

- 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
- Detection of normalized counting signals
- 5 VDC differential
- 5...24 VDC single-ended
- 1 digital PNP input, 24 VDC
- 1 digital PNP output, 24 VDC, 0.5 A

<b>Type designation</b>	BLCEN-1M12MT-1CNT-ENC
Ident no.	6811479
<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...30VDC
Nominal current Vi	225 mA
Max. current Vi	1 A
Admissible range Vo	18...30VDC
Max. current Vo	4 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 ← M12 4-pin, D-coded
Protocol detection	automatic
Web server	Integrated
Service Interface	Ethernet
Vendor ID	48
Product type	12
Product code	11479
<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. 8 register
Input register start address	0 (0x0000 hex)
Output Data Size	max. 4 register
Output register start address	2048 (0x0800 hex)

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**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	8 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. 12 BYTE
Output Data Size	max. 8 BYTE

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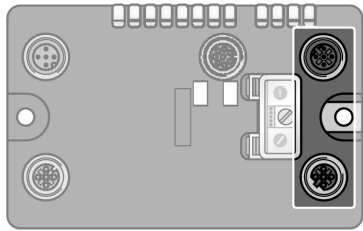
**Technology**

Signal type	Counter / Encoder
Number of channels	1
Input type	PNP
Output type	PNP
Output current per channel	0.5 A
Output delay	0.2 ms
Load type	ohmsch
Short-circuit protection	yes
Sensor supply	24 VDC from supply voltage
Transmission signals	A, B, Z
Frequency measurement	bis 250 kHz
Speed measurement	Faktor parametrierbar
Period duration measurement	400 ms bis 858,9 s
Upper count limit	0xFFFFFFFF
Lower count limit	0x80000000
Cable length	30 m
Electrical isolation	Electronics and field level isolated via optocouplers

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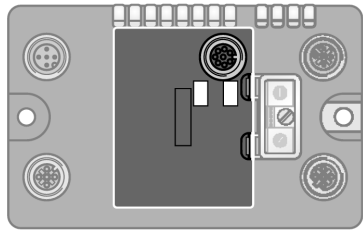
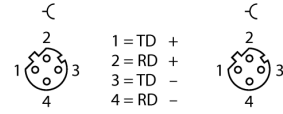
**Dimensions**

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	330 ± 20 g
Approvals and certificates	CE, cULus



**Ethernet**

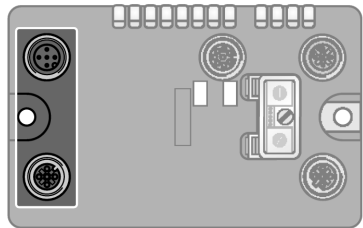
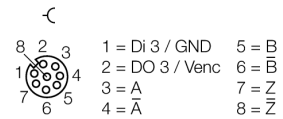
Fieldbus cable (IP67 example): RSSD RSSD 441-2M ID number U-02482 or RSSD-RSSD-441-2M/S2174 ID number 6914218



**Digital Counter/Encoder Interface**

Extension cable (example): E-RKC 8T-264-2-RSS 8T/BL/S1500 ident-no. U-89641 or BS8181-0 ident-no. 6901004

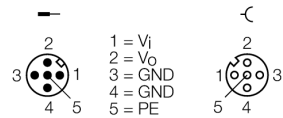
**Pin Assignment**



**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**



**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		AUS	Power Off
	GRÜN	AN	Connected to Master
	GRÜN	BLINKEND	Betriebsbereit
	ROT	AN	Fehler
	ROT	BLINKEND	WINK
	YELLOW	AN	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
A/Z		OFF	Inputs A and Z inactive
	GREEN	ON	Input A active
	RED	ON	Input Z active
	RED & GREEN	ON	Inputs A and Z active
B		OFF	Input B inactive
	GREEN	ON	Input B active resp. direction input indicates "count down"
DO 3		OFF	Output status x = 0 (OFF)
	GREEN	ON	Output status x = 1 (ON)
	RED	ON	Overload at output x
DI 3		OFF	Input status x = 0 (OFF)
	GREEN	ON	Input status x = 1 (ON)

\* 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
Status Bytes	0	-	A	B	Z	DI3	DI2	DI1	DI0
	1	ERR_PARA	SYNC_AKN:	-	-	-	-	-	Count Direction
	2	REG_WR_ACCEPT	REG_WR_AKN	-	-	-	STS_ZC	STS_OFLW	STS_UFLW
Communication	3	REG_RD_ABORT, REG_ACT_RD_ADR							
User Data	4	REG_RD_DATA, Byte 0							
	5	REG_RD_DATA, Byte 1							
	6	REG_RD_DATA, Byte 2							
	7	REG_RD_DATA, Byte 3							
	8	AUX_RD_DATA, Byte 0							
	9	AUX_RD_DATA, Byte 1							
	10	AUX_RD_DATA, Byte 2							
Diagnostics	11	AUX_RD_DATA, Byte 3							
	12	Module number reporting diagnostic data							
Slot 1 (ref. Byte 12)	13	Replace Station	-	Diagnostics Active	-	-	-	-	-
	14	ERR_PARA	-	-	-	-	-	STS_OFLW	STS_UFLW
	15	-	-	-	-	DIA_DO3	DIA_DO2	DIA_DO1	DIA_DO0
	16	-	-	-	-	-	-	-	-
	17	-	-	-	-	-	-	-	-
	18	-	-	-	-	-	-	-	-
	19	-	-	-	-	-	-	-	-
OUTPUT	20	-	-	-	-	-	-	-	-
	21	-	-	-	-	-	-	-	-
Control Bytes	0	DO3	DO2	DO1	DO0	-	-	-	GATE
	1	-	SYNC_REQ	-	-	-	-	-	RES_STS
Kommunikation	2	REG_WR	REG_WR_ADR						
	3	REG_RD_ADR							
User Data	4	REG_WR_DATA, Byte 0							
	5	REG_WR_DATA, Byte 1							
	6	REG_WR_DATA, Byte 2							
	7	REG_WR_DATA, Byte 3							

Count direction: 0 = Up, 1 = Down.

SYNC\_AKN Encoder not synchronized with zero-position.

ERR\_PARA: Faulty/inconsistent parameter data.

STS\_UFLW: Counter value below lower limit of counter range.

STS\_OFLW: Counter value below lower limit of counter range.

STS\_ZC: Counter value crossed zero value.

REG\_WR\_AKN: Register contents updated.

REG\_WR\_ACCEPT: REG\_WR\_ADR valid.

REG\_ACT\_RD\_ADR: Address of actually read input register.

REG\_RD\_ABORT: REG\_RD\_ADR error.

REG\_RD\_DATA: Content of the register selected by REG\_RD\_ADR, if RD\_ABORT does not equal 1

AUX\_RD\_DATA: Content of the register which has been defined via parameter byte 14.

GATE: Counter active, depending on parameter Gate function.

RES\_STS: During the change from 0 to 1 the counter status bits (STS\_UFLW and STS\_OFLW) are reset.

SYNC\_REQ: Synchronization request

REG\_WR\_ADR: Address of the register which has to be written with REG\_WR\_DATA.

REG\_WR: Write REG\_WR\_DATA to REG\_WR\_ADR

REG\_RD\_ADR Address of the register which has to be read.

REG\_WR\_DATA: Value, which has to be written to the register defined via REG\_WR\_ADR.

DIA\_DOx: Diagnostics pending for DOx

NOTE: Digital inputs and outputs 0-2 can not be addressed via the direct connections on the BL compact stations.

**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	ERR PARA	SYNC AKN	-	-	-	-	-	CNT Direc- tion	-	A	B	Z	DI3	DI2	DI1	DI0	
	0x0001	REG RD ABORT	REG_ACT_RD_ADR							REG WR ACCEPT	REG WR AKN	-	-	-	STS ZC	STS OFLW	STS UFLW	
	0x0002 ... 0x0003	REG_RD_DATA (2 Words)																
	0x0004 ... 0x0005	AUX_RD_DATA (2 Words)																
Status (RO)	0x0006	-	FCE	-	-	CFG	COM	VI low	-	VO low	-	-	-	-	-	-	-	DIA
Diag. (RO)	0x0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S1 DIA
Ausgänge (RW)	0x0800	-	SYNC REQ	-	-	-	-	-	RES STS	DO3	DO2	DO1	DO0	-	-	-	GATE	
	0x0801	REG_RD_ADR							REG WR	REG_WR_ADR								
	0x0802 ... 0x0803	REG_WR_DATA (2 Words)																
I/O Diag (RO)	0xA000	-	-	-	-	SC- DO3	SC- DO2	SC- DO1	SC- DO0	PRM	-	-	-	-	-	-	OF	UF

**PROFINET® Process Data**

	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Inputs	0	-	A	B	Z	DI3	DI2	DI1	DI0	
	1	ERR_PARA	SYNC_AKN:	-	-	-	-	-	Count Direc- tion	
	2	REG_WR_ACCEPT	REG_WR_AKN	-	-	-	STS_ZC	STS_OFLW	STS_UFLW	
	3	REG_RD_ABORT	REG_ACT_RD_ADR							
	4	REG_RD_DATA, Byte 0								
	5	REG_RD_DATA, Byte 1								
	6	REG_RD_DATA, Byte 2								
	7	REG_RD_DATA, Byte 3								
	8	AUX_RD_DATA, Byte 0								
	9	AUX_RD_DATA, Byte 1								
	10	AUX_RD_DATA, Byte 2								
11	AUX_RD_DATA, Byte 3									
Outputs	0	DO3	DO2	DO1	DO0	-	-	-	GATE	
	1	-	SYNC_REQ	-	-	-	-	-	RES_STS	
	2	REG_WR	REG_WR_ADR							
	3	REG_RD_ADR								
	4	REG_WR_DATA, Byte 0								
	5	REG_WR_DATA, Byte 1								
	6	REG_WR_DATA, Byte 2								
7	REG_WR_DATA, Byte 3									