-No. 6827063 tension spring connection **BL20-S4S-SBCS** Ident-No. 6827060 screw connection Comments with supply via C rail and cross connected root ① C rail ② cross-connection via QVR in the base; max. 8 relay modules	Wiring diagram  Module wiring diagram 

BL20 Electronic module
Relay module, 2 x normally open
BL20-2DO-R-NO



Type	BL20-2DO-R-NO
Ident-No.	6827029
Number of channels	2, normally open
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal current from module bus	28 mA
Power loss, typical	1 W
Outputs	
Load type	resistive, inductive, lamp load
Nominal load voltage	230/30 VAC/DC
Load factor	1
Life cycle with 230 VAC, 5A	100000
Life cycle with 230 VAC, 0.5A	1000000
Output curent with DC voltage (resistive)	see load limit curve
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

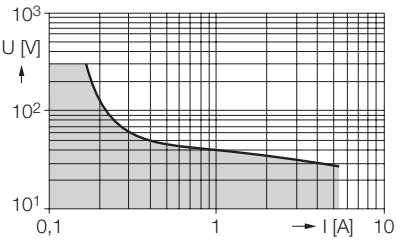
- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 normally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

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

Load limit curve

Definition: At 1000 switching cycles, a standing electric arc of > 10 ms may not occur.



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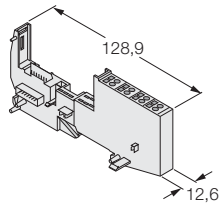
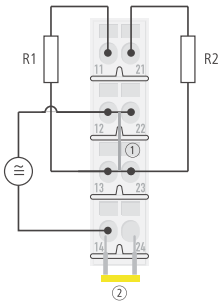
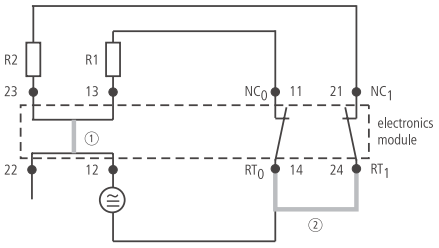
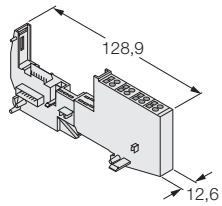
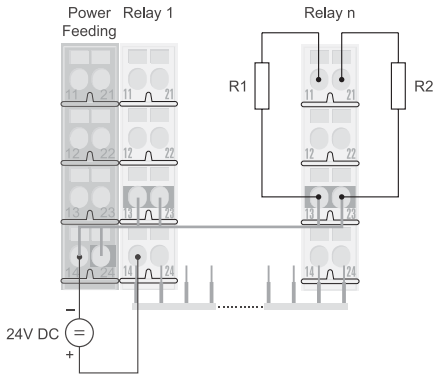
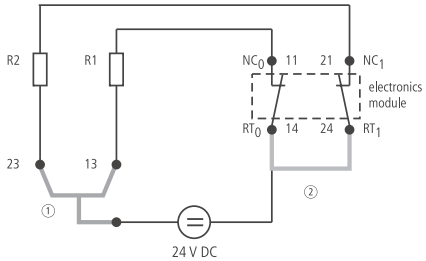
BL20 Electronic module
Relay module, 2 x normally open
BL20-2DO-R-NO

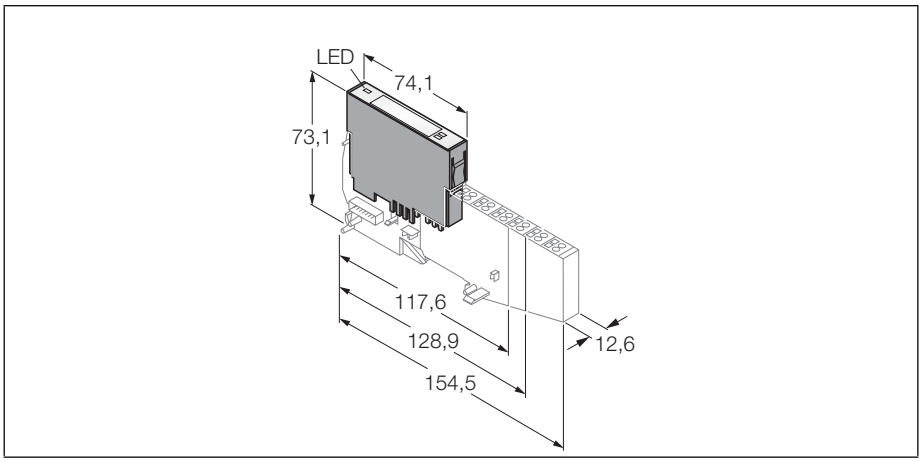
Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection Comments with externally applied supply and cross connected root ① Jumpered in the electronics ② cross-connection via QVR in the base	Wiring diagram  Module wiring diagram 

Dimension drawing	Type	Connection
	**BL20-S4T-SBCS** Ident-No. 6827063 tension spring connection **BL20-S4S-SBCS** Ident-No. 6827060 screw connection Comments with supply via C rail and cross connected root ① C rail ② cross-connection via QVR in the base; max. 8 relay modules	Wiring diagram  Module wiring diagram 

BL20 Electronic module
Relay module, 2 x change-over
BL20-2DO-R-CO



Type	BL20-2DO-R-CO
Ident-No.	6827030
Number of channels	2, change-over, galvanically isolated
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	20 mA
Nominal current from module bus	28 mA
Power loss, typical	1 W
Outputs	
Load type	resistive, inductive, lamp load
Nominal load voltage	230/30 VAC/DC
Load factor	1
Life cycle with 230 VAC, 5A	100000
Life cycle with 230 VAC, 0.5A	1000000
Output curent with DC voltage (resistive)	see load limit curve
Potential isolation	electronics to the field level
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

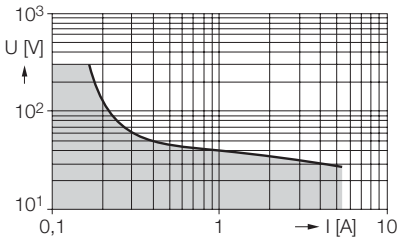
- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **2 change-over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

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

Load limit curve

Definition: At 1000 switching cycles, a standing electric arc of > 10 ms may not occur.



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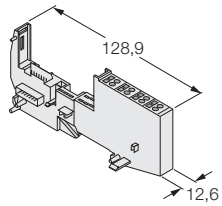
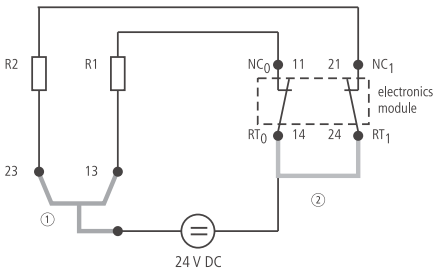
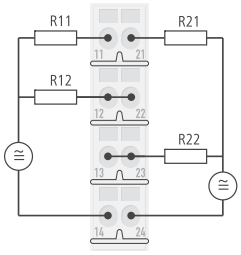
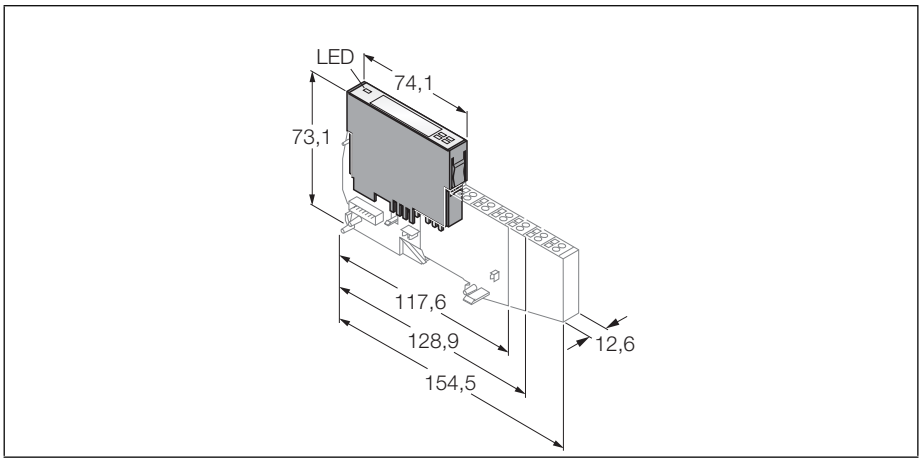
BL20 Electronic module
Relay module, 2 x change-over
BL20-2DO-R-CO

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram  Module wiring diagram 

BL20 Electronic module
Counter
BL20-1CNT-24VDC



Type	BL20-1CNT-24VDC
Ident-No.	6827031
Number of channels	1
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	50 mA
Nominal current from module bus	40 mA
Power loss, typical	1.3 W
Potential isolation	isolation of electronics and field level via opto-couplers
Count signals and digital input	
Input type	1 x 24 VDC
Signal voltage low level	-30 VDC...5 VDC
Signal voltage high level	11 VDC...30 VDC
Signal current low level	-8 mA...1.5 mA
Signal current high level	2 mA...10 mA
Min. pulse width (max. count frequency)	
Filter on	> 25 µs (20 kHz)
Filter off	< 2.5 µs (200 kHz)
Input filter	< 0.2 ms
Outputs	
Output type	1 x 24 VDC, 2 A
Output current per channel	2 A
Output delay	100 µs
Load type	resistive, inductive, lamp load
Switching frequency	100 Hz
Short-circuit protection	yes
Measurement ranges	
Frequency measurement	0.1 Hz...200 kHz
Rotational speed measurement	1 U/min...25000 U/min
Period duration measurement	5 ms...120 s
Upper count limit	0...7FFF FFFF
Lower count limit	8000 0000...FFFF FFFF
No. of diagnostics bytes	1
No. of parameter bytes	15

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **Degree of protection IP20**
- **LEDs for display of status and diagnostics**
- **Electronics galvanically isolated from the field level via opto couplers**
- **Detection of standard counting signals**
- **1 digital input, 24 VDC**
- **1 digital output, 24 VDC, 2 A**
- **Counting mode: "continuous count", "single count" or "periodic count"**
- **Measuring mode: frequency, rotational speed or period duration measurement**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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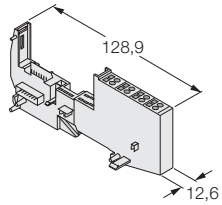
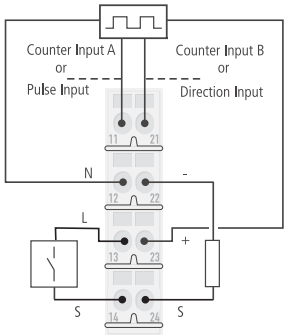
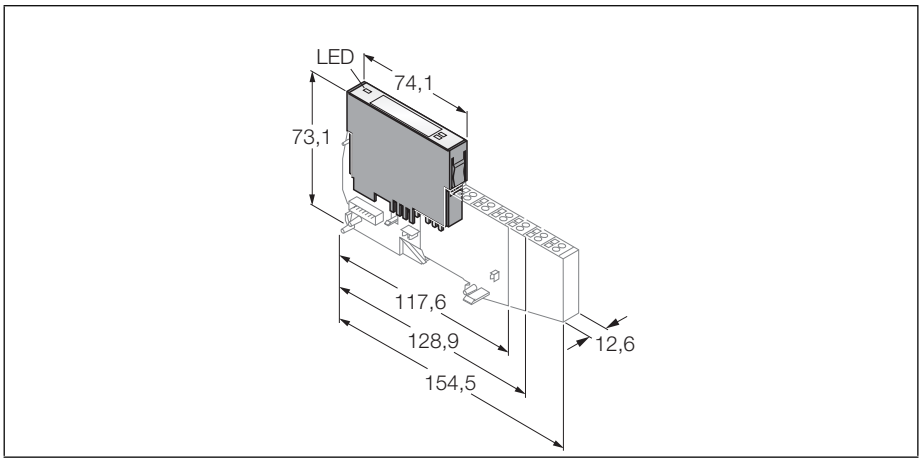
BL20 Electronic module
Counter
BL20-1CNT-24VDC

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram 

BL20 Electronic module
RS232 interface
BL20-1RS232



Type	BL20-1RS232
Ident-No.	6827169
Number of channels	1
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	25 mA
Nominal current from module bus	140 mA
Power loss, typical	1 W
Inputs / outputs	
Transmission level active (URS1)	-15...-3 VDC
Transmission level inactive (URS0)	3...15 VDC
Common mode range (UGL)	-7...12 VDC
Transmission signals	RxD, TxD, RTS, CTS
Buffer receive / transmit	128 / 64 Byte
Type of connection	full duplex
Transmission rate	300 to 115200 bps
Parameters	transmission rate, diagnostics, data bits, stop bits, XON-character, XOFF-character, parity, flow control
Cable length	15 m
Potential isolation	isolation of electronics and field level via opto-couplers
No. of diagnostics bytes	1
No. of parameter bytes	4
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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 diverse devices, such as printers, scanners or bar code readers**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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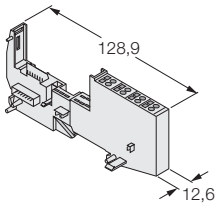
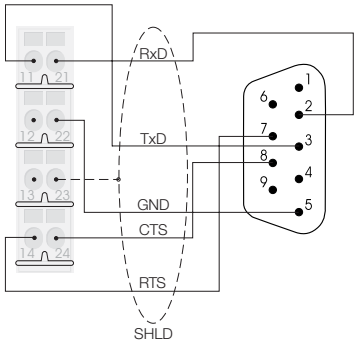
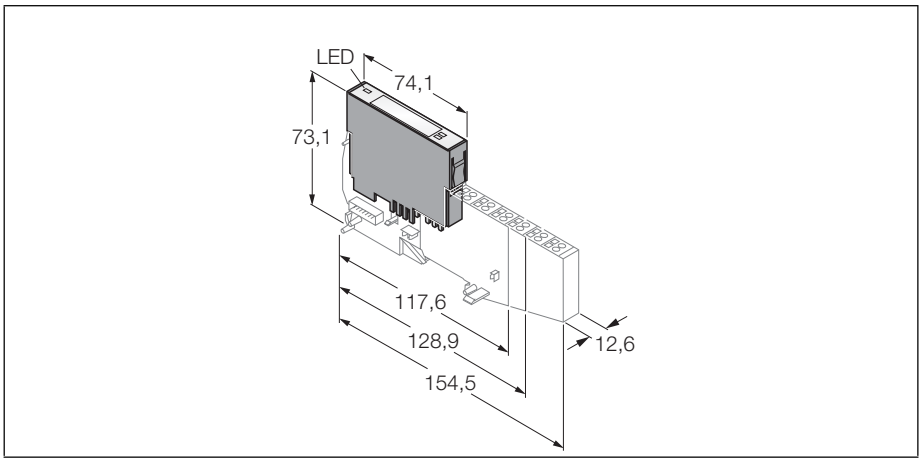
BL20 Electronic module
RS232 interface
BL20-1RS232

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram 

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



Type	BL20-1RS485/422
Ident-No.	6827165
Number of channels	1
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	25 mA
Nominal current from module bus	60 mA
Power loss, typical	1 W
Inputs / outputs	
Transmission signals	TxD, RxD
Buffer receive / transmit	128 / 64 Byte
Type of connection	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
Cable impedance	120 Ω
bus termination resistor	extern
Potential isolation	isolation of electronics and field level via opto-couplers
No. of diagnostics bytes	1
No. of parameter bytes	4
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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 diverse devices, such as printers, scanners or bar code readers**

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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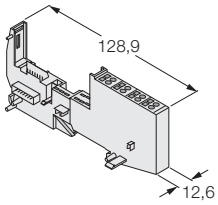
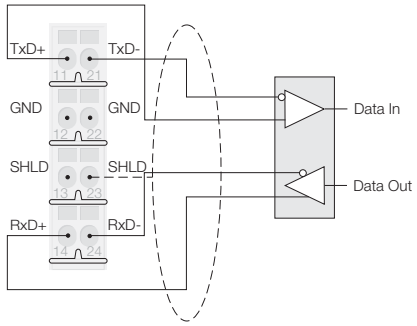
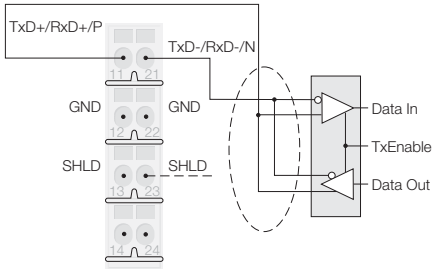
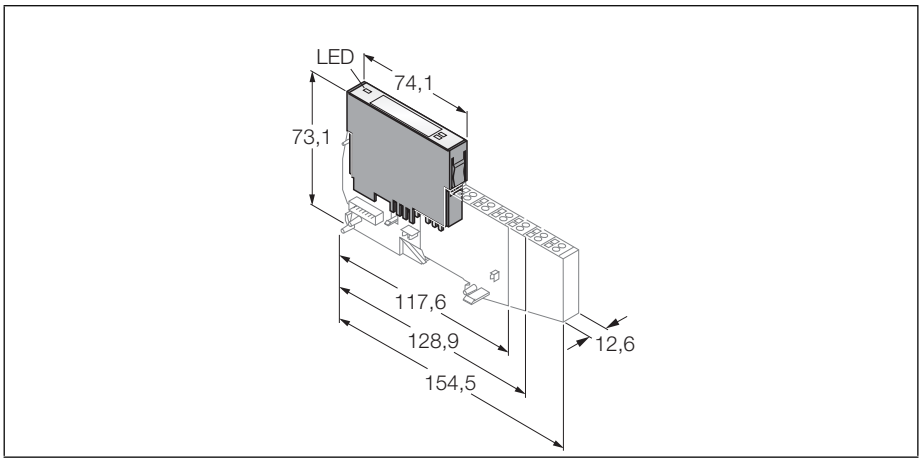
BL20 Electronic module
RS485/422 interface
BL20-1RS485/422

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram for RS422  Wiring diagram for RS485 

BL20 Electronic module
Connection of SSI sensors
BL20-1SSI



- **Independent of the type of fieldbus and connection technology used**
- **Terminal configuration printed on module cover**
- **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 MBit/s**

Type	BL20-1SSI
Ident-No.	6827166
Number of channels	1
Nominal voltage through supply terminal	24 VDC
Nominal current from supply terminal	25 mA
Nominal current from module bus	50 mA
Power loss, typical	1 W
Inputs / outputs	
Transmission signals	CL, D
Type of connection	4-wire full duplex (clock output/signal input)
Transmission rate	62,5 kbps up to 1 Mbps
Parameter	transmission rate, diagnostic, data format (binary/GRAY coded), data frame bits (1-32), number of invalid bits (LSB: 0-15, MSB 0-7)
Cable length	30 m
Potential isolation	isolation of electronics and field level via opto-couplers
No. of diagnostics bytes	1
No. of parameter bytes	4
Dimensions	12.6 x 74.1 x 55.4 mm
Operating temperature	0 to +55 °C
Storage temperature	-25 to +85 °C
Relative humidity	5 to 95 % (indoor), Level RH-2, without condensation (storage at 45 °C)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Topple and fall	according to IEC 68-2-31 and free fall according to IEC 68-2-32
Electromagnetic compatibility	according to EN 50 082-2
Degree of protection	IP20

General technical data see from page 22 on

Function principle

BL20 electronic modules are plugged into the purely passive base modules which are used for connection of field devices. Maintenance is significantly facilitated due to separation of the connection level from the module electronics. Flexibility is enhanced because the base modules provide a choice of tension spring or screw connection technology.
The electronic modules are completely independent of the type of higher level field bus through the use of gateways.

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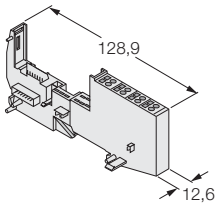
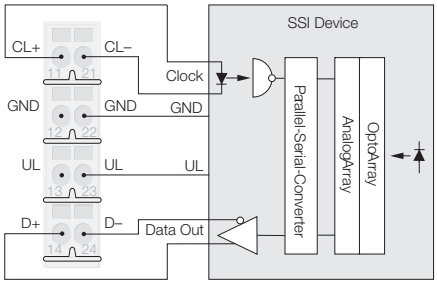
BL20 Electronic module
Connection of SSI sensors
BL20-1SSI

Industrial Automation

Compatible base modules

Dimension drawing	Type	Connection
	**BL20-S4T-SBBS** Ident-No. 6827046 tension spring connection **BL20-S4S-SBBS** Ident-No. 6827047 screw connection	Wiring diagram 

BL20 – Motor starters

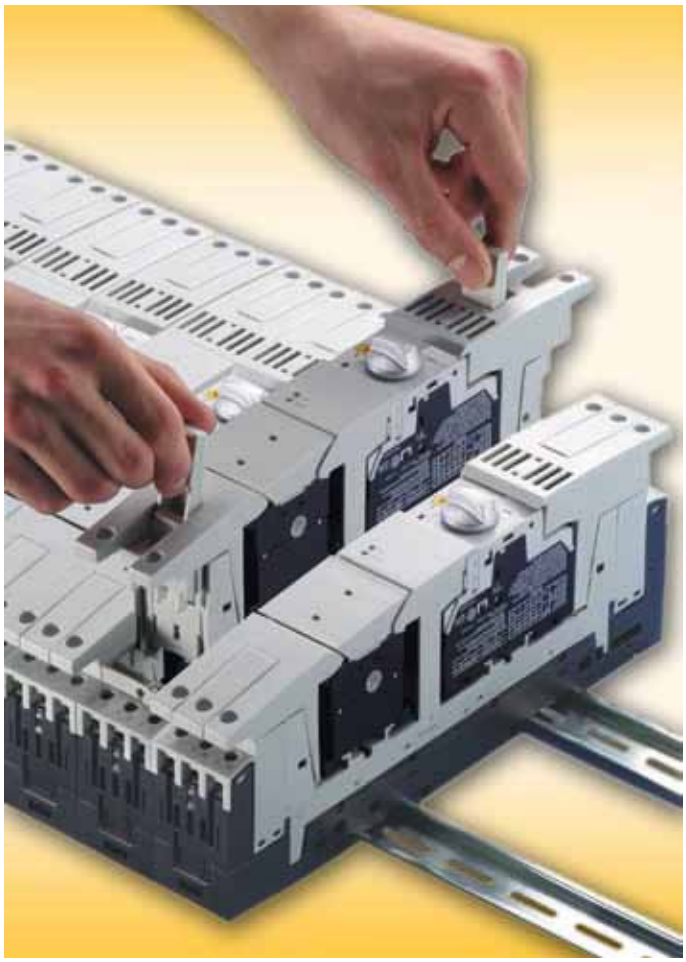
The advantages of the modular BL20 system is transferred to industrial standard motor starters:

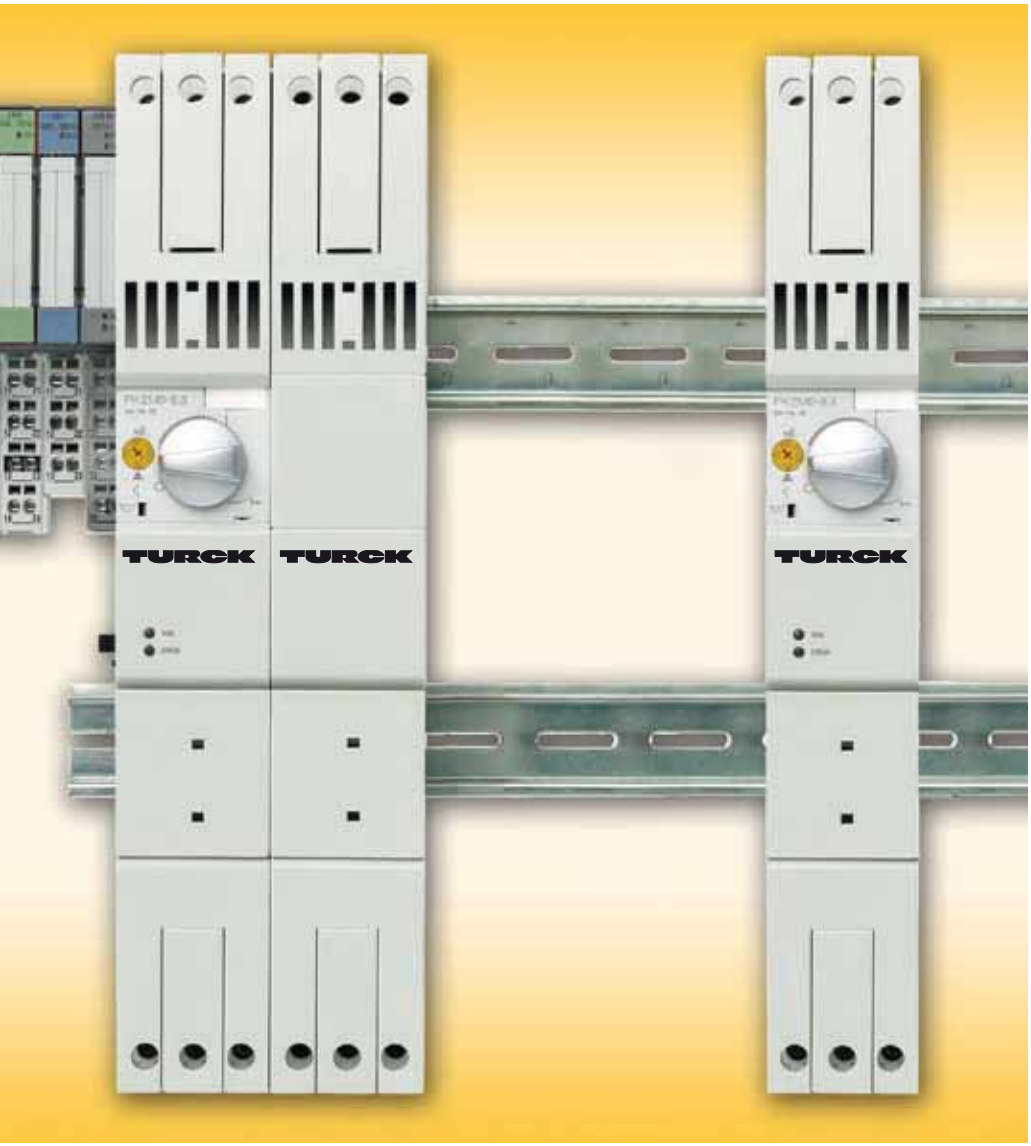
- The gateway provides flexibility and independence from the fieldbus used.
- The base modules can be quickly installed without errors. Additional control wiring is not required.
- The power modules are pluggable and provide a comfortable and simple service. Furthermore, the object-orientated features permanently reduce the engineering time and costs.

BL20 motors starters conform to the demands of the industrial switchgear standard IEC/EN 60947-4-1 as direct and reversing starters.

Installation of the motor starter in the field bus

- The motor starter modules are simply connected by snap-fitting and pushing them on
- The energy routing up to 63 A is implemented using three-phase commoning links
- I/O modules and motor starters can be combined in a station





Reversing starter without trip-indication

Direct starter without trip-indication

Industrial motor starters

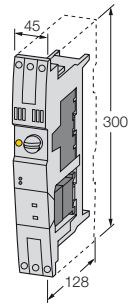
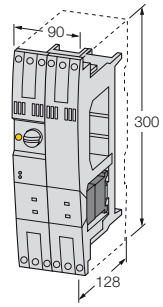
- Clear switch position indication through the rotary handlef
- Fulfils the isolation properties in the 0 position
- Type-tested motor starter combinations with AC-3 up to 415 V.
- Even switches off high short-circuit currents. No danger for personnel and systems.
- Fulfils the co-ordination type 1 to IEC/EN 60947-1 and 60947-4-1.
- Motor starter in 4 versions:
  - Direct starter with trip-indicating auxiliary contact
  - Direct starter without trip-indicating auxiliary contact
  - Reversing starter with trip-indicating auxiliary contact
  - Reversing starter without trip-indicating auxiliary contact

Reversing starter

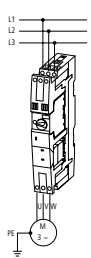
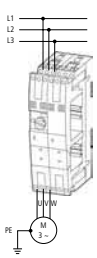
- For drives with two directions of rotation
- Switching and protection of motors from 0.06 to 4.0 kW
- Only 90 mm in width
- Consisting of a motor protective switch and two power contactors.

Direct starter

- For drives with a single direction of rotation
- Switching and protection of motors from 0.06 to 5.5 kW
- Only 45 mm in width (without trip-indicating auxiliary contact), 90 mm (with trip-indicating auxiliary contact)
- Consisting of a motor protective switch and a power contactor.

Dimensions/Format [mm]	Trip-indicating auxiliary contact	Motor data		Overload release adjustment range	Short-circuit release	
		Rated operational power[1]) [kW]	Rated operational current[2]) [A]	[A]	[A]	
	–	0.06	0.21	0.16 ... 0.25	3.5	
	–	0.09	0.31	0.25 ... 0.4	5.6	
	–	0.18	0.6	0.4 ... 0.63	8.8	
	–	0.25	0.8	0.6 ... 1	14	
	–	0.55	1.5	1 ... 1.6	22	
	–	0.75	1.9	1.6 ... 2.5	35	
	–	1.5	3.6	2.5 ... 4	56	
	–	2.2	5	4 ... 6.3	88	
	–	3	6.6	6.3 ... 10	140	
	–	4	8.5	6.3 ... 10	140	
	–	5.5	11.3	10 ... 16	224	

Wiring diagram

BL20-DSO-340-K06...4K	BL20-DSO-340-5K5
	

[1]) Motor switch AC-3, 400 V

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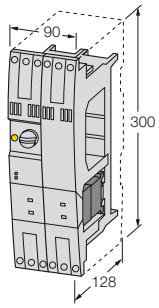
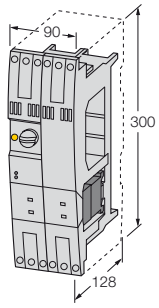
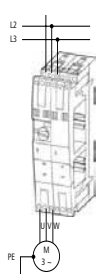
Type	Ident-no.	Direct starter	Reversing starter	Rated operational voltage [VAC]	Coordination type up to 1,6 A	Coordination type up to 10 A	Motor starting current [A]
BL20-DS0-340-K06	6827139	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-K09	6827140	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-K18	6827084	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-K25	6827085	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-K55	6827086	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-K75	6827087	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-1K5	6827088	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-2K2	6827089	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-3K	6827090	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-340-4K	6827091	✔	–	415, AC-3	2	1	≤ 70
Compatible base module **BL20-XBMS-DS0-A** Ident-No 6827068							
BL20-DS0-340-5K5	6827211	✔	–	415, AC-3	2	1	≤ 70
Compatible base module: **BL20-XBMS-RS0-A** Ident-No 6827069							

2) AC-3, 400 V

Dimensions/Format [mm]	Trip-indicating auxiliary contact	Motor data		Overload release adjustment range	Short-circuit release	
		Rated operational power[1]) [kW]	Rated operational current[2]) [A]	[A]	[A]	
	✔	0.06	0.21	0.16 ... 0.25	3.5	
	✔	0.09	0.31	0.25 ... 0.4	5.6	
	✔	0.18	0.6	0.4 ... 0.63	8.8	
	✔	0.25	0.8	0.6 ... 1	14	
	✔	0.55	1.5	1 ... 1.6	22	
	✔	0.75	1.9	1.6 ... 2.5	35	
	✔	1.5	3.6	2.5 ... 4	56	
	✔	2.2	5	4 ... 6.3	88	
	✔	3	6.6	6.3 ... 10	140	
	✔	4	8.5	6.3 ... 10	140	
	–	0.06	0.21	0.16 ... 0.25	3.5	
	–	0.09	0.31	0.25 ... 0.4	5.6	
	–	0.18	0.6	0.4 ... 0.63	8.8	
	–	0.25	0.8	0.6 ... 1	14	
	–	0.55	1.5	1 ... 1.6	22	
	–	0.75	1.9	1.6 ... 2.5	35	
	–	1.5	3.6	2.5 ... 4	56	
	–	2.2	5	4 ... 6.3	88	
	–	3	6.6	6.3 ... 10	140	
	–	4	8.5	6.3 ... 10	140	

Wiring diagram

BL20-DSO-341-K06...4K0	BL20-RSO-340-K06...4K
	

[1]) Motor switch AC-3, 400

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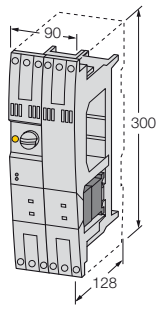
Type	Ident-no.	Direct starter	Reversing starter	Rated operational voltage [VAC]	Coordination type up to 1,6 A	Coordination type up to 10 A	Motor starting current [A]
BL20-DS0-341-K06	6827144	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-K09	6827145	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-K18	6827146	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-K25	6827147	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-K55	6827148	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-K75	6827149	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-1K5	6827150	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-2K2	6827151	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-3K0	6827152	✔	–	415, AC-3	2	1	≤ 70
BL20-DS0-341-4K0	6827153	✔	–	415, AC-3	2	1	≤ 70
Compatible base module: BL20-XBMS-RS0-A Ident-No. 6827069							
BL20-RS0-340-K06	6827141	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-K09	6827142	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-K18	6827138	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-K25	6827143	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-K55	6827092	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-K75	6827093	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-1K5	6827094	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-2K2	6827095	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-3K	6827096	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-340-4K	6827097	–	✔	415, AC-3	2	1	≤ 70
Compatible base module: BL20-XBMS-RS0-A Ident-No. 6827069							

[2]) AC-3, 400 V

Dimensions/Format [mm]	Trip-indicating auxiliary contact	Motor data		Overload release adjustment range	Short-circuit release	
		Rated operational power[1]) [kW]	Rated operational current[2]) [A]	[A]	[A]	
	✔	0.06	0.21	0.16 ... 0.25	3.5	
	✔	0.09	0.31	0.25 ... 0.4	5.6	
	✔	0.18	0.6	0.4 ... 0.63	8.8	
	✔	0.25	0.8	0.6 ... 1	14	
	✔	0.55	1.5	1 ... 1.6	22	
	✔	0.75	1.9	1.6 ... 2.5	35	
	✔	1.5	3.6	2.5 ... 4	56	
	✔	2.2	5	4 ... 6.3	88	
	✔	3	6.6	6.3 ... 10	140	
	✔	4	8.5	6.3 ... 10	140	

Wiring diagram

BL20-RSO-341-K06...4K0	
	

[1]) Motor switch AC-3, 400 V

Type	Ident-no.	Direct starter	Reversing starter	Rated operational voltage [VAC]	Coordination type up to 1,6 A	Coordination type up to 10 A	Motor starting current [A]
BL20-RS0-341-K06	6827154	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-K09	6827155	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-K18	6827156	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-K25	6827157	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-K55	6827158	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-K75	6827159	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-1K5	6827160	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-2K2	6827161	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-3K0	6827162	–	✔	415, AC-3	2	1	≤ 70
BL20-RS0-341-4K0	6827163	–	✔	415, AC-3	2	1	≤ 70
Compatible base module: **BL20-XBMS-RS0-A** Ident-No. 6827069							

Motor starter – accessories

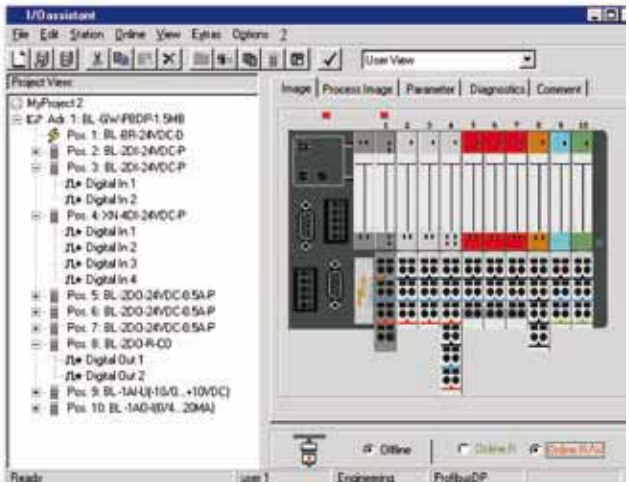
	Three-phase commoning link	shockproof, U_e = 690 V, I_u = 63 A can be extended by rotated installation, length 90 mm	**B3.0/2-PKZ0**	6827099
	Three-phase commoning link	shockproof, U_e = 690 V, I_u = 63 A can be extended by rotated installation, length 180 mm	**B3.0/4-PKZ0**	6827098
	Power feed terminal	for three-phase commoning link, shockproof, U_e = 690 V, I_u = 63 A	**BK25/3-PKZ0**	6827134

2) AC-3, 400 V

Engineering software I/O-ASSISTANT

Engineering software for

- Project planning
- Configuration
- Parameterisation



Description
The I/O-ASSISTANT engineering software assists you with the planning and implementation of an I/O system. In online or in offline mode, the I/O-ASSISTANT simplifies the engineering of the modules as well as the configuration and parameterisation.

The software also provides excellent service with the commissioning of systems and implementation of testing procedures.

Functions
- Supporting software tool
- Selection of the required modules
- Offline planning and engineering of modules of the I/O systems piconet®, BL20 and BL67
- Configuration, parameterisation and commissioning of individual modules
- Reading and setting of process data
- Commissioning assistance with the testing of the wiring and sensors without a PLC
- Realistic representation of the engineered piconet®, BL20 and BL67 components
- Automatic documentation of engineered piconet®, BL20 and BL67 systems

Type	Ident-no.	Description
SW-I/O-ASSISTANT	Available free at http://www.turck.com	Engineering software
I/O-ASSISTANT-KABEL-BL20/BL67	6827133	RS232 adapter cable

Designation	Description	Type	Ident-no.
Labels 	for labelling electronic modules		
	DIN A5 sheets, slice, perforated (laser print) 5 x 57 labels	BL20-LABEL/SCHEIBE	6827070
	DIN A5 sheets, block, perforated (laser print) 5 x 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 x 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
Connector markers 	Dekafix (50 labels per carrier foil/10 foils)		
	labelled 1-50	BL20-FW5/1-50	6827100
	labelled 51-100	BL20-FW5/51-100	6827101
	labelled 101-150	BL20-FW5/101-150	6827102
	labelled 151-200	BL20-FW5/151-200	6827103
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
Coding for electronic and base modules 	for coding slots of electronic and base modules (10 coding pieces per packing unit)		
	Electronic module type BL20-…DI-24VDC…	BL20-KO/2	6827112
	Electronic module type BL20-…DO-24VDC…	BL20-KO/6	6827113
	Electronic module type BL20-2DO-R-NO	BL20-KO/8	6827114
	Electronic module type BL20-2DO-R-NC	BL20-KO/9	6827115
	Electronic module type BL20-2DO-R-CO	BL20-KO/10	6827116
	Electronic module type BL20-1AI-I(0/4...20MA)	BL20-KO/11	6827117
	Electronic module type BL20-1AI-U (-10/0...+10V)	BL20-KO/12	6827118
	Electronic module type BL20-1AO-I(0/4...20MA)	BL20-KO/13	6827119
	Electronic module type BL20-2AO-U (-10/0...+10V)	BL20-KO/14	6827120
	Electronic module type power distribution module 24 VDC	BL20-KO/16	6827121
	Electronic module type BL20-PF-120/230VAC-D	BL20-KO/17	6827122

BL20 – Accessories

		Description	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 connection		shield connection for direct wiring of BL20 gateway	BL20-SCH-1	6827125
		shield connection for analogue signals, 10 pcs. tension clamp screw	BL20-KLBU/T BL20-KLBU/S	6827126 6827127
Ferrite ring		for damping high-frequency interference signals to data and supply lines (2 ferrite rings per packing unit)	BL20-ZBX-405	6827128
Documentation BL20 Manual PROFIBUS-DP. (german, english) BL20 Manual DeviceNet™ (english) BL20 Manual I/O Modules (german, english)		At www.turck.com		
Tools Tension clamp operating tool		tension clamp operating tool, 5 pcs	ZBW5	6827129

BL20 – Type index

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- ❑ BL67 – modulares Feldbus-I/O-System in IP67
- ❑ BL20 – modulares Feldbus-I/O-System in IP20
- ❑ Remote-I/O-System *excom*®
- ❑ Segmentkoppler
- ❑ FOUNDATION™ fieldbus-Feldbuskomponenten
- ❑ PROFIBUS-PA-Feldbuskomponenten
- ❑ Feldbussystem *sensoplex*®*2/2Ex*

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