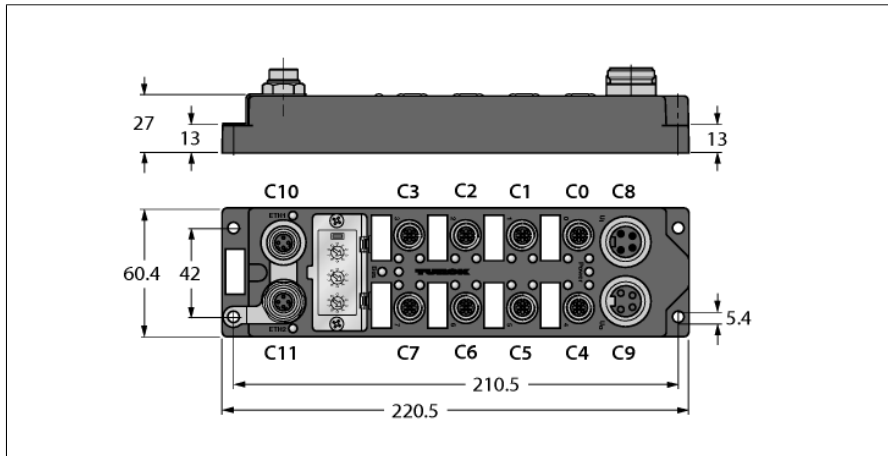


# Compact multiprotocol I/O module for Ethernet

## 16 digital pnp inputs

### FGEN-IM16-4001



- Multiprotocol I/O Module for the Ethernet protocols Modbus TCP®, EtherNet/IP™ and PROFINET®
- PROFINET® supports Fast Start-Up (FSU)
- EtherNet/IP™ supports QuickConnect (QC)
- Integrated Ethernet Switch
- FDT/DTM supported
- Input diagnostics per port
- Two inputs per port
- 7/8", 4-pin, for power supply
- Power supply, galvanically separated
- Fibre-glass reinforced PA6 housing
- Vibration and shock-resistant
- Encapsulated module electronics
- Metal connectors
- Degree of protection IP67

<b>Type designation</b>	FGEN-IM16-4001
Ident-No.	6825423
<b>Voltage supply connection</b>	2 x 7/8"
Operating current	< 200 mA
Electrical isolation	operating and load voltage galvanically separated
<b>System data</b>	
Fieldbus connection technology	2 x M12
Protocol detection	automatic
Web server	from FW 3.1.0.0
Service interface	Ethernet
<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
<b>EtherNet/IP™</b>	
Addressing	acc. to EtherNet/IP™ specification
Quick Connect (QC)	< 150 ms
Device Level Ring (DLR)	supported
Class 3 connections	3
Class 1 connections	10
<b>PROFINET</b>	
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
<b>Number of channels</b>	(16) 3-wire pnp sensors
Switching threshold	EN 61131-3
	low max.: 1.5 mA / high min.: 2 mA
Input delay	2.5 ms
Electrical isolation	galvanically separated against the bus
Input voltage	18...30 VDC from operating voltage UB
<b>Vibration test</b>	acc. to EN 60068-2-6
Shock test	acc. to EN 60068-2-27
Electromagnetic compatibility	acc. to EN 61131-2
UL Certificate	pol. deg.2, env. temp. max. 40 °C, cl.2 ps req.

## Compact multiprotocol I/O module for Ethernet

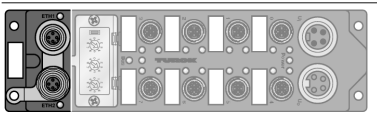
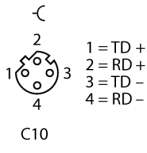
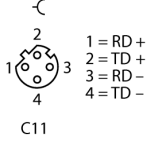
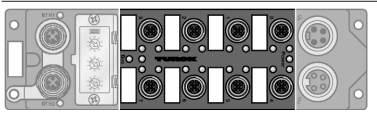
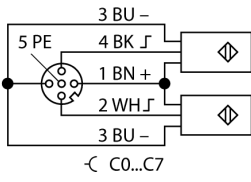
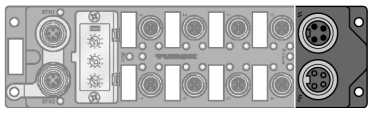
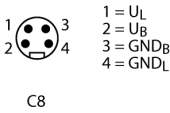

### 16 digital pnp inputs

### FGEN-IM16-4001

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<b>Dimensions (W x L x H)</b>	60 x 220.5 x 27mm
Operating temperature	0...+55 °C
Storage temperature	-25 ...+70 °C
Altitude	max.5000 m
Protection class	IP67
MTTF	203 years
Housing material	fibre-glass reinforced Polyamide (PA6-GF30)
Halogen-free	yes
Mounting	4 mounting holes Ø 5,4 mm

**Compact multiprotocol I/O module for Ethernet**  
**16 digital pnp inputs**  
**FGEN-IM16-4001**

	<p><b>Accessories</b> Ethernet cable (example): RSSD RSSD 441-2M Ident-No. U-02482</p>	<p>M12 x 1 Ethernet</p>  <p>C10</p>  <p>C11</p>
	<p><b>Accessories</b> Connection cable for dual channels (example): RK 4.4T-2-RS 4.4T Ident-No. U2445 Splitter for single channels (example): YB2-FSM 4.5-2FKM 4.5 Ident-No. U0875-78</p>	<p>M12 x 1 Input</p>  <p>C0..C7</p>
	<p><b>Accessories</b> Power supply cable (example): RSM RKM 40-2M Ident-No. U2280-0</p>	<p>7/8" Power Supply</p>  <p>C8</p>  <p>C9</p>

## Compact multiprotocol I/O module for Ethernet

### 16 digital pnp inputs

### FGEN-IM16-4001

#### LED status module

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	ready
	red	on	IP address conflict or Restore Mode
		flashing	Blink/Wink command active
Power	green	on	Operating voltage $U_s$ within the defined tolerances
		off	Operating voltage $U_s$ below the defined tolerances

#### LED status IOs

LED	Color	Status	Description
C0.I1 ... C7.I16	green	on	Input active
	red	on	Overload of sensor supply at the corresponding connector
		off	Input inactive

# Compact multiprotocol I/O module for Ethernet

## 16 digital pnp inputs

### FGEN-IM16-4001

#### Process data mapping of single protocols

##### 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	DI15 C7P2	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI11 C5P2	DI10 C5P4	DI9 C4P2	DI8 C4P4	DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Status (RO)	0x0001	-	FCE	-	-	CFG	COM	UB	-	-	-	-	-	-	-	-	Diag Warn
Diag (RO)	0x0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
I/O Diag (RO)	0xA000	-	-	-	-	-	-	-	-	SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0

##### EtherNet/IP™ data mapping with activated Scheduled 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	1	-	FCE	-	-	CFG	COM	UB	-	-	-	-	-	-	-	-	Diag Warn
Inputs	2	DI15 C7P2	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI11 C5P2	DI10 C5P4	DI9 C4P2	DI8 C4P4	DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Diag 1	3	-	-	Sched Diag	-	-	-	-	-	-	-	-	-	-	-	-	I/O Diag
Diag 2	4	-	-	-	-	-	-	-	-	SCS7	SCS6	SCS5	SCS4	SCS3	SCS2	SCS1	SCS0
Output (Scanner -> Station)																	
Control	1	reserved															

##### 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	1	-	FCE	-	-	CFG	COM	UB	-	-	-	-	-	-	-	-	Diag Warn
Inputs	2	DI15 C7P2	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI11 C5P2	DI10 C5P4	DI9 C4P2	DI8 C4P4	DI7 C3P2	DI6 C3P4	DI5 C2P2	DI4 C2P4	DI3 C1P2	DI2 C1P4	DI1 C0P2	DI0 C0P4
Diag.	3																I/O Diag
Output (Scanner -> Station)																	
Control	1	reserved															

##### 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
	1	DI15 C7P2	DI14 C7P4	DI13 C6P2	DI12 C6P4	DI11 C5P2	DI10 C5P4	DI9 C4P2	DI8 C4P4

##### Legend:

DI	Digital input	COM	Communication error on internal module bus
DO	Digital output	CFG	I/O configuration error
Cx	female	FCE	I/O-ASSISTANT Force Mode active
Px	Pin	I/ODiag	I/O diagnostics available
DiagWarn	Diagnostic at least on 1 channel	SchedDiag	Manufacturer-specific diagnostics configured and active
UL	Undervoltage UL	SCSx	Short-circuit on sensor supply at female x
UB	Undervoltage UB	SCOx	Short-circuit output x