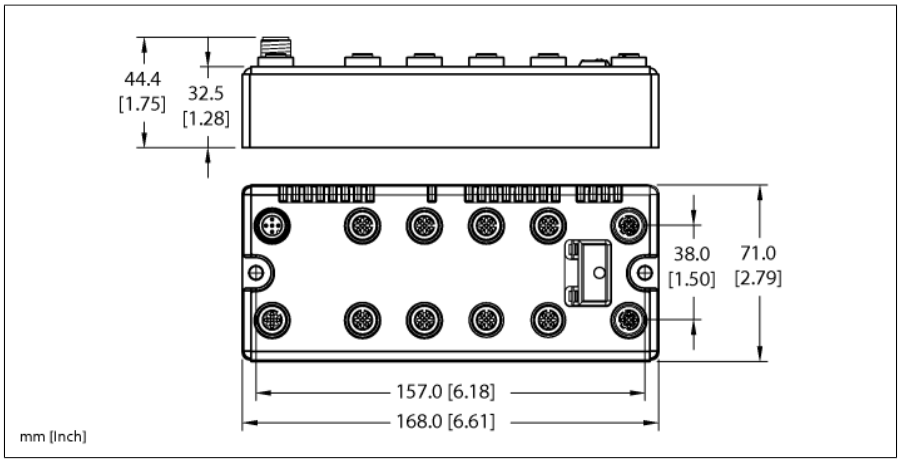
BL compact™ multiprotocol fieldbus station for Industrial Ethernet
8 IO-Link Channels
BLCEN-8M12LT-4IOL-4IOL/CS30125



ID	6811637
Nominal system voltage	24 VDC
System power supply	Via auxiliary power
Voltage supply connection	2 x M12, 5-pin
Admissible range Vi	20…30 VDC
Nominal current Vi	205 mA
Max. current Vi	2 A
Admissible range Vo	20…30 VDC
Nominal current Vo	160 mA
Max. current Vo	4 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 decimally coded rotary switches
Fieldbus connection technology	2 × M12
	4-pole, D-coded
Protocol detection	automatic
Web server	Integrated
Service interface	Ethernet
Vendor ID	48
Product type	12
Product code	11500

- 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
- CS30125: IOs LED solid when Vo is removed

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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. 18 register
Input register start address	0 (0x0000 hex)
Output Data Size	max. 16 register
Output register start address	2048 (0x0800 hex)

Ethernet/IP	
Addressing	acc. to EtherNet/IP specification
Device Level Ring (DLR)	supported
Class 1 connections (CIP)	6
Input Assembly Instance	103
Input Data Size	21 INT
Output Assembly Instance	104
Output Data Size	16 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. 32 BYTE
Output Data Size	max. 32 BYTE

Digital inputs	from 4IOL
Input type	PNP
Low-level signal voltage	< 5 V
High level signal voltage	> 11 V
Low level signal current	< 1.5 mA DI / < 5mA SIO
High level signal current	2.1 ... 3.7 mA DI / 5 ... 11 mA SIO

Digital outputs	from 4IOL
Output type	PNP
Sensor supply (V_{SENS})	24 VDC
Output current per channel	0.5 A
Output voltage	24 VDC
Output delay	3 ms
Load type	resistive, inductive, lamp load
Load resistance, resistive	> 48 Ω
Load resistance, inductive	< 1.2 H
Lamp load	< 3 W
Switching frequency, resistive	< 200 Hz
Switching frequency, inductive	< 2 Hz
Switching frequency, lamp load	< 20 Hz
Short-circuit protection	yes

Technology	
Signal type	IO-Link
Electrical isolation	isolation of electronics and field level via optocouplers

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Dimensions	168 x 71 x 32.5 mm
Mounting	2 × 5.4 mm diameter holes, 1.7 Nm torque
Weight	620 ± 20 g
Housing material	Glass-filled nylon, nickel plated brass connectors
Housing color	Black
Material screw	Nickel-plated brass
Material label	Polyester with polycarbonate overlay
Ground label material	Nickel plated brass
Protection class	IP67 IP69K
Ambient temperature	-40…+70 °C
Storage temperature	-40…+85 °C
Relative humidity	15 to 95% (non-condensing)
Vibration test	Acc. 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	Acc. to IEC 61131-2
Approvals and certificates	CE, cULus

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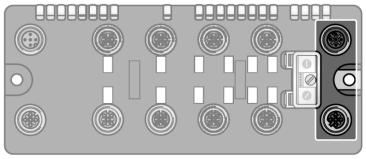
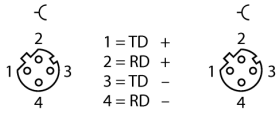
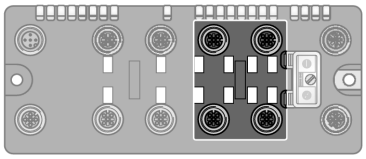
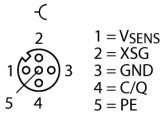
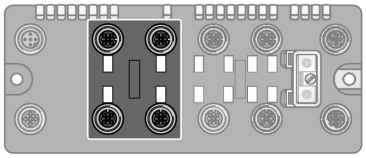
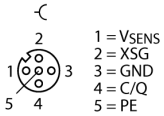
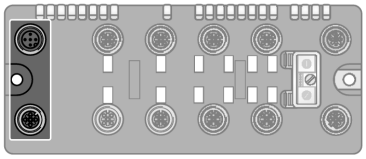
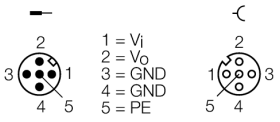
Pinning and wiring diagram

	**Ethernet** Fieldbus cable (IP67 example): RSSD RSSD 441-2M ID number U-02482 or RSSD-RSSD-441-2M/S2174 ID number 6914218	Pin Assignment (M12, D-code) 
	**Slot 1: IO-Link Channels** Extension cable (example): RK 4.4T-2-RS 4.4T ident-no. U2445 or RKC4.4T-2-RSC4.4T/TEL ident-no. 6625208	Pin Assignment 
	**Slot 2: IO-Link Channels** See slot 1	Pin Assignment 
	**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 

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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)
IO-Link Mode Channels 1_0...1_3		OFF	Channel Status x = “0“ (OFF), no diagnostics active
	GREEN	Flashing	IO-Link communication, Process data valid
	RED	ON	No IO-Link communication
		Flashing	Process Data Invalid
DI Mode Channels 1_0...1_3		OFF	Channel Status x = “0” (OFF)
	GREEN	ON	Channel Status x = “1” (ON)
XSG 1_4...1_7		OFF	Channel Status x = “0” (OFF)
	GREEN	ON	Channel Status x = “1” (ON)

* 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)
IO-Link Mode Channels 2_0...2_3		OFF	Channel Status x = “0“ (OFF), no diagnostics active
	GREEN	Flashing	IO-Link communication, Process data valid
	RED	ON	No IO-Link communication
		Flashing	Process Data Invalid
DI Mode Channels 2_0...2_3		OFF	Channel Status x = “0” (OFF)
	GREEN	ON	Channel Status x = “1” (ON)
XSG 2_4...2_7		OFF	Channel Status x = “0” (OFF)
	GREEN	ON	Channel Status x = “1” (ON)

* 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
Digital	0	DI 1_7	DI 1_6	DI 1_5	DI 1_4	DI 1_3	DI 1_2	DI 1_1	DI 1_0
	1	OCDO 1_7	OCDO 1_6	OCDO 1_5	OCDO 1_4	DVS 1_3	DVS 1_2	DVS 1_1	DVS 1_0
	2…15	IO-Link Read Data (depends on parameter settings)							
	16	DI 2_7	DI 2_6	DI 2_5	DI 2_4	DI 2_3	DI 2_2	DI 2_1	DI 2_0
	17	OCDO 2_7	OCDO 2_6	OCDO 2_5	OCDO 2_4	DVS 2_3	DVS 2_2	DVS 2_1	DVS 2_0
	18…31	IO-Link Read Data (depends on parameter settings)							
Diagnostics	32	Module number reporting diagnostic data							
	33	Replace Station	-	Diagnostics Active	-	-	-	-	-
Slot X (ref. Byte 32)	34	IOL X_0 EVT2	IOL X_0 EVTX	IOL X_0 PDINV	IOL X_0 HWER	IOL X_0 DSER	IOL X_0 CFGER	-	OCDO X_4
	35	IOL X_0 GENER	IOL X_0 OVL	IOL X_0 VHIGH	IOL X_0 VLOW	IOL X_0 ULVE	IOL X_0 LLVU	IOL X_0 OTMP	IOL X_0 PRMER
	36	IOL X_1 EVT2	IOL X_1 EVT1	IOL X_1 PDINV	IOL X_1 HWER	IOL X_1 DSER	IOL X_1 CFGER	-	OCDO X_5
	37	IOL X_1 GENER	IOL X_1 OVL	IOL X_1 VHIGH	IOL X_1 VLOW	IOL X_1 ULVE	IOL X_1 LLVU	IOL X_1 OTMP	IOL X_1 PRMER
	38	IOL X_2 EVT2	IOL X_2 EVTX	IOL X_2 PDINV	IOL X_2 HWER	IOL X_2 DSER	IOL X_2 CFGER	-	OCDO X_6
	39	IOL X_2 GENER	IOL X_2 OVL	IOL X_2 VHIGH	IOL X_2 VLOW	IOL X_2 ULVE	IOL X_2 LLVU	IOL X_2 OTMP	IOL X_2 PRMER
	40	IOL X_3 EVT2	IOL X_3 EVTX	IOL X_3 PDINV	IOL X_3 HWER	IOL X_3 DSER	IOL X_3 CFGER	-	OCDO X_7
	41	IOL X_3 GENER	IOL X_3 OVL	IOL X_3 VHIGH	IOL X_3 VLOW	IOL X_3 ULVE	IOL X_3 LLVU	IOL X_3 OTMP	IOL X_3 PRMER
OUTPUT	**BYTE**	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Digital	0	DO 1_7	DO 1_6	DO 1_5	DO 1_4	-	-	-	-
	1	-	-	-	-	-	-	-	-
	2…15	IO-Link Write Data (depends on parameter settings)							
	16	DO 2_7	DO 2_6	DO 2_5	DO 2_4	-	-	-	-
	17	-	-	-	-	-	-	-	-
	18…31	IO-Link Write Data (depends on parameter settings)							

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

Legend

GENER	Common error	EVT1	Maintenance events
VHIGH	Overvoltage	HWER	Hardware error
ULVE	Upper limit value exceeded	CFGER	Wrong or missing device
OTMP	Overtemperature	DVS	Data Valid Signal
EVT2	Out of specification error	OC	Over Current
PDINV	Process input data invalid	DIAG	Diagnostics
DSER	Data storage error	DO	Digital Output
OVL	Overload	DI	Digital Input
VLOW	Undervoltage	COM	Communication Lost Bit
LLVU	Lower limit value underrun	CFG	Connfiguration Error
PRMER	Parameterization error		

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	OCDO 1_7	OCDO 1_6	OCDO 1_5	OCDO 1_4	DVS 1_3	DVS 1_2	DVS 1_1	DVS 1_0	DI 1_7	DI 1_6	DI 1_5	DI 1_4	DI 1_3	DI 1_2	DI 1_1	DI 1_0
	0x0001… 0x0007	IO-Link Read Data (depends on parameter settings)															
	0x0008	OCDO 2_7	OCDO 2_6	OCDO 2_5	OCDO 2_4	DVS 2_3	DVS 2_2	DVS 2_1	DVS 2_0	DI 2_7	DI 2_6	DI 2_5	DI 2_4	DI 2_3	DI 2_2	DI 2_1	DI 2_0
	0x0009… 0x000F	IO-Link Read Data (depends on parameter settings)															
Status (RO)	0x0010	-	FCE	-	-	CFG	COM	VI low	VI high	VO low	VO high	OCVI	-	-	-	-	DIAG
Diag. (RO)	0x0011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S2 DIAG	S1 DIAG
Outputs (RW)	0x0800	-	-	-	-	-	-	-	-	DO 1_7	DO 1_6	DO 1_5	DO 1_4		-		-

	0x0801… 0x0807	IO-Link Write Data (depends on parameter settings)															
	0x0808	-	-	-	-	-	-	-	-	DO 2_7	DO 2_6	DO 2_5	DO $_{24}$		-		-
	0x0809… 0x080F	IO-Link Write Data (depends on parameter settings)															
I/O Diag. (RO)	0xA000	IOL 1_0 GEN-ER	IOL 1_0 OVL	IOL 1_0 VHIGH	IOL 1_0 VLOW	IOL 1_0 ULVE	IOL 1_0 LLVU	IOL 1_0 OTMP	IOL 1_0 PRMER	IOL 1_0 EVT2	IOL 1_0 EVT1	IOL 1_0 PDINV	IOL 1_0 HWER	IOL 1_0 DSER	IOL 1_0 CFGER	-	OC DO 1_4
	0xA001	IOL 1_1 GEN-ER	IOL 1_1 OVL	IOL 1_1 VHIGH	IOL 1_1 VLOW	IOL 1_1 ULVE	IOL 1_1 LLVU	IOL 1_1 OTMP	IOL 1_1 PRMER	IOL 1_1 EVT2	IOL 1_1 EVT1	IOL 1_1 PDINV	IOL 1_1 HWER	IOL 1_1 DSER	IOL 1_1 CFGER	-	OC DO 1_5
	0xA002	IOL 1_2 GEN-ER	IOL 1_2 OVL	IOL 1_2 VHIGH	IOL 1_2 VLOW	IOL 1_2 ULVE	IOL 1_2 LLVU	IOL 1_2 OTMP	IOL 1_2 PRMER	IOL 1_2 EVT2	IOL 1_2 EVT1	IOL 1_2 PDINV	IOL 1_2 HWER	IOL 1_2 DSER	IOL 1_2 CFGER	-	OC DO 1_6
	0xA003	IOL 1_3 GEN-ER	IOL 1_3 OVL	IOL 1_3 VHIGH	IOL 1_3 VLOW	IOL 1_3 ULVE	IOL 1_3 LLVU	IOL 1_3 OTMP	IOL 1_3 PRMER	IOL 1_3 EVT2	IOL 1_3 EVT1	IOL 1_3 PDINV	IOL 1_3 HWER	IOL 1_3 DSER	IOL 1_3 CFGER	-	OC DO 1_7
	0xA004	IOL 2_0 GEN-ER	IOL 2_0 OVL	IOL 2_0 VHIGH	IOL 2_0 VLOW	IOL 2_0 ULVE	IOL 2_0 LLVU	IOL 2_0 OTMP	IOL 2_0 PRMER	IOL 2_0 EVT2	IOL 2_0 EVT1	IOL 2_0 PDINV	IOL 2_0 HWER	IOL 2_0 DSER	IOL 2_0 CFGER	-	OC DO 2_4
	0xA005	IOL 2_1 GEN-ER	IOL 2_1 OVL	IOL 2_1 VHIGH	IOL 2_1 VLOW	IOL 2_1 ULVE	IOL 2_1 LLVU	IOL 2_1 OTMP	IOL 2_1 PRMER	IOL 2_1 EVT2	IOL 2_1 EVT1	IOL 2_1 PDINV	IOL 2_1 HWER	IOL 2_1 DSER	IOL 2_1 CFGER	-	OC DO 2_5
	0xA006	IOL 2_2 GEN-ER	IOL 2_2 OVL	IOL 2_2 VHIGH	IOL 2_2 VLOW	IOL 2_2 ULVE	IOL 2_2 LLVU	IOL 2_2 OTMP	IOL 2_2 PRMER	IOL 2_2 EVT2	IOL 2_2 EVT1	IOL 2_2 PDINV	IOL 2_2 HWER	IOL 2_2 DSER	IOL 2_2 CFGER	-	OC DO 2_6
	0xA007	IOL 2_3 GEN-ER	IOL 2_3 OVL	IOL 2_3 VHIGH	IOL 2_3 VLOW	IOL 2_3 ULVE	IOL 2_3 LLVU	IOL 2_3 OTMP	IOL 2_3 PRMER	IOL 2_3 EVT2	IOL 2_3 EVT1	IOL 2_3 PDINV	IOL 2_3 HWER	IOL 2_3 DSER	IOL 2_3 CFGER	-	OC DO 2_7

PROFINET® Process Data

Inputs	0	DI 1_7	DI 1_6	DI 1_5	DI 1_4	DI 1_3	DI 1_2	DI 1_1	DI 1_0
	1	OCDO 1_7	OCDO 1_6	OCDO 1_5	OCDO 1_4	DVS 1_3	DVS 1_2	DVS 1_1	DVS 1_0
	2…15	IO-Link Read Data (depends on parameter settings)							
	16	DI 2_7	DI 2_6	DI 2_5	DI 2_4	DI 2_3	DI 2_2	DI 2_1	DI 2_0
	17	OCDO 2_7	OCDO 2_6	OCDO 2_5	OCDO 2_4	DVS 2_3	DVS 1_2	DVS 1_1	DVS 1_0
	18…31	IO-Link Read Data (depends on parameter settings)							
Outputs	0	DO 1_7	DO 1_6	DO 1_5	DO 1_4	-	-	-	-
	1	-	-	-	-	-	-	-	-
	2…15	IO-Link Write Data (depends on parameter settings)							
	16	DO 2_7	DO 2_6	DO 2_5	DO 2_4	-	-	-	-
	17	-	-	-	-	-	-	-	-
	18…31	IO-Link Write Data (depends on parameter settings)							

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