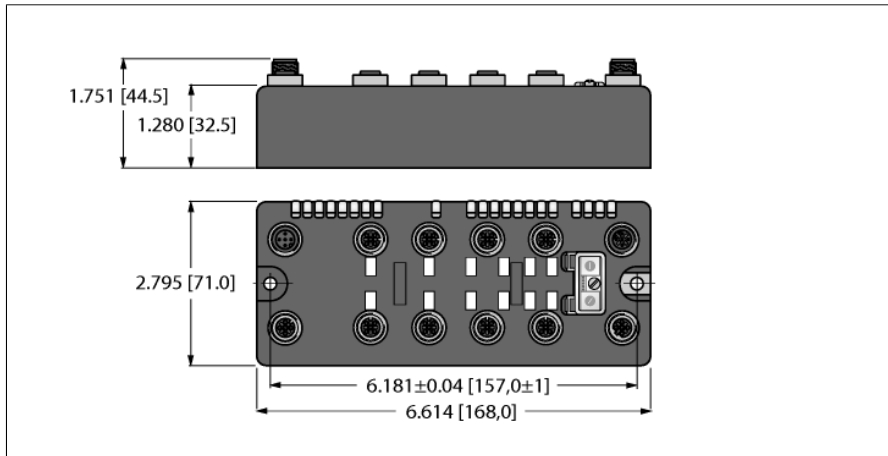


**BL compact™ multiprotocol fieldbus station for Industrial Ethernet**  
**4 Analog Outputs for Voltage and 8 Configurable Digital PNP Channels**  
**BLCEN-8M12LT-4AO-V-8XSG-P**



- On-machine Compact fieldbus I/O block
- EtherNet/IP™, Modbus® TCP, or PROFINET slave
- Integrated Ethernet Switch
- 10 Mbps / 100 Mbps supported
- Two 4-pole M12, D-coded, connectors for fieldbus connection
- 2 rotary switches for node address
- IP67, IP69K
- M12 I/O connectors
- LEDs indicating status and diagnostics
- Electronics galvanically separated from the field level via optocouplers
- 8 Configurable digital PNP channels, 24 VDC
- Max. 0.5A per channel
- Selection of filtering times (Input delay)
- Invertible inputs
- 4 analog voltage outputs
- -10/0...+10 VDC

<b>Type designation</b>	BLCEN-8M12LT-4AO-V-8XSG-P
Ident-No.	6811514
<b>Electrical isolation</b>	The inputs and outputs of the 8XSG I/O cards are supplied via a common ground. Therefore, it is recommend not to use this module for safety or emergency stop applications.
<b>Fieldbus transmission rate</b>	10/100 Mbps
Adjustment transmission rate	Automatic detection
Fieldbus connection technology	2 × M12, 4-pole, D-coded
Fieldbus address range	1...92
	0 (192.168.1.254)
	93 (BootP)
	94 (DHCP)
	95 (PGM)
	96 (PGM-DHCP) *Recommended for PROFINET
	97...98 (manufacturer specific)
Fieldbus addressing	2 decimally coded rotary switches
Protocol detection	automatic
Web server	Integrated
Service interface	Ethernet
Vendor ID	48
Product type	12
Product code	11514
<b>Modbus TCP</b>	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of TCP connections	6
Input Data Size	max. 3 register
Input register start address	0 (0x0000 hex)
Output Data Size	max. 5 register
Output register start address	2048 (0x0800 hex)
<b>EtherNet/IP™</b>	
Addressing	acc. to EtherNet/IP™ specification
Device Level Ring (DLR)	supported
Class 1 connections	6
Input Data Size	4 INT
Output Data Size	5 INT

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**PROFINET**

Addressing	DCP
Conformance class	B (RT)
MinCycleTime	1 ms
Diagnostics	acc. to PROFINET alarm handling
Topology detection	supported
Automatic addressing	supported
Media Redundancy Protocol (MRP)	supported
Input Data Size	max. 8 BYTE
Output Data Size	max. 10 BYTE

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**Analog outputs**

Operating modes	from 4AO-V
Resolution	-10/0 ... 10 V
Repeat accuracy	16 bit
Temperature coefficient	< 0.05 %
	< 300 ppm/°C of full scale

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**Vibration test**

Extended vibration resistance	according to IEC 61131-2
- up to 20 g (at 10 up to 150 Hz)	For mounting on base plate or machinery
Shock test	according to IEC 61131-2
Electromagnetic compatibility	according to IEC 61131-2
Approvals and certificates	CE, cULus

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**Dimensions (W x L x H)**

Operating temperature	71 x 168 x 32.5mm
Storage temperature	-40...+70 °C
Relative humidity	-40...+85 °C
Protection class	15 to 95% (non-condensing)
Housing material	IP67
Housing color	IP69K
Window material	Glass-filled nylon, nickel plated brass connectors
Material screw	Black
Material label	Lexan
Ground label material	Nickel-plated brass
Weight	Polyester with polycarbonate overlay
Mounting	Nickel plated brass
	620 ± 20 g
	2 × 5.4 mm diameter holes, 1.7 Nm torque

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**Pinning and wiring diagram**

	<p><b>Ethernet Ports</b> Fieldbus cable (IP67 example): RSSD RSSD 441-2M ID number U-02482 or RSSD-RSSD-441-2M/S2174 ID number 6914218</p>	<p>M12 x 1 Ethernet</p>
	<p><b>Slot 1: Analog Outputs</b> Extension cable (example): RK 4.5T-2-RS 4.5T/S653 ident-no. U2187-09 or RKC4.5T-2-RSC4.5T/TEL ident-no. 6625212</p>	<p>M12 x 1 Output</p>
	<p><b>Slot 2: Digital Inputs and Outputs</b> Extension cable (example): RK 4.4T-2-RS 4.4T ident-no. U2445 or RKC4.4T-2-RSC4.4T/TEL ident-no. 6625208</p>	<p>M12 x 1 I/O Port</p>
	<p><b>Auxiliary Power</b> Extension cable (example): RKC 4.4T-2-RSC 4.4T ident-no. U5264 or RKC4.4T-2-RSC4.4T/TEL ident-no. 6625208</p>	<p>Power Supply</p>

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**Station LED status**

LED	Color	Status	Description
IOs		OFF	No power
	RED	ON	Low power or station error
	RED	FLASHING (1 Hz)	I/O module configuration error
	RED	FLASHING (4 Hz)	No I/O module bus communication
	GREEN	ON	Station ok
	GREEN	FLASHING	Force mode active
BUS		OFF	Power Off
	GREEN	ON	Connected to Master
	GREEN	FLASHING	Ready
	GREEN	FLASHING 3x (1Hz)	ARGEE Running
	RED	ON	Error
	RED	FLASHING	WINK
	YELLOW	ON	DHCP/BOOTP Search
LNK/ACT		OFF	No Link
	GREEN	ON	Link
	GREEN	FLASHING	Traffic
	YELLOW	ON	100 Mbit Linked

**I/O LED status slot 1**

LED	Color	Status	Description
D1 *		OFF	No diagnostics active
	RED	ON	Station error/ module bus communication failure
	RED	FLASHING (0.5Hz)	Diagnostics active (Slot 1)
AO channels 0...3			Not connected (The analog outputs do not have a LED)

\* D1 LED also indicates gateway diagnostics

**I/O LED status slot 2**

LED	Color	Status	Description
D2 *		OFF	No diagnostics active
	RED	ON	Station error/ module bus communication failure
	RED	FLASHING (0.5Hz)	Diagnostics active (Slot 2)
XSG channels 2 <sub>0</sub> ...2 <sub>7</sub>		OFF	Channel status x = "0" (OFF), no diagnostics active
	GREEN	ON	Channel status x = "1" (ON)
	RED	ON	Short-circuit at output

\* D2 LED also indicates gateway diagnostics

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**Process Data Mapping of Each Protocol**

**EtherNet/IP™ I/O & Diagnostics Data Mapping**

INPUT	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	DI 2 <sub>7</sub>	DI 2 <sub>6</sub>	DI 2 <sub>5</sub>	DI 2 <sub>4</sub>	DI 2 <sub>3</sub>	DI 2 <sub>2</sub>	DI 2 <sub>1</sub>	DI 2 <sub>0</sub>
	1	-	-	-	-	-	-	-	-
Diagnostics	2	Module number reporting diagnostic data							
	3	Replace Station	-	Diagnostics Active	-	-	-	-	-
Slot 1 (ref. Byte 2)	4	Hardware Failure	-	-	-	AO 1 <sub>0</sub> Overflow/Underflow	-	-	Range Error AO 1 <sub>0</sub>
	5	Hardware Failure	-	-	-	AO 1 <sub>1</sub> Overflow/Underflow	-	-	Range Error AO 1 <sub>1</sub>
	6	Hardware Failure	-	-	-	AO 1 <sub>2</sub> Overflow/Underflow	-	-	Range Error AO 1 <sub>2</sub>
	7	Hardware Failure	-	-	-	AO 1 <sub>3</sub> Overflow/Underflow	-	-	Range Error AO 1 <sub>3</sub>
OUTPUT	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
AO 1 <sub>0</sub>	0	AO 1 <sub>0</sub> LSB							
	1	AO 1 <sub>0</sub> MSB							
AO 1 <sub>1</sub>	2	AO 1 <sub>1</sub> LSB							
	3	AO 1 <sub>1</sub> MSB							
AO 1 <sub>2</sub>	4	AO 1 <sub>2</sub> LSB							
	5	AO 1 <sub>2</sub> MSB							
AO 1 <sub>3</sub>	6	AO 1 <sub>3</sub> LSB							
	7	AO 1 <sub>3</sub> MSB							
	8	DO 2 <sub>7</sub>	DO 2 <sub>6</sub>	DO 2 <sub>5</sub>	DO 2 <sub>4</sub>	DO 2 <sub>3</sub>	DO 2 <sub>2</sub>	DO 2 <sub>1</sub>	DO 2 <sub>0</sub>
	9	-	-	-	-	-	-	-	-

\* The scheduled diagnostic information changes every 125 ms between Slot 1 and Slot 2, if both slots send active diagnostics.

AO	Analog Output	MR	Measurement Value Range Error
CFG	Configuration Error	OC	Open Circuit
COM	Communication Failure	S1	Slot 1
DIA	Diagnostics Active	S2	Slot 2
DI	Digital Input	SC	Short Circuit/Overcurrent
DO	Digital Output	VI Low	VI Voltage
FCE	Force Mode Active	VO Low	VO Voltage

**Modbus® TCP Register Mapping**

	REG	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Inputs (RO)	0x0000	-	-	-	-	-	-	-	-	DI 2 <sub>7</sub>	DI 2 <sub>6</sub>	DI 2 <sub>5</sub>	DI 2 <sub>4</sub>	DI 2 <sub>3</sub>	DI 2 <sub>2</sub>	DI 2 <sub>1</sub>	DI 2 <sub>0</sub>
Status (RO)	0x0001	-	FCE	-	-	CFG	COM	VI low	VO low	-	-	-	-	-	-	-	DIA
Diag. (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S2 DIA	S1 DIA
Outputs (RW)	0x0800	AO 1 <sub>0</sub>															
	0x0801	AO 1 <sub>1</sub>															
	0x0802	AO 1 <sub>2</sub>															
	0x0803	AO 1 <sub>3</sub>															
	0x0804	-	-	-	-	-	-	-	-	-	DO 2 <sub>7</sub>	DO 2 <sub>6</sub>	DO 2 <sub>5</sub>	DO 2 <sub>4</sub>	DO 2 <sub>3</sub>	DO 2 <sub>2</sub>	DO 2 <sub>1</sub>
I/O Diag. (RO)	0xA000	-	-	-	-	OFUAC <sub>1</sub>	SCAO <sub>1</sub>	WBAO <sub>1</sub>	MRAO <sub>1</sub>	-	-	-	-	OFUAC <sub>10</sub>	SCAO <sub>10</sub>	WBAO <sub>10</sub>	MRAO <sub>10</sub>
	0xA001	-	-	-	-	OFUAC <sub>13</sub>	SCAO <sub>13</sub>	WBAO <sub>13</sub>	MRAO <sub>13</sub>	-	-	-	-	OFUAC <sub>12</sub>	SCAO <sub>12</sub>	WBAO <sub>12</sub>	MRAO <sub>12</sub>
	0xA002	SCDO <sub>2</sub>	SCDO <sub>26</sub>	SCDO <sub>25</sub>	SCDO <sub>24</sub>	SCDO <sub>23</sub>	SCDO <sub>22</sub>	SCDO <sub>21</sub>	SCDO <sub>20</sub>	SCDI <sub>2</sub>	SCDI <sub>26</sub>	SCDI <sub>25</sub>	SCDI <sub>24</sub>	SCDI <sub>23</sub>	SCDI <sub>22</sub>	SCDI <sub>21</sub>	SCDI <sub>20</sub>

**PROFINET® Process Data**

	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Inputs	0	DI 1 <sub>7</sub>	DI 1 <sub>6</sub>	DI 1 <sub>5</sub>	DI 1 <sub>4</sub>	DI 1 <sub>3</sub>	DI 1 <sub>2</sub>	DI 1 <sub>1</sub>	DI 1 <sub>0</sub>
	1	-	-	-	-	-	-	-	-
Outputs	0	AO 1 <sub>0</sub> LSB							
	1	AO 1 <sub>0</sub> MSB							

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2	AO 1, LSB							
3	AO 1, MSB							
4	AO 2, LSB							
5	AO 2, MSB							
6	AO 3, LSB							
7	AO 3, MSB							
8	DO 2 <sub>7</sub>	DO 2 <sub>6</sub>	DO 2 <sub>5</sub>	DO 2 <sub>4</sub>	DO 2 <sub>3</sub>	DO 2 <sub>2</sub>	DO 2 <sub>1</sub>	DO 2 <sub>0</sub>
9	-	-	-	-	-	-	-	-