



Main

Range of product	Preventa Safety automation
Product or component type	Preventa safety PLC compact
Safety module name	XPSMF31
Safety module application	For numerous machine safety functions and for the protection of personnel
Safety use category	Category 4 conforming to EN 954-1/ISO 13849-1 SIL 3 conforming to IEC 61508
Structure type	10BASE-T/100BASE-TX Modbus TCP/IP 10BASE-T/100BASE-TX safe Ethernet

Complementary

Function of module	Monitoring safety actuators for discrete output Monitoring safety detection for discrete input Monitoring safety dialogue for discrete input Monitoring safety dialogue for discrete output
[Us] rated supply voltage	24 V DC (- 15...20 %)
No load current	0.4 A
Protection type	Internal fuse
Clock	With, supplied by backup capacitor for 1 week following loss of supply
Response time	Depending on size of application
Memory description	User logic 250 kB for application User logic 250 kB for data
Discrete input number	20, not isolated
Voltage state 0 guaranteed	≤ 5 V for discrete input
Voltage state 1 guaranteed	≥ 15 V for discrete input
Current state 0 guaranteed	1...1.5 mA, discrete input
Current state 1 guaranteed	≥ 2 mA, discrete input
Discrete input voltage	20 V
Discrete input current	100 mA
Input protection type	Protected against short-circuit to earth Protected against short-circuit
Maximum overvoltage on input	500 V for discrete input IEC 61000-4-5
Switching voltage	7.5 V
Discrete output number	8
Discrete output voltage	24 V DC
Output voltage tolerance	+/- 2 %
Discrete output current	≤ 7 mA (all channels) 1 A at 60 °C (channels 4 and 8) 2 A at 50 °C (channels 4 and 8) 0.5 A at 60 °C (channels 1 to 3 and 5 to 7)
Minimum load	2 mA per discrete output
Leakage current	≤ 1 mA, at 2 V at state 0 for discrete output
Overload protection	Shutdown of outputs concerned with cyclic reconnection
Communication port protocol	Safe Ethernet with 4 RJ45 port(s), transmission rate: 100 Mbps, medium: dual twisted pair cable
Exchange mode	Half duplex, full duplex, autonegotiation, Modbus TCP/IP Half duplex, full duplex, autonegotiation, safe Ethernet
Method of access	Slave Modbus TCP/IP
Concept	Transparent Ready Modbus TCP/IP

Web server	Class A10 Modbus TCP/IP
Web services	Modbus identification request Modbus TCP/IP Modbus TCP/IP messaging (reading/writing of data words) Modbus TCP/IP Modbus TCP/IP server Modbus TCP/IP Standard 502 Modbus TCP/IP
Operating distance	<= 100 m (between station) discrete input <= 100 m (between station) discrete output
Number of terminal blocks	1 for power supply 2 for discrete output 5 for discrete input
Connections - terminals	Captive screw clamp terminals, clamping capacity: 1 x 0.14...1 x 1.5 mm ² , AWG 28...16 flexible without cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 1 x 0.14...1 x 1.5 mm ² , AWG 28...16 solid without cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 1 x 0.2...1 x 2.5 mm ² , AWG 24...12 flexible without cable end for power supply Captive screw clamp terminals, clamping capacity: 1 x 0.2...1 x 2.5 mm ² , AWG 24...12 solid without cable end for power supply Captive screw clamp terminals, clamping capacity: 1 x 0.25...1 x 0.5 mm ² , AWG 22...20 flexible with cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 1 x 0.25...1 x 1.5 mm ² , AWG 22...16 flexible without cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 1 x 0.25...1 x 2.5 mm ² , AWG 22...16 flexible with cable end for power supply Captive screw clamp terminals, clamping capacity: 1 x 0.25...1 x 2.5 mm ² , AWG 22...16 flexible without cable end for power supply Captive screw clamp terminals, clamping capacity: 2 x 0.14...2 x 0.5 mm ² , AWG 28...20 solid without cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 2 x 0.14...2 x 0.75 mm ² , AWG 28...18 flexible without cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 2 x 0.2...2 x 1.5 mm ² , AWG 24...12 flexible without cable end for power supply Captive screw clamp terminals, clamping capacity: 2 x 0.2...2 x 1.5 mm ² , AWG 24...12 solid without cable end for power supply Captive screw clamp terminals, clamping capacity: 2 x 0.25...2 x 0.34 mm ² , AWG 22 flexible without cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 2 x 0.25...2 x 1 mm ² , AWG 22...18 flexible without cable end for power supply Captive screw clamp terminals, clamping capacity: 2 x 0.5 mm ² , AWG AWG 20 flexible with cable end for discrete input/output circuit Captive screw clamp terminals, clamping capacity: 2 x 0.5...2 x 1.5 mm ² , AWG 22...16 flexible with cable end for power supply
Tightening torque	0.22...0.25 N.m
Wire stripping length	9 mm
Current consumption	8 A at 24 V DC on power supply
Mounting support	35 mm symmetrical DIN rail
Depth	66.5 mm
Height	113 mm
Width	253 mm
Product weight	1 kg

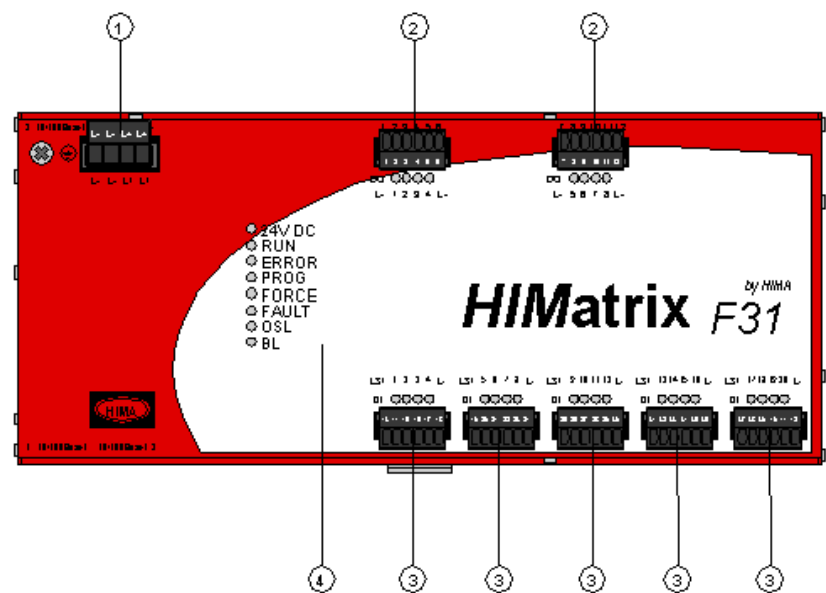
Environment

Standards	DIN V 0801 DIN V 19250 EN 50156 pending IEC 61131
Immunity to microbreaks	10 ms
IP degree of protection	IP20 (enclosure)
Ambient air temperature for operation	0...60 °C conforming to EN 61131-2
Ambient air temperature for storage	-40...85 °C conforming to EN 61131-2
Relative humidity	95 % (supply not connected)
Operating altitude	< 2000 m
Pollution degree	2
Class of protection against electric shock	Class II conforming to EN/IEC 61131-2
Electromagnetic compatibility	EN/IEC 61131-2
Vibration resistance	1 gn, 10...150 Hz conforming to EN 61131-2
Shock resistance	15 gn for 11 ms conforming to EN 61131-2

Resistance to electrostatic discharge	4 kV contact conforming to EN/IEC 61000-4-2 8 kV on air conforming to EN/IEC 61000-4-2
Resistance to electromagnetic fields	10 V/m (26 MHz...1 GHz), conforming to EN/IEC 61000-4-3

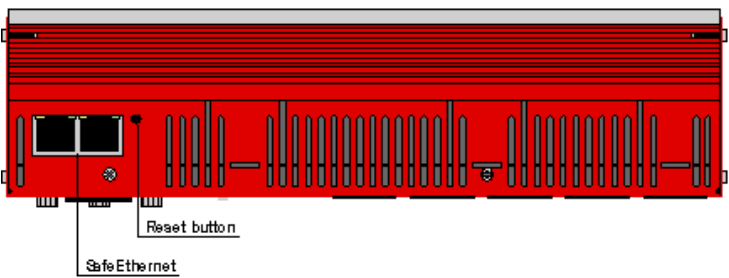
Housing Elements

Front View

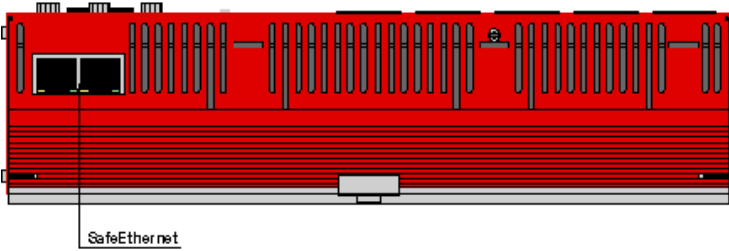


No.	Description
1	power supply input
2	digital outputs
3	digital inputs
4	indicators

Top View

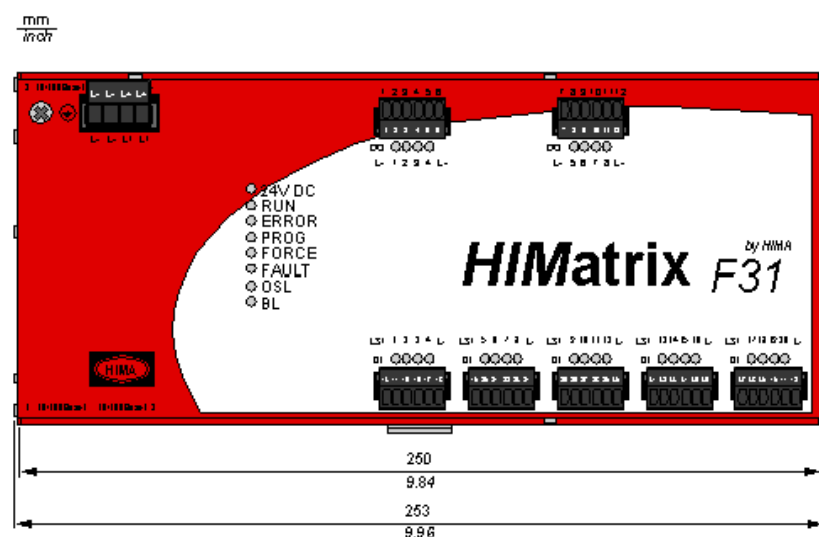


Bottom View

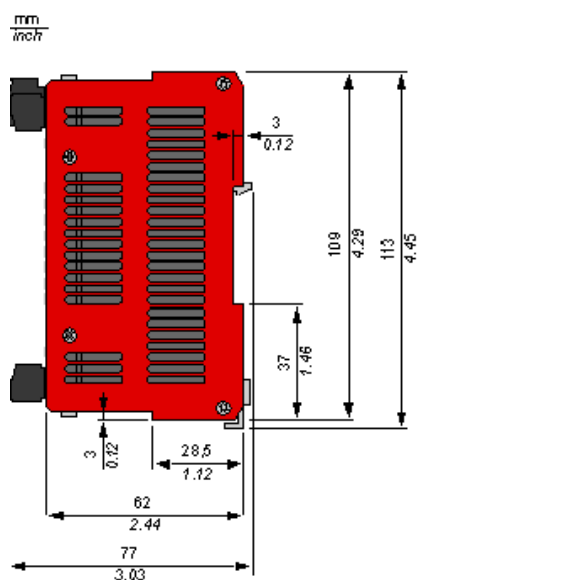


Dimensions

Front View

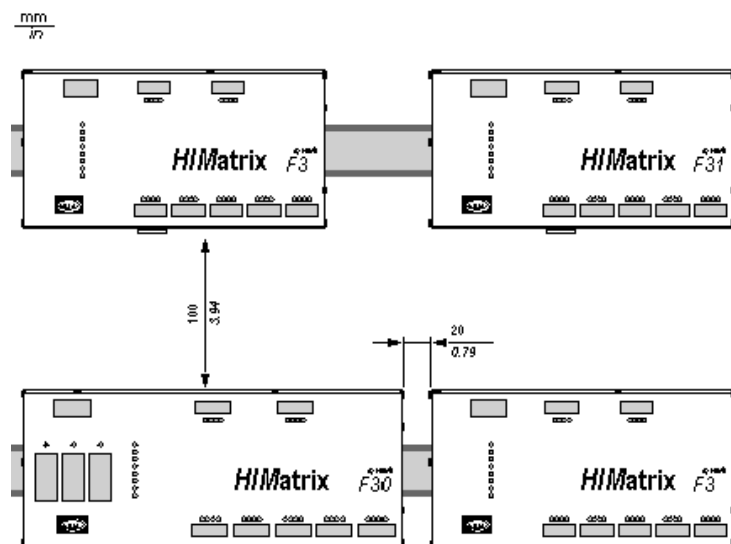


Side View

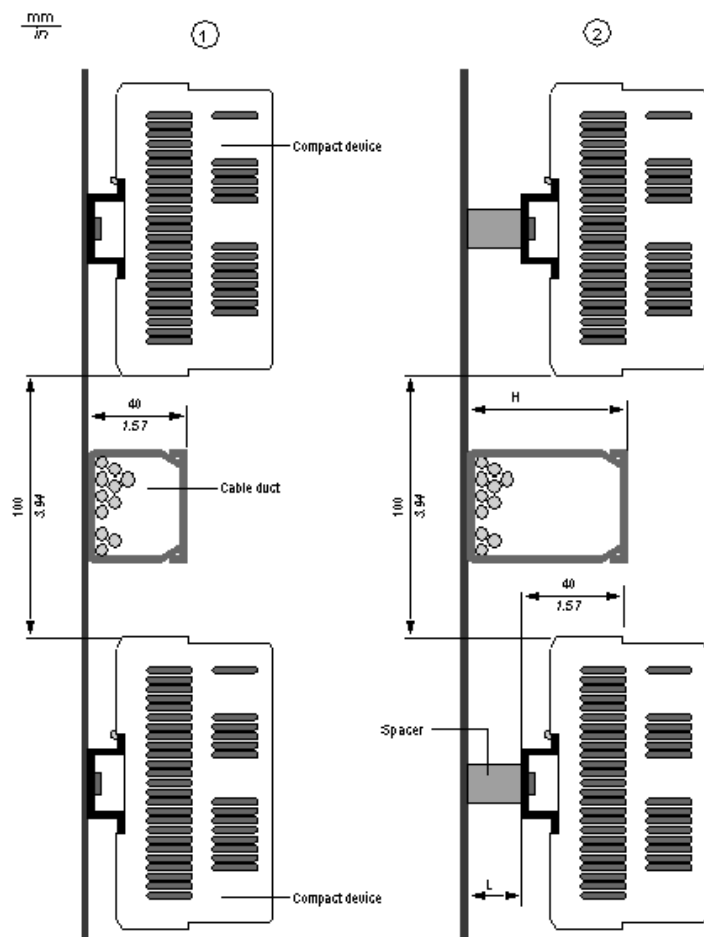


Mounting

Minimum Clearances



Air Circulation



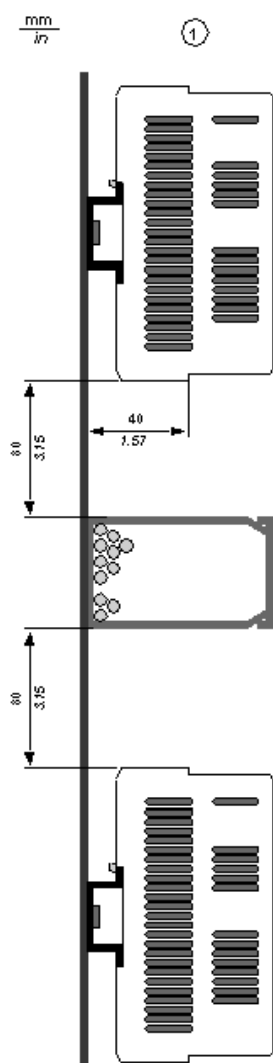
No.	Description
1	The height of the cable ducts is less than 40 mm / 1.57 in.
2	The height of the cable ducts is greater than 40 mm / 1.57 in.

$L = H - 40 \text{ mm} / 1.57 \text{ in.}$

L = length of the spacer

H = height of the cable duct

Minimum clearance when $H > 40 \text{ mm} / 1.57 \text{ in.}$ and no spacer

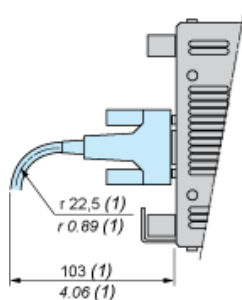


Mounting Precautions Relating to Connectors

Access to Modbus Serial Link (RTU)

SUB-D 9-pin connector

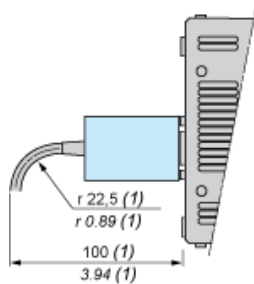
$\frac{\text{mm}}{\text{in.}}$



(1) minimum value

Adaptor XPS MFADAPT

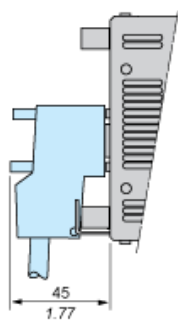
$\frac{\text{mm}}{\text{in.}}$



(1) minimum value

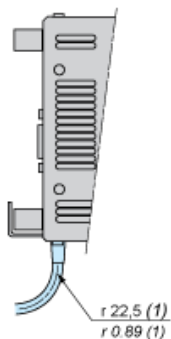
Access to PROFIBUS DP

$\frac{\text{mm}}{\text{in.}}$



Access to Ethernet Network

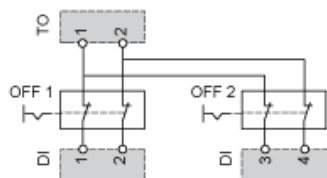
$\frac{\text{mm}}{\text{in.}}$



(1) minimum value

Wiring Diagrams

Emergency Stop Connections (Line Control)



Actuator Connections to the Outputs

