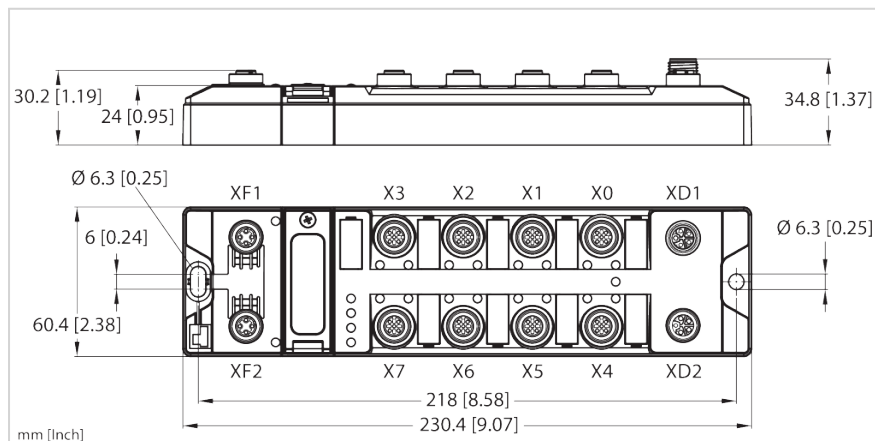


TBEN-LL-8IOL

Compact multiprotocol I/O module for Ethernet

8 IO-Link Master Channels

4 Universal Digital PNP Channels, 2 A, Channel Diagnostics



Type designation	TBEN-LL-8IOL
Ident-No.	100003910

Technical data

Power supply	
Supply voltage	24 VDC
Admissible range	18 ... 30 VDC XD1...XD2 forward current max. 16 A per voltage group Max. total current 9 A per voltage group Max. total current V1 + V2 11 A
Voltage supply connection	M12, L-coded
Operating current	V1: max. 180 mA, min. 120 mA V2: min. 40 mA, max. 90 mA
Sensor/actuator supply	Supply from V1 Short-circuit proof, max. 4 A per port X0 and X4, max. 2 A per port X1...X3, X5...X7
Sensor/actuator supply	Class B supply from V2 Short-circuit proof, max. 4 A per port X4 and X5, max. 2 A per port X6 and X7
Electrical isolation	Galvanic isolation of V1 and V2 voltage group Voltage proof up to 500 VDC
Fault exclusion	Yes, acc. to EN ISO 13849-2, appendix D.2
System data	

Features

- PROFINET Device, Ethernet/IP Device, Modbus TCP Server, CC-Link IE Field Basic Server
- 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
- M12, 5-pin, L-coded male connector for power supply
- ATEX zone 2/22
- CCC-Ex
- M12 ports for IO-Link master, 5-pin
- IO-Link master port class A and port class B
- IO-Link Protocol 1.1
- Programmable ARGEE

Technical data

Fieldbus transmission rate	10/100 Mbps
Fieldbus connection technology	2 x M12, 4-pin, D-coded
Protocol detection	automatic
Service interface	Ethernet via XF1 or XF2
ARGEE functionality	Supported
Field logic controller (FLC)	
ARGEE Engineering Version	3.2.217.0
Modbus TCP	
Addressing	Static IP, DHCP
Supported function codes	FC3, FC4, FC6, FC16, FC23
Number of TCP connections	8
Input register start address	0 (0x0000 hex)
Output register start address	2048 (0x0800 hex)
EtherNet/IP	
Addressing	acc. to EtherNet/IP specification
Quick Connect (QC)	< 150 ms
Min. RPI	2 ms
Device Level Ring (DLR)	supported
Class 3 connections (TCP)	3
Class 1 connections (CIP)	10
Input Assembly Instance	103, 120, 121, 122, 123, 124, 125, 126
Output Assembly Instance	104, 150, 151, 152
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
CC-Link	
Interface	CC-Link IE Field Basic

Technical data

Type	Intelligent device station
Message Transmission	Yes
Number of occupied stations	4
IP change mechanism	Yes
Acyclic SLMP communication	Yes
Digital inputs	
Number of channels	4 DXP + 8 SIO
Connectivity inputs	M12, 5-pin
Input type	PNP
Type of input diagnostics	Channel diagnostics
Switching threshold	DXP: EN 61131-2 type 3, PNP SIO: EN 61131-2 type 1, 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	0.05 ms
Electrical isolation	Galvanic isolation to the fieldbusVoltage resistance up to 500 VAC
Digital outputs	
Number of channels	4 DXP
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 A, short-circuit proof
IO-Link	
Number of channels	8
	Pin 4 in IOL mode
IO-Link specification	V 1.1
IO-Link port type	Class A & Class B
Transmission rate	4.8 kbps (COM 1) / 38.4 kbps (COM 2) / 230 kbps (COM 3)
Supported devices	Max. 32 bytes in/32 bytes out per port
Frame type	Supports all specified frame types
Mechanical data	
Dimensions	230,4 mm x 60,4 mm x 34,8 mm
Housing material	PA6-GF30

Technical data

Housing color	Black
Material screw	303 stainless steel
Material label	Polycarbonate
Male connector material	Nickel-plated brass
Window material	Lexan
Mounting	2 mounting holes Ø 6.3 mm
Ambient conditions	
Ambient temperature	-40...+70 °C
Storage temperature	-40...+85 °C
Altitude	max. 5000 m
Electromagnetic compatibility	Acc. to EN 61131-2
Shock test	Acc. to EN 60068-2-27
Vibration test	Acc. to EN 60068-2-6, acceleration up to 20 g
Protection class	IP65 IP67 IP69K, (IP rating not evaluated by UL)
Standards/directives	
Drop and topple	Acc. to IEC 60068-2-31/IEC 60068-2-32
Tests/approvals	
Approvals and certificates	CE UKCA ATEX zone 2/22 CCC-Ex 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 areas must be observed.
MTTF	160 Years acc. to SN 29500 (Ed. 99) 20 °C
Other properties	
Halogen-free	yes
Comments	
Packaging unit	1

Module status LED

LED	Color	Status	Description
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L/A	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/ARGE 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	No power supply

ERR	Green	On	No diagnostics available
	Red	On	Diagnostics available Behavior of undervoltage diagnosis is dependent on parameters

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 not present or V ₂ undervoltage
		Off	V ₁ power supply not present 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 not present or V ₂ undervoltage
		Off	V ₁ power supply not present or V ₁ undervoltage

I/O status LED

LED	Color	Status	Description
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LED 0, 2, 4, 6, 8, 10, 12, 14 IO-Link port 1...8 IO-Link mode	Green	Flashing	IO-Link communication, process data valid
	Red	Flashing	IO-Link communication, process data invalid
		On	IO-Link power supply OK, no IO-Link communication
		Off	Port inactive
LED 0, 2, 4, 6, 8, 10, 12, 14 IO-Link port 1...8 SIO mode	Green	On	Digital input signal is present
		Off	No input signal
LED 1, 3, 5, 7 DXP	Green	On	Digital input or output active
	Red	On	Output active with overload/short circuit
		Flashing	VAUX1 supply overload
		Off	Input or output inactive
LED 9, 11, 13, 15 IO-Link class B VAUX2	Green	On	V _{AUX2} active on Pin 2
	Red	On	VAUX2 active on Pin 2 with overload/short circuit
		Flashing	VAUX1 supply overload
		Off	V _{AUX2} inactive on Pin 2

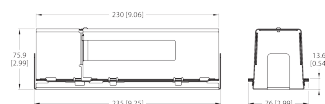
Process Data Mapping of the Single Protocols

For more details on the corresponding protocols see manual.

Mounting accessories

TB-SG-L

100014865



mm [inch]

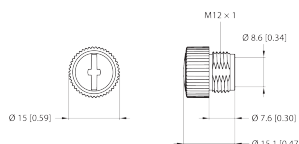
Protective housing for TBEN-L and TBIL-M block I/O modules for use in ATEX Zone 2/22

Connection accessories

VS-M12-PWR

100034822

Blanking plug for M12 female connectors

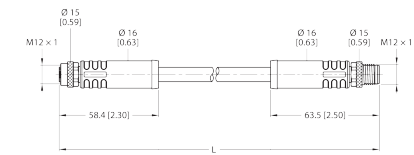


mm [inch]

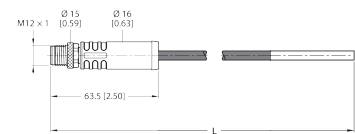
Connection accessories - Power supply

RKP56PLA-2-RSP56PLA/TXG	100038722
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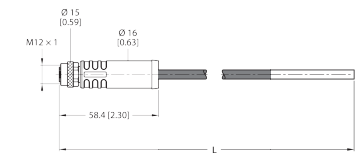
Extension cable, M12 female connector, straight, 4-pin + FE, L-coded; M12 male connector, straight, 4-pin + FE, L-coded; cable length: 2 m, jacket material: PUR, gray



RSP56PLA-2/TXG	100038699
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RKP56PLA-2/TXG	100038706
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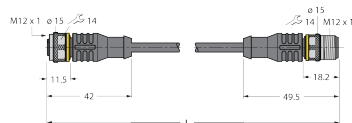


Connection accessories - I/O

RKC4T-2-RSC4T/TXL

6625604

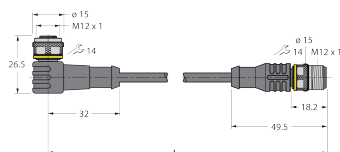
Extension cable, M12 female connector, straight, 3-pin to M12 male connector, straight, 3-pin; cable length: 2 m, jacket material: PUR, black; cULus approval



WKC4T-2-RSC4T/TXL

6625636

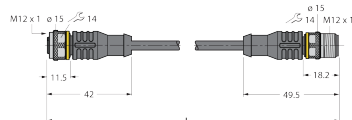
Extension cable, M12 female connector, angled, 3-pin to M12 male connector, straight, 3-pin; cable length: 2 m, jacket material: PUR, black; cULus approval



RKC4.4T-2-RSC4.4T/TXL

6625608

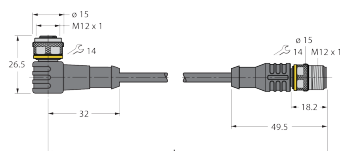
Extension cable, M12 female connector, straight, 4-pin to M12 male connector, straight, 4-pin; cable length: 2 m, jacket material: PUR, black; cULus approval



WKC4.4T-2-RSC4.4T/TXL

6625640

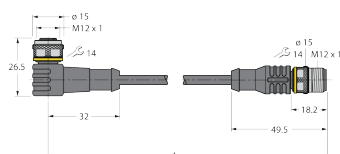
Extension cable, M12 female connector, angled, 4-pin to M12 male connector, straight, 4-pin, cable length: 2 m, jacket material: PUR, black; cULus approval



WKC4.5T-2-RSC4.5T/TXL

6625644

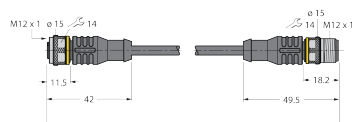
Extension cable, M12 female connector, angled, 5-pin to M12 male connector, straight, 5-pin; cable length: 2 m, jacket material: PUR, black; cULus approval



RKC4.5T-2-RSC4.5T/TXL

6625612

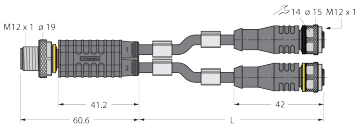
Extension cable, M12 female connector, straight, 5-pin to M12 male connector, straight, 5-pin; cable length: 2 m, jacket material: PUR, black; cULus approval



VBRS4.4-2RKC4T-1/1/TXL

6628112

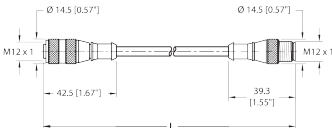
Connection accessories - I/O



2-port junction systems — Y-splitter with cable, M12 male connector, straight, 4-pin — 2 x M12 female connector, straight, 3-pin, cable length: 1 m, jacket material: PUR, black

RK 4T-2-RS 4T

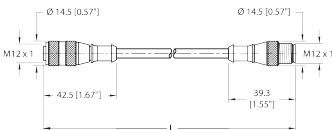
U2151-3



Actuator and sensor cordset, extension cable, M12 female connector, straight, 3-pin, M12 male connector, straight, 3-pin, IP68, IP69K, cable length: 2 m, cable jacket PVC, gray, other cable lengths and versions available, see www.turck.com

RK 4.4T-2-RS 4.4T

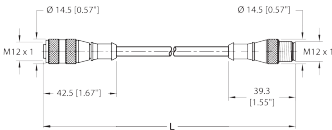
U2445



Actuator and sensor cordset, extension cable, M12 female connector, straight, 4-pin, M12 male connector, straight, 4-pin, IP68, IP69K, cable length: 2 m, cable jacket PVC, gray, other cable lengths and versions available, see www.turck.com

RK 4.5T-2-RS 4.5T

U2187-1



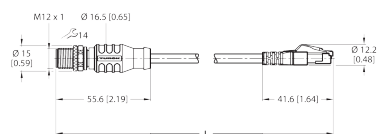
Actuator and sensor cordset, extension cable, M12 female connector, straight, 5-pin, M12 male connector, straight, 5-pin, IP68, IP69K, cable length: 2 m, cable jacket PVC, gray, other cable lengths and versions available, see www.turck.com

Connection accessories - network

RSSD-RJ45S-4422-2M

6635170

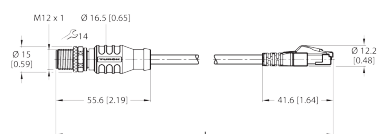
Cable for Industrial Ethernet, M12 male connector, D-coded, straight to RJ45 male connector, straight, cable length: 2 m, jacket material: PUR, green



RSSD-RJ45S-4422-7M

6635579

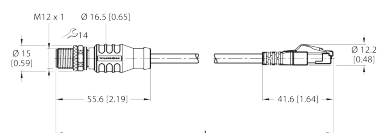
Cable for Industrial Ethernet, M12 male connector, D-coded, straight to RJ45 male connector, straight, cable length: 2 m, jacket material: PUR, green



RSSD-RJ45S-4422-8M

6635538

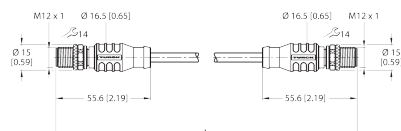
Cable for Industrial Ethernet, M12 male connector, D-coded, straight to RJ45 male connector, straight, cable length: 2 m, jacket material: PUR, green



RSSD-RSSD-4422-2M

6635150

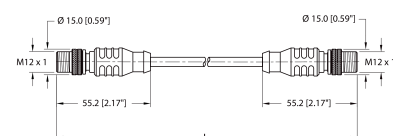
Cable for Industrial Ethernet, M12 male connector, D-coded, straight to M12 male connector, D-coded, straight, cable length: 2 m, jacket material: PUR, green



RSSD RSSD 441-2M

U-02482

Cable for Industrial Ethernet, M12 male connector, D-coded, straight to M12 male connector, D-coded, straight, cable length: 2 m, jacket material: TPE, turquoise



RSSD RJ45 441-2M

U-08880

Cable for Industrial Ethernet, M12 male connector, D-coded, straight to RJ45 male connector, straight, cable length: 2 m, jacket material: TPE, turquoise

