

# BL67 electronic module

## Detection of Standard Counting Signals

### BL67-1CNT/ENC



- 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
- Detection of standard counting signals
- 5 VDC differential
- 5 ... 24 VDC single-ended
- 2 digital inputs, 24 VDC
- 2 digital outputs, 24 VDC, 0.5 A
- 2 more digital DIO channels (each channel is independently serviceable as input or output, 24 VDC, 0.5 A)

Type	BL67-1CNT/ENC
ID	6827224

Number of channels	1
Supply voltage	24 VDC
Nominal voltage $V_i$	24 VDC
Nominal current from field supply	$\leq 100$ mA
Nominal current from module bus	$\leq 50$ mA
Power dissipation, typical	$\leq 1.2$ W

Electrical isolation	isolation of electronics and field level via optocouplers
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Input type	PNP
Low-level signal voltage	$< 5$ V
High level signal voltage	7...30 V
High level signal current	max. 5 mA
Output connectivity	M12, M23

Output type	PNP
Output voltage	24 VDC
Output current per channel	0.5 A
Output delay	0.2 ms
Load type	resistive, inductive, lamp load
Lamp load	$< 10$ W
Switching frequency, resistive	$< 100$ Hz
Switching frequency, inductive	$< 2$ Hz
Switching frequency, lamp load	$< 10$ Hz
Short-circuit protection	yes
Simultaneity factor	1

Measuring ranges	
Frequency measurement	up to 250 kHz
Speed measurement	factor parameterisable
Period duration measurement	resolution 200 ns, max. period duration $(2^{32-1}) * 200$ ns
Upper count limit	0x80000000 up to 0xFFFFFFFF
Lower count limit	0x80000000 up to 0xFFFFFFFF

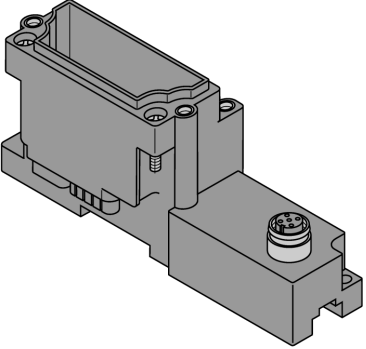
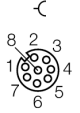
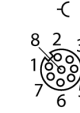
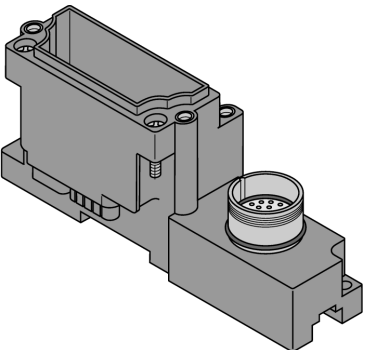


#### Functional principle

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.

Number of input bytes	12
Number of output bytes	8
Dimensions (W x L x H)	32 x 91 x 59 mm
Approvals	CE, cULus
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
Tightening torque fixing screw	0.9...1.2 Nm

## Compatible base modules

Dimension drawing	Type	Pin configuration																								
	<p><b>BL67-B-1M12-8</b> 6827193 1 x M12, 8-pole, female</p> <p><b>Comments</b> Matching connection cable (for example): BS8181-0 Ident no. 6901004</p>	<p>Pin assignment: RS422</p>  <table border="0"> <tr> <td>1 = DI 3 / GND</td> <td>5 = B</td> </tr> <tr> <td>2 = DO 3 / Venc</td> <td>6 = <math>\bar{B}</math></td> </tr> <tr> <td>3 = A</td> <td>7 = Z</td> </tr> <tr> <td>4 = <math>\bar{A}</math></td> <td>8 = <math>\bar{Z}</math></td> </tr> </table> <p>Pin assignment: Push-pull</p>  <table border="0"> <tr> <td>1 = DI 3 / GND</td> <td>5 = B</td> </tr> <tr> <td>2 = DO 3 / Venc</td> <td>6 = n.c. or GND</td> </tr> <tr> <td>3 = A</td> <td>7 = Z</td> </tr> <tr> <td>4 = n.c. or GND</td> <td>8 = n.c. or GND</td> </tr> </table>	1 = DI 3 / GND	5 = B	2 = DO 3 / Venc	6 = $\bar{B}$	3 = A	7 = Z	4 = $\bar{A}$	8 = $\bar{Z}$	1 = DI 3 / GND	5 = B	2 = DO 3 / Venc	6 = n.c. or GND	3 = A	7 = Z	4 = n.c. or GND	8 = n.c. or GND								
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	<p><b>BL67-B-1M23</b> 6827213 1 x M23, 12-pole, female</p> <p><b>Comments</b> Matching connection cable (for example): FW-M23ST12Q-G-LT-ME-XX-10 Ident no. 6604070</p>	<p>Pin assignment: RS422</p>  <table border="0"> <tr> <td>1 = DI 3 / GND</td> <td>7 = Z</td> </tr> <tr> <td>2 = DO 3 / Venc</td> <td>8 = <math>\bar{Z}</math></td> </tr> <tr> <td>3 = A</td> <td>9 = DIO 0</td> </tr> <tr> <td>4 = <math>\bar{A}</math></td> <td>10 = DIO 1</td> </tr> <tr> <td>5 = B</td> <td>11 = DO 2</td> </tr> <tr> <td>6 = <math>\bar{B}</math></td> <td>12 = GND</td> </tr> </table> <p>Pin assignment: Push-pull</p>  <table border="0"> <tr> <td>1 = DI 3 / GND</td> <td>7 = Z</td> </tr> <tr> <td>2 = DO 3 / Venc</td> <td>8 = n.c. or GND</td> </tr> <tr> <td>3 = A</td> <td>9 = DIO 0</td> </tr> <tr> <td>4 = n.c. or GND</td> <td>10 = DIO 1</td> </tr> <tr> <td>5 = B</td> <td>11 = DO 2</td> </tr> <tr> <td>6 = n.c. or GND</td> <td>12 = GND</td> </tr> </table>	1 = DI 3 / GND	7 = Z	2 = DO 3 / Venc	8 = $\bar{Z}$	3 = A	9 = DIO 0	4 = $\bar{A}$	10 = DIO 1	5 = B	11 = DO 2	6 = $\bar{B}$	12 = GND	1 = DI 3 / GND	7 = Z	2 = DO 3 / Venc	8 = n.c. or GND	3 = A	9 = DIO 0	4 = n.c. or GND	10 = DIO 1	5 = B	11 = DO 2	6 = n.c. or GND	12 = GND
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6 = n.c. or GND	12 = GND																									

**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
A/Z		OFF	Inputs A and Z inactive
	GREEN	ON	Input A active
	RED	ON	Input Z active
	RED/GREEN	ON	Inputs A and Z active
B		OFF	Input B inactive
	GREEN	ON	Input B active resp. direction input indicates "count down"
DIO 0 / DIO 1		OFF	Channel status x = 0 (OFF)
	GREEN	ON	Channel status x = 1 (ON)
	RED	ON	Overload at output x
DO 2 / DO 3		OFF	Output status x = 0 (OFF)
	GREEN	ON	Output status x = 1 (ON)
	RED	ON	Overload at output x
DI 2 / DI 3		OFF	Input status x = 0 (OFF)
	GREEN	ON	Input status x = 1 (ON)

**Data mapping**

DATA	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
<b>Input</b>	n	X	A	B	Z	DI 3	DI 2	DI 1	DI 0	
	n+1	ERR_ PARA	SYNC_ AKN	X	X	X	X	X	count direction	
	n+2	REG_WR_ ACCEPT	REG_WR_ AKN	X	X	X	STS_ZC	STS_ OFLW	STS_ UFLW	
	n+3	REG_RD_ ABORT	REG_RD_ADR							
	n+4	REG_RD_DATA, Byte 0								
	n+4	REG_RD_DATA, Byte 1								
	n+6	REG_RD_DATA, Byte 2								
	n+7	REG_RD_DATA, Byte 3								
	n+8	AUX_RD_DATA, Byte 0								
	n+9	AUX_RD_DATA, Byte 1								
	n+10	AUX_RD_DATA, Byte 2								
n+11	AUX_RD_DATA, Byte 3									
<b>Output</b>	m	DO 3	DO 2	DO 1	DO 0	X	X	X	GATE	
	m+1	X	SYNC_ REQ	X	X	X	X	X	RES_STS	
	m+2	REG_WR	REG_WR_ADR							
	m+3	REG_RD_ADR								
	m+4	REG_WR_DATA, Byte 0								
	m+4	REG_WR_DATA, Byte 1								
	m+6	REG_WR_DATA, Byte 2								
	m+7	REG_WR_DATA, Byte 3								

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.