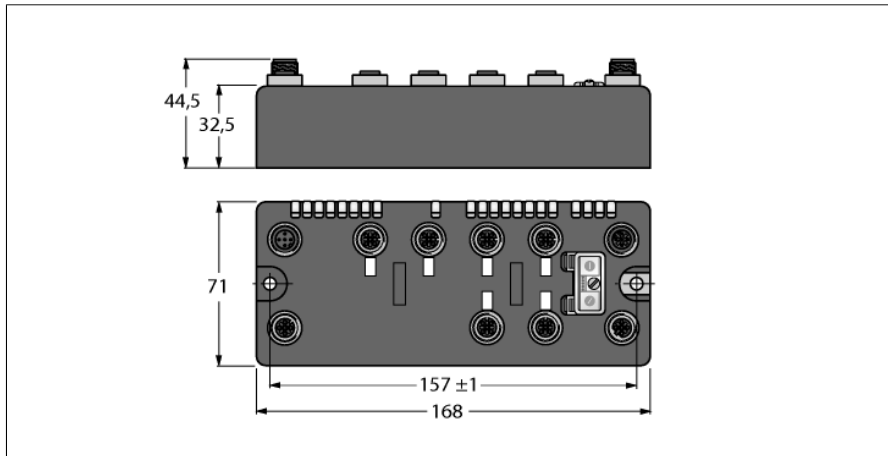


BL compact Multiprotocol Station for Industrial Ethernet
4 IO-Link Channels and Interface for Connection of 2 BL ident Read/Write
Heads(HF/UHF)
BLCEN-6M12LT-4IOL-2RFID-S



- 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
- Simple RFID interface
- Connection of 2 BL ident® read/write heads
- Max cable length of 50 m

Type designation	BLCEN-6M12LT-4IOL-2RFID-S
Ident no.	6811501
Nominal system voltage	24 VDC
System power supply	Via auxiliary power
Voltage supply connection	2 x M12, 5-pin
Admissible range Vi	20...30VDC
Nominal current Vi	190 mA
Max. current Vi	2 A
Admissible range Vo	20...30VDC
Nominal current Vo	80 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 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	11501
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. 21 register
Input register start address	0 (0x0000 hex)
Output Data Size	max. 19 register
Output register start address	2048 (0x0800 hex)

**BL compact Multiprotocol Station for Industrial Ethernet
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BLCEN-6M12LT-4IOL-2RFID-S**

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	27 INT
Output Assembly Instance	104
Output Data Size	20 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. 40 BYTE
Output Data Size	max. 40 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, < 5 mA 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	ohmsch, induktiv, Lampenlast
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	Electronics and field level isolated via optocouplers

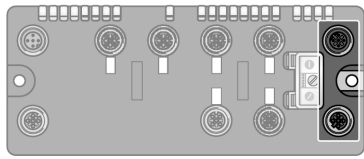
technology

	from 2RFID-S
Signal type	Simple RFID interface
Number of channels	2
Sensor supply	0,5 A pro Kanal, kurzschlussfest
Simultaneity factor	1
Transmission rate	115.2 KBit/s
Cable length	50 m
Electrical isolation	Trennung von Elektronik und Feldebene via Optokoppler

**BL compact Multiprotocol Station for Industrial Ethernet
4 IO-Link Channels and Interface for Connection of 2 BL ident Read/Write
Heads(HF/UHF)
BLCEN-6M12LT-4IOL-2RFID-S**

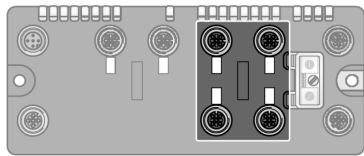
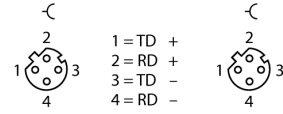
Dimensions	168 x 71 x 32.5 mm
Operating temperature	-40...+70 °C
Storage temperature	-40...+85 °C
Relative humidity	15 to 95% (non-condensing)
Vibration test	acc. to IEC 61131-2
Extended vibration resistance	
- up to 20 g (at 10 up to 150 Hz)	For mounting on base plate or machinery
Shock test	acc. to 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	600 ± 20 g
Approvals and certificates	CE, cULus

BL compact Multiprotocol Station for Industrial Ethernet 4 IO-Link Channels and Interface for Connection of 2 BL ident Read/Write Heads(HF/UHF) BLCEN-6M12LT-4IOL-2RFID-S



Ethernet

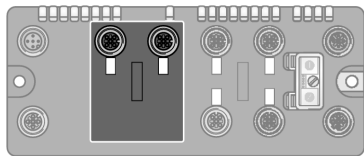
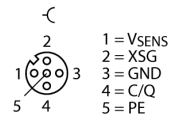
Fieldbus cable (IP67 example): RSSD RSSD 441-2M ID number
U-02482 or RSSD-RSSD-441-2M/S2174 ID number 6914218



Slot 1: IO-Link channels

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

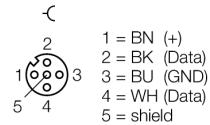
Pin Assignment



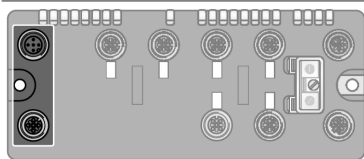
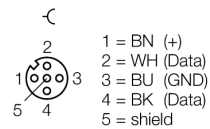
Slot 2: RFID Channels

Extension cable (example): RK 4.5T-2-RS 4.5T/S2501 ident-no.
U3-01243 or RK4.5T-2-RS4.5T/S2500 ident-no. 6699200

.../S2500 Connectors



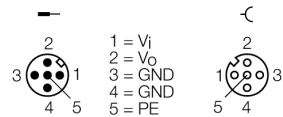
.../S2501 Connectors



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



BL compact Multiprotocol Station for Industrial Ethernet
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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, slot 1

LED	Color	Status	Description
D1 *		OFF	Diagnostic disabled
	RED	ON	Station / module bus communication failure
	RED	FLASHING (0.5Hz)	Summarized diagnostic
I/O link mode channels 1 ₀ ...1 ₃		OFF	Channel status x = "0" (OFF) no active diagnostics
	GREEN	Flashing	IO-Link communication, process data valid
	RED	ON	No I/O 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 ₀ ...1 ₇		OFF	Channel status x = 0 (OFF)
	GREEN	ON	Channel status x = 1 (ON)

* 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
RW0 / RW1		OFF	No tag, no active diagnostics
	GREEN	ON	Tag available
	GREEN	FLASHING (2 Hz)	Data transfer from/to tag active
	RED	ON	Read/write head error
	RED	FLASHING (2 Hz)	Short-circuit in transceiver feed

* The D2 LED also indicates gateway diagnosis

BL compact Multiprotocol Station for Industrial Ethernet
4 IO-Link Channels and Interface for Connection of 2 BL ident Read/Write Heads(HF/UHF)
BLCEN-6M12LT-4IOL-2RFID-S

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	
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 Daten lesen (je nach Einstellung der Parameter)								
RFID 2 ₀	16	Done	Busy	Fehler	Trans. Conn.	Trans. On	TP	TFR	-	
	17	Error Cat. (Category Code)								
	18	Error Desc. (Description Code)								
	19	-	-	-	-	-	-	-	-	-
	20...27	Read Data (8 Byte)								
RFID 2 ₁	28	Done	Busy	Fehler	Trans. Conn.	Trans. On	TP	TFR	-	
	29	Error Cat. (Category Code)								
	30	Error Desc. (Description Code)								
	31	-	-	-	-	-	-	-	-	-
	32...39	Read Data (8 Byte)								
Diagnose	40	Modulnummer meldet Diagnose Daten								
	41	Austauschstation	-	Diagnose aktiv	-	-	-	-	-	-
Steckplatz X* (Ref. Byte 40)	42	IOL X ₀ EVT2	IOL X ₀ EVT1	IOL X ₀ PDINV	IOL X ₀ HWER	IOL X ₀ DSER	IOL X ₀ CFGER	-	OCDO X ₀	
	43	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	
	44	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 ₁	
	45	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	
	46	IOL X ₂ EVT2	IOL X ₂ EVT1	IOL X ₂ PDINV	IOL X ₂ HWER	IOL X ₂ DSER	IOL X ₂ CFGER	-	OCDO X ₂	
	47	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	
	48	IOL X ₃ EVT2	IOL X ₃ EVT1	IOL X ₃ PDINV	IOL X ₃ HWER	IOL X ₃ DSER	IOL X ₃ CFGER	-	OCDO X ₃	
	49	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	
	50	-	-	-	-	-	RFID X ₀ Trans. PS Off	-	-	
	51	-	-	-	-	RFID X ₀ Trans. PS Error	-	-	RFID X ₀ Trans. Hdwr Error	
	52	-	-	-	-	-	RFID X ₁ Trans. PS Off	-	-	
53	-	-	-	-	RFID X ₁ Trans. PS Error	-	-	RFID X ₁ Trans. Hdwr Error		
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 Daten schreiben (je nach Einstellung der Parameter)								
RFID 2 ₀	16	Transceiver	Next	TAG ID	lesen	Write	TAG Info	Trans. Info.	Reset	
	17	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0	
	18	Address High Byte (MSB)								
	19	Address Low Byte (LSB)								
	20...27	Write Data (8 Byte)								
RFID 2 ₁	28	Transceiver	Next	TAG ID	lesen	Write	TAG Info	Trans. Info.	Reset	
	29	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0	
	30	Address High Byte (MSB)								
	31	Address Low Byte (LSB)								
	32...39	Write Data (8 Byte)								

* If both slots of the module are diagnosable, the display of continuous diagnostic (scheduled diagnostic) switches every 125 ms between slot 1 and 2.

Legend

BL compact Multiprotocol Station for Industrial Ethernet
4 IO-Link Channels and Interface for Connection of 2 BL ident Read/Write Heads(HF/UHF)
BLCEN-6M12LT-4IOL-2RFID-S

GENER	Common error	EVT1	Maintenance Events
VHIGH	Overvoltage	HWER	Hardware Error
ULVE	Upper Limit Value Exceeded	CFGGER	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	Configuration 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	
Eingänge (RO)	0x0000	OCDO ₁₇	OCDO ₁₆	OCDO ₁₅	OCDO ₁₄	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 Daten lesen (je nach Einstellung der Parameter)																
RFID 2 ₀	0x0008	Error Cat. (Category Code)								Done	Busy	Fehler	Trans. Conn.	Trans. On	TP	TFR	-	
	0x0009	-	-	-	-	-	-	-	-	Error Desc. (Description Code)								
	0x000A... 0x000D	Read Data (4 Words)																
RFID 2 ₁	0x000E	Error Cat. (Category Code)								Done	Busy	Fehler	Trans. Conn.	Trans. On	TP	TFR	-	
	0x000F	-	-	-	-	-	-	-	-	Error Desc. (Description Code)								
	0x0010... 0x0013	Read Data (4 Words)																
Status (RO)	0x0014	-	FCE	-	-	CFG	COM	VI low	VI high	VO low	VO high	OCVI	-	-	-	-	DIAG	
Diag. (RO)	0x0015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S2 DIAG	S1 DIAG	
Ausgänge (RW)	0x0800	-	-	-	-	-	-	-	-	DO 1 ₇	DO 1 ₆	DO 1 ₅	DO 1 ₄	-	-	-	-	
	0x0801... 0x0807	IO-Link Daten schreiben (je nach Einstellung der Parameter)																
	0x0808	-	-	-	-	-	Byte CNT 2	Byte CNT 1	Byte CNT 0	Trans.	Next	TAG ID	lesen	Write	TAG Info	Trans. Info.	Reset	
	0x0809	Address																
	0x080A... 0x080D	Write Data (4 Words)																
	0x080E	-	-	-	-	-	Byte CNT 2	Byte CNT 1	Byte CNT 0	Trans.	Next	TAG ID	lesen	Write	TAG Info	Trans. Info.	Reset	
	0x080F	Address																
	0x0810... 0x0813	Write Data (4 Words)																
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 CFGGER	-	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 CFGGER	-	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 CFGGER	-	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 CFGGER	-	OC DO 1 ₇	
	0xA004	-	-	-	-	PS RFID 2 ₀	-	-	HW RFID 2 ₀	-	-	-	-	-	-	SCO RFID 2 ₀	-	-
	0xA005	-	-	-	-	PS RFID 2 ₁	-	-	HW RFID 2 ₁	-	-	-	-	-	-	SCO RFID 2 ₁	-	-

PROFINET® Process Data

Eingänge	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
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	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 Daten lesen (je nach Einstellung der Parameter)							
	16	Done	Busy	Fehler	Trans. Conn.	Trans. On	TP	TFR	-
	17	Error Cat. (Category Code)							
	18	Error Desc. (Description Code)							
	19	-	-	-	-	-	-	-	-
	20...27	Read Data (8 Byte)							
	28	Done	Busy	Fehler	Trans. Conn.	Trans. On	TP	TFR	-
	29	Error Cat. (Category Code)							
	30	Error Desc. (Description Code)							
	31	-	-	-	-	-	-	-	-
	32...39	Read Data (8 Byte)							
Ausgänge	0	DO 1 ₇	DO 1 ₆	DO 1 ₅	DO 1 ₄	-	-	-	-
	1	-	-	-	-	-	-	-	-
	2...15	IO-Link Daten schreiben (je nach Einstellung der Parameter)							
	16	Transceiver	Next	TAG ID	lesen	Write	TAG Info	Trans. Info.	Reset
	17	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0
	18	Address High Byte (MSB)							
	19	Address Low Byte (LSB)							
	20...27	Write Data (8 Byte)							
	28	Transceiver	Next	TAG ID	lesen	Write	TAG Info	Trans. Info.	Reset
	29	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0
	30	Address High Byte (MSB)							
	31	Address Low Byte (LSB)							
	32...39	Write Data (8 Byte)							