USER'S MANUAL
TP1043 02 series
HMI – Operator panel

ME7056_13
05/23

INDEX

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.   *Simbols*

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: TP1043 02
Terminals: MPNC006,   MPNC020,   MPNC030,   MPNC035
                       MPNE series
System: PLC (TP1043 02) 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 safety reasons it is necessary to have a 2 section power switch with a fuse near the instrument 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 safety transformers or SELV transformers.

1.5. *Reference Manual*

The **Quick Start** (downloadable from the web site) and **MectSuite Tutorial** are reference manuals for MectSuite to develop HMI and PLC applications.
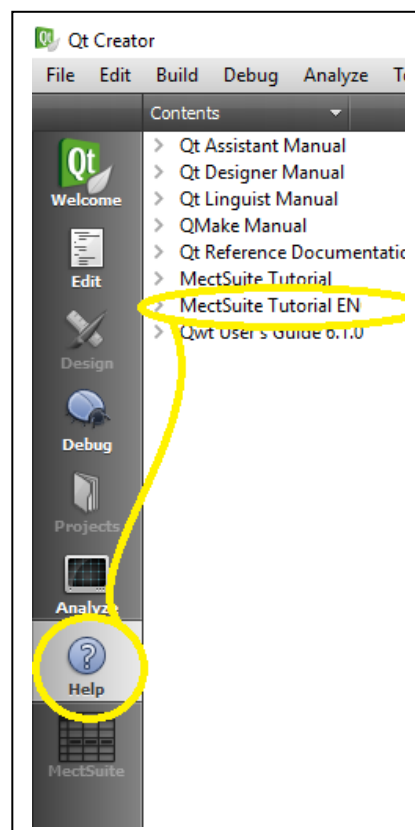
2. System description

TP1043 02 is a device composed by a PLC and a HMI with touch-screen monitor 4.3" width and 480 x 272 pixel resolution with 262.000 colors.

TP1043 allows the supervision of networked Modbus RTU and Modbus TCP devices. The networks are managed simultaneously by TP1043 and data from a network can be sent to another in order to create a bridge between the two networks.

A Micro-USB host port allows, with a special adapter, the use of an USB-pen drive for software updates and data log. Through a GPRS/UMTS or Wi-Fi key (optionally sold by Mect) is possible to connect the operator panel to a Wi-Fi or Mobile network. Settings under MENU → OPTIONS → NETWORK_CFG → tab "Wi-Fi" or tab "Mobile"

On TP1043 02 there are up to 1 Kbyte for retentive variables stored on the internal flash memory.

The device is also able to manage an up to 64GB wide, micro SD card. The SD card is factory mounted on request.

A real-time clock buffered RAM maintains the date and time up to four months with the device turned off.

TP1043 02 is equipped with a micro PLC to make a small automation of the process.

The device can be applied in horizontal or in vertical design with the option "V" (see following pictures).
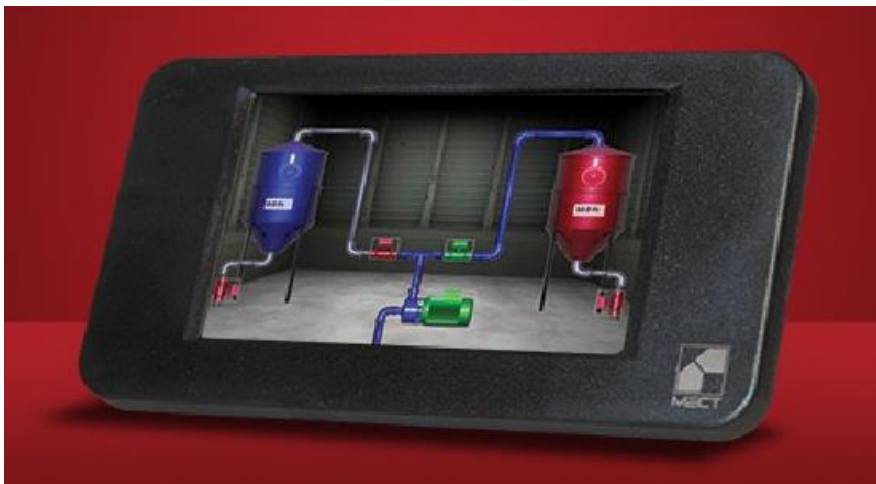

Figure 1: Front view TP1043 (horizontal version)

Figure 2: Front view TP1043 (vertical version)

2.1. *Specification*

TP1043 02 is based on a multiprocessor system. PLC and HMI are based on a 454MHz ARM9.

Table 1

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 480 x 272 pixel 262k colors
Touch screen	Resistive 4 wires
Ethernet	10Mbit/s - 100Mbit/s self recognition
Micro-USB	Host 2.0
Micro SD	Max 64GB
Software characteristics	
OS	LINUX 2.35
PLC	IEC61131-3
Graphics	Based on QT library
CAN	CanOpen 2.0
ModBus	Modbus RTU master
Storage memory	Possibility of history storage
Field bus main features	
RTU Modbus	Master 2 wires
TCP Modbus	Client
Power supply	
Power Supply **24Vac/Vdc**	12÷36Vdc - 150mA (24Vdc)
	24Vac ±20% - 150mA (only for models A or B)

| Tightening torque	
0,07-0,08 Nm	

Electromagnetic compatibility

The electromagnetic compatibility tests have been carried out at accredited laboratories, according to EN 61326-1, EN 61131-2 and EN 61000-6-2standards.

2.2 Mechanical dimensions
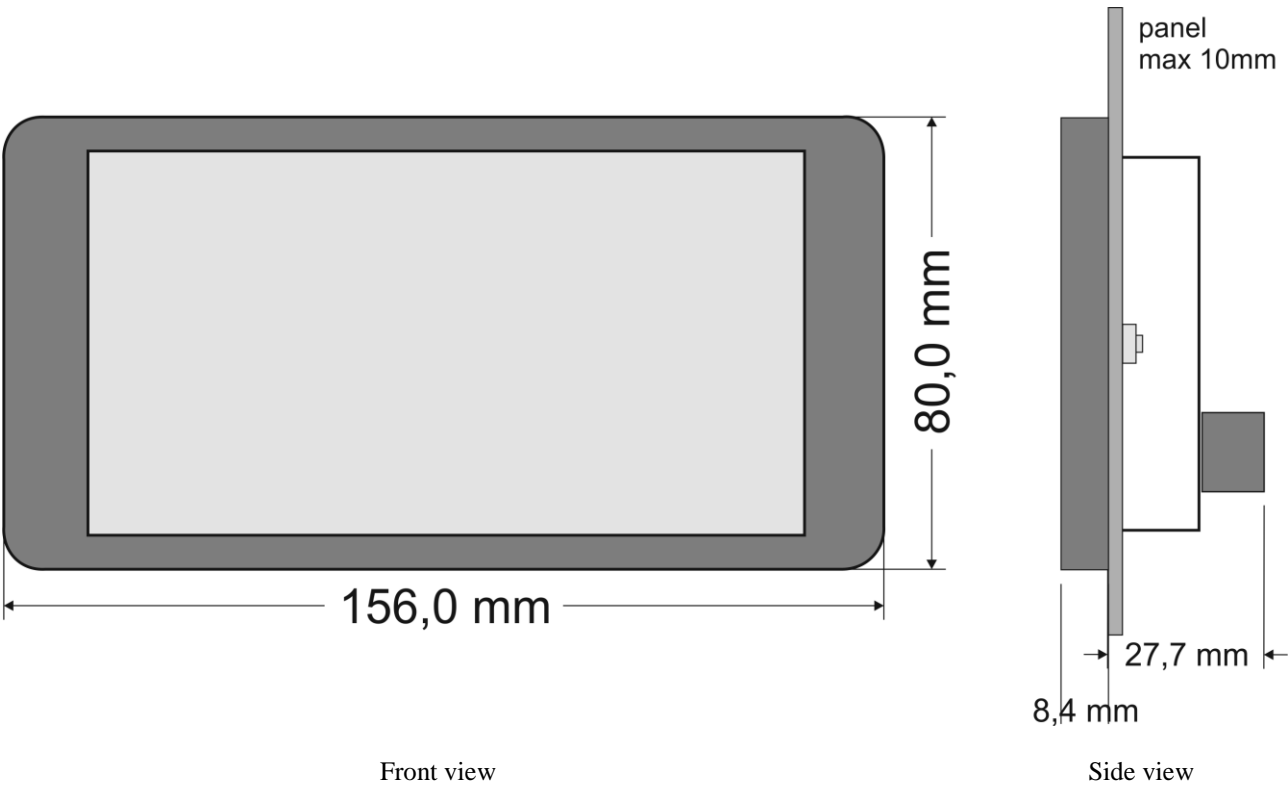
In the following figures see the TP1043 dimensions.
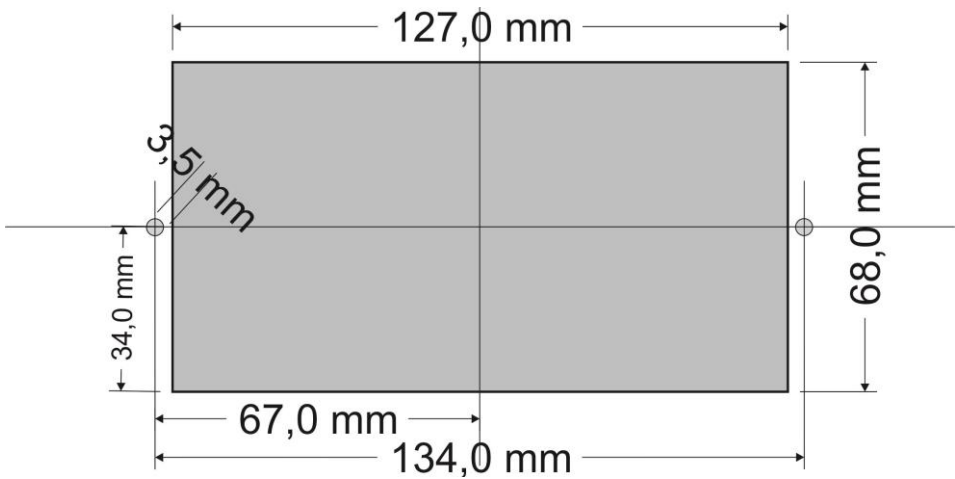
Panel with frame mounting and hooks fastening:
Encumbrance

Front view   Side view
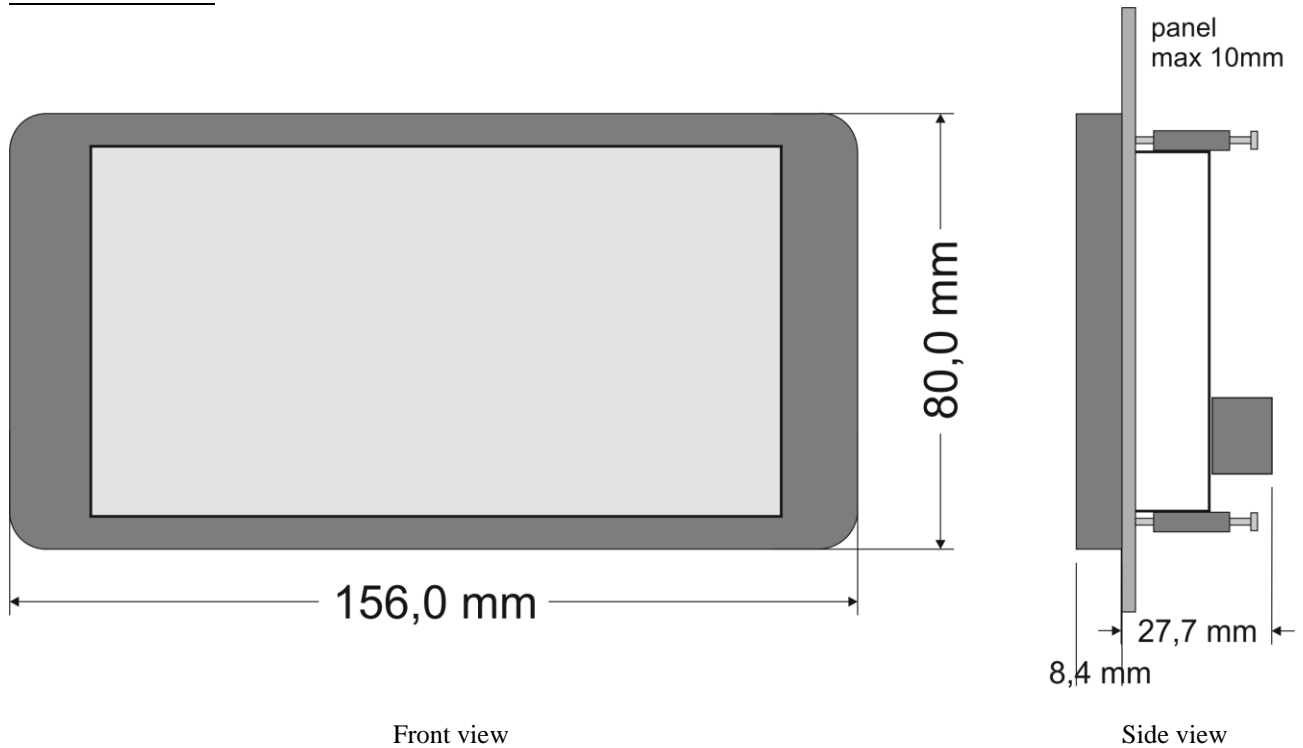
Mounting plate

Panel with frame mounting and screws fastening:

Encumbrance

Front view   Side view

Mounting plate

Panel without frame mounting:

In this case, the display has to be exactly at the same height of the panel, so for metal panels below 2,5mm it needs to insert a spacer to reach the exact height.
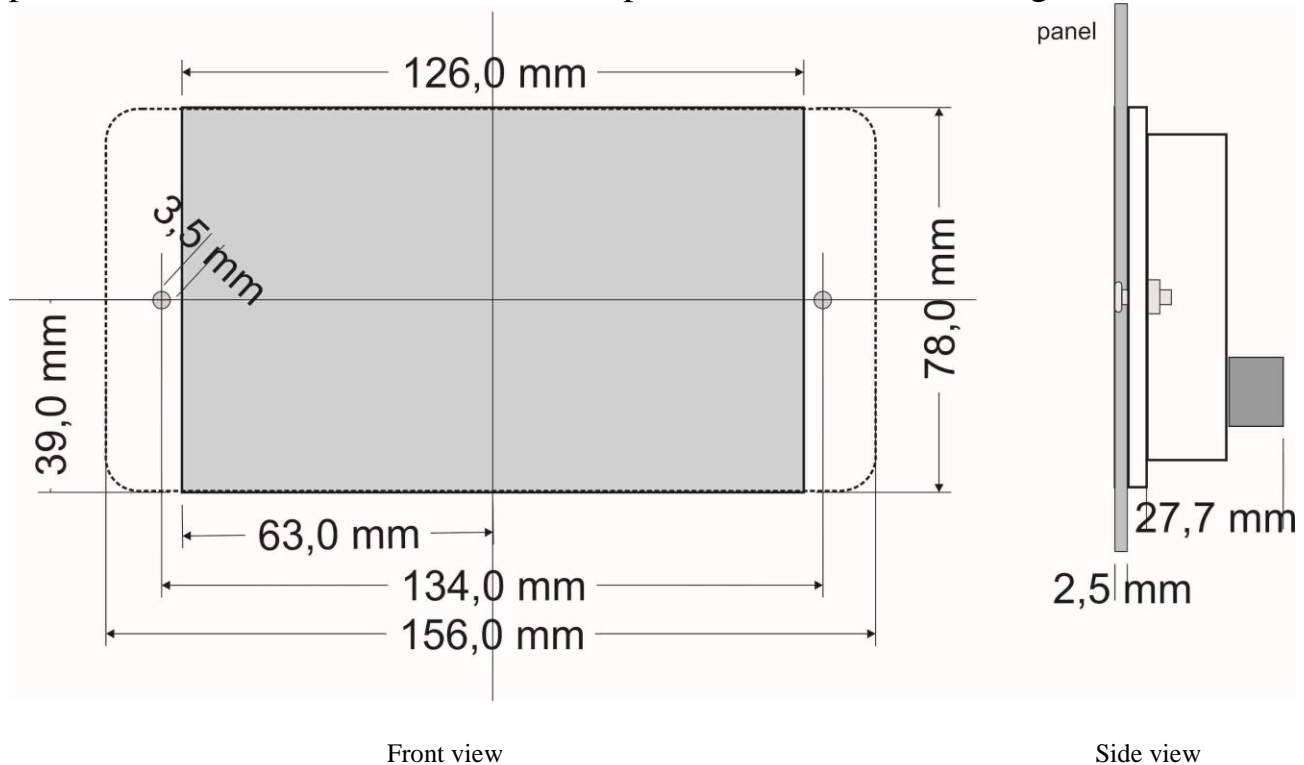

Front view   Side view

Technical specification

Table 2

Mechanical	
Material	ABS, Polycarbonate
Dimensions W x L x H	27 mm x 156 mm x 80 mm
Mounting plate	127mm x 68mm
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

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

2.3 Panel mount

2.3.1 Distance

The device must be installed with some space between other devices to allow the right dissipation and cabling.

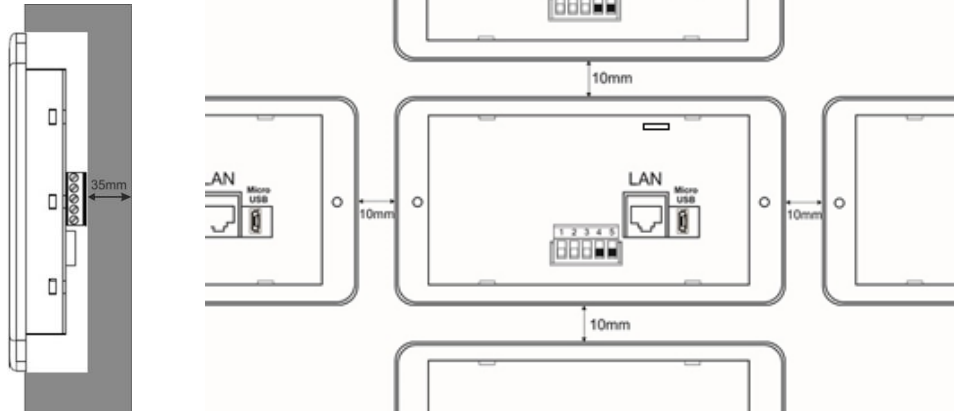In order to avoid EMC issues, you should not overlap cables.
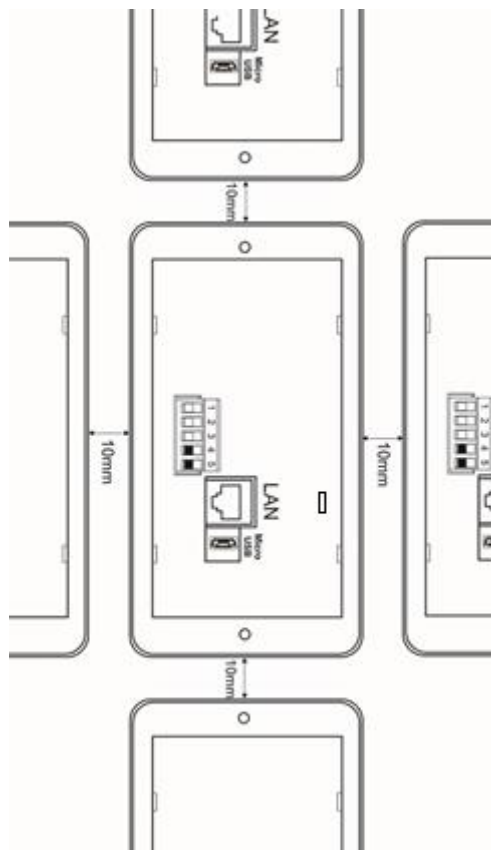

Figure 6A: Horizontal mounting

Figure 6B: Vertical mounting

2.4 TP1043 02 wiring

2.5 Connections

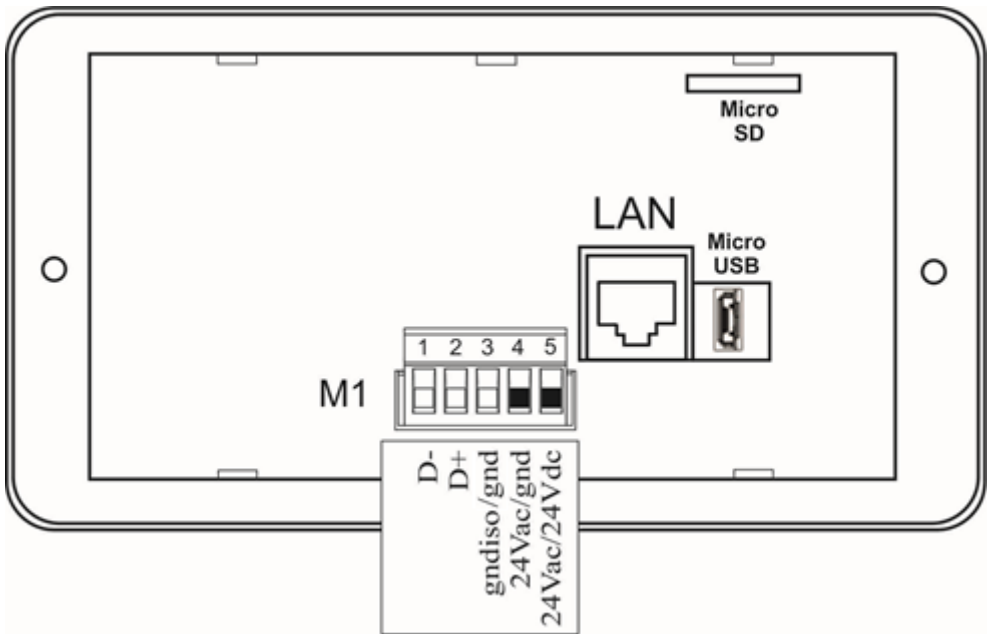In the following figure see the wiring diagram.

Figure 7

Table 3

TP1043 02	
Power Supply **24Vdc/Vac**	12÷36Vdc - 150mA (24Vdc) or 24Vac ±20% (only for models A or B) - 150mA
Micro-USB	2.0
Ethernet	Bit rate: 100Mbit/sec
Serial ouputs	RS485 Modbus half duplex (hardware configuration) or CANopen

2.6 Power supply

2.6.1 System power supply

TP1043 02 has a 12÷36Vdc or 24Vac (only for models A or B), see the model purchased, according to the scheme in the figure. System is protected against reverse power supply .

2.6.2   Fuse

The device has no internal fuse protection, so the use of an external 500mA fuse for the panel power supply is recommended.
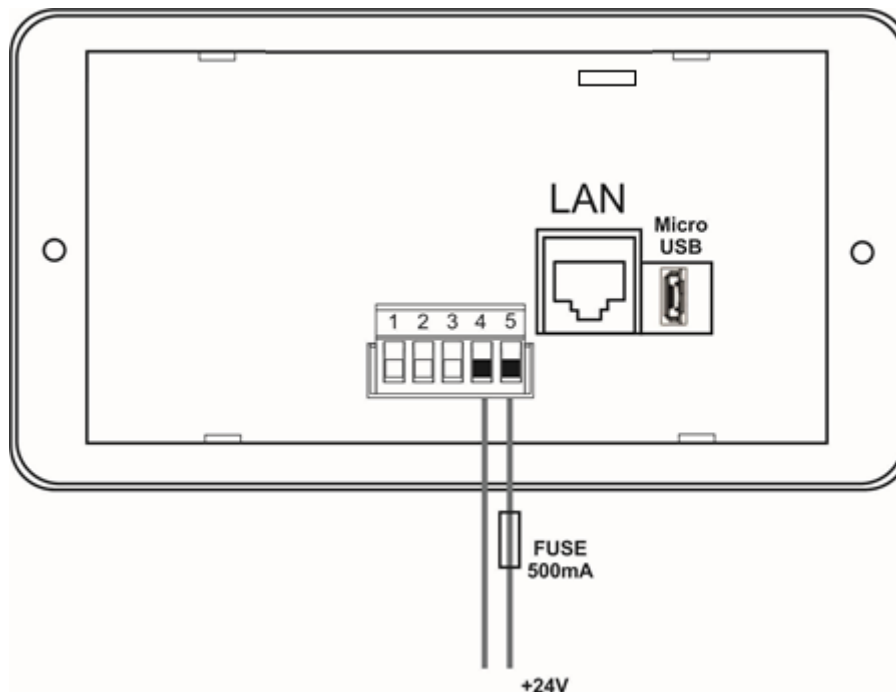

Figure 8

⚠ **Attention**
A wrong power supply voltage can damage the device

2.7 ModBus wiring

ModBus on TP1043 02 is a 2 wire RS485 serial line, at the following pins of the terminal board:

Table 4

Pin	Signal	Description
3	GNDiso / GND	
2	D +	Linea +
1	D -	Linea -

Example of wiring for a system composed by:

- MPNC006
- MPNC020
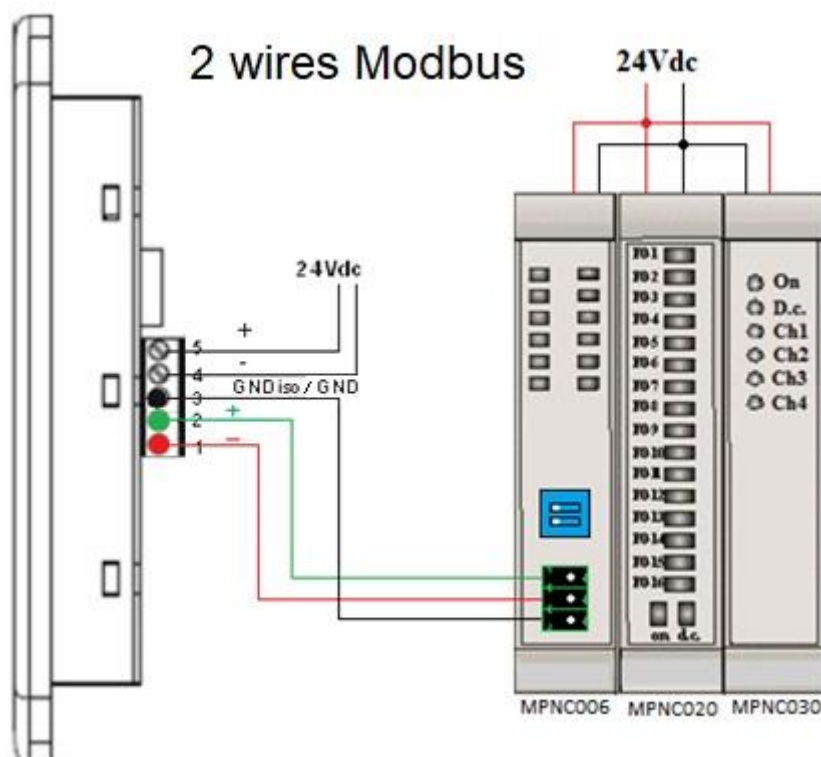- MPNC030
- TP1043 02

Figure 9

2.8 CANOpen wiring

The CANopen interface on TP1043 02 must be connected to the terminal block on the pins shown in the table.

Table 5

Pin	Signal	Description
3	GNDiso	
2	CAN H	Line +
1	CAN L	Line -

Example of wiring for a system composed by:
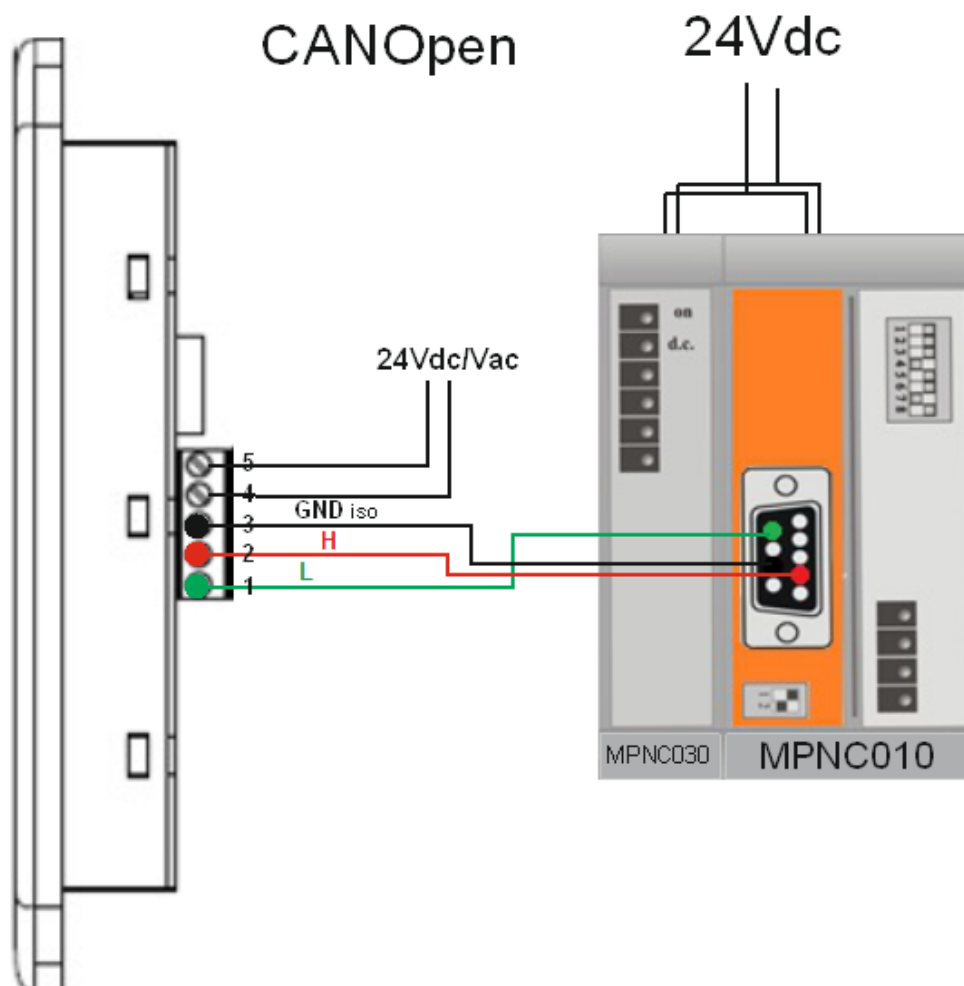
- MPNC010
- MPNC030
- TP1043 02

Figure 10

3   Peripherals

3.1 USB

TP1043 02 has a Micro-USB 2.0 host for:
- software update
- data storage: datalogger
- USB peripherals as printers, mouse, etc
- Wi-Fi or Mobile key interface (optionally supplied by Mect) to connect to a different network from LAN

Specific connection of external peripherals are implemented on request.

3.2 Ethernet

TP1043 02 has a 10/100Mbit/s ethernet port with auto-configuration, the connection cable between TP1043 02 and a personal computer can be either straight either cross.

3.3 Micro SD-Card

On TP1043 02 is it possible to insert a micro SD card up to 64 GB used by applications and/or data logging. The memory will be handled automatically by the device itself.

3.4 Configuration DIP switches

In the rear of the panel, there is a DIP switch, used for the boot configuration.
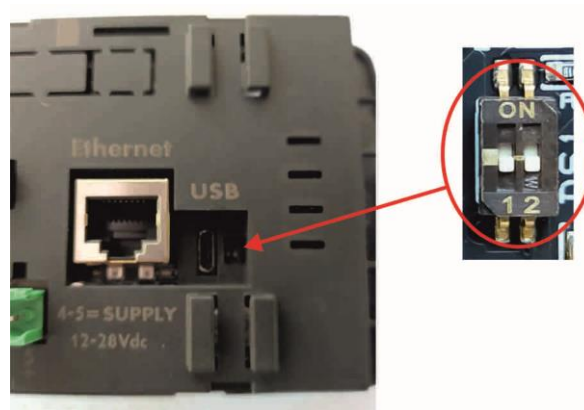
Three boot options are allowed:
- Internal FLASH
- SD card
- USB

Set accordingly the switches before the power up, to select the wanted boot mode.

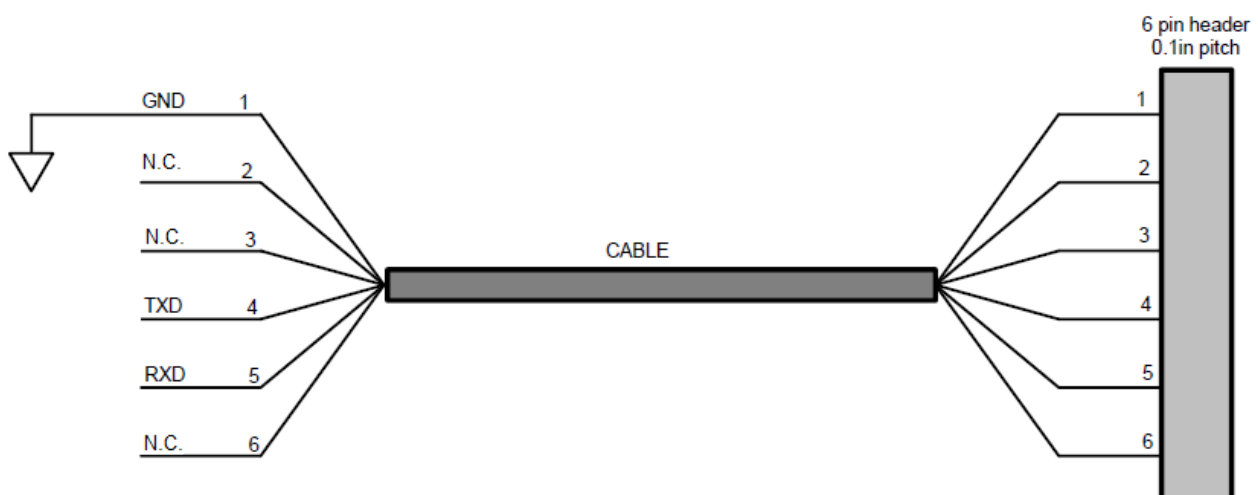Switches configuration is shown in the following table
Table 6

SW1	SW2	Boot mode	Note
OFF	OFF	Internal Flash (default)	Default configuration
OFF	ON	USB	Factory firmware upgrade do not use
ON	ON	SD card	
ON	OFF	SD card	

3.5 UART debug

In the bottom side of the rear panel there is a six pole header used for debug purpose. The port is a TTL UART with the following pinout:

A commercial adapter is available from FTDI: TTL-232R.

This interface is only available for debugging, it cannot be absolutely used for any functional purposes at all.

The use of this port is recommended for advanced users only.

4 HMI / PLC

The device is programmed by a development suite (Mect Suite - QT based), tailored to MECT products.
A tutorial specifically made for the device is available.
The Mect suite software run on Windows operative system.
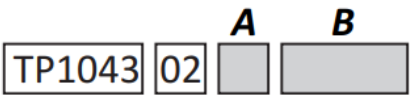
4.1 System variables

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 software "Mect Suite".

5 How to order

A - *Interface*

A   = Isolated RS485, Ethernet port (Rj-45), Micro-USB port
B   = Isolated CANopen, Ethernet port (Rj-45), Micro-USB port
AN = RS485 not isolated, Ethernet port (Rj-45), Micro-USB port
BN = CANopen not isolated, Ethernet port (Rj-45), Micro-USB port

B - *Power supply*

24VDC = 12÷36Vdc
24VAC = 24Vac ±20% (only for A or B interface)

All models are available in both **portrait** and **landscape** versions.

All models can use the **sMily remote connection and monitoring service**.