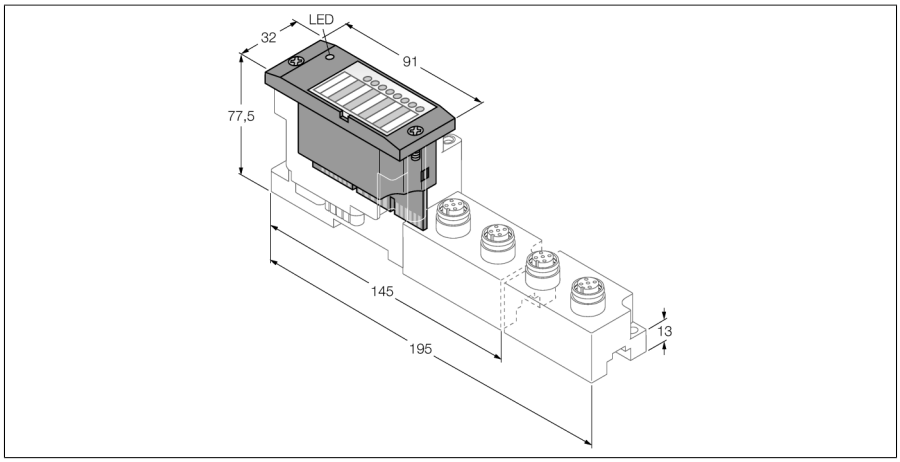
BL67 electronic module
2 Analog Inputs for Current/Voltage and 2 Analog Outputs for Voltage
BL67-2AI2AO-V/I



- Independent of the fieldbus and connection technology used
- Protection class IP67
- LEDs indicate status and diagnostic
- Electronics galvanically separated from the field level via optocouplers
- 2 analog inputs, single-ended
- 0/4…20 mA or
- -10/0…+10 VDC
- Selectable per channel
- 2 analog outputs
- -10/0…+10 VDC

Type	BL67-2AI2AO-V/I
ID	6827324
Supply voltage	24 VDC
Admissible range	18…30 VDC
Power dissipation, typical	≤ 1 W
Nominal voltage V_i	24 VDC
Max. sensor supply I_{sens}	4 A
Analog inputs	
Operating modes	0/4 … 20 mA or -10/0 … 10 VDC
Type of input diagnostics	Channel diagnostics
Sensor supply	24 VDC
Input resistance	Current: < 125 Ω (typ. 65 Ω); Voltage: > 98.5 kΩ (typ. 225 kΩ)
Maximum limiting frequency analog	< 20 Hz
Basic fault limit at 23 °C	< 0.3 %
Repeatability	< 0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Measuring principle	Sigma Delta
Measurement display	16 bit signed integer
	12 bit full range left-justified

Functional principle

BL67 electronic modules are plugged on the purely passive base modules which in turn are connected to the field devices. The separation of connection level and electronics simplifies maintenance considerably. Flexibility is enhanced because the user can choose between base modules with different connection technologies.

The electronic modules are completely independent of the higher level fieldbus through the use of gateways.

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Analog outputs	
Operating modes	-10/0 … 10 V
Type of output diagnostics	Channel diagnostics
Sensor supply	24 VDC, 250 mA per channel
Load resistance, resistive	> 1 kΩ
Load resistance, capacitive	< 1 µF
Transmission frequency	< 100 Hz
Basic fault limit at 23 °C	< 0.3 %
Repeat accuracy	< 0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 bit
Measured-value display	16 bit signed integer
	12 bit full range left-justified

Ambient temperature	-40…+70 °C
Storage temperature	-40…+85 °C
Relative humidity	5…95 % (internal), level RH-2, no condensation (when stored at 45 °C)
Vibration test	Acc. to EN 61131
- up to 5 g (at 10 to 150 Hz)	for mounting on DIN rail no drilling according to EN 60715, with end bracket
- up to 20 g (at 10 up to 150 Hz)	for mounting on base plate or machinery Therefore every second module has to be mounted with two screws each.
Shock test	Acc. to IEC 60068-2-27
Drop and topple	acc. to IEC 68-2-31 and free fall to IEC 68-2-32
Electromagnetic compatibility	Acc. to EN 61131-2
Protection class	IP67

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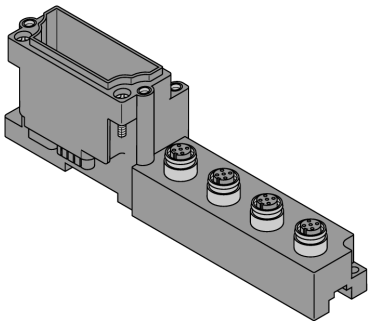
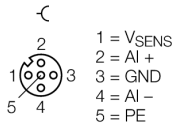
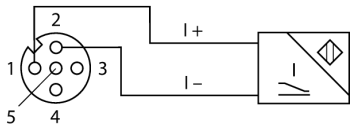
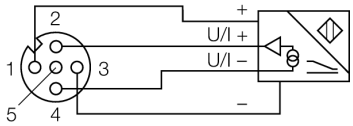
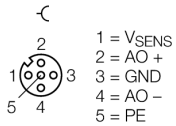
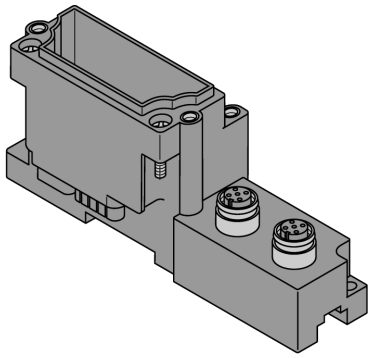
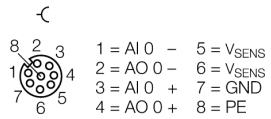
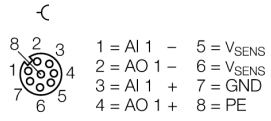
Compatible base modules

Dimension drawing	Type	Pin configuration
	**BL67-B-4M12** 6827187 4 x M12, 5-pole, female, a-coded **Comments** Matching connection cable (for example): RKC5.501T-2-RSC5.501T/TXL Ident-No. 6628831 Note Pin 3 (GND) and Pin 4 (AI -) are internally connected!	Pin Assignment Ports 0 to 1  1 = V_{SENS} 2 = AI + 3 = GND 4 = AI – 5 = PE 2-wire Connection  3-wire connection 4-wire connection technology  Pin assignment, slots 2 to 3  1 = V_{SENS} 2 = AO + 3 = GND 4 = AO – 5 = PE
	**BL67-B-2M12-8** 6827336 2 x M12, 8-pole, female **Comments** Field-wireable connector (for example): BS8181-0 Ident. no. 6901004	Pin Assignment Port 0  1 = AI 0 – 2 = AO 0 – 3 = AI 0 + 4 = AO 0 + 5 = V_{SENS} 6 = V_{SENS} 7 = GND 8 = PE Pin Assignment Port 1  1 = AI 1 – 2 = AO 1 – 3 = AI 1 + 4 = AO 1 + 5 = V_{SENS} 6 = V_{SENS} 7 = GND 8 = PE

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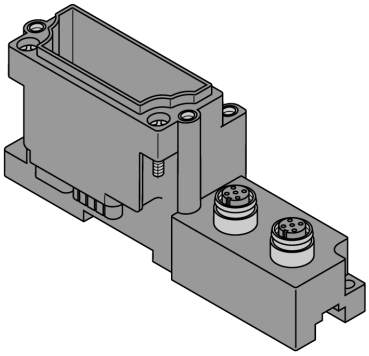
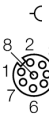
Compatible base modules

Dimension drawing	Type	Pin configuration
	**BL67-B-2M12-8-P** 6827337 2 x M12, 8-pole, female, paired	Pin Assignment Port 0  1 = AI 0 – 5 = V_{SENS} 2 = AI 1 – 6 = V_{SENS} 3 = AI 0 + 7 = GND 4 = AI 1 + 8 = PE Pin Assignment Port 1 1 = AO 0 – 5 = V_{SENS} 2 = AO 1 – 6 = V_{SENS} 3 = AO 0 + 7 = GND 4 = AO 1 + 8 = PE

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LED display

LED	Color	Status	Meaning
D		OFF	No error message or diagnostics active.
	RED	ON	Failure of module bus communication. Check if more than 2 adjacent electronic modules are pulled. Relevant modules are located between gateway and this module.
	RED	FLASHING (0.5 Hz)	Upcoming module diagnostics
AI channels 0…1		OFF	Channel x inactive
	GREEN	ON	Channel x active
	GREEN	FLASHING (0.5 Hz)	Measuring range undershoot
	GREEN	FLASHING (4 Hz)	Measuring range overshoot
AO channels 2…3			Without function (no LEDs for analog outputs)

Data mapping

DATA	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Input	n	AI 0 LSB							
	n+1	AI 0 MSB							
	n+2	AI 1 LSB							
	n+3	AI 1 MSB							
Output	m	AO 0 LSB							
	m+1	AO 0 MSB							
	m+2	AO 1 LSB							
	m+3	AO 1 MSB							

n = Offset of input data; depending on extension of station and the corresponding fieldbus.
m = Offset of output data; depending on extension of station and the corresponding fieldbus.

With PROFIBUS, PROFINET and CANopen, the I/O data of this module is localized
within the process data of the whole station via the hardware configuration tool of the fieldbus master.
With DeviceNet™, EtherNet/IP™ and Modbus TCP a detailed mapping table can be created
with the TURCK configuration tool I/O-ASSISTANT.

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