

- 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
- Simple RFID interface
- Connection of 4 BL ident® read/write heads
- Max cable length of 50 m
- FLC/ARGE programmable

Type designation	BLCEN-4M12LT-2RFID-S-2RFID-S
Ident-No.	6811453
Ident-No (TUSA)	F6811453
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	175 mA
Max. current Vi	2 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 x M12 4-pole, D-coded
Protocol detection	automatic
Web server	Integrated
Service Interface	Ethernet
Vendor ID	48
Product type	12
Product code	11453

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. 26 register
Input register start address	0 (0x0000 hex)
Output Data Size	max. 24 register
Output register start address	2048 (0x0800 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	27 INT
Output Assembly Instance	104
Output Data Size	24 INT
Configuration Assembly Instance	106
Configuration Size	0
Comm Format	Data - INT

**BL compact™ multiprotocol fieldbus station for Industrial Ethernet
Interface for Connection of 4 BL ident Read/Write Heads (HF/UHF)
BLCEN-4M12LT-2RFID-S-2RFID-S**

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. 48 BYTE
Output Data Size	max. 48 BYTE

Technology

Signal type	Simple RFID interface
Number of channels	4
Sensor supply	0.5 A per channel, short-circuit proof
Simultaneity factor	1
Transmission rate	115.2 kbps
Cable length	50 m
Electrical isolation	isolation of electronics and field level via optocouplers

Dimensions

Mounting	168 x 71 x 32.5 mm
Weight	2 × 5.4 mm diameter holes, 1.7 Nm torque
Housing material	530 ± 20 g
Housing color	Glass-filled nylon, nickel plated brass connectors
Window material	Black
Material screw	Lexan
Material label	Nickel-plated brass
Ground tab material	Polyester with polycarbonate overlay
Protection class	Nickel plated brass
	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
Electro-magnetic compatibility	according to IEC 61131-2
MTTF	104 years
MTTF note	acc. to SN 29500 (Ed. 99) 20 °C
Approvals and certificates	CE, cULus, Class I Div.2

Pinning and wiring diagram

	<p>Ethernet Fieldbus cable (IP67 example): RSSD RSSD 441-2M ID number U-02482 or RSSD-RSSD-441-2M/S2174 ID number 6914218</p>	<p>Pin assignment (M12, D-coded)</p>
	<p>Slot 1: 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</p>	<p>.../S2500 Connectors</p> <p>.../S2501 Connectors</p>
	<p>Slot 2: RFID Channels See slot 1</p>	
	<p>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</p>	<p>Pin Assignment</p>

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)
RW0 / RW1		OFF	No tag present, no diagnostics active
	GREEN	ON	Tag present
	GREEN	FLASHING (2 Hz)	Data communication from / to tag active
	RED	ON	Error in the R/W head
	RED	FLASHING (2 Hz)	Short circuit in the transceiver supply

* 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)
RW0 / RW1		OFF	No tag present, no diagnostics active
	GREEN	ON	Tag present
	GREEN	FLASHING (2 Hz)	Data communication from / to tag active
	RED	ON	Error in the R/W head
	RED	FLASHING (2 Hz)	Short circuit in the transceiver supply

* D2 LED also indicates gateway diagnostics

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	
RFID 1 ₀	0	Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-	
	1	Error Cat. (Category Code)								
	2	Error Desc. (Description Code)								
	3	-	-	-	-	-	-	-	-	-
	4...11	Read Data (8 Byte)								
RFID 1 ₁	12	Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-	
	13	Error Cat. (Category Code)								
	14	Error Desc. (Description Code)								
	15	-	-	-	-	-	-	-	-	-
	16...23	Read Data (8 Byte)								
RFID 2 ₀	24	Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-	
	25	Error Cat. (Category Code)								
	26	Error Desc. (Description Code)								
	27	-	-	-	-	-	-	-	-	-
	28...35	Read Data (8 Byte)								
RFID 2 ₁	36	Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-	
	37	Error Cat. (Category Code)								
	38	Error Desc. (Description Code)								
	39	-	-	-	-	-	-	-	-	-
	40...47	Read Data (8 Byte)								
Diagnostics	48	Module number reporting diagnostic data								
	49	Replace Station	-	Diagnostics Active	-	-	-	-	-	-
Slot X (ref. Byte 48)	50	-	-	-	-	-	RFID X ₀ Trans. PS Off	-	-	
	51	-	-	-	-	RFID X ₀ Trans. PS Error	-	-	RFID X ₀ Trans. Hardware Error	
	52	-	-	-	-	-	RFID X ₁ Trans. PS Off	-	-	
	53	-	-	-	-	RFID X ₁ Trans. PS Error	-	-	RFID X ₁ Trans. Hardware Error	
OUTPUT	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
RFID 1 ₀	0	Transceiver	Next	Tag ID	Read	Write	Tag Info.	Trans. Info.	Reset	
	1	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0	
	2	Address High Byte (MSB)								
	3	Address Low Byte (LSB)								
	4...11	Write Data (8 Byte)								
RFID 1 ₁	12	Transceiver	Next	Tag ID	Read	Write	Tag Info.	Trans. Info.	Reset	
	13	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0	
	14	Address High Byte (MSB)								
	15	Address Low Byte (LSB)								
	16...23	Write Data (8 Byte)								
RFID 2 ₀	24	Transceiver	Next	Tag ID	Read	Write	Tag Info.	Trans. Info.	Reset	
	25	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0	
	26	Address High Byte (MSB)								
	27	Address Low Byte (LSB)								
	28...35	Write Data (8 Byte)								
RFID 2 ₁	36	Transceiver	Next	Tag ID	Read	Write	Tag Info.	Trans. Info.	Reset	
	37	-	-	-	-	-	Byte Count 2	Byte Count 1	Byte Count 0	
	38	Address High Byte (MSB)								
	39	Address Low Byte (LSB)								
	40...47	Write Data (8 Byte)								

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

Legend:

Done	Channel is ready to receive command	Tag_ID	Turn on to read UID (HF)
Busy	Channel is processing command	Read	Read Data

Error	Channel has encountered an error	Write	Write data
Trans_Conn	Transceiver is connected	Tag_Info	Turn on to read information about tag in field
Trans_On	Transceiver turned on	Trans_Info	Turn on to read information about transceiver
TP	Tag present	Reset	Reset any in process or queued commands
TFR	Tag fully read (HF)	ByteCount	3 bits represent the number of bytes to read or write
Error_Cat	Error category and description	Domain	2 bits represent memory domain used (UHF)
Error_Desc			
Read Data Bytes	Data read from the tag	Address	Starting address in the domain to read / write
Transceiver	Turns transceiver on and off	Write Data Bytes	Data to be written to tag
Next	Starting address in the domain to read / write		

Modbus® TCP Register Mapping

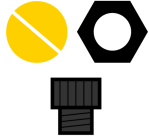
	REG	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Inputs (RO)	0x0000	Error Cat. (Category Code)									Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-
	0x0001	-	-	-	-	-	-	-	-	Error Desc. (Description Code)								
	0x0002 ... 0x0005	Read Data (4 Words)																
	0x0006	Error Cat. (Category Code)									Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-
	0x0007	-	-	-	-	-	-	-	-	Error Desc. (Description Code)								
	0x0008 ... 0x000B	Read Data (4 Words)																
	0x000C	Error Cat. (Category Code)									Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-
	0x000D	-	-	-	-	-	-	-	-	Error Desc. (Description Code)								
	0x000E ... 0x0011	Read Data (4 Words)																
	0x0012	Error Cat. (Category Code)									Done	Busy	Error	Trans. Conn.	Trans. On	TP	TFR	-
	0x0013	-	-	-	-	-	-	-	-	Error Desc. (Description Code)								
	0x0014 ... 0x0017	Read Data (4 Words)																
	Status (RO)	0x0018	-	FCE	-	-	CFG	COM	VI low	-	VO low	-	-	-	-	-	-	DIA
	Diag. (RO)	0x0019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S2 DIA	S1 DIA
Outputs (RW)	0x0800	-	-	-	-	-	Byte CNT 2	Byte CNT 1	Byte CNT 0	Trans.	Next	Tag ID	Read	Write	Tag Info.	Trans. Info.	Reset	
	0x0801	Address																
	0x0802 ... 0x0805	Write Data (4 Words)																
	0x0806	-	-	-	-	-	Byte CNT 2	Byte CNT 1	Byte CNT 0	Trans.	Next	Tag ID	Read	Write	Tag Info.	Trans. Info.	Reset	
	0x0807	Address																
	0x0808 ... 0x080B	Write Data (4 Words)																
	0x080C	-	-	-	-	-	Byte CNT 2	Byte CNT 1	Byte CNT 0	Trans.	Next	Tag ID	Read	Write	Tag Info.	Trans. Info.	Reset	
	0x080D	Address																
	0x080E ... 0x0811	Write Data (4 Words)																
	0x0812	-	-	-	-	-	Byte CNT 2	Byte CNT 1	Byte CNT 0	Trans.	Next	Tag ID	Read	Write	Tag Info.	Tran. Info.	Reset	
	0x0813	Address																
	0x0814 ... 0x0817	Write Data (4 Words)																
	I/O Diag. (RO)	0xA000	-	-	-	-	PS RFID 1 ₀	-	-	HW RFID 1 ₀	-	-	-	-	-	SCO RFID 1 ₀	-	-
		0xA001	-	-	-	-	PS RFID 1 ₁	-	-	HW RFID 1 ₁	-	-	-	-	-	SCO RFID 1 ₁	-	-
0xA002		-	-	-	-	PS RFID	-	-	HW RFID 2 ₀	-	-	-	-	-	SCO RFID 2 ₀	-	-	

						2 ₀ PS RFID 1 ₀														
0xA003	-	-	-	-	-	PS RFID 2 ₀	-	-	HW RFID 2 ₀	-	-	-	-	-	-	-	SCO RFID 2 ₀	-	-	-

PROFINET® Process Data

	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Inputs	0	RFID 1 ₀ Done	RFID 1 ₀ Busy	RFID 1 ₀ Error	RFID 1 ₀ Trans. Conn.	RFID 1 ₀ Trans. On	RFID 1 ₀ TP	RFID 1 ₀ TFR	-	
	1	RFID 1 ₀ Error Cat. (Category Code)								
	2	RFID 1 ₀ Error Desc. (Description Code)								
	3	-	-	-	-	-	-	-	-	-
	4...11	RFID 1 ₀ Read Data (8 Byte)								
	12	RFID 1 ₁ Done	RFID 1 ₁ Busy	RFID 1 ₁ Error	RFID 1 ₁ Trans. Conn.	RFID 1 ₁ Trans. On	RFID 1 ₁ TP	RFID 1 ₁ TFR	-	-
	13	RFID 1 ₁ Error Cat. (Category Code)								
	14	RFID 1 ₁ Error Desc. (Description Code)								
	15	-	-	-	-	-	-	-	-	-
	16...23	RFID 1 ₁ Read Data (8 Byte)								
	24	RFID 2 ₀ Done	RFID 2 ₀ Busy	RFID 2 ₀ Error	RFID 2 ₀ Trans. Conn.	RFID 2 ₀ Trans. On	RFID 2 ₀ TP	RFID 2 ₀ TFR	-	-
	25	RFID 2 ₀ Error Cat. (Category Code)								
	26	RFID 2 ₀ Error Desc. (Description Code)								
	27	-	-	-	-	-	-	-	-	-
	28...35	RFID 2 ₀ Read Data (8 Byte)								
	36	RFID 2 ₁ Done	RFID 2 ₁ Busy	RFID 2 ₁ Error	RFID 2 ₁ Trans. Conn.	RFID 2 ₁ Trans. On	RFID 2 ₁ TP	RFID 2 ₁ TFR	-	-
	37	RFID 2 ₁ Error Cat. (Category Code)								
	38	RFID 2 ₁ Error Desc. (Description Code)								
	39	-	-	-	-	-	-	-	-	-
	40...47	RFID 2 ₁ Read Data (8 Byte)								
Outputs	0	RFID 1 ₀ Transceiver	RFID 1 ₀ Next	RFID 1 ₀ Tag ID	RFID 1 ₀ Read	RFID 1 ₀ Write	RFID 1 ₀ Tag Info.	RFID 1 ₀ Trans. Info.	RFID 1 ₀ Reset	
	1	-	-	-	-	-	RFID 1 ₀ Byte Count 2	RFID 1 ₀ Byte Count 1	RFID 1 ₀ Byte Count 0	
	2	RFID 1 ₀ Address High Byte (MSB)								
	3	RFID 1 ₀ Address Low Byte (LSB)								
	4...11	RFID 1 ₀ Write Data (8 Byte)								
	12	RFID 1 ₁ Transceiver	RFID 1 ₁ Next	RFID 1 ₁ Tag ID	RFID 1 ₁ Read	RFID 1 ₁ Write	RFID 1 ₁ Tag Info.	RFID 1 ₁ Trans. Info.	RFID 1 ₁ Reset	
	13	-	-	-	-	-	RFID 1 ₁ Byte Count 2	RFID 1 ₁ Byte Count 1	RFID 1 ₁ Byte Count 0	
	14	RFID 1 ₁ Address High Byte (MSB)								
	15	RFID 1 ₁ Address Low Byte (LSB)								
	16...23	RFID 1 ₁ Write Data (8 Byte)								
	24	RFID 2 ₀ Transceiver	RFID 2 ₀ Next	RFID 2 ₀ Tag ID	RFID 2 ₀ Read	RFID 2 ₀ Write	RFID 2 ₀ Tag Info.	RFID 2 ₀ Trans. Info.	RFID 2 ₀ Reset	
	25	-	-	-	-	-	RFID 2 ₀ Byte Count 2	RFID 2 ₀ Byte Count 1	RFID 2 ₀ Byte Count 0	
	26	RFID 2 ₀ Address High Byte (MSB)								
	27	RFID 2 ₀ Address Low Byte (LSB)								
	28...33	RFID 2 ₀ Write Data (8 Byte)								
	36	RFID 2 ₁ Transceiver	RFID 2 ₁ Next	RFID 2 ₁ Tag ID	RFID 2 ₁ Read	RFID 2 ₁ Write	RFID 2 ₁ Tag Info.	RFID 2 ₁ Trans. Info.	RFID 2 ₁ Reset	
	37	-	-	-	-	-	RFID 2 ₁ Byte Count 2	RFID 2 ₁ Byte Count 1	RFID 2 ₁ Byte Count 0	
38	RFID 2 ₁ Address High Byte (MSB)									
39	RFID 2 ₁ Address Low Byte (LSB)									
40...47	RFID 2 ₁ Write Data (8 Byte)									

Accessories

Type code	Ident-No.	Description	
LOCK-EURO-C	A0885	Locking guard for straight eurofast™ C-body connectors (RKC, RKCV, RSC, RSCV) in a Class I, Division 2 installations	
LOCK-EURO-C (10/BAG)	A0886	Locking guard for straight eurofast™ C-body connectors (RKC, RKCV, RSC, RSCV) in a Class I, Division 2 installations	