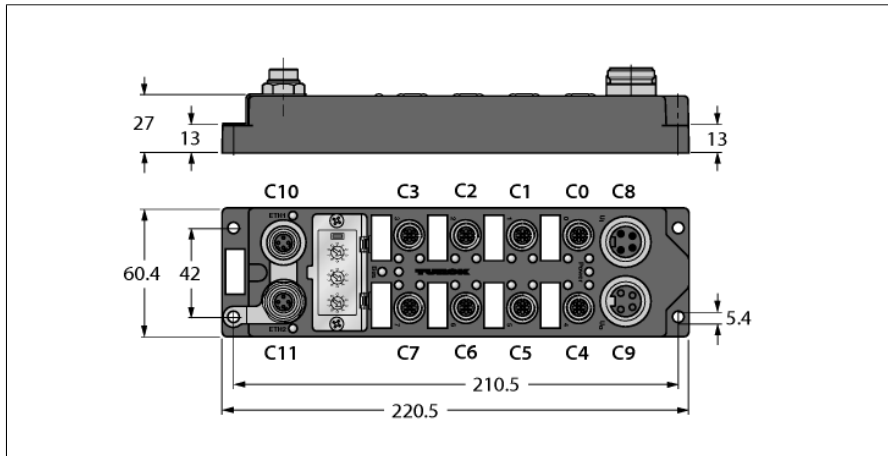


Compact multiprotocol I/O module for Ethernet

16 digital pnp inputs

FGEN-IM16-4001



- Multiprotocol I/O module for the Ethernet protocols Modbus TCP, EtherNet/IP and PROFINET
- PROFINET supports Fast Startup (FSU)
- Ethernet/IP supports QuickConnect (QC)
- Integrated Ethernet switch
- FDT / DTM supported
- Input diagnostics per port
- Two inputs per port
- 7/8", 4-pin to power supply
- Power supply, galvanically separated
- Fibre-glass reinforced PA6 housing
- Vibration and shock-resistant
- Encapsulated module electronics
- Metal connector
- Protection class IP67

Type designation	FGEN-IM16-4001
Ident no.	6825423
Number of channels	16
Operating / load voltage	18...30 VDC
Operating current	< 200 mA
Electrical isolation	operating and load voltage galvanically separated
Voltage supply connection	2 x 7/8"
Inputs	
Number of channels	(16) 3-wire pnp sensors
Input voltage	18...30 VDC from operating voltage UB
Supply current	120 mA per port, short-circuit proof
Switching threshold	EN 61131-3
	low max.: 1.5 mA / high min.: 2 mA
Input delay	2.5 ms
Max. input current	7 mA
Electrical isolation	galvanically separated against the bus
System data	
Transmission rate	10/100 Mbps; Full/Half Duplex; Auto Negotiation; Auto Crossing
Connection technology Ethernet	2 x M12 x 1 female connector, 4-pin, D-coded
Protocol detection	automatic
Web server	from FW 3.1.0.0
Service interface	Ethernet
Modbus TCP	
Addressing	Static IP, BOOTP, DHCP
Supported function codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Number of TCP connections	8
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
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

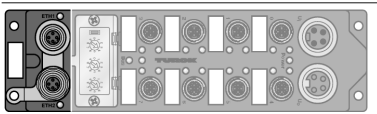
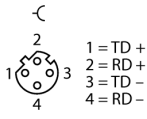
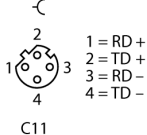
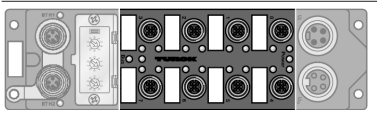
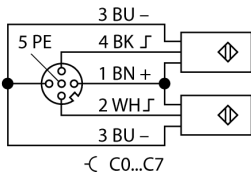
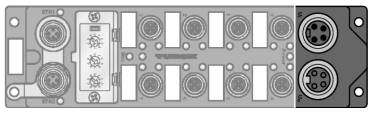
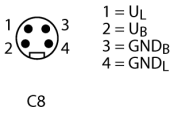

Compact multiprotocol I/O module for Ethernet

16 digital pnp inputs

FGEN-IM16-4001

Dimensions (W x L x H)	60 x 220.5 x 27 mm
Housing material	fibre-glass reinforced Polyamide (PA6-GF30)
Halogen-free	yes
Mounting	4 mounting holes Ø 5,4 mm
Ambient temperature	0...+55 °C
Storage temperature	-25...+70 °C
Altitude	Max. 5000 m
Vibration test	Acc. to EN 60068-2-6
Shock test	acc. to EN 60068-2-27
Electromagnetic compatibility	Acc. to EN 61131-2
Protection class	IP67
MTTF	203 years
Approvals	CE, cULus
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

	<p>Note Ethernet cable (example): RSSD-RSSD-441-2M/S2174 Ident no. 6914218</p>	<p>M12 x 1 Ethernet</p>  <p>C10</p>  <p>C11</p>
	<p>Note 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</p>	<p>M12 x 1 Input</p>  <p>C0..C7</p>
	<p>Note Power supply cable (example): RKM43-1-RSM43 Ident no. 6914312</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	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