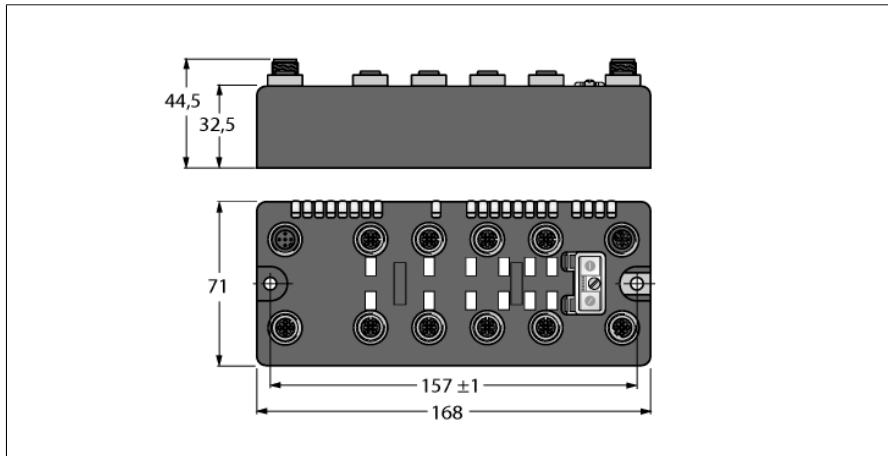


**BL compact Multiprotocol Station for Industrial Ethernet**  
**8 Analog Thermocouple Inputs**  
**BLCEN-8M12LT-4AI-TC-4AI-TC**



- On-Machine™ compact fieldbus I/O blocks
- EtherNet/IP™, Modbus® TCP or PROFINET slave
- Integrated Ethernet switch
- 10 Mbps/100 Mbps supported
- Two 4-pin, D-coded M12 connectors for fieldbus connection
- 2 rotary coding switches for node-address
- IP 69K
- M12 I/O ports
- LEDs indicating status and diagnostics
- Electronics galvanically isolated from the field level via optocouplers
- 8 analog inputs for thermocouples
- Types B, C, E, G, J, K, N, R, S or T (selectable per channel)
- Cold junction compensation via Pt1000 probe in a special connector

<b>Type designation</b>	BLCEN-8M12LT-4AI-TC-4AI-TC
Ident no.	6811478
<b>Nominal system voltage</b>	24 VDC
System power supply	Via auxiliary power
Voltage supply connection	2 x M12, 5-pin
Admissible range Vi	18...30 VDC
Nominal current Vi	185 mA
Max. current Vi	2 A
<b>Fieldbus transmission rate</b>	10/100 Mbps
Adjustment transmission rate	Automatic detection
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 dec. Rotary coding switches
Fieldbus connection technology	2 x M12 4-pin, D-coded
Protocol detection	automatic
Web server	Integrated
Service interface	Ethernet
Vendor ID	48
Product type	12
Product code	11478
<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. 10 register
Input register start address	0 (0x0000 hex)
<b>Ethernet/IP</b>	
Addressing	acc. to EtherNet/IP specification
Device Level Ring (DLR)	supported
Class 1 connections (CIP)	6
Input Assembly Instance	103
Input Data Size	11 INT
Output Assembly Instance	104
Output Data Size	1 INT
Configuration Assembly Instance	106
Configuration Size	0
Comm Format	Data - 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. 16 BYTE

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**Analog inputs**

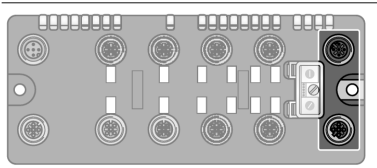
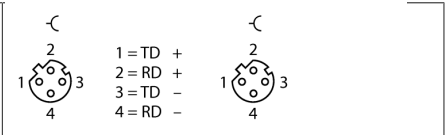
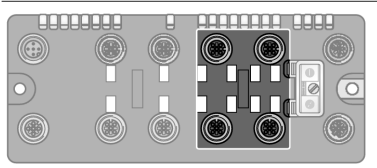
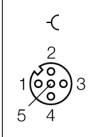
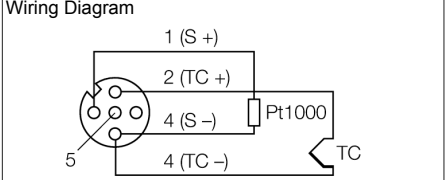
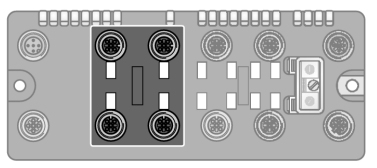
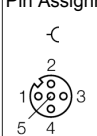
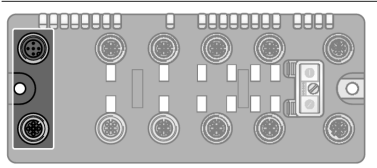
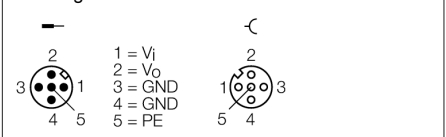
Operating modes	Types B, C, E, G, J, K, N, R, S, T
Type of input diagnostics	Channel diagnostics
Sensor supply	24 VDC, max. 1 A
Input resistance	> 7 M $\Omega$
Voltage resolution	$\pm 50$ mV: < 2 $\mu$ V $\pm 100$ mV: < 4 $\mu$ V $\pm 500$ mV: < 20 $\mu$ V $\pm 1000$ mV: < 50 $\mu$ V
Maximum limiting frequency analog	< 70 Hz
Basic fault limit at 23 °C	< 0.2 %
Repeatability	< 0.05 %
Temperature coefficient	< 300 ppm/°C of full scale
Resolution	16 Bit
Measurement display	16 bit signed integer 12 bit full range left-justified

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**Dimensions**

Mounting	168 x 71 x 32.5 mm
Weight	2 x 5.4 mm diameter holes, 1.7 Nm torque
Housing material	620 $\pm$ 20 g
Housing color	Glass fiber reinforced nylon, nickel-plated connector
Material screw	Black
Material label	Nickel-plated brass
Ground label material	Polyester with polycarbonate overlay
Protection class	Nickel-plated brass
Ambient temperature	IP67
Storage temperature	IP69K
Relative humidity	-40...+70 °C
Vibration test	-40...+85 °C
- up to 20 g (at 10 up to 150 Hz)	15...95 %, non-condensing
Shock test	Acc. to IEC 61131-2
Electromagnetic compatibility	For mounting on base plate or machinery
MTTF	acc. to IEC 61131-2
MTTF note	acc. to IEC 61131-2
Approvals and certificates	88 years acc. to SN 29500 (Ed. 99) 20 °C CE, cULus

**BL compact Multiprotocol Station for Industrial Ethernet**  
**8 Analog Thermocouple Inputs**  
**BLCEN-8M12LT-4AI-TC-4AI-TC**

	<p><b>Ethernet</b> Fieldbus cable (IP67 example): RSSD RSSD 441-2M ID number U-02482 or RSSD-RSSD-441-2M/S2174 ID number 6914218</p>	
	<p><b>Slot 1: Thermocouple Inputs</b> TC compensating connector BL67-WAS5-THERMO ident-no. 6827197</p>	<p><b>Pin Assignment</b></p>  <p><b>Wiring Diagram</b></p> 
	<p><b>Slot 2: Thermocouple Inputs</b> See slot 1</p>	<p><b>Pin Assignment</b></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><b>Pin Assignment</b></p> 

**BL compact Multiprotocol Station for Industrial Ethernet**  
**8 Analog Thermocouple Inputs**  
**BLCEN-8M12LT-4AI-TC-4AI-TC****Status: Station LED**

LED	Color	Status	Description
IOs		OFF	Power off
	RED	ON	Insufficient power supply
	RED	FLASHING (1Hz)	Deviating station configuration
	RED	FLASHING (4 Hz)	No module bus communication
	GREEN	ON	Station OK
	GREEN	FLASHING	Force mode active
MNS		OFF	No connection
	GREEN	ON	Fieldbus communication active
	GREEN	FLASHING (1Hz)	Fieldbus communication disabled, device status OK
	RED	ON	Double MAC-ID
	RED	FLASHING	Fieldbus communication timeout
IO	GREEN	ON	I/O slots OK
	GREEN	FLASHING (1Hz)	At least one I/O slot in idle state
	RED	ON	At least one faulty I/O slot
	RED	FLASHING	At least one I/O slot in faulty state

**Status: I/O LED, slot 1**

LED	Color	Status	Description
D1 *		OFF	Diagnostic disabled
	RED	ON	Station / module bus communication failure
	RED	FLASHING (0.5Hz)	Summarized diagnostic
AI channels 0 / 1			Without function

\* D1 LED also indicates gateway diagnostic

**I/O LED Status Slot 2**

LED	Colour	Status	Description
D2 *		OFF	Diagnostic disabled
	RED	ON	Station / module bus communication failure
	RED	FLASHING (0.5Hz)	Summarized diagnostic

\* The D2 LED also indicates gateway diagnosis

**BL compact Multiprotocol Station for Industrial Ethernet**  
**8 Analog Thermocouple Inputs**  
**BLCEN-8M12LT-4AI-TC-4AI-TC**

**Process Data Mapping of the Single Protocols**

**EtherNet/IP™ I/O and Diagnostic Data Mapping**

INPUT	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
AI 1 <sub>0</sub>	0	AI 1 <sub>0</sub> LSB							
	1	AI 1 <sub>0</sub> MSB							
AI 1 <sub>1</sub>	2	AI 1 <sub>1</sub> LSB							
	3	AI 1 <sub>1</sub> MSB							
AI 1 <sub>2</sub>	4	AI 1 <sub>2</sub> LSB							
	5	AI 1 <sub>2</sub> MSB							
AI 1 <sub>3</sub>	6	AI 1 <sub>3</sub> LSB							
	7	AI 1 <sub>3</sub> MSB							
AI 2 <sub>0</sub>	8	AI 2 <sub>0</sub> LSB							
	9	AI 2 <sub>0</sub> MSB							
AI 2 <sub>1</sub>	10	AI 2 <sub>1</sub> LSB							
	11	AI 2 <sub>1</sub> MSB							
AI 2 <sub>2</sub>	12	AI 2 <sub>2</sub> LSB							
	13	AI 2 <sub>2</sub> MSB							
AI 2 <sub>3</sub>	14	AI 2 <sub>3</sub> LSB							
	15	AI 2 <sub>3</sub> MSB							
Diagnose	16	Modulnummer meldet Diagnose Daten							
	17	Austauschstation	-	Diagnose aktiv	-	-	-	-	-
Steckplatz X* (Ref. Byte 16)	18	-	-	-	-	-	-	Offener Stromkreis AI X <sub>0</sub>	Bereichsfehler AI X <sub>0</sub>
	19	-	-	-	-	-	-	Offener Stromkreis AI X <sub>1</sub>	Bereichsfehler AI X <sub>1</sub>
	20	-	-	-	-	-	-	Offener Stromkreis AI X <sub>2</sub>	Bereichsfehler AI X <sub>2</sub>
	21	-	-	-	-	-	-	Offener Stromkreis AI X <sub>3</sub>	Bereichsfehler AI X <sub>3</sub>

\* Sind beide Slots des Moduls diagnosefähig, dann wechselt die Anzeige der durchlaufenden Diagnose (Scheduled Diagnostic) alle 125 ms zwischen Slot 1 und 2.

Legende:

AI	Analogeingang	OC	Offener Stromkreis
CFG	Konfigurationsfehler	S1	Slot 1
COM	Kommunikationsfehler	S2	Slot 2
DIA	Diagnose aktiv	SC	Kurzschluss/Überstrom
FCE	Force Mode aktiv	VI	VI-Spannung
MR	Messwert Bereichsfehler	VO	VO-Spannung
CJ	Kaltstellenfehler		

**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
Eingänge (RO)	0x0000	AI 1 <sub>0</sub>															
	0x0001	AI 1 <sub>1</sub>															
	0x0002	AI 1 <sub>2</sub>															
	0x0003	AI 1 <sub>3</sub>															
	0x0004	AI 2 <sub>0</sub>															
	0x0005	AI 2 <sub>1</sub>															
	0x0006	AI 2 <sub>2</sub>															
	0x0007	AI 2 <sub>3</sub>															
Status (RO)	0x0008	-	FCE	-	-	CFG	COM	VI low	-	VO low	-	-	-	-	-	-	DIA
Diag. (RO)	0x0009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S2 DIA	S1 DIA
I/O Diag (RO)	0xA000	-	-	-	-	-	CJAI 1 <sub>1</sub>	OCAI 1 <sub>1</sub>	MRAI 1 <sub>1</sub>	-	-	-	-	-	CJAI 1 <sub>0</sub>	OCAI 1 <sub>0</sub>	MRAI 1 <sub>0</sub>
	0xA001	-	-	-	-	-	CJAI 1 <sub>3</sub>	OCAI 1 <sub>3</sub>	MRAI 1 <sub>3</sub>	-	-	-	-	-	CJAI 1 <sub>2</sub>	OCAI 1 <sub>2</sub>	MRAI 1 <sub>2</sub>
	0xA002	-	-	-	-	-	CJAI 2 <sub>1</sub>	OCAI 2 <sub>1</sub>	MRAI 2 <sub>1</sub>	-	-	-	-	-	CJAI 2 <sub>0</sub>	OCAI 2 <sub>0</sub>	MRAI 2 <sub>0</sub>

**BL compact Multiprotocol Station for Industrial Ethernet**  
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	0xA003	-	-	-	-	-	-	CJAI 2 <sub>3</sub>	OCAI 2 <sub>3</sub>	MRAI 2 <sub>3</sub>	-	-	-	-	-	-	CJAI 2 <sub>3</sub>	OCAI 2 <sub>2</sub>	MRAI 2 <sub>2</sub>
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**PROFINET® Process Data**

	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Eingänge	0	AI 1 <sub>0</sub> LSB							
	1	AI 1 <sub>0</sub> MSB							
	2	AI 1 <sub>1</sub> LSB							
	3	AI 1 <sub>1</sub> MSB							
	4	AI 1 <sub>2</sub> LSB							
	5	AI 1 <sub>2</sub> MSB							
	6	AI 1 <sub>3</sub> LSB							
	7	AI 1 <sub>3</sub> MSB							
	8	AI 2 <sub>0</sub> LSB							
	9	AI 2 <sub>0</sub> MSB							
	10	AI 2 <sub>1</sub> LSB							
	11	AI 2 <sub>1</sub> MSB							
	12	AI 2 <sub>2</sub> LSB							
	13	AI 2 <sub>2</sub> MSB							
	14	AI 2 <sub>3</sub> LSB							
15	AI 2 <sub>3</sub> MSB								