

- 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
- 4 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

Type designation	BLCEN-4M12MT-4AI-TC
Ident no.	6811467
Nominal system voltage	24 VDC
System power supply	Via auxiliary power
Voltage supply connection	2 x M12, 5-pin
Admissible range Vi	18...30VDC
Nominal current Vi	155 mA
Max. current Vi	1 A
Fieldbus transmission rate	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- (←) M12 4-pin, D-coded
Protocol detection	automatic
Web server	Integrated
Service Interface	Ethernet
Vendor ID	48
Product type	12
Product code	11467
Modbus TCP	
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. 6 register
Input register start address	0 (0x0000 hex)
EtherNet/IP™	
Addressing	acc. to EtherNet/IP™ specification
Device Level Ring (DLR)	supported
Number of CIP connections	6
Input Assembly Instance	103
Input Data Size	7 INT
Output Assembly Instance	104
Output Data Size	1 INT
Configuration Assembly Instance	106
Configuration Size	0
Comm Format	Data - INT

PROFINET

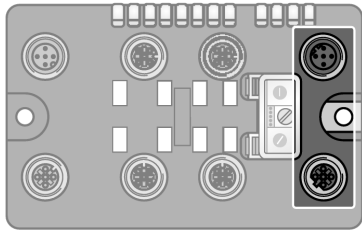
Addressing	DCP
Conformance class	B (RT)
MinCycleTime	1 ms
Diagnostics	acc. to PROFINET alarm handling
Topology detection	supported
Automatic addressing	supported
Media Redundancy Protocol (MRP)	supported
Input Data Size	max. 8 BYTE

Analog inputs

Operating modes	from 4AI-TC
Type of input diagnostics	Types B, C, E, G, J, K, N, R, S, T
Sensor supply	Channel diagnostics
Input resistance	24 VAC, max. 1 A
Voltage resolution	> 7 M Ω
	± 50 mV: < 2 μ V
	± 100 mV: < 4 μ V
	± 500 mV: < 20 μ V
	± 1000 mV: < 50 μ 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

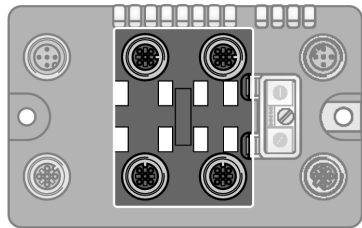
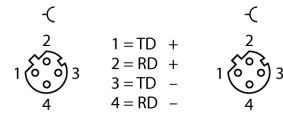
Dimensions

Operating temperature	113 x 71 x 32.5 mm
Storage temperature	-40...+70 °C
Relative humidity	-40...+85 °C
Vibration test	15 to 95% (non-condensing)
Extended vibration resistance	acc. to IEC 61131-2
- up to 20 g (at 10 up to 150 Hz)	For mounting on base plate or machinery
Shock test	acc. to IEC 61131-2
Electro-magnetic compatibility	acc. to IEC 61131-2
Protection class	IP67
	IP69K
Housing material	Glass fiber reinforced nylon, nickel-plated connector
Housing color	Black
Window material	Lexan
Material screw	Nickel-plated brass
Material label	Polyester with polycarbonate overlay
Ground tab material	Nickel-plated brass
Weight	390 \pm 20 g
Approvals and certificates	CE, cULus



Ethernet

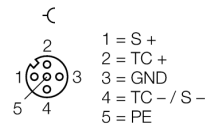
Fieldbus cable (IP67 example): RSSD RSSD 441-2M ID number U-02482 or RSSD-RSSD-441-2M/S2174 ID number 6914218



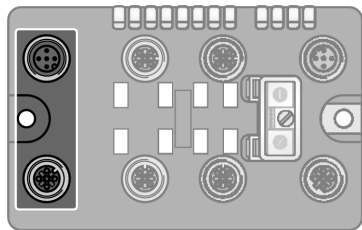
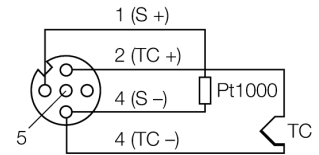
Thermocouple Inputs

TC compensating connector BL67-WAS5-THERMO ident-no. 6827197

Pin Assignment



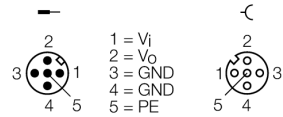
Wiring Diagram



Auxiliary Power

Extension cable (example): RKC 4.4T-2-RSC 4.4T ident-no. U5264 or RKC4.4T-2-RSC4.4T/TEL ident-no. 6625208

Pin Assignment



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
BUS		OFF	Power Off
	GREEN	ON	Connected to Master
	GREEN	FLASHING	Ready
	RED	ON	Error
	RED	FLASHING	WINK
	YELLOW	ON	DHCP/BOOTP Search
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

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

* D LED also indicates gateway diagnostic

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 ₀	0	AI 1 ₀ LSB							
	1	AI 1 ₀ MSB							
AI 1 ₁	2	AI 1 ₁ LSB							
	3	AI 1 ₁ MSB							
AI 1 ₂	4	AI 1 ₂ LSB							
	5	AI 1 ₂ MSB							
AI 1 ₃	6	AI 1 ₃ LSB							
	7	AI 1 ₃ MSB							
Diagnose	8	Modulnummer meldet Diagnose Daten							
	9	Austauschstation	-	Diagnose aktiv	-	-	-	-	-
Steckplatz 1 (ref. Byte 8)	10	-	-	-	-	-	-	Offener Stromkreis AI 1 ₀	Bereichsfehler AI 1 ₀
	11	-	-	-	-	-	-	Offener Stromkreis AI 1 ₁	Bereichsfehler AI 1 ₁
	12	-	-	-	-	-	-	Offener Stromkreis AI 1 ₂	Bereichsfehler AI 1 ₂
	13	-	-	-	-	-	-	Offener Stromkreis AI 1 ₃	Bereichsfehler AI 1 ₃

Legend:

AI	Analog Input	MR	Measured Value Range Error
CFG	Configuration Error	OC	Open Circuit
COM	Communication Error	S1	Slot 1
DIA	Diagnostics Active	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	
Eingänge (RO)	0x0000	AI 1 ₀																
	0x0001	AI 1 ₁																
	0x0002	AI 1 ₂																
	0x0003	AI 1 ₃																
Status (RO)	0x0004	-	FCE	-	-	CFG	COM	VI low	-	VO low	-	-	-	-	-	-	DIA	
Diag. (RO)	0x0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S1 DIA	
I/O Diag (RO)	0xA000	-	-	-	-	-	CJAI 1 ₁	OCAI 1 ₁	MRAI 1 ₁	-	-	-	-	-	-	CJAI 1 ₀	OCAI 1 ₀	MRAI 1 ₀
	0xA001	-	-	-	-	-	CJAI 1 ₃	OCAI 1 ₃	MRAI 1 ₃	-	-	-	-	-	-	CJAI 1 ₂	OCAI 1 ₂	MRAI 1 ₂

PROFINET® Process Data

	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Eingänge	0	AI 1 ₀ LSB							
	1	AI 1 ₀ MSB							
	2	AI 1 ₁ LSB							
	3	AI 1 ₁ MSB							
	4	AI 1 ₂ LSB							
	5	AI 1 ₂ MSB							
	6	AI 1 ₃ LSB							
7	AI 1 ₃ MSB								