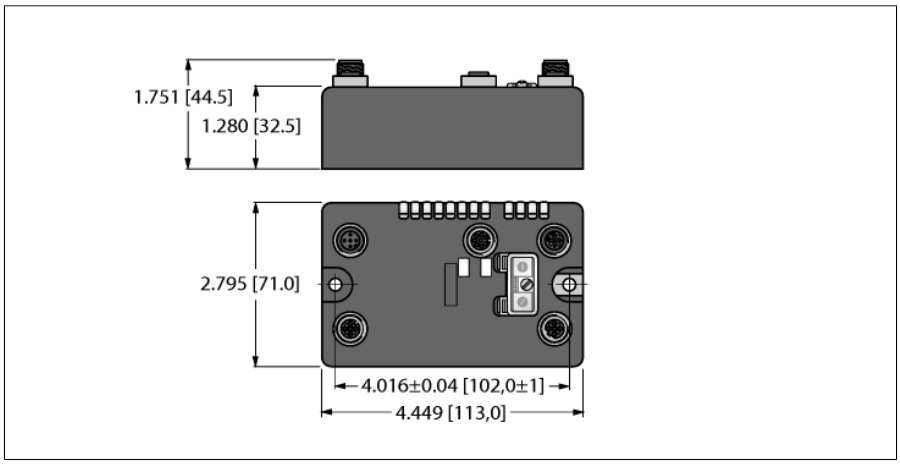
BL compact™ multiprotocol fieldbus station for Industrial Ethernet
RS232 Interface
BLCEN-1M12MT-1RS232



- **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**
- **Transmission of serial data via RS232 interface**
- **For connection of devices such as: printers, scanners, or bar code readers**

Type designation	BLCEN-1M12MT-1RS232
Ident-No.	6811461
Nominal system voltage	24 VDC
System power supply	Via auxiliary power
Voltage supply connection	2 x M12, 5-pin
Admissible range Vi	11…30VDC
Nominal current Vi	175 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 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	11461
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)
Output Data Size	max. 4 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	6 INT
Output Assembly Instance	104
Output Data Size	4 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. 8 BYTE
Output Data Size	max. 8 BYTE

Technology	
Signal type	RS232
Number of channels	1
Transmission level active (URS1)	-15 to -3 VDC
Transmission level inactive (URSO)	3 to 15 VDC
Common-mode range (UGL)	-7 to 12 VDC
Transmission signals	RxD, TxD, RTS, CTS
Receive data buffer	128 Byte
Send data buffer	64 Byte
Connection type	full duplex
Cable length	15 m
Parameters	transmission rate, diagnostics, data bits, stop bits, XON-character, XOFF-character, parity, flow control
Electrical isolation	isolation of electronics and field level via optocouplers

Dimensions	113 x 71 x 32.5 mm
Mounting	2 × 5.4 mm diameter holes, 1.7 Nm torque
Weight	330 ± 20 g
Housing material	Glass-filled nylon, nickel plated brass connectors
Housing color	Black
Window material	Lexan
Material screw	Nickel-plated brass
Material label	Polyester with polycarbonate overlay
Ground label material	Nickel plated brass
Protection class	IP67 IP69K
Operating temperature	-40...+70 °C
Storage temperature	-40...+85 °C
Relative humidity	15 to 95% (non-condensing)
Vibration test	according 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	according to IEC 61131-2
Electromagnetic compatibility	according to IEC 61131-2
MTTF	185 years
MTTF note	acc. to SN 29500 (Ed. 99) 20 °C
Approvals and certificates	CE, cULus

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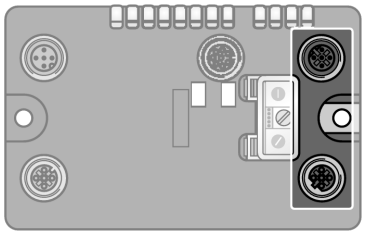
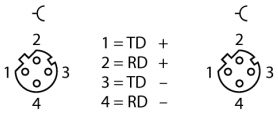
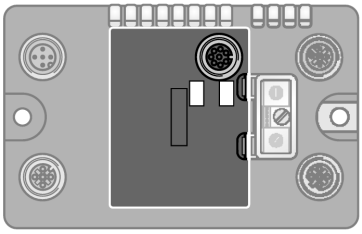
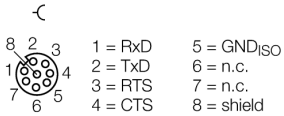
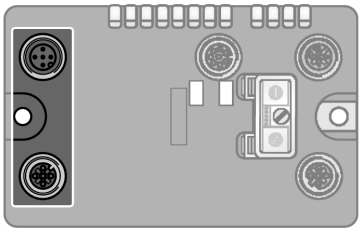
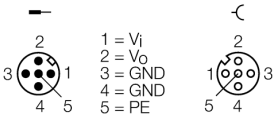
Pinning and wiring diagram

	**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) 
	**RS232 Interface** Extension cable (example): RKC 8T-2-RSC 8T/S1555 ident-no. U0933-01 or BS8181-0 ident-no. 6901004	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
	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

LED	Color	Status	Description
D *		OFF	No diagnostics active
	RED	ON	Station error/ module bus communication failure
	RED	FLASHING (0.5Hz)	Diagnostics active
TxD		OFF	No data send actually
	GREEN	ON	Data actually send
RxD		OFF	No data actually received
	GREEN	ON	Data actually received
RTS		OFF	The RS232 module enabled the data transfer from the communication partner
	GREEN	ON	The RS232 module stopped the data transfer from the communication partner

* D 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
Status Bytes	0	STAT	TX_CNT_ACK		RX_CNT		RX_BYTE_CNT		
	1	BUF_OVFL	FRAME_ERR	HNDSH_ERR	HW_FAILURE	PRM_ERR	-	-	-
User Data	2	Data Byte 0							
	3	Data Byte 1							
	4	Data Byte 2							
	5	Data Byte 3							
	6	Data Byte 4							
	7	Data Byte 5							
Diagnostics	8	Module number reporting diagnostic data							
	9	Replace Station	-	Diagnostics Active	-	-	-	-	-
Slot 1 (ref. Byte 8)	10	-	-	-	Buffer Overflow	Frame Error	Data Flow Control Error	Hardware Failure	Parameterization Error
	11	-	-	-	-	-	-	-	-
OUTPUT	**BYTE**	**Bit 7**	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Control Bytes	0	STAT_RES	RX_CNT_ACK		TCX_CNT		TX_BYTE_CNT		
	1	-	-	-	-	-	-	RXBUF_FLUSH	TXBUF_FLUSH
User Data	2	Data Byte 0							
	3	Data Byte 1							
	4	Data Byte 2							
	5	Data Byte 3							
	6	Data Byte 4							
	7	Data Byte 5							

ATTENTION !

1RS232 has additional data format available; contact TURCK technical support for details.

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	BUF OVFL	FRM	HNDSH ERR	HW	PRM	-	-	-	STAT	TX_CNT_ACK		RX_CNT		RX_BYTE_CNT		
	0x0001 … 0x0003	Read Data (3 Words)															
Status (RO)	0x0004	-	FCE	-	-	CFG	COM	VI low	-	VO low	-	-	-	-	-	-	DIA
Diag. (RO)	0x0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S1 DIA
Outputs (RW)	0x0800	-	-	-	-	-	-	RXBUF FLUSH	TXBUF FLUSH	STAT RES	RX_CNT_ACK		TCX_CNT		TX_BYTE_CNT		
	0x0801 … 0x0803	Write Data (3 Words)															
I/O Diag. (RO)	0xA000	-	-	-	-	-	-	-	-	OF	FRM	DFC	HW	PRM	-	-	-

PROFINET® Process Data

	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Inputs	0	STAT	TX_CNT_ACK		RX_CNT		RX_BYTE_CNT		
	1	BUF_OVFL	FRAME_ERR	HNDSH_ERR	HW_FAILURE	PRM_ERR	-	-	-
	2	Data Byte 0							
	3	Data Byte 1							
	4	Data Byte 2							
	5	Data Byte 3							
	6	Data Byte 4							
	7	Data Byte 5							
Outputs	0	STAT_RES	RX_CNT_ACK		TCX_CNT		TX_BYTE_CNT		
	1	-	-	-	-	-	-	RXBUF_FLUSH	TXBUF_FLUSH
	2	Data Byte 0							
	3	Data Byte 1							
	4	Data Byte 2							
	5	Data Byte 3							
	6	Data Byte 4							
	7	Data Byte 5							

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