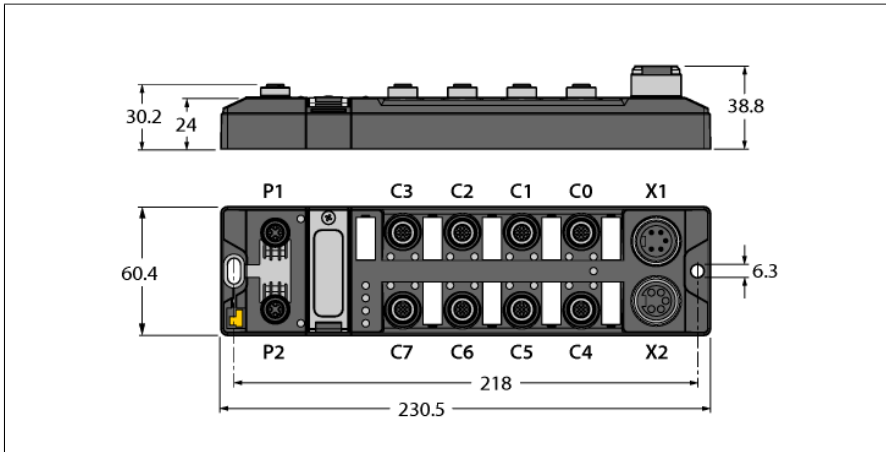


Compact Multiprotocol I/O Module for Ethernet

16 Universal Digital Channels, Configurable as PNP Inputs or 2 A Outputs

TBEN-L5-16DXP



Type	TBEN-L5-16DXP
ID	6814088
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	V1: max. 150 mA
Sensor/actuator supply	supply of ports C0-C3 from V1 short-circuit proof, 120 mA per port
Sensor/actuator supply	supply of ports C4-C7 from V2 short-circuit proof, 120 mA per port
Electrical isolation	galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC
Power dissipation, typical	≤ 10 W
System data	
Fieldbus transmission rate	10/100 Mbps
Fieldbus connection technology	2 × M12, 4-pin, D-coded
Protocol detection	automatic
Web server	Default: 192.168.1.254
Service interface	Ethernet via P1 or P2
BEEP functionality	Supported
Field Logic Controller (FLC)	
ARGEE Firmware Version	3.2.9.0
ARGEE Engineering Version	2.0.24.0
Modbus TCP	
Addressing	Static IP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of TCP connections	8
Input register start address	0 (0x0000 hex)
Output register start address	2048 (0x0800 hex)

- PROFINET device, EtherNet/IP device or Modbus TCP slave
- Integrated Ethernet switch
- Supports 10 Mbps/100 Mbps
- 2 × M12, 4-pin, D-coded, Ethernet fieldbus connection
- PROFINET S2 system redundancy
- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- 7/8" male connector for power supply, 5-pin
- Galvanically isolated voltage groups
- ATEX Zone 2/22
- Input diagnostics per port
- Max. 2 A per output
- Output diagnostics per channel
- Two freely selectable digital channels per port
- Programmable ARGEE

Ethernet/IP	
Addressing	acc. to EtherNet/IP specification
Quick Connect (QC)	< 150 ms
Device Level Ring (DLR)	supported
Class 3 connections (TCP)	3
Class 1 connections (CIP)	10
Input Assembly Instance	101
Output Assembly Instance	102
Configuration Assembly Instance	106

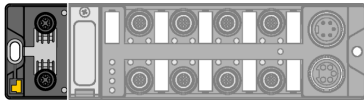
PROFINET	
Version	2.35
Addressing	DCP
Conformance class	B (RT)
MinCycleTime	1 ms
Fast Start-Up (FSU)	< 150 ms
Diagnostics	acc. to PROFINET alarm handling
Topology detection	supported
Automatic addressing	supported
Media Redundancy Protocol (MRP)	supported
System redundancy	S2
Netload class	3

Digital inputs	
Number of channels	16
Connectivity inputs	M12, 5-pin
Input type	PNP
Type of input diagnostics	Group 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
Input delay	2.5 ms
Electrical isolation	Galvanically isolated to the fieldbus Voltage proof up 500 VDC

Digital outputs	
Number of channels	16
Connectivity outputs	M12, 5-pin
Output type	PNP
Type of output diagnostics	Channel diagnostics
Output voltage	24 VDC from potential group
Output current per channel	2.0 A, short-circuit proof, max. 2.0 A per port
Output delay	1.3 ms
Load type	EN 60947-5-1: DC-13
Short-circuit protection	yes
Electrical isolation	Galvanically isolated to the fieldbus Voltage proof up 500 VDC

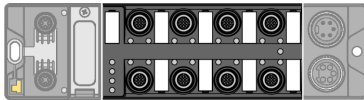
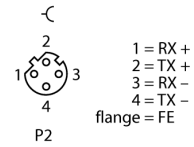
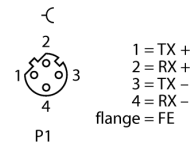
Standard/Directive conformity	
Vibration test	Acc. to EN 60068-2-6 Acceleration up to 20 g
Shock test	acc. to EN 60068-2-27
Drop and topple	acc. to EN 60068-2-31/IEC 60068-2-32
Electromagnetic compatibility	Acc. to EN 61131-2
Approvals and certificates	CE FCC statement, FM class I, zone 2, UV resistant 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	148 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



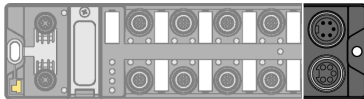
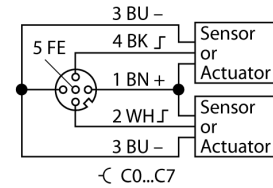
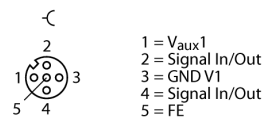
Note
 Ethernet cable (example):
 RSSD-RSSD-4416-2M
 Ident. no. 6441652

M12 x 1 Ethernet



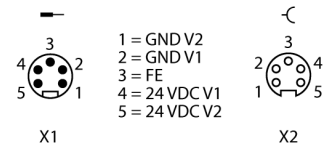
Note
 Actuator and sensor cable/PUR connection cable (example):
 RKC4.4T-2-RSC4.4T/TXL
 Ident-no. 6625608
 Connection cable with Y piece for single assignment
 VBRS4.4-2RKC4T-1/1/TEL
 Ident. no. 6628199

M12 x 1 I/O Port



Note
 Power supply cable (example):
 RKM52-1-RSM52
 ID number 6914149

7/8" Power Supply



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 a master	
		Flashing	Steady flashing: Ready for operation Sequence of 3 flashes in 2 seconds: FLC/ARGEE active	
	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	Power off	
ERR	Green	On	No diagnostics available	
	Red	On	Diagnostics available Undervoltage diagnosis response is parameter dependent	
		LED response master in the Beep network:		
	Green	1 Hz, 250 ms off	Cyclical IO data exchange	
	Red/green	1 Hz, 250 ms red	Cyclical IO data exchange, diagnostics available	
	Green/red	1 Hz, alternating	Discovery mode active	
	Red		Discovery mode active, diagnostics available	
	PWR	LED response parameter (PWR) at V_2 undervoltage = "red"		
		Green	On	V_1 and V_2 power supply OK
		Red	On	V_2 power supply off or V_2 undervoltage
Off			V_1 power supply off or V_1 undervoltage	
LED response parameter (PWR) at V_2 undervoltage = "green"				
Green		On	V_1 and V_2 power supply OK	
		Flashing	V_2 power supply off or V_2 undervoltage	
		Off	V_1 power supply off or V_1 undervoltage	

LED Status I/O

LED	Color	Status	Description
LED 0 ... 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

Process Data Mapping of the Single Protocols

For more details on the corresponding protocols see manual.

Accessories

Type code	Ident no.		Dimension drawing
TB-SG-L	100014865	Protective housing for TBEN-L and TBIL-M block I/O modules for use in ATEX Zone 2/22	