Ascon Tecnologic S.r.l.
via Indipendenza 56,
27029 - Vigevano (PV)
Tel.: +39 0381 69871,
Fax: +39 0381 698730
www.ascontecnologic.com

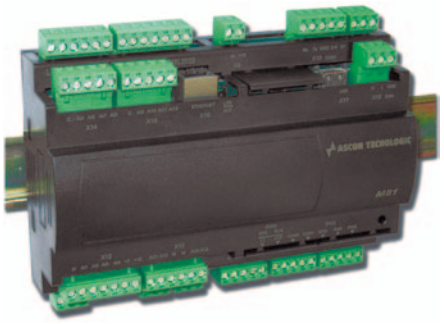
mod. M81

M.I. M81-04/17.05
Cod. ISTR-MM81ENG04

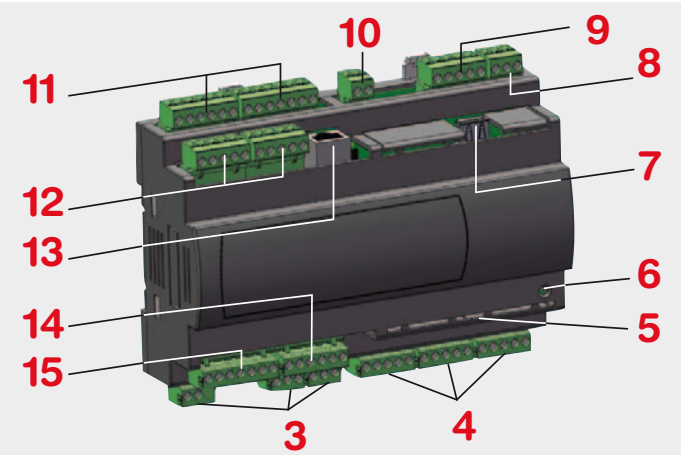
Installation Manual

Contents

Integrated system, CPU module with on-board I/O mod. M81



General description



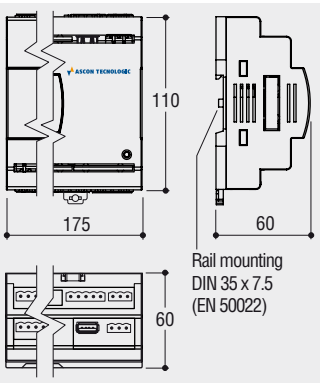
1 Model identification label (on the back side of the module);
2 DIN RAIL 35 x 7.5 (EN50022);
3 **X1** one 2 poles plug to connect the power supply and
X2... X3 two 3 poles plugs to connect the DO1...DO2 SPDT output relays or Vdc/Vac SSR or 12 Vdc to drive external SSR;
4 **X4... X6** two 5 poles plugs to connect the DI1... DI12 Digital Inputs;
5 Status/diagnostic LEDs:
L1 (red, CAN ERR)
USB (green, USB activity/CAN Run),
COM2 (green, COM2 traffic),
COM1 (green, COM1 traffic),
MSG (message),
RUN (program status run/stop),
PWR (power supply ON);
6 - Reset button;
7 **X17** USB type A receptacle to connect a flash drive;
8 **X10** 5 poles plug to connect the COM1 service serial port (RS232/RS485);
9 **X11** 3 poles plug to connect the COM2 serial port (RS485);
10 **X9** 2 poles plug output power supply (15Vdc);
11 **X7... X8** 6... 7 poles plugs to connect DO3... D10 SPST output relays;

12 **X14... X15** 5 poles plugs to connect AI5... AI12 NTC/PT1000 Analogue Inputs;
13 **X16** RJ45 plug to connect the Ethernet TCP/IP network for programming purposes or for the MODBUS through the TCP port;
14 **X13** 6 poles plug to connect AO1... AO4 Analogue Outputs;
15 **X12** 7 poles plug to connect AI1... AI4 Analogue Inputs.

Note: The green terminals on the CPU are male connectors (pitch 5 mm), the corresponding female plugs are snap-on connectors with screw or spring terminals for connecting the wires.

Installation

Dimensions (mm)



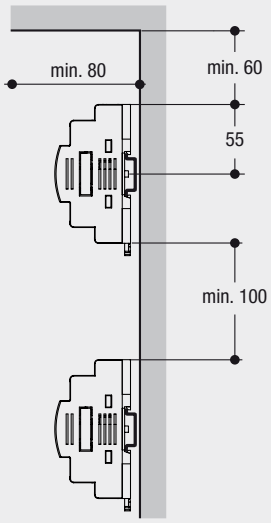
Operating conditions

Environmental condition			Suggestion
Operating conditions		Temperature 0...+50°C	
	%Rh	Umidity: 5... 95% Rh non condensing	
Special conditions		Temperature > 50°C	Use forced ventilation
	%Rh	> 95% RH	Warm up
		Conducting atmosphere	Use filter
Forbidden conditions		Corrosive atmosphere	
		Explosive atmosphere	

Mounting position

- Mount the module vertically;
- In order to help the ventilation flow of air, respect the distances between modules and walls or other modules.

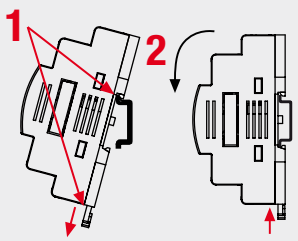
Mounting position (mm)



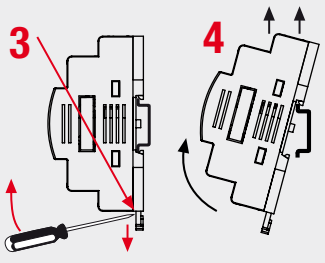
Mounting/removing the modules on/from the DIN rail

1 Open the 2 spring slides on the lower part of the CPU, clip the upper part of the module to the rail;
2 Rotate the module downwards, then close the 2 spring slides;
3 Switch OFF the Power Supply
Lower the spring slide by inserting a flat-blade screwdriver as indicated;
4 Turn and lift the module upwards to remove the CPU from the DIN rail.

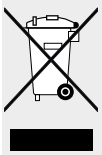
Mounting the module



Removing the module



Disposal



The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal.

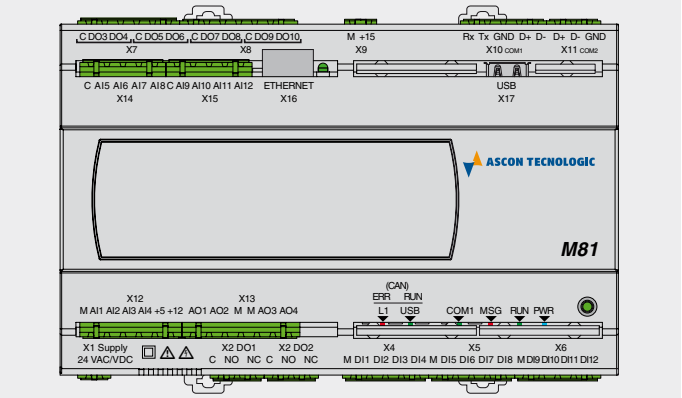
Accessories

24 VDC Power supply
APS2ALEDR12024 (120 W, 5.0 A),
APS2ALNDR75-24 (75 W, 3.2 A),
APS2ALMDR20-24 (20 W, 1.0 A)

Screw Terminal Blocks
APS2/M81-KITSCREW

Electrical connections

Terminals connections and plugs



Conn.	Label	Signals
X1 Supply	24 Vac/ Vdc	Power Supply
		Power Supply
X2 DO1	C	SPDT relay/SSR Vac/dc (+)
	NO	SPDT relay/SSR Vac/dc (-)
	NC	SPDT relay
X3 DO2	C	SPDT relay/SSR Vac/dc (+)
	NO	SPDT relay/SSR Vac/dc (-)
	NC	SPDT relay
X4	M	Common of DI1... DI4
	DI1...DI4	Digital inputs 1... 4
X5	M	Common of DI5... DI8
	DI5... DI8	Digital inputs 5... 8

Conn.	Label	Signals
X10 COM1	RX	RS232
	TX	
	GND	
	D+	RS485
	D-	
X11 COM2	D+	RS485
	D-	
	GND	
X12	AI1...AI4	Analogue inputs 1... 4
	+5	Voltage output +5 Vdc, 30 mA max.
	+12	Voltage output +12 Vdc, 80 mA max.

Description		Plugs of all terminals	
Flexible cable section:		0.2... 2.5 mm² (AWG24... AWG12)	
	Stripped wire	**Screw:** 7mm	**Spring:** 10mm
	Flat blade screwdriver	0.6 x 3.5 mm	0.4 x 2.5 mm
	Tightening torque	0.5... 0.6 Nm	-

Conn.	Label	Signals
X6	M	Common of DI9... DI2
	DI9... DI12	Digital inputs 9... 12
X7	C	Common of relays 3... 4
	DO3... DO4	Relays outputs 3... 4
	C	Common of relays 5... 6
	DO5... DO6	Digital outputs 5... 6
X8	C	Common of relays 7... 8
	DO7... DO8	Digital outputs 7... 8
	C	Common of relay 9
	DO9	Relay output 9
	C	Common of relay 10
	DO10	Relay output 10
X9	M	Ground
	+15	Voltage output +15 Vdc

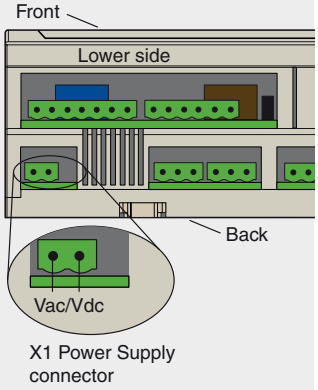
Conn.	Label	Signals
X13	AO1... AO2	Analogue outputs 1... 2
	M	Common AO1... AO2
	M	Common AO3... AO4
	AO3...AO4	Analogue outputs 3... 4
X14	C	Common AI5...AI8
	AI5...AI8	Analogue inputs 5... 8
X15	C	Common AI9...AI12
	AI9...AI12	Analogue inputs 9... 12
X16	Ethernet	RJ45 ethernet port
X17	USB	USB port

Technical data:
- The green terminals are male connectors (pitch 5 mm), the corresponding female plugs are snap-on connectors with screw or spring terminals for connecting the wires;
- Made with self extinguishing material as required by UL94 V0 standard;
- Overvoltage cathegory/pollution degree II/2;
- Max. load current/section 8A/2.5mm² at 65°C;
- Test pulse voltage: 4 kVp.

⚠ Make sure that the overall current absorption (modules and field devices) matches the power supply;

⚠ In order to avoid excessive voltage drops, install the most power consuming modules closer to the power supply.

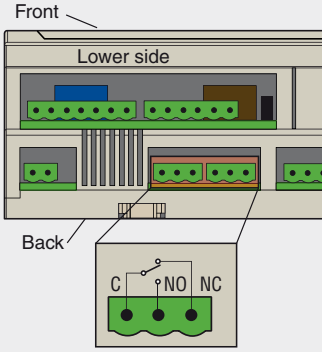
Power supply



X1 Power Supply connector

- Connector X1: 24Vac/dc (–10...+10%), 15W max.;
- The power supply terminals (**X1-1** and **X1-2**) are not polarized as the CPU acceps both the 24 Vac and 24 Vdc.

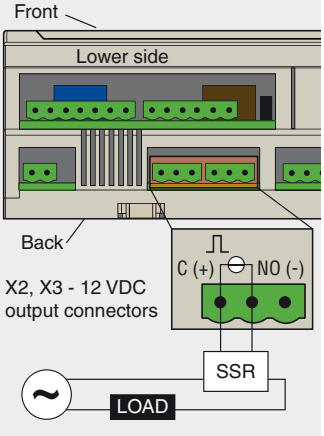
Digital outputs DO1/DO2: SPDT Relays



X2, X3 SPDT connectors

- Connectors X2, X3: 2 SPDT relays (form C) outputs;
- Rate: 5 A (for resistive loads);
- Isolation: 2500V beween channel and Power Supply and between channel and main electronics.

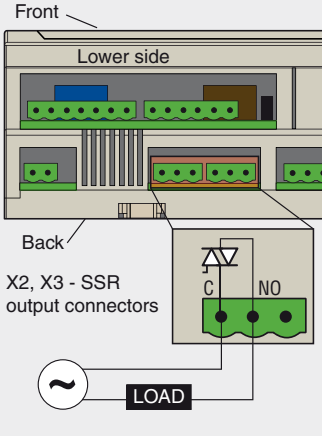
Digital outputs DO1/DO2: Vdc for SSR



X2, X3 - 12 VDC output connectors

- Connectors X2, X3: 12 Vdc for SSR outputs;
- Voltage output 0/12 Vdc;
- Respect the polarity shown;
- Output not isolated.

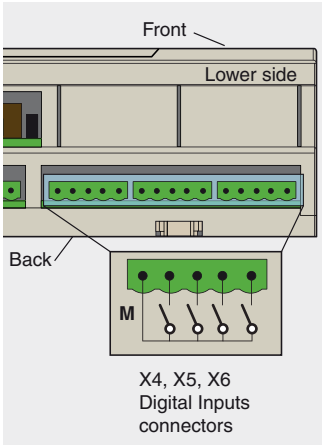
Digital outputs DO1/DO2: SSR



X2, X3 - SSR output connectors

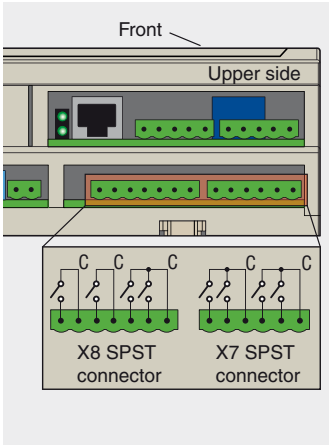
- Connectors X2, X3: 2 SSR outputs;
- Rate: 2 A, 250 Vac or 2 A, 24 Vdc;
- Zero Crossing Function;
- Isolation: 2500V beween channel and Power Supply and between channel and main electronics.

Digital Inputs



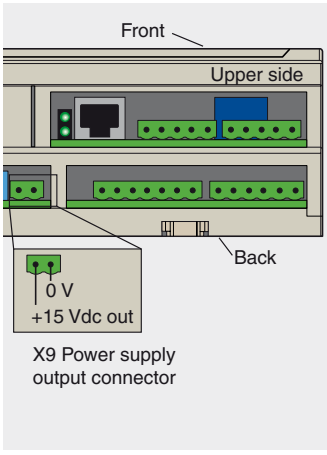
- Connectors X4, X5, X6: DI01... DI12 digital inputs;
- Isolation: 800V between channel ad Power Supply.

Digital outputs: SPST Relays



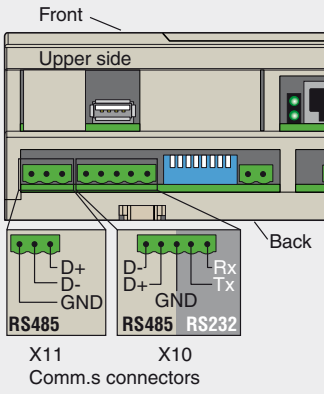
- Connectors X7, X8: 8 SPST NO relays (form A) outputs;
- Rate: 2 A (for resistive loads);
- Isolation: 2500V beween channel and Power Supply and between channel and main electronics.

Power Supply Output



- Connectors X9: 15 Vdc Power Supply Output;
- Max. output power: 3 W.

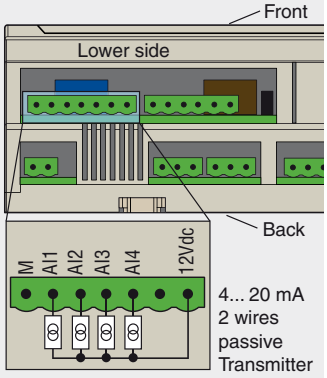
Serial Communications Ports



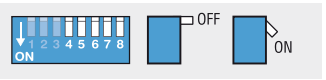
- Connector X10: to connect an RS232/485 terminal (also for setup purposes). Through this port, using the Modbus protocol (master/slave) or serial ASCII the PLC can connect a fieldbus network;
- The RS232 cable must be shorter than 15 m;
- Connector X11: RS485 port to connect a fieldbus network using the Modbus protocol (master/slave) or serial ASCII;
- These two ports can be configured using the DIP switches on the right of the X10 connector;
- Isolation from other electronics: 1600 V.

Analogue input connectors

X12 Analogue input connector

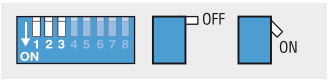


- For the analogue input, respect the polarity shown;
- Pay attention to connect the power source to each external sensor;
- Type: 0/1... 5 V, 0/2... 10 V, Ratiometric (5 V ref.), 0/4... 20 mA;
- Resolution: 16 bit;
- Accuracy: 0.5%.



Some parameters of the Service Port (Com 1) can be configured using switches 4...8 of the DIP switch block located close to the X10 connector. The table that follows describes the selectable options.

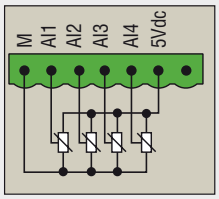
SW	ON	OFF
4	RS232 enabled	RS232 disabled
5	RS485	RS232
6	Termination resistance (ON/OFF) (110Ω) (default: disabled = OFF)	
7	Line polarization Pull-Down (ON/OFF) (default: disabled = OFF)	
8	Line polarization Pull-Up (ON/OFF) (default: disabled = OFF)	



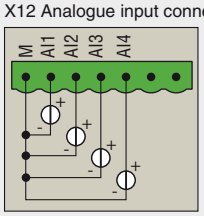
Some parameters of the RS485 (Com 2) Modbus Port can be configured using selectors 1...3 of the DIP switch block located close to the X10 connector. The table that follows describes the selectable options.

SW	ON	OFF
1	Termination resistance (ON/OFF) (110Ω) (default: disabled = OFF)	
2	Line polarization Pull-Down (ON/OFF) (default: disabled = OFF)	
3	Line polarization Pull-Up (ON/OFF) (default: disabled = OFF)	

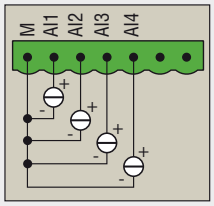
X12 Analogue input connector



X12 Analogue input connector

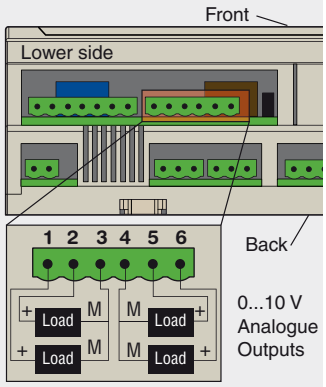


X12 Analogue input connector



Analogue Output Connectors

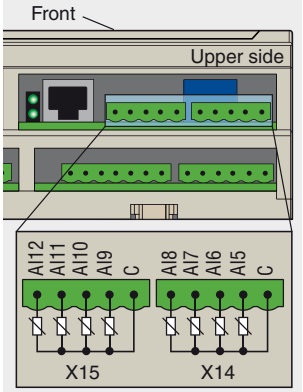
X13: Analogue Output connectors



- For the analogue output, respect the polarity shown;
- Type: 0... 10V;
- Load: > 1kΩ;
- Resolution: 16 bit;
- Accuracy: 0.5%;
- Isolation:
  800V Channel-Power supply,
  50V channel-main electronics.

NTC, PTC, Pt1000 analogue input connectors

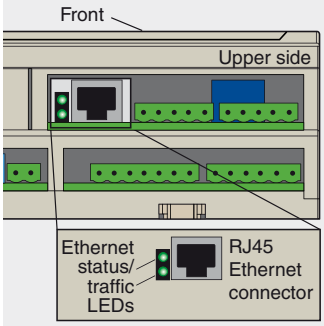
X14, X15 - NTC, Pt1000 input connectors



- For the 2 wire analogue inputs, follow the connecting diagram illustrated;
- Type: NTC, Pt1000.

ETHERNET CONNECTOR

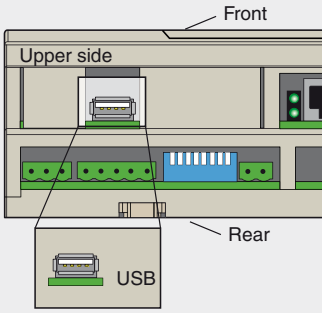
X16 - Ethernet RJ45 connector



- The Ethernet connection is made through a standard J45 connector;
- The 2 green LEDs near to the Ethernet connector show the port status and the communication traffic

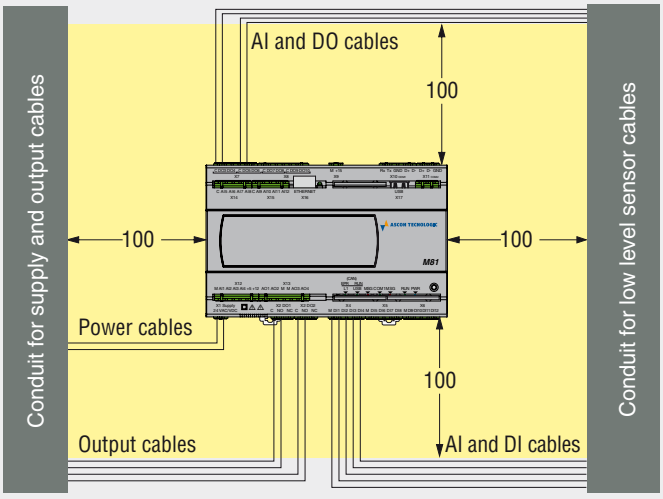
USB PORT CONNECTOR

X17 - USB type A connector



- USB type A receptacle (X17) to connect a flash drive (system files upload or data logging download);

SUGGESTED WIRES ROUTING



Despite the fact that the instrument has been designed to work in an harsh and noisy environment, it is strongly recommended to follow the following suggestions.

All the wiring must comply with the local regulations.

The supply wiring should be routed away from the power cables. Avoid to use electromagnetic contactors, power relays and high power motors nearby.

Avoid power units nearby, especially if controlled in phase angle. Keep the low level sensor input wires away from the power lines and the output cables.
Power lines and output cables must also be at 100 mm (min.) away from the CPU.

If this is not achievable, use shielded cables on the sensor input, with the shield connected to earth.

Warning!

Whenever a failure or a malfunction of the device may cause dangerous situations for persons, things or animals, please remember that the plant must be equipped with additional devices which will guarantee safety.

HOW TO ORDER

M81 = CPU of the Programmable Logic Controller

a: IN AI1..AI4 Pre-Configured
- = In 0/4...20 mA
5 = In 0/1... 5 V Ratiometrics

b: OUT DO1
D = Out SSR 2 A 24 Vdc
O = Out VDC for SSR
Q = Out SSR 2 A 250 Vac
R = Out DO1 Relay SPDT 5A (for resistive loads)

c: OUT DO2
D = Out SSR 2 A 24 Vdc
O = Out VDC for SSR
Q = Out SSR 2 A 250 Vac
R = Out DO1 Relay SPDT 5A (for resistive loads)

d: OUT DO7... DO10
R = Out DO7... DO10 Relay SPST-NO 2A (for resistive loads)
- = Not provided

e: OUT AO1 ... AO4
V = Out AO1... AO4 - 0... 10 Vdc
- = Not provided

f: USB Port
U = USB
- = Not provided

g: COMM Ports
1 = COM1 RS485/RS232
2 = COM1 RS485/RS232 + COM2 RS485
- = Not provided

h: Reserved Code
- = Fixed Code

i: Terminals
E = Removable screw connectors
N = Connectors not provided

j: Packaging
- = Fixed Code

k: Instructions
- = Not provided
E = English Manual

M81 _ _ _ _ _ _ _ _ - _ -