

USER'S MANUAL for TP1070 series



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ME7032_03
09/15

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1. Introduction

To grant a fast setup of the device please follow carefully the information in this manual.

1.1. Staff skill

Products described in this manual are devoted to PLC programmers or automation experts only. MECT S.r.l. declines any responsibility about malfunctioning or damage caused by incorrect use of MECT devices, due to noncompliance to this manual information. MECT S.r.l has an help desk.

1.2. Symbols

**Danger**

Follow this advice to avoid people injury.

**Warning**

Follow this advice to protect the device.

**Caution**

Follow this advice to have a more effective performance.

**ESD (Electrostatic discharge)**

Danger: possibly damage due to Electrostatic discharge.

**Note**

Step to follow for a correct installation.

**Additional information**

1.3. Terms

PLC:	TP1070
Terminals:	MPNC020; MPNC030
System:	PLC (TP1070) with terminals

1.4. Security



Attention

Switch off devices before connecting them.



ESD (Electrostatic discharge)

Modules have electronic components that can be damaged by electrostatic discharge. Be sure to be connected to ground when handle the devices.

The instrument has no power switch and no internal fuse, but it powers on immediately after connecting a correct power supply input (check the power supply value on the instrument label). Keep the power supply line as short as possible and keep it separate from other power lines.

For security reasons it is necessary to have a 2 section power switch with a fuse near the instrument and easily replaceable.

Avoid the presence of other power actuators in the same control panel, high humidity, excessive heat and corrosive gas.

Instruments must have a power supply from security transformers or SELV transformers.

1.5. REFERENCE MANUAL

ME7028 Mect configurator

ME7041 Quick Start

2. System description

TP1070 is a device composed by a PLC and a HMI with touch-screen monitor 7" width and 800 x 480 pixel resolution with 262.000 colors. TP1070 has digital and analogue input and output, field bus CanOpen and Modbus, and a 100Mbit/s Ethernet. The device can be applied in horizontal or in vertical design with the option "V" (see following pictures).



Figure 1: Front view TP1070 (horizontal version)



Figure 2: Front view TP1070 (vertical version)

2.1. Specification

TP1070 is based on a multiprocessor system. PLC and HMI are based on a 454MHz ARM9.

Table 1

PLC Hardware characteristics	
PLC Processor	ARM926JE 454MHz
RAM	128MB
FLASH	128MB
Non volatile variables	On FLASH memory
Real Time Clock	Yes with rechargeable battery
Screen	TFT 800 x 480 pixel 262k colors
Touch screen	Resistive 4 wires
Ethernet	10Mbit/s - 100Mbit/s self recognition
USB	Host 2.0
Field bus main features	
RTU Modbus	Master 2 or 4 wies
TCP Modbus	Server

3. Hardware Installation

In the following figures see the TP1070 dimensions.

3.1. Mechanical dimensions

Side view

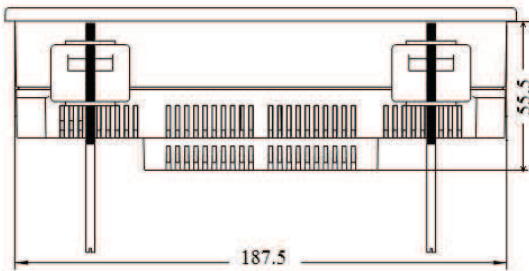


Figure 3

Rear view

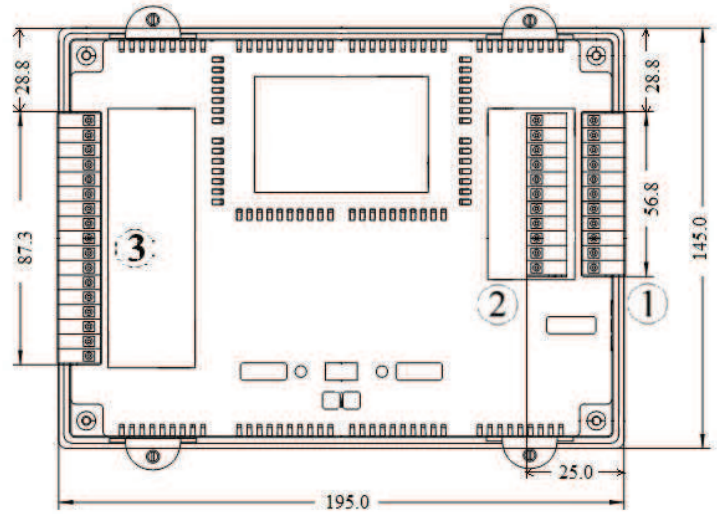


Figure 4

Side view

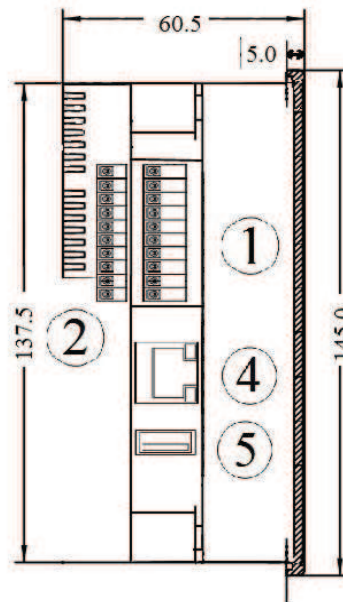


Figure 5

Technical specification

Table 2

Mechanical				
Material	Polycarbonate, Polyamide 6.6			
Dimensions W x L x H	195 mm x 145 mm x 60.5 mm			
Mounting plate	139mm x 189mm			
Installation	Panel installation			
Environmental conditions				
Operative temperature	0 °C ... 55 °C			
Storage Temperature	-20 °C ... +85 °C			
Relative Humidity	5 % a 95 % no condensation			
Electric isolation				
Air clearance	According to IEC 60664-1			
Pollution According to IEC 61131-2	2			
Protection				
Rear protection	IP 20			
Front protection	IP65			
EMC				
EMC according to EN 61000-6-2 (2001)				
Test specification	Values	Class	Criterion	
EN 61000-4-2 ESD	4 kV/8 kV (contact/air)	2/3	B	
EN 61000-4-3 electromagnetic fields	10 V/m 80 MHz ... 1 GHz	3	A	
EN 61000-4-4 burst	1 kV/2 kV (data/supply)	2/3	B	
EN 61000-4-5 surge	Data:	-/- (line/line)	B	
		1 kV (line/earth)		2
	DC supply:	0.5 kV (line/line)	1	B
		0.5 kV (line/earth)	1	
	AC supply:	1 kV (line/line)	2	B
	2 kV (line/earth)	3		
EN 61000-4-6 RF disturbances	10 V/m 80 % AM (0.15 ... 80 MHz)	3	A	
Emissions according to EN 61000-6-4 (2001)				
Test specification	Limit values/IQPI	Frequency Range	Distance	

EN 55011 (AC supply, conducted)	79 dB (μ V)	150 kHz ... 500	
	73 dB (μ V)	500 kHz ... 30	
EN 55011 (radiated)	40 dB (μ V/m)	30 MHz ... 230	10 m
	47 dB (μ V/m)	230 MHz ... 1	10 m
Emissions according to EN 61000-6-3 (2001)			
Test specification	Limit values/IQPI	Frequency Range	Distance
EN 55022 (AC supply, conducted)	66 ... 56 dB	150 kHz ... 500	
	56 dB (μ V)	500 kHz ... 5	
	60 dB (μ V)	5 MHz ... 30	
EN 55022 (DC supply/data, conducted)	40 ... 30 dB	150 kHz ... 500	
	30 dB (μ A)	500 kHz ... 30	
EN 55022 (radiated)	30 dB (μ V/m)	30 MHz ... 230	10 m
	37 dB (μ V/m)	230 MHz ... 1	10 m

**Attention**

Install the device in a panel with no more than 55 °C.

3.2. Panel mount

3.2.1. Distance

System must be installed with a space for heat dissipation and cabling. Avoid cabling superimposing to avoid EMC problems.

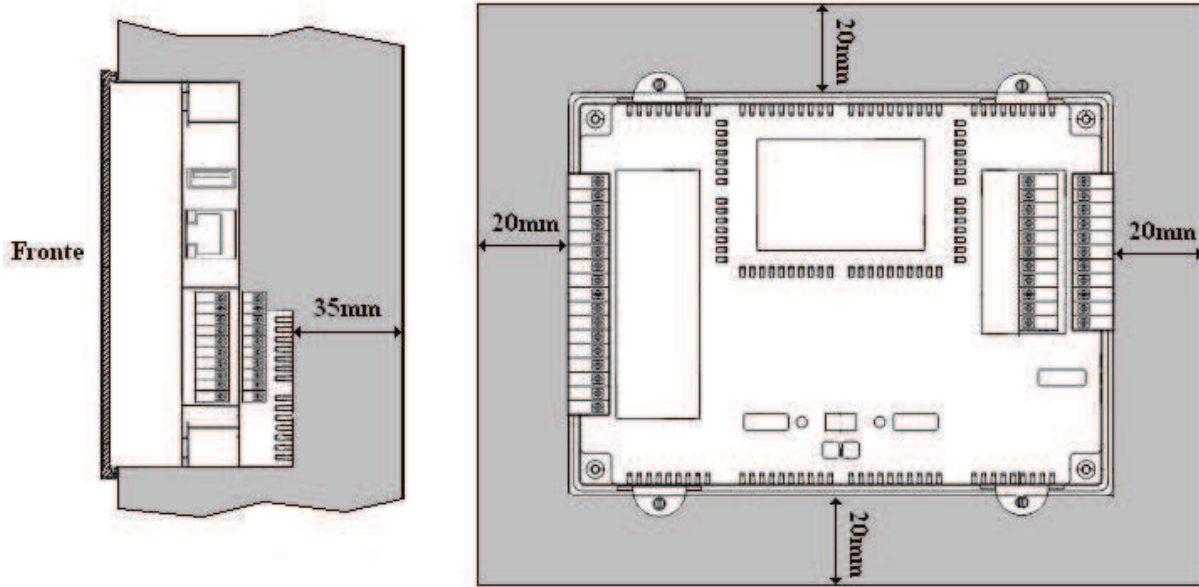


Figure 6A: Horizontal mounting

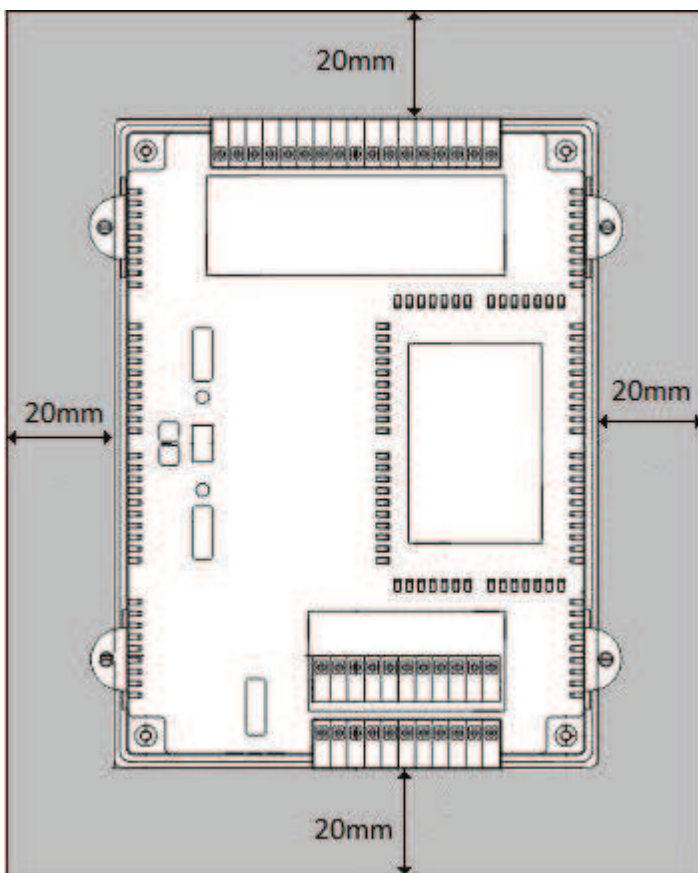


Figure 6B: Vertical mounting

4. TP1070 wiring

4.1. Connections

In the following figure see the wiring diagram with the available I/O.

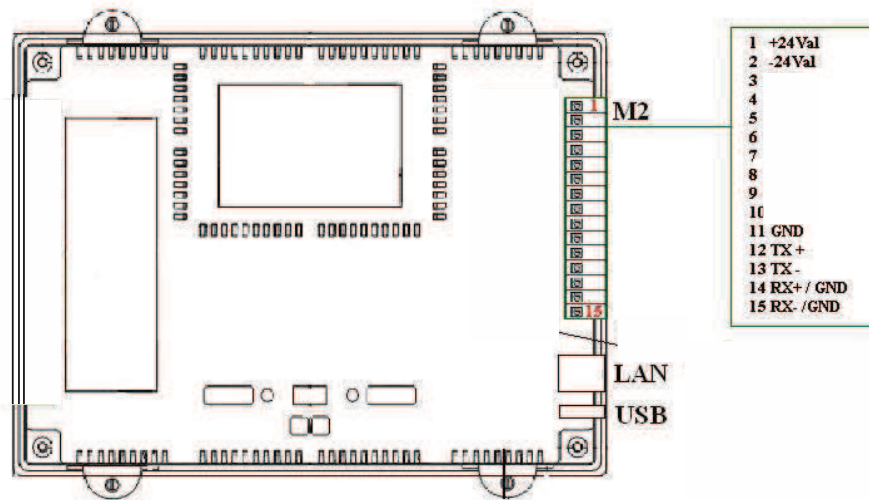


Figure 7

Table 3

TP1070	
Power Supply	24Vdc ±15% 400mA
USB A	2.0
Ethernet	Bit rate: 100Mbit/sec
Serial outputs	RS485 full duplex (hardware configuration)

4.2. Power supply

4.2.1. Isolation

Device has no galvanic isolation between input, output and power supply.

4.2.2. System power supply

TPAC1070 has a 24Vdc (-15% +20 %) according to the scheme in the figure. System is protected against reverse power supply.

4.2.3. Fuse

System has no internal fuse , so is suggested the use of an external 1A fuse for the panel power supply.

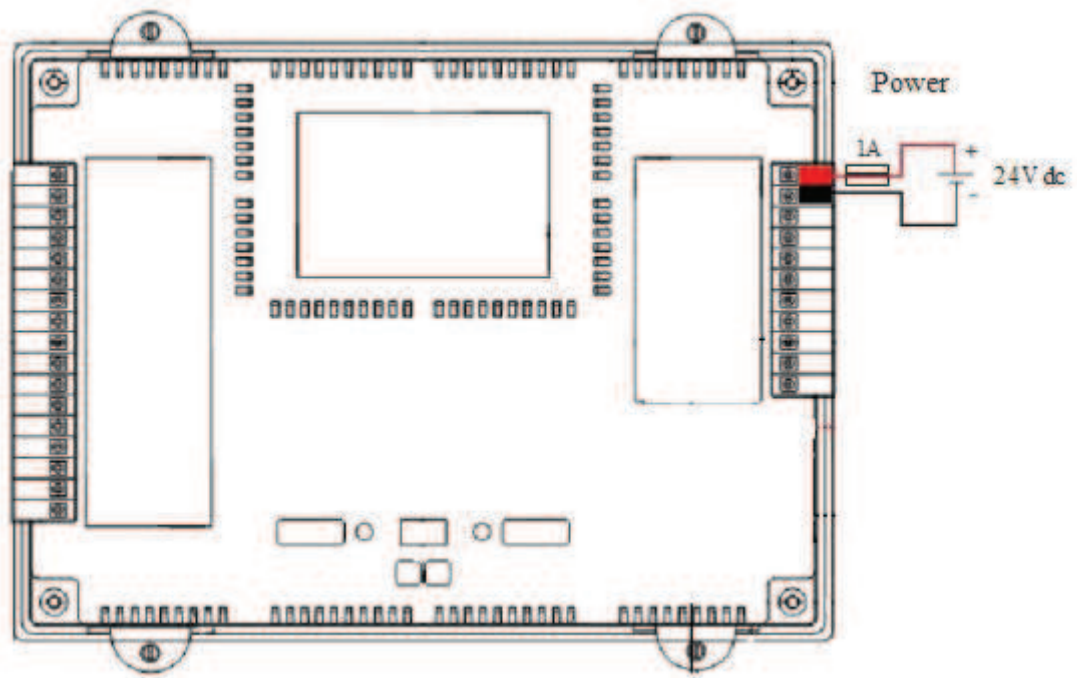


Figure 8



Attention

A wrong value for the power supply can cause a damage to the device

4.3. ModBus wiring

ModBus on TP1070 is a 4 wire RS485 serial line, on the M2 terminal board on pins:

Table 4

Pin	Segnale	Description
11	GND	
12	TX +	Line + Tx
13	TX -	Line - Tx
14	RX +	Line + Rx
15	RX -	Line - Rx

Example of a wiring of a system composed by:

- TPLC005
- MPNC020
- MPNC030
- TP1070

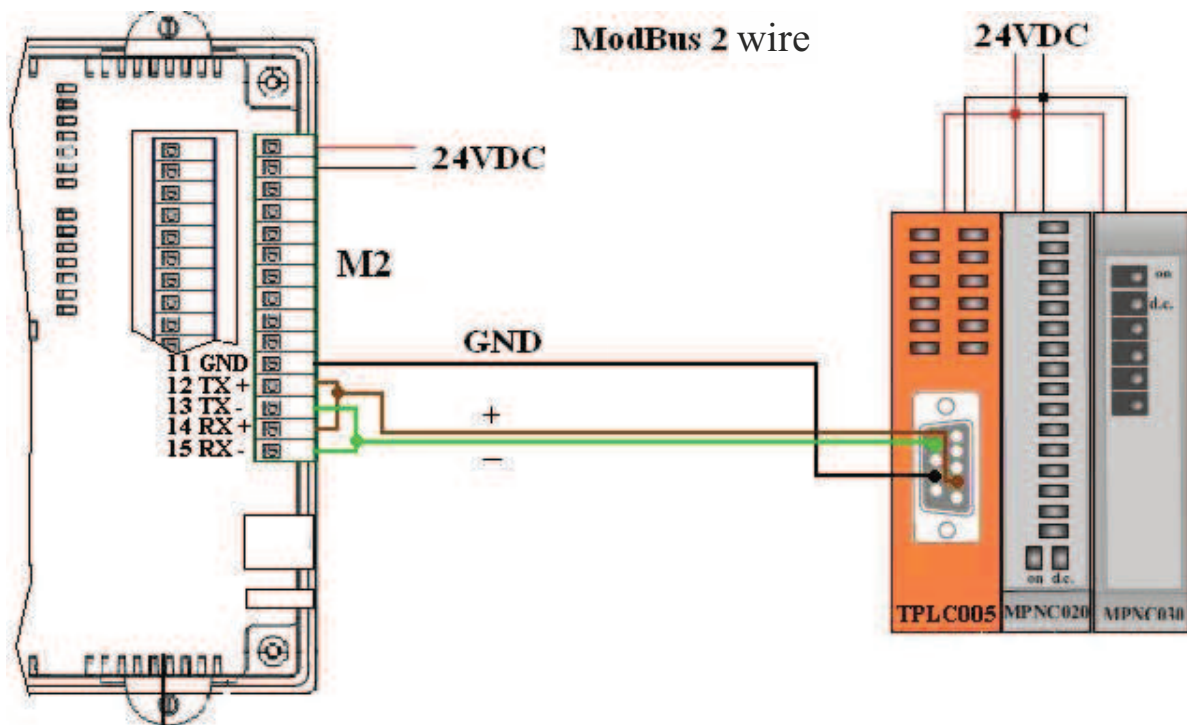


Figure 9

5. Peripherals

5.1. USB

TPAC1070 has an USB 2.0 host for:

- software update.
- data storage: datalogger.
- Connect USB peripherals as printers, mouse, etc.

Specific connection of external peripherals are implemented on request.

5.2. Ethernet

TP1070 has a 10/100Mbit/s ethernet port with autoconfiguration, with direct or inverse connection cable.

TP1070, by ethernet, can be controlled by a personal computer, it is possible to control the I/O of TP1070 by means of a program on a PC.

6. HMI

To set the TP1070 is necessary to develop a software in QT Creator based on QT libraries, custom-tailored on MECT operator panel.

A specific tutorial is furnished with the device.

The QT Creator suite software is available in Windows environment.

6.1. System variables

The system can use 5472 interchange variables between HMI and automation (at maximum) which include:

internal variables, interchange variables on Modbus network, retentive variables.

The variables are defined by a tool furnished from Mect.

7. How to order



A - Interface

- A = LAN + USB + RS485
- B = LAN + USB + RS485 + CAN

B - Orientation

- Blank = Horizontal
- V = Vertical

C - Options

Upon customer's request