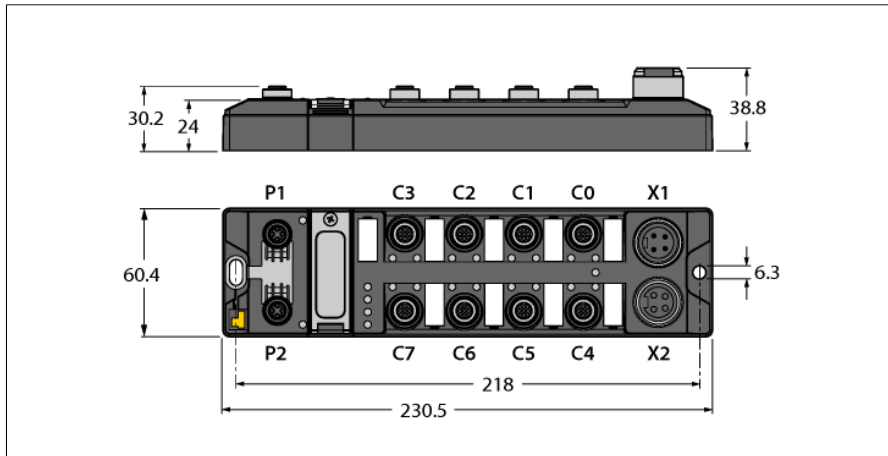


## Compact multiprotocol I/O module for Ethernet 8 Digital PNP Inputs and 8 Digital PNP Outputs 2 A TBEN-LG-8DIP-8DOP



- EtherNet/IP™, Modbus® TCP, or PROFINET® slave
- Integrated Ethernet switch
- Supports 10 Mbps/100 Mbps
- 2 x M12, 4-pin, D-coded, Ethernet fieldbus connection
- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- 7/8" connector for power supply, 4-pin
- Separated power groups for safety shutdown
- Input diagnostics per port
- Max. 2 A per output
- Output diagnostics per channel

<b>Type designation</b>	TBEN-LG-8DIP-8DOP
Ident-No.	6814066
Ident-No (TUSA)	M6814066
<b>Supply</b>	
Supply voltage	24 VDC
Admissible range	18...30 VDC
	Total current max. 9 A per voltage group
	Total current V1 + V2 max. 11 A per module
Voltage supply connection	4-pin male 7/8" connector X1
Sensor/Actuator supply $V_{AUX1}$	supply of ports C0-C3 from V1
	short-circuit proof, 120 mA per port
Sensor/Actuator supply $V_{AUX2}$	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
<b>System data</b>	
Fieldbus transmission rate	10 Mbps/100 Mbps
Fieldbus connection technology	2 x M12, 4-pin, D-coded
Protocol detection	automatic
Web server	default: 192.168.1.254
Service Interface	Ethernet via P1 or P2
Product code	14066
<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	8
Input register start address	0 (0x0000 hex)
Output register start address	2048 (0x0800 hex)
<b>EtherNet/IP™</b>	
Addressing	acc. to EtherNet/IP™ specification
Quick Connect (QC)	< 150 ms
Device Level Ring (DLR)	supported
Number of TCP connections	3
Number of CIP connections	10
Input Assembly Instance	103
Output Assembly Instance	104
Configuration Assembly Instance	106

**Compact multiprotocol I/O module for Ethernet**  
**8 Digital PNP Inputs and 8 Digital PNP Outputs 2 A**  
**TBEN-LG-8DIP-8DOP**



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**PROFINET**

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

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**Digital inputs**

Number of channels	8
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
Potential separation	galvanic isolation to P1/P2 , voltages up to 500 VDC

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**Digital outputs**

Number of channels	8
Connection Technology Outputs	M12, 5-pol
Output type	PNP
Type of output diagnostics	channel diagnostics
Output voltage	24 VDC from potential group
Output current per channel	2.0 A per port, short-circuit proof
Output delay	1.3 ms
Load type	EN 60947-5-1: DC-13
Short-circuit protection	yes
Potential separation	galvanic isolation to P1/P2 , voltages up to 500 VDC

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**Standard/Directive conformity**

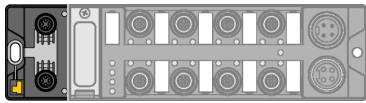
Vibration test	acceleration to 20 g acc. to EN 60068-2-6
Shock test	acc. to EN 60068-2-27
Drop and topple	acc. to EN 60068-2-31/IEC 60068-2-32
Electro-magnetic compatibility	acc. to EN 61131-2
Approvals and certificates	CE
UL conditions	cULus LISTED 21 W2, Encl.Type 1 IND.CONT.EQ.

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**General Information**

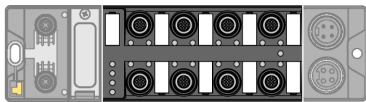
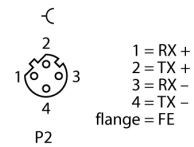
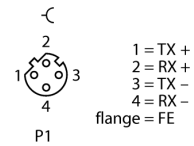
Dimensions (W x L x H)	60.4 x 230.4 x 39mm
Operating temperature	-40...+70 °C
Storage temperature	-40...+85 °C
Altitude	max.5000 m
Protection class	IP65 IP67 IP69K
MTTF	205 years
Housing material	PA6-GF30
Housing color	Black
Window material	Lexan
Material screw	303 stainless steel
Material label	Polycarbonate
Halogen-free	yes
Mounting	2 mounting holes □ 6.3 mm

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**8 Digital PNP Inputs and 8 Digital PNP Outputs 2 A**  
**TBEN-LG-8DIP-8DOP**



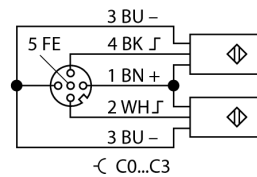
**Accessories**  
 Ethernet cable (example):  
 RSSD RSSD 441-2M  
 Ident no. U-02482

M12 x 1 Ethernet

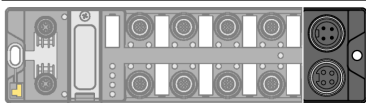
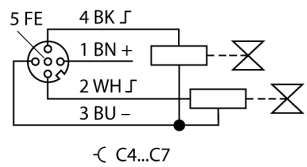


**Accessories**  
 Accessories:  
 Connection cable , 2-channel (example):  
 RK 4.4T-2-RS 4.4T  
 Ident no. U2445  
 Splitter, 1-channel (example):  
 YB2-FSM 4.5-2FKM 4.5  
 Ident no. U0875-78

M12 x 1 Input

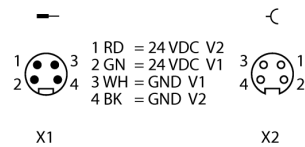


M12 x 1 Output



**Accessories**  
 Power supply cable (example):  
 RSM RKM 40-2M  
 Ident no. U2280-0

7/8" Power Supply



**Compact multiprotocol I/O module for Ethernet**  
**8 Digital PNP Inputs and 8 Digital PNP Outputs 2 A**  
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**Module LED Status**

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 Sequence of 3 flashes in 2 seconds: FLC/ARGEE active
		Red	ON
	Green/red	Flashing	Blink/Wink command active
		Alternating	Autonegotiation and/or waiting for DHCP/Boot-P addressing
	OFF	Power off	
ERR	Green	ON	Diagnostics disabled
	Red	ON	Diagnostics enabled
PWR	Green	ON	V <sub>1</sub> and V <sub>2</sub> power on
		flashing	V <sub>2</sub> power off or below defined tolerance
		OFF	V <sub>1</sub> power off or below defined tolerance

**LED Status I/O**

LED	Color	Status	Description
LED 0...7	Green	ON	Input active
		Flashing	Power overload at the corresponding port. Both port LEDs are flashing.
		OFF	Input inactive
LED 0...7	Red	ON	Output active
		ON	Output active with overload/short circuit
		Flashing	Power overload at the corresponding port. Both port LEDs are flashing.
		OFF	Output inactive

# Compact multiprotocol I/O module for Ethernet

## 8 Digital PNP Inputs and 8 Digital PNP Outputs 2 A

### TBEN-LG-8DIP-8DOP

#### Process Data Mapping of the Single Protocols

For more details on the corresponding protocols see manual.

#### 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									DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Status (RO)	0x0001	-	FCE	-	-	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Diag (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Inputs (RW)	0x0800									DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Outputs (RW)	0x0800									DO7 C7P2	DO6 C7P4	DO5 C6P2	DO4 C6P4	DO3 C5P2	DO2 C5P4	DO1 C4P2	DO0 C4P4
I/O Diag (RO)	0xA000	SC07	SC06	SC05	SC04	SC03	SC02	SC01	SC00	SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0

#### EtherNet/IP™ data mapping with activated scheduled diagnostics, default settings

	Word	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
Input data (station -> scanner)																	
GW status	0	-	FCE	-	-	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Inputs	1									DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Diag 1	2	-	-	Sched Diag	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Diag 2	3	SC07	SC06	SC05	SC04	SC03	SC02	SC01	SC00	SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0
Output data (scanner -> station)																	
Control	0	reserved															
Outputs	1									DO7 C7P2	DO6 C7P4	DO5 C6P2	DO4 C6P4	DO3 C5P2	DO2 C5P4	DO1 C4P2	DO0 C4P4

#### EtherNet/IP™ data mapping with activated summarized diagnostics

	Word	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
Input data (station -> scanner)																	
GW status	0	-	FCE	-	-	CFG	COM	V1	-	V2	-	-	-	-	-	-	Diag Warn
Inputs	1									DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Diag 1	2																I/O Diag
Output data (scanner -> station)																	
Control	0	reserved															
Outputs	1									DO7 C7P2	DO6 C7P4	DO5 C6P2	DO4 C6P4	DO3 C5P2	DO2 C5P4	DO1 C4P2	DO0 C4P4

#### PROFINET Process Data

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Inputs	0	DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Outputs	0	DO7 C7P2	DO6 C7P4	DO5 C6P2	DO4 C6P4	DO3 C5P2	DO2 C5P4	DO1 C4P2	DO0 C4P4

Key:

DIx	Digital input channel x	CFG	I/O configuration error
DOx	Digital output channel x	FCE	I/O-ASSISTANT Force Mode active
Cx	Port x	I/Odiag	I/O diagnostics connected
Px	Pin x	SchedDiag	Manufacturer-specific diagnostics configured and active
DiagWarn	Diagnostic at least on 1 channel	SCSx	Short-circuit at port x
V1	Undervoltage V1	SCG1	Short-circuit supply ports C0-C3
V2	Undervoltage V2	SCG2	Short-circuit supply ports C4-C7
COM	Communication error on internal module bus	SC0x	Short-circuit output channel x
SPEx	Power clamp port active		