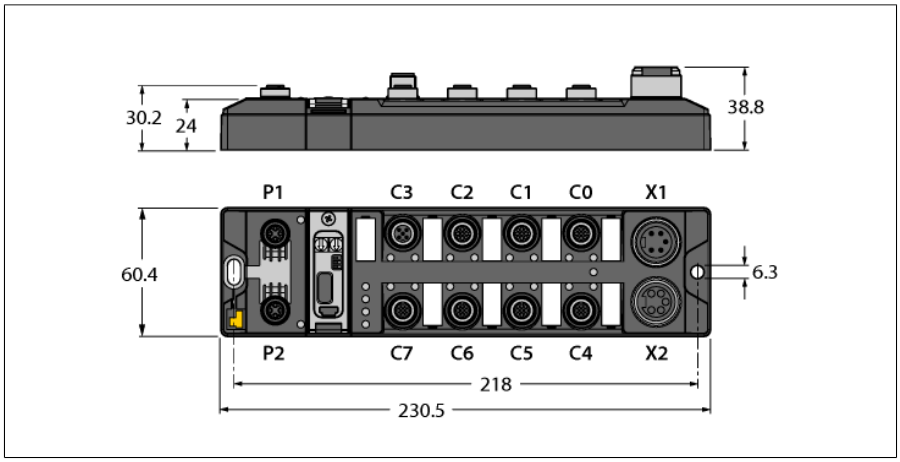
Compact PLC in IP67
CODESYS V3
TBEN-L5-PLC-10



Type	TBEN-L5-PLC-10
ID	6814018

Supply	
Supply voltage	24 VDC
Admissible range	18…30 VDC Total current max. 9 A per voltage group Total current V1 + V2 max. 11 A
Voltage supply connection	5-pin male 7/8" connector X1
Operating current	< 280 mA
Sensor/actuator supply	Supply ports C0-C3 from V1 short-circuit proof, C0 + C1: 2 A per port, C2 + C3: 4 A for both ports
Sensor/actuator supply	Short-circuit proof supply of ports C4-C7 from V2, 2 A per port
Electrical isolation	galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC
Power dissipation, typical	≤ 5 W

Controller	
Processor	ARM Cortex A8, 32 Bit, 800 MHz
Program memory and data memory	20 MB
Remanent memory	64 kB
Add-on memory	1 x USB host port
Real time clock	yes
Operating system	Linux

PLC data	
Programming	CODESYS V3
Released for CODESYS version	V 3.5.14.2
Programming languages	IEC 61131-3 (IL, LD, FBD, SFC, ST)
Application tasks	10
Number of POUs	1024
Programming interface	Ethernet, USB
Cycle time	< 1 ms for 1000 AWL commands (without I/O cycle)
Input data	8 kByte
Output data	8 kByte

- CODESYS V3 PLC Runtime
- CODESYS OPC UA server/client
- IoT gateway for Turck Cloud
- PROFINET Controller/Device
- EtherNet/IP Scanner/Device
- Modbus TCP Master/Slave
- Modbus RTU Master/Slave
- CANopen Manager/Device
- SAE J1939 manager
- Serial RS232/RS485 interfaces
- Ethernet 2 × M12, 4-pin, D-coded
- Switched or Dual-MAC-Mode
- 10 Mbps/100 Mbps
- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- ATEX Zone 2/22
- Eight universal digital I/O channels
- Sensor supply max. 2 A per port
- Input diagnostics per port
- Max. 2 A per output
- Output diagnostics per channel

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System data	
Transmission rate Ethernet	10/100 Mbps
Connection technology Ethernet	2 x M12, 4-pin, D-coded
Web server	default: 192.168.1.254
Service interface	Ethernet via P1 or P2, Mini USB port

Serial interface	
Signal type	RS232 or RS485
Number of channels	2

Operating mode RS232	
Signal low level	-18 to -3 VDC
Signal high level	3 to 18 VDC
Transmission signals	T×D, R×D
Transmission rate	9600 to 230400 bps
Transmission type	Full duplex
Cable length	15 m at 19200 Bd (max. line capacitance < 2000 pF)

Operating mode RS485	
Transmission signals	TX/RX+, TX/RX-
Transmission rate	9600 to 230400 bps
Transmission type	2-wire half duplex
Terminating resistor	Internal or external
Biasing	Internal or external
Line impedance	120 Ω

Digital inputs	
Number of channels	8
Connectivity inputs	M12, 5-pin
Input type	PNP
Type of input diagnostics	Channel diagnostics
Switching threshold	EN 61131-2 Typ 3, PNP
Low-level signal voltage	< 5 V
High level signal voltage	> 11 V
Low level signal current	< 1.5 mA
High level signal current	> 2 mA
Sensor supply	2 A, short-circuit proof, from V2
Electrical isolation	Galvanically isolated to the fieldbus Voltage proof up 500 VDC

Digital outputs	
Number of channels	8
Connectivity outputs	M12, 5-pin
Output type	PNP
Type of output diagnostics	Channel diagnostics
Output voltage	24 VDC from V2
Output current per channel	2.0 A, short-circuit proof, max. 4.0 A per port
Simultaneity factor	0.56
Load type	EN 60947-5-1: DC-13
Short-circuit protection	yes
Actuator power supply	2 A, short-circuit proof, from V2
Electrical isolation	Galvanically isolated to the fieldbus Voltage proof up 500 VDC

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Standard/Directive conformity	
Vibration test	Acc. to EN 60068-2-6 Acceleration up to 20 g
Shock test	acc. to EN 60068-2-27
Drop and topple	acc. to EN 60068-2-31/IEC 60068-2-32
Electromagnetic compatibility	Acc. to EN 61131-2
Approvals and certificates	CE FCC statement, FM class I, zone 2, UV resistant acc. to DIN EN ISO 4892-2A (2013)
UL Certificate	cULus LISTED 21 W2, Encl.type 1 IND.CONT.EQ.
Note on ATEX/IECEx	The Quick Start Guide with information on use in Ex Zones 2 and 22 must be observed.

General Information	
Dimensions (W x L x H)	60.4 x 230.5 x 38.8 mm
Ambient temperature	-40…+70 °C
Storage temperature	-40…+85 °C
Altitude	Max. 5000 m
Protection class	IP65 IP67 IP69K
MTTF	80 years acc. to SN 29500 (Ed. 99) 20 °C
Housing material	PA6-GF30
Housing color	Black
Male connector material	Nickel-plated brass
Window material	Lexan
Material screw	303 stainless steel
Material label	Polycarbonate
Halogen-free	yes
Mounting	2 mounting holes Ø 6.3 mm

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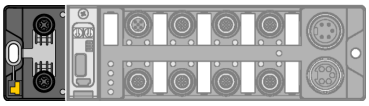
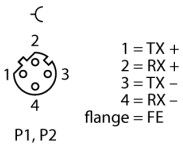
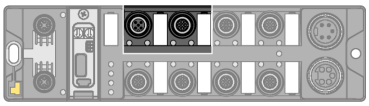
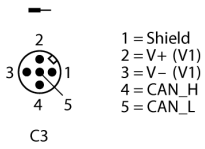
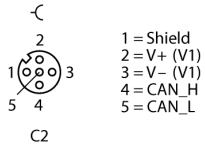
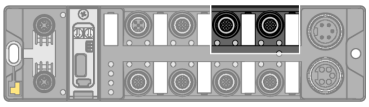
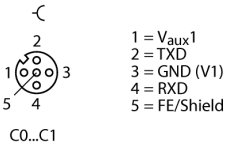
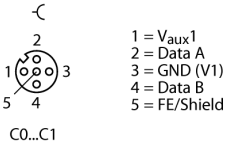
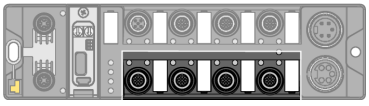
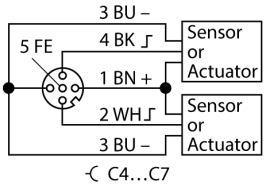
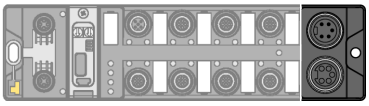
	**Ethernet Ports** Ethernet cable (example): RSSD-RSSD-4416-2M (ID number 6441652)	M12 x 1 Ethernet 
	**CAN Interfaces** CAN cable (example): RSC-RKC5701-2M (ID 6604833) CAN terminating resistor (examples): Female connector: RKE 57-TR2 (ID U2251-5) Male connector: RSE 57-TR2 (ID U2251-1)	CAN in  CAN out 
	**Serial Interfaces** Cable (example): RK4.5T-2-RS4.5T/S2503 (ID No. 7030331)	Pin Assignment in RS232 Operating Mode  Pin Assignment in RS485 Operating Mode 
	**Digital Inputs and Outputs** Actuator and sensor cable/PUR cable (example): RKC4.4T-2-RSC4.4T/TXL (ID number 6625608) Y extension cable for single occupancy VBRS4.4-2RKC4T-1/1/TXL (ID number 6628112)	M12 x 1 I/O Port 
	**Power Supply** Power supply cable (example): RKM52-1-RSM52 (ID No. 6914149)	7/8″ Power Supply 

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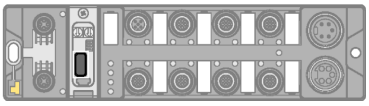
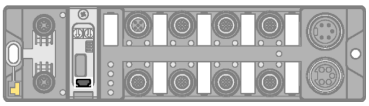
	**USB Host Interface** For use with USB sticks	USB 2.0 A Jack  1 = 5 VDC 2 = D – 3 = D + 4 = GND
	**USB Device Interface** For use as a programming interface (alternative to Ethernet) USB cable (example): USB 2.0 CABLE 1.5M (ID number 6827388) USB 2.0 Extension A-male on A-female: USB 2.0 EXTENSION 5M (ID number 6827389) USB 2.0 EXTENSION ACTIVE 5M (ID number 6827390)	USB 2.0 mini-B Jack  1 = 5 VDC 2 = D – 3 = D + 4 = n.c. 5 = GND

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Module Status LED

LED	Color	Status	Description
ETH1/ETH2	Green	ON	Ethernet link (100 Mbps)
		Flashing	Ethernet communication (100 Mbps)
	Yellow	ON	Ethernet link (10 Mbps)
		Flashing	Ethernet communication (10 Mbps)
		OFF	No Ethernet link
BUS	Green	ON	Active connection to the first configured master
		Flashing	Ready
	Red	ON	IP-address conflict or Restore Mode or Modbus timeout
		Flashing	Blink/Wink command active
	green / red	alternating	Autonegotiation and/or waiting for DHCP/Boot-P addressing
		OFF	V1 power off or below defined tolerance (18 V)
ERR	Green	ON	Diagnostics disabled
	Red	ON	Diagnostics enabled
		OFF	V1 power off or below defined tolerance (18 V)
RUN	Green	ON	SPS status running
	Red	ON	SPS status stop
		Flashing	No PLC program loaded
		Flashes 2x 1Hz	Factory Reset executed
		OFF	V1 power off or below defined tolerance (18 V)
APPL	green / red	ON/OFF/Flashing	This LED is controlled user-defined from the CODESYS program
	White	Flashing	Blink/Wink command active
PWR	Green	ON	V_1 and V_2 power on
	Red	ON	V_2 power off or below defined tolerance of 18 V
		OFF	V_1 power off or below defined tolerance of 18 V

LED Status I/O

LED	Color	Status	Description
LED 0	Green	ON	COM 0: TX data transmission
		OFF	COM 0: no TX data transmission
LED 1	Green	ON	COM 0: RX data transmission
		OFF	COM 0: no RX data transmission
LED 2	Green	ON	COM 1: TX data transmission
		OFF	COM 1: no TX data transmission
LED 3	Green	ON	COM 1: RX data transmission
		OFF	COM 1: no RX data transmission
LED 4 … 7	green / red	ON/OFF/Flashing	This LED is controlled user-defined from the CODESYS program
LED 8 … 15	Green	ON	Input or output active
	Red	ON	Output active with overload/short circuit
		Flashing	Power overload at the corresponding port. Both port LEDs are flashing.
		OFF	Input or output inactive

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Accessories

Type code	Ident no.		Dimension drawing
TBXX-L-SER-VICE-WINDOW-02-5pcs	100028429	High PA6 service window for TBxx-L