

USER'S MANUAL for TPAC1007 04 series HMI with PLC



MECT
mechatronic thinking

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INDEX

1.	Introduction.....	2
1.1.	Staff skill	2
1.2.	Symbols.....	2
1.3.	Terms	2
1.4.	Security	3
1.5.	Reference Manual	3
2	System description.....	4
2.1	Specification	5
2.2	Wiring description AA model.....	6
2.3	Wiring description AB model.....	7
2.4	Wiring description AD model.....	9
2.5	Wiring description AE model	10
2.6	Mechanical dimensions	11
2.7	Panel mounting	14
2.7.1	Distance.....	14
3	Connections TPAC1007 04	15
3.1	Isolation.....	15
3.2	System power supply	15
3.2.1	Fuse	16
3.3	IO wiring	16
3.4	ModBus wiring	18
4	Peripherals	20
4.1	USB	20
4.2	Ethernet	20
4.3	Micro SD-Card.....	20
4.4	Configuration DIP switches	21
4.5	UART debug	22
5	HMI / PLC	23
5.1	System variables	23
6	How to order	28

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:	TPAC1007
Terminals:	MPNC006, MPNC020, MPNC030, MPNC035 MPNE series
System:	PLC (TPAC1007) 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.

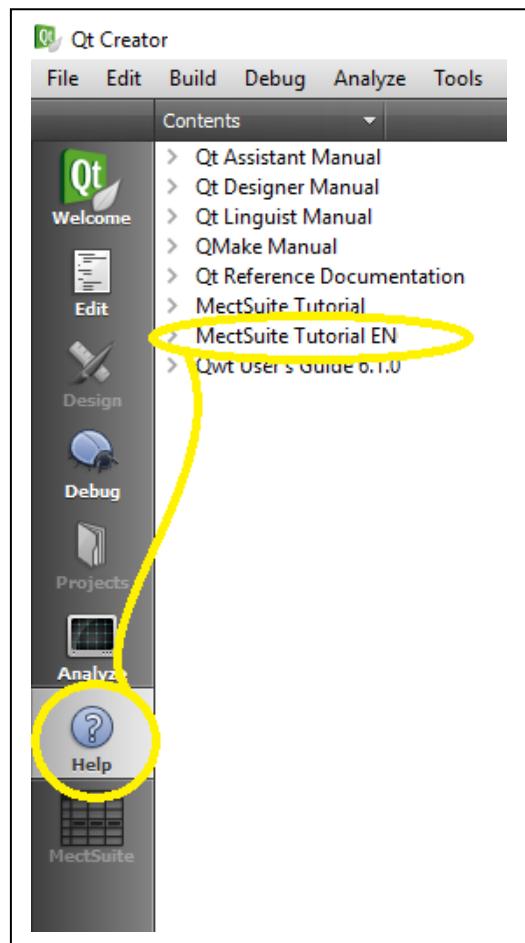
For security reasons it is necessary to have a 2 section power switch with a fuse near the instrument and easily replaceable.

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

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



2 System description

TPAC1007 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.

TPAC1007 allows the supervision of networked Modbus RTU and Modbus TCP devices. The networks are managed simultaneously by TPAC1007 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 TPAC1007 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 maintains the date and time up to four months with the device turned off.

TPAC1007 is equipped with a micro PLC with several digital and analogue I/O to make a small automation of the process.

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



Figure 1: Front view TPAC1007 (horizontal version)
version)



Figure 2: front view TPAC1007 (vertical

2.1 Specification

TPAC1007 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 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	64 GB
PLC software characteristics	
OS	LINUX 2.35
PLC	IEC61131-3
Graphics	Based on QT library
ModBus	Modbus RTU master
Storage memory	Possibility of history storage
Field bus main features	
Modbus RTU	Master/ Client 2 wires + Master/ Client 4 wires (TPAC100704AE only)
Modbus TCP	Master/ Client

Power supply	
12÷28VDC	
Power	3.5W digital output off

Tightening torque	
0,07-0,08 Nm	

Electromagnetic compatibility

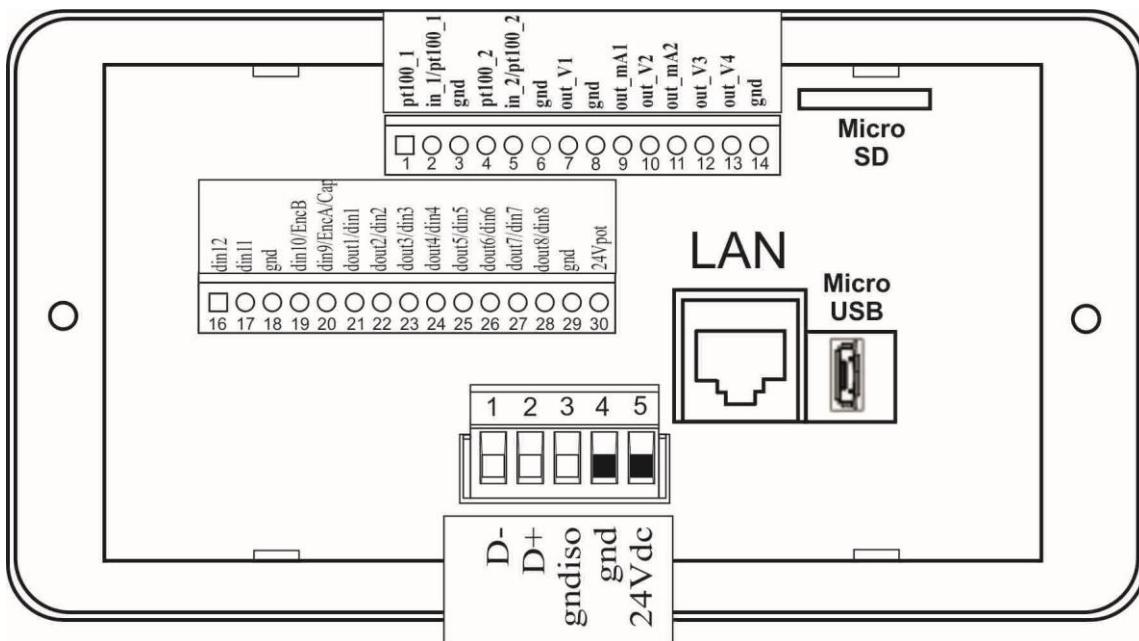
The electromagnetic compatibility tests have been carried out at accredited laboratories, according to EN 61326-1, EN 61131-2 and EN 61000-6-2 standards.

2.2 Wiring description AA model

See table for wiring of model TPAC1007 04 AA:

Table 2

TPAC1007 04 AA Expansion features					
		Input type	Resolution	Bit	Note
Universal analogue inputs	N° 2 (in1 – in2)	0÷20 mA	0.005mA	12	Input impedance 8Ω
		0÷10V	0.003V	12	Input impedance 1MΩ
		Thermocouples J(0°C ÷ 600°C), T(0°C ÷ 400°C), K(0°C ÷ 1200°C) S(0°C ÷ 1710°C) B(100°C ÷ 1800°C) R(0°C ÷ 1500°C)	1°C	12	Cold junction compensation
		PT100 r -40.0°C ÷ 200.0°C	0.1°C	12	
		PT100 E -40°C÷800°C	1°C	12	
		Output type	Resolution	Bit	Note
		0÷20 mA	0.01mA	12	Max impedance : 400Ω
Analogue output	N° 2 (out1-out2)	0÷10V	0.01V	12	Min impedance : 1KΩ
		PWM @250Hz	1%		Min impedance: 1KΩ
		0-10V	0.01V	12	Min impedance: 1KΩ
Analogue output	N° 2 (out3-out4)	PWM @250Hz	1%		Min impedance: 1KΩ
		Input type	Resolution		Note
Digital inputs	N°4 (din9-din12)	PNP or NPN (factory preset)	PLC cycle time		Inputs din9 and din10 can be used as incremental encoder max input frequency: 40kHz din9: input A / Capture(μs) din10: input B
Configurable Digital I/O	N°8 (din1-din8 / dout1 - dout8)	I/O Type	Resolution		Note
		PNP	PLC cycle time		200mA max for each output. 2 A max all outputs.



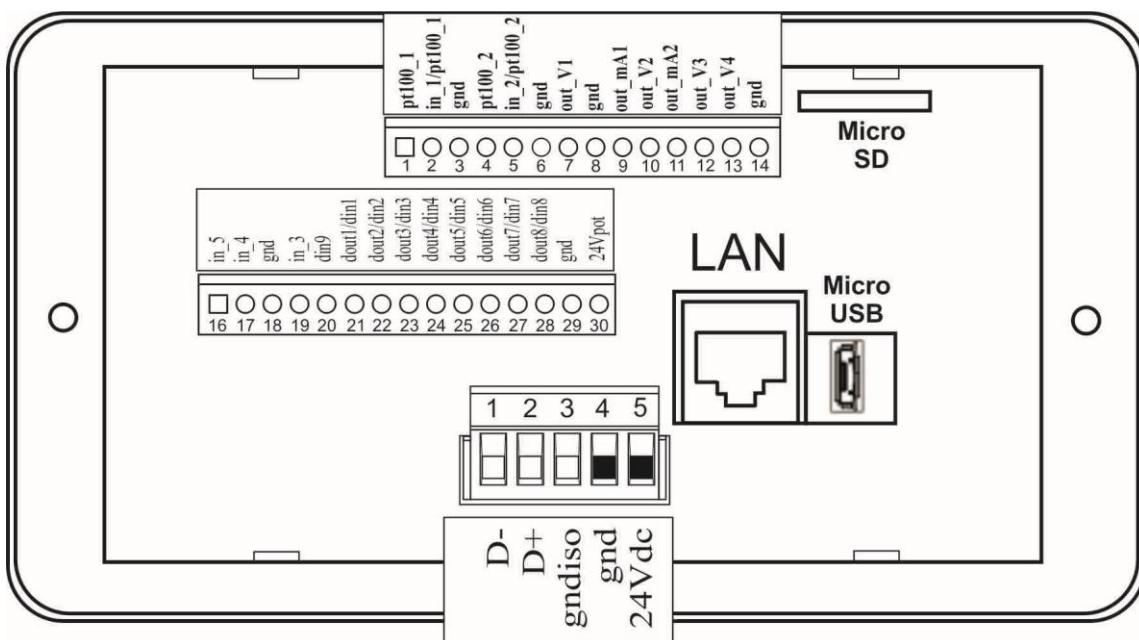
2.3 Wiring description AB model

See table for wiring of model TPAC1007 04 AB:

Table 3

TPAC1007 04 AB Expansion features					
		Input type	Resolution	Bit	Note
Universal analogue inputs	N° 2 (in1 – in2)	0÷20 mA	0.005mA	12	Input impedance 8Ω
		0÷10V	0.003V	12	Input impedance 1MΩ
		thermocouples J(0°C ÷ 600°C) T(0°C ÷ 400°C) K(0°C ÷ 1200°C) S(0°C ÷ 1710°C) B(100°C ÷ 1800°C) R(0°C ÷ 1500°C)	1°C	12	Cold junction compensation
		PT100 r -40.0°C ÷ 200.0°C	0.1°C	12	
		PT100 E -40°C÷800°C	1°C	12	
		0÷10V	0.005V	12	Input impedance 25kΩ
		Output type		Bit	Note
		0÷20 mA	0.01mA	12	Max impedance: 400Ω
Analogue output	N° 2 (out1-out2)	0÷10V	0.01V	12	Min impedance: 1KΩ

		PWM @250Hz	1%		Min impedance : 1KΩ
Analogue output	N° 2 (out3-out4)	0÷10V	0.01V	12	Min impedance: 1KΩ
		PWM @250Hz	1%		Min impedance: 1KΩ
Digital input	N°1 (din9)	Input type	Resolution		Note
		PNP o NPN (factory preset)	PLC cycle time		
Configurable Digital I/O	N°8 (din1-din8 / dout1 - dout8)	I/O Type	Resolution		Note
		PNP	PLC cycle time		200mA max for each output. 2 A max all outputs.

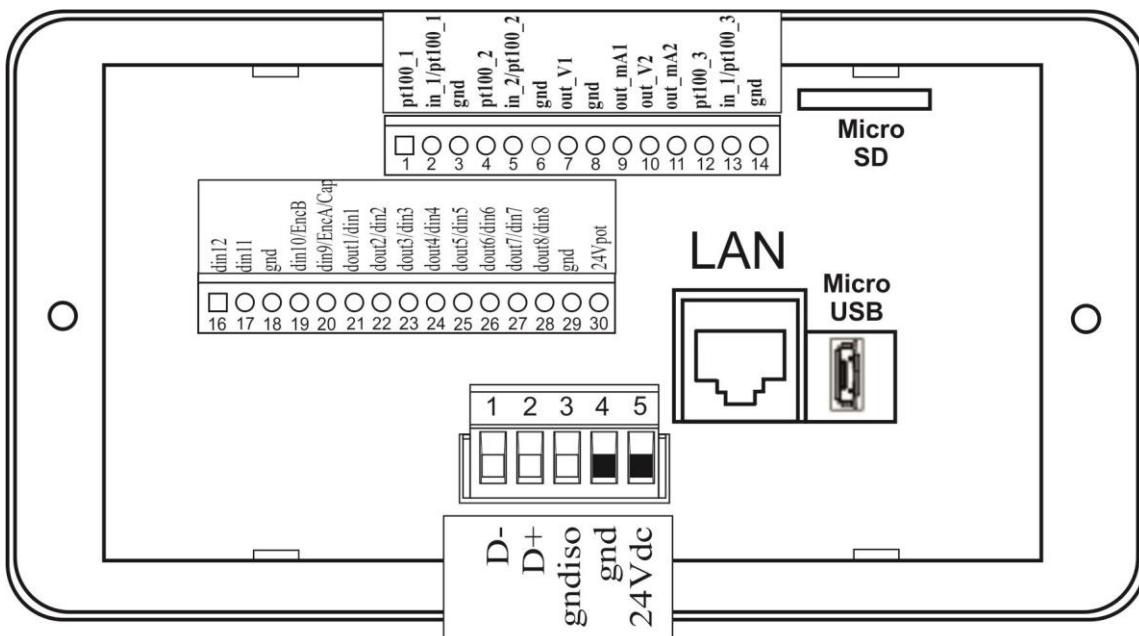


2.4 Wiring description AD model

See table for wiring of model TPAC1007 04 AD:

Table 5

TPAC1007 04 AD Expansion features					
		Input type	Resolution	Bit	Note
Universal analogue inputs	N° 3 (in1 – in3)	0÷20 mA	0.005mA	12	Input impedance 8Ω
		0÷10V	0.003V	12	Input impedance 1MΩ
		Thermocouples J(0°C ÷ 600°C), T(0°C ÷ 400°C), K(0°C ÷ 1200°C) S(0°C ÷ 1710°C) B(100°C ÷ 1800°C) R(0°C ÷ 1500°C)	1°C	12	Cold junction compensation
		PT100 r -40.0°C ÷ 200.0°C	0.1°C	12	
		PT100 E -40°C÷800°C	1°C	12	
Analogue output	N° 2 (out1-out2)	Output type	Resolution	Bit	Note
		0÷20 mA	0.01mA	12	Max impedance : 400Ω
		0÷10V	0.01V	12	Min impedance : 1KΩ
		PWM @250Hz	1%		Min impedance: 1KΩ
Digital inputs	N°4 (din9-din12)	Input type	Resolution		Note
		PNP or NPN (factory preset)	PLC cycle time		Inputs din9 and din10 can be used as incremental encoder max input frequency: 40kHz din9: input A / Capture(μs) din10: input B
Configurable Digital I/O	N°8 (din1-din8 / dout1 - dout8)	I/O Type	Resolution		Note
		PNP	PLC cycle time		200mA max for each output. 2 A max all outputs.

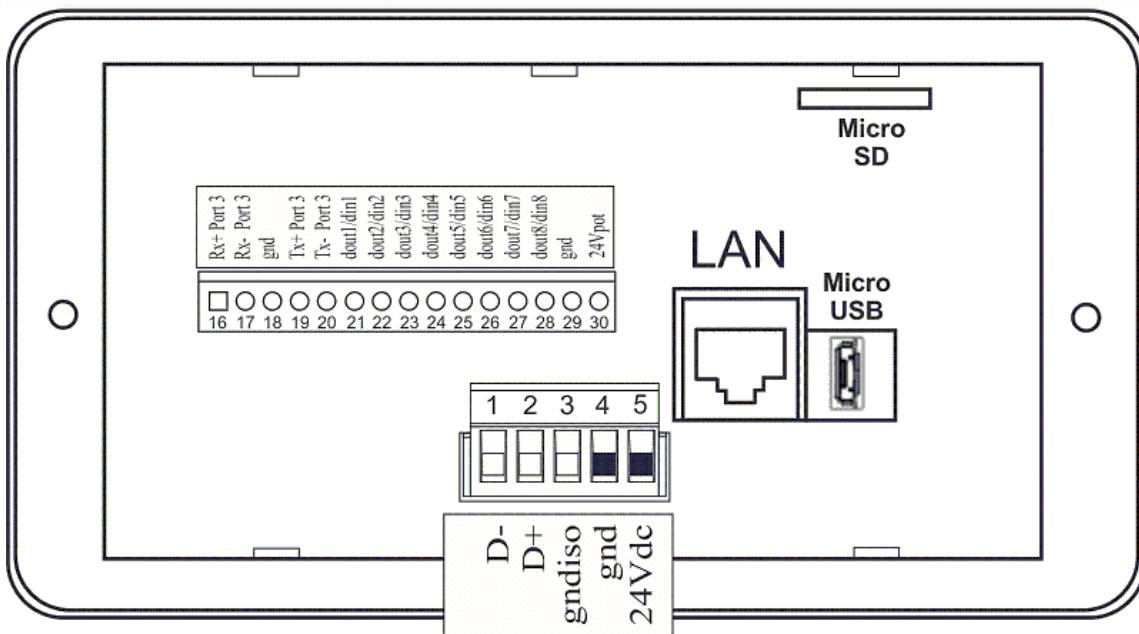


2.5 Wiring description AE model

See table for wiring of model TPAC1007 04 AE:

Table 6

TPAC1007 04 AE Expansion features				
Configurable Digital I/O	N°8 (din1-din8 / dout1 - dout8)	I/O Type	Resolution	Note
		PNP	PLC cycle time	
Modbus RTU PORT 3	Master/Client 4 wires			

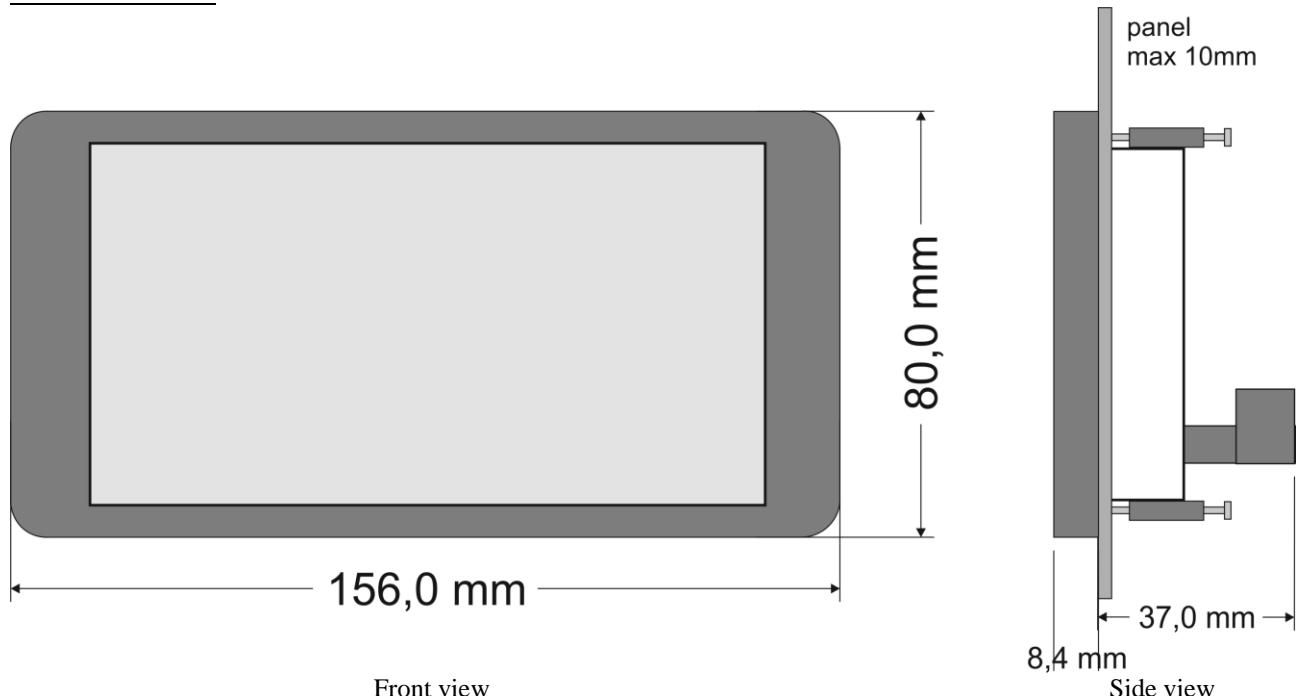


2.6 Mechanical dimensions

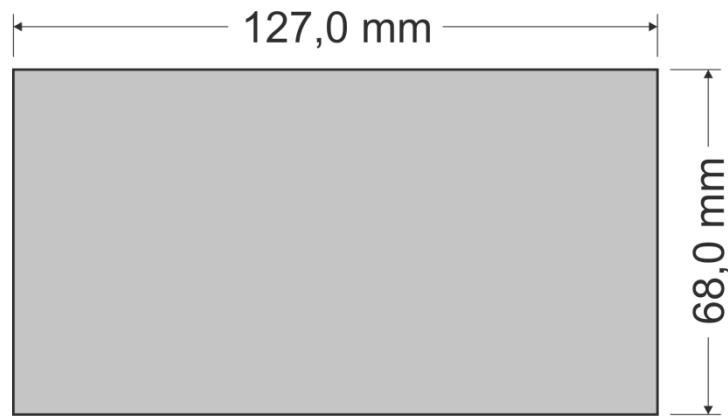
In the following figures see the TPAC1007 dimensions.

Panel with frame mounting and hooks fastening:

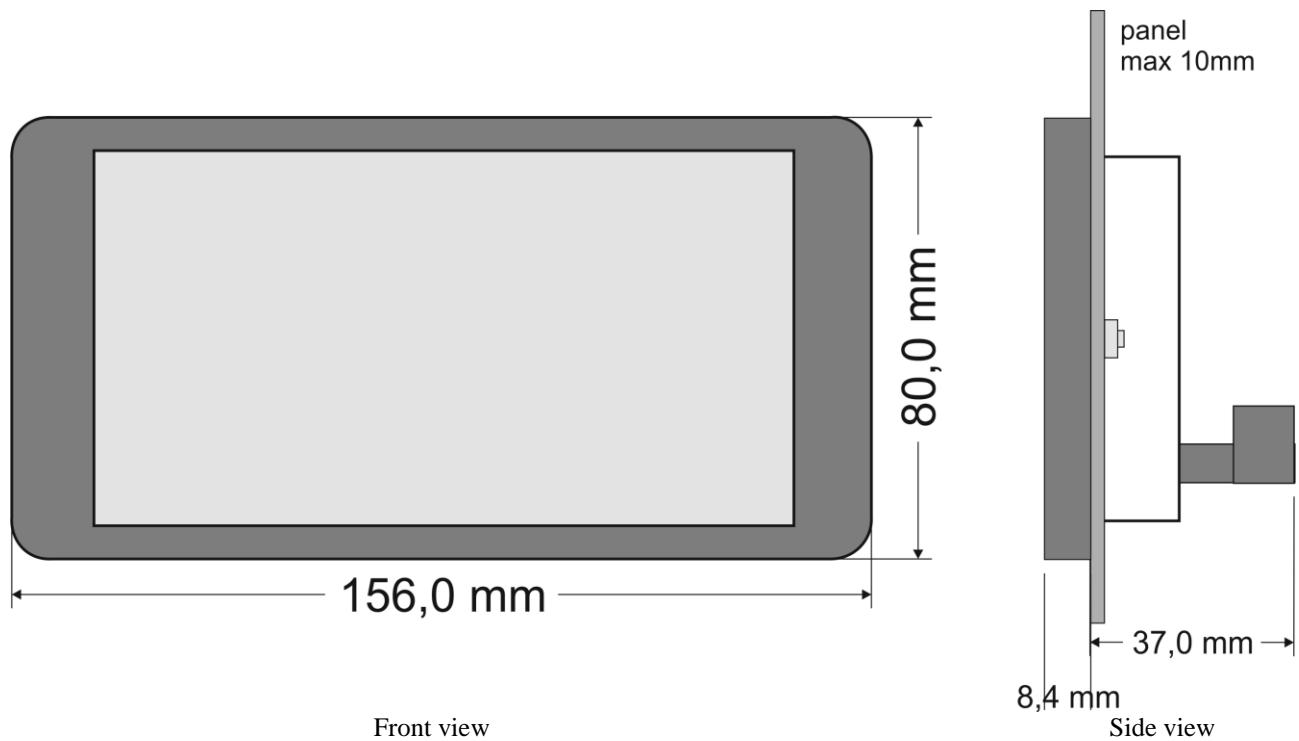
Encumbrance



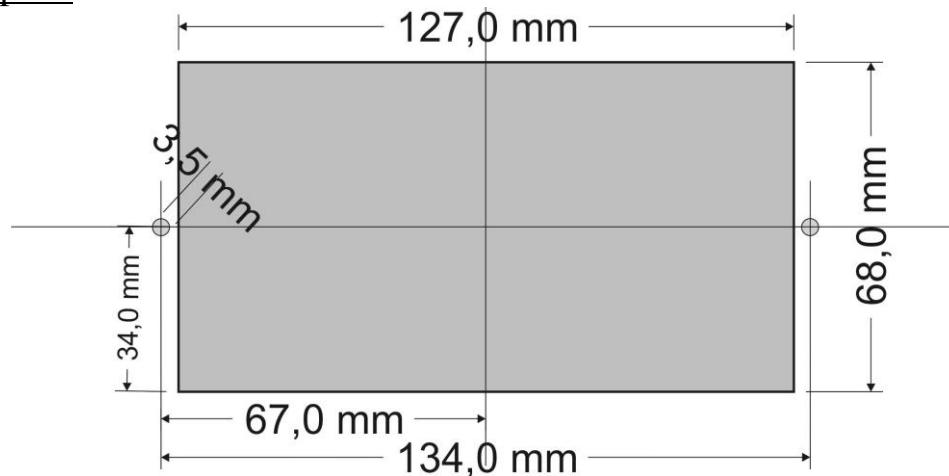
Mounting plate



Panel with frame mounting and screws fastening:
Encumbrance



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.

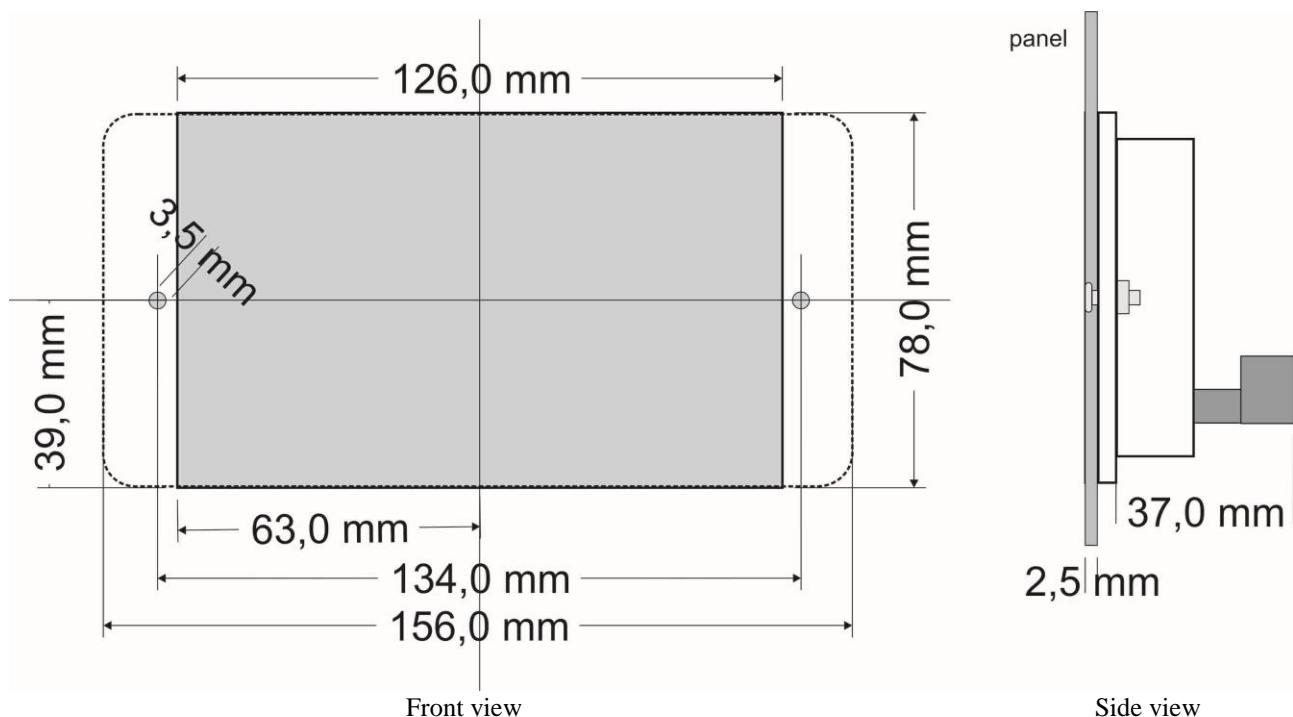
**Technical specification**

Table 7

MECHANICAL	
Material	ABS, Polycarbonate
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.

2.7 Panel mounting

2.7.1 Distance

The device must be installed with some space between other devices to allow the right heat dissipation and cabling. In order to avoid EMC issues, you should not overlap cables.

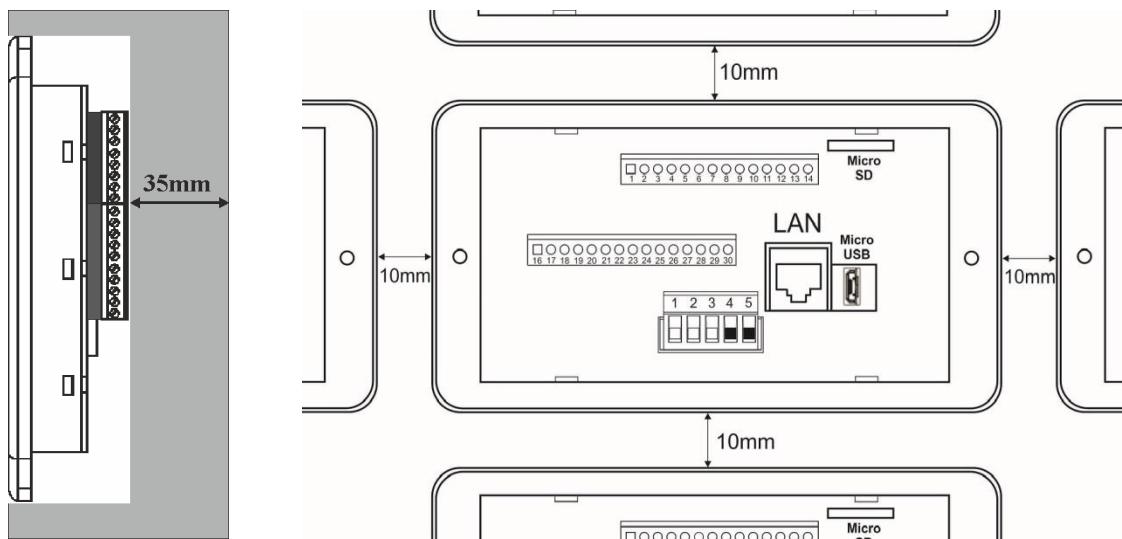


Figure 6A – Horizontal mounting

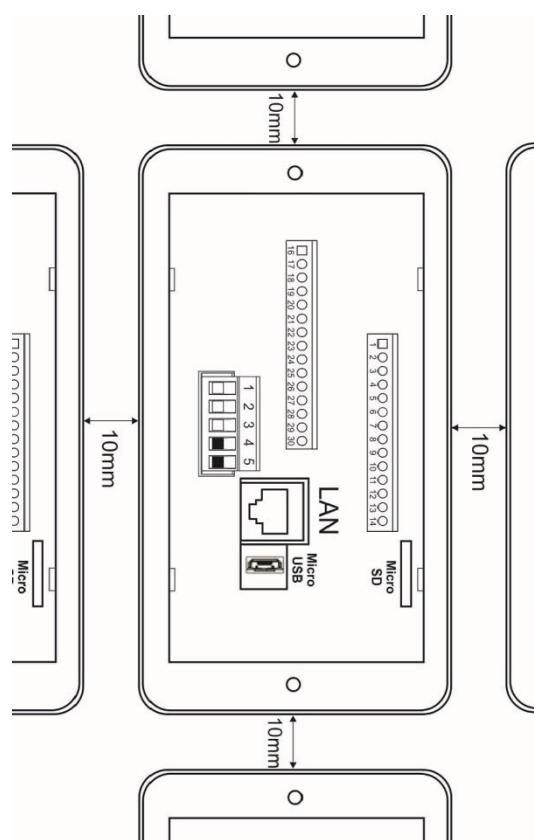


Figure 6B – Vertical mounting

3 Connections TPAC1007 04

Power supply

3.1 Isolation

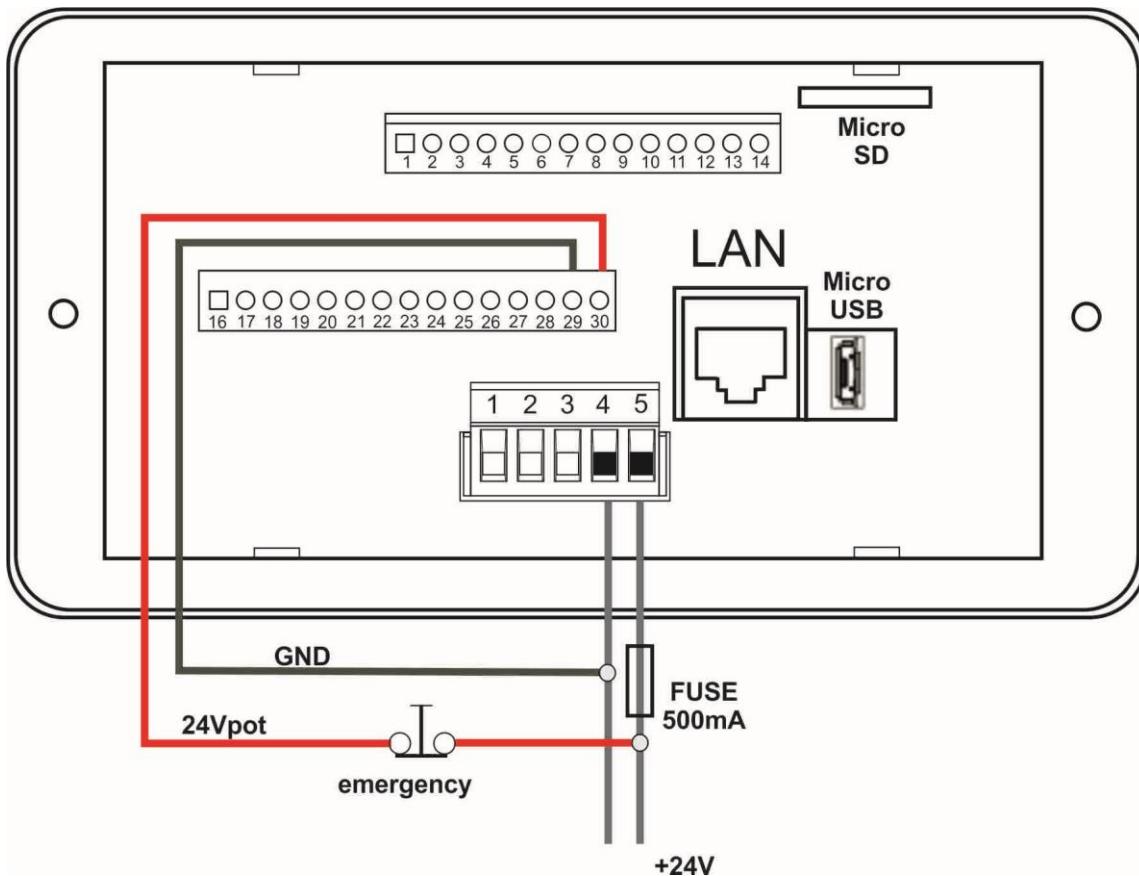
Device has a galvanic isolation between power supply and RS485 (2 wires) serial interface.

3.2 System power supply

TPAC1007 04 has a 12Vdc to 28Vdc power supply for the main board and the expansion board as well, according to the schematic in the figure below. Both input power can be connected to the same power supply.

Digital outputs circuitry is powered by the 29 (-) and the 30 (+) terminals. This part of the circuit can be separated by an external power switch.

The device is protected against reverse polarity power supply.



Attention

A wrong power supply voltage can damage the device.

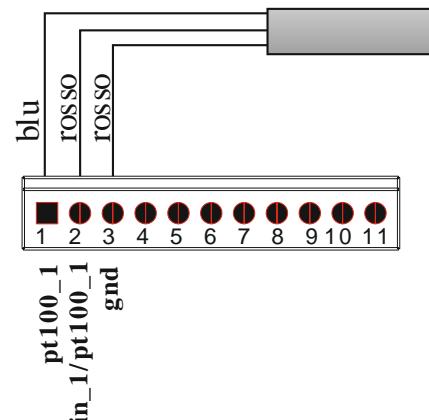
3.2.1 Fuse

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

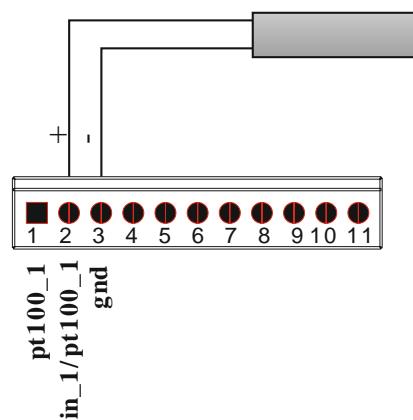
3.3 IO wiring

Analogue and digital wiring

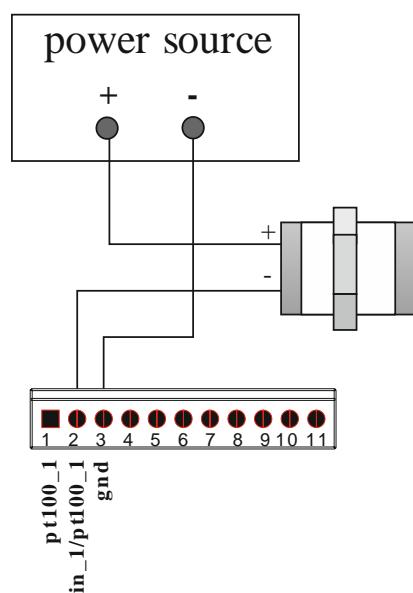
3 wire PT100 input. Wiring with too high resistance can cause measure errors. To use 2 wire PT100 short terminals 2 and 3.



T/C input. Thermocouples must be isolated type. Use only proper thermocouples wire.

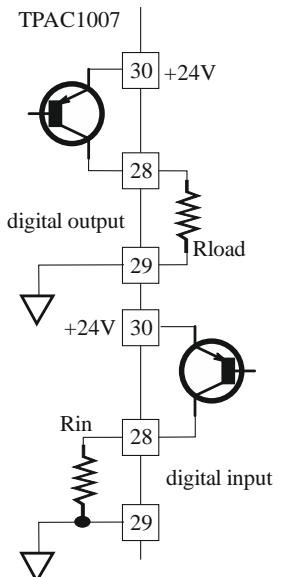


mA/V Input. Analogue inputs 4÷20mA and 0÷10V are connected to input and GND terminals. See figure to connect a 2 wire transducer with external power supply.

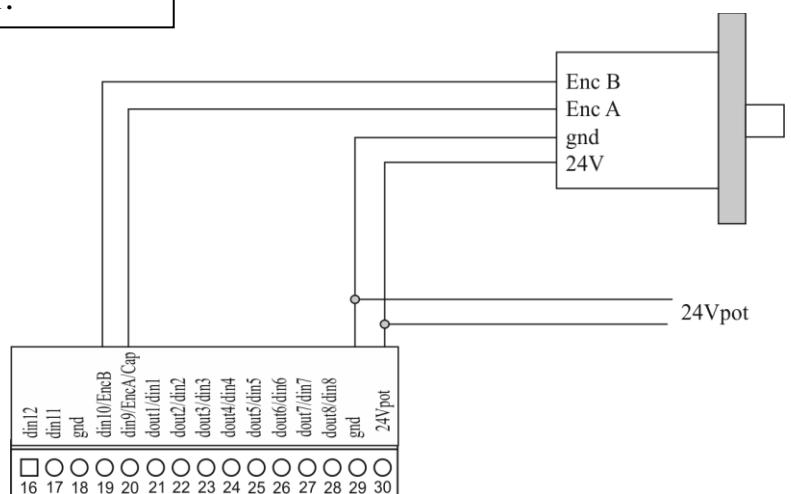


Digital I/O. Terminals 21 ÷ 28 can be configured as digital input or output . See in the figure the 28 terminal connection.

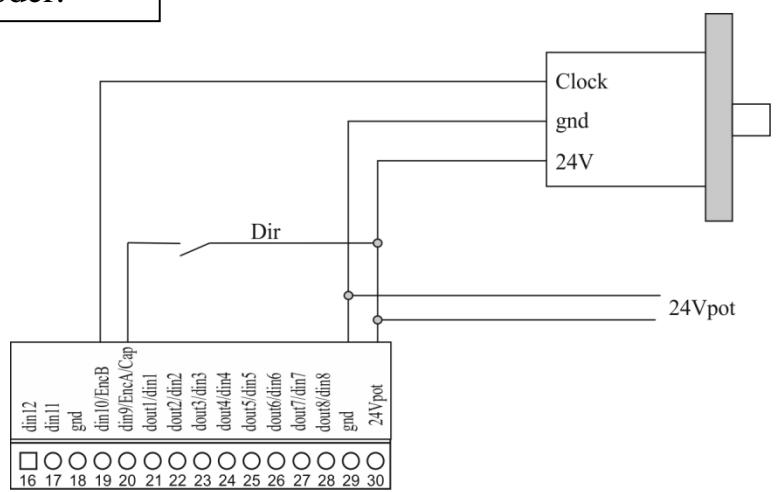
Terminals “17, 19 and 20” are high speed inputs (freq, ect)



Connecting to bidirectional encoder.



Connecting to mono directional encoder.



Connect to the input “DIN10” count (Clock) while in the input “DIN9” the direction:

- DIN9 = 0 counter UP
- DIN9 = 1 (24V) counter down

3.4 ModBus wiring

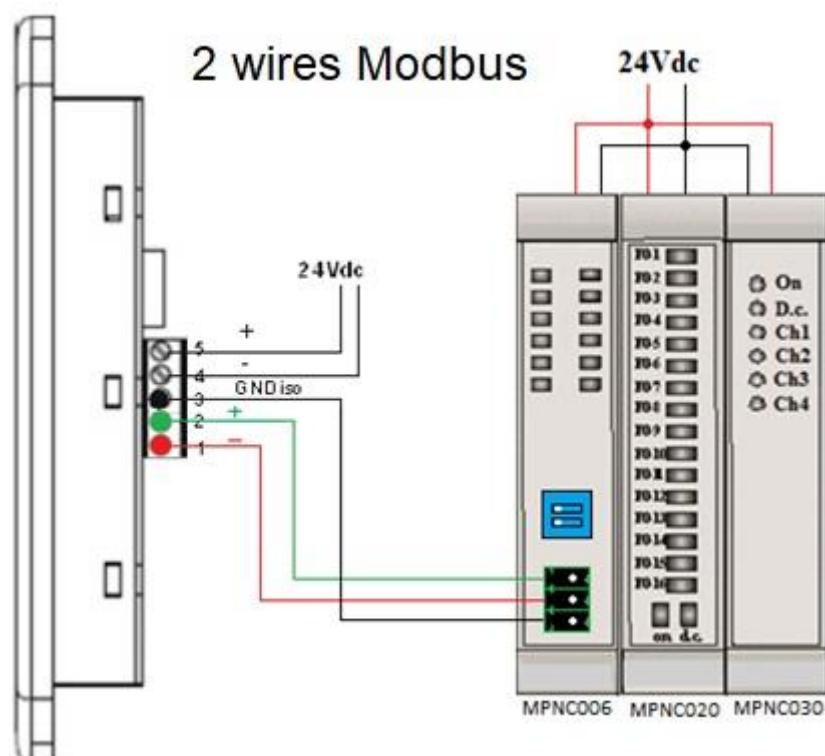
ModBus on TPAC1007 is a optoisolated 2 wires RS485 serial line, on the terminal board on pins:

Table 9

Pin	Signal	Description
3	GNDiso	
2	D +	Line +
1	D -	Line -

Example of a wiring of a system composed by:

- MPNC006
- MPNC020
- MPNC030
- TPAC1007



The additional ModBus on **TPAC100704AE** is a 4 wire RS485 serial line, on the black terminal board on pins (**RTU3**).

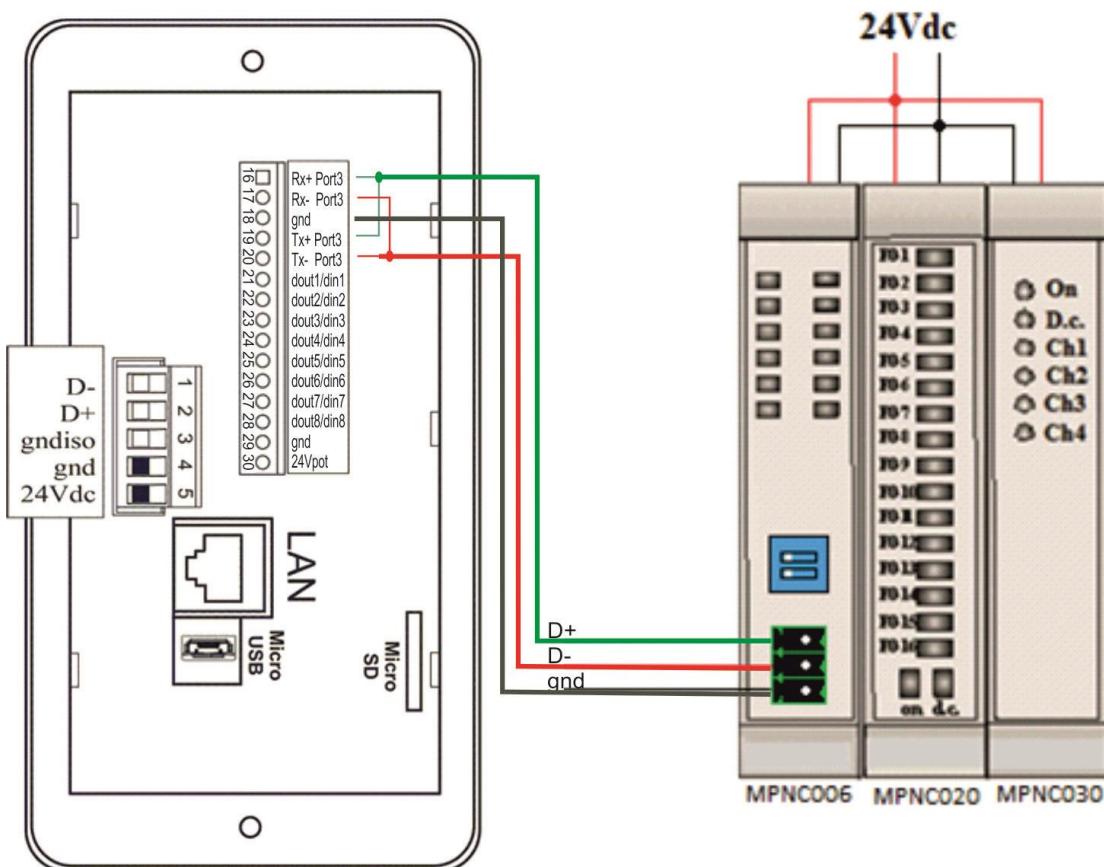
Limitations: this serial can only be used by MASTER. It cannot control slaves with addresses (Node ID) equal to 20. Non modifiable communication parameters: Baudrate = 38400; Parity = N; Databits = 8; Stopbits = 1.

Table 10

Pin	Signal	Description
16	RX +	Rx + line
17	RX -	Rx - line
18	GND	
19	TX +	Tx + line
20	TX -	Tx - line

Example of a wiring of a system composed by:

- MPNC006
- MPNC020
- MPNC030
- TPAC100704AE



4 Peripherals

4.1 USB

TPAC1007 has a Micro-USB 2.0 host for:

- software update
- data storage: data logger
- connect USB peripherals as printers, mouse, etc.
- connect a Wi-Fi or Mobile key (optionally supplied by Mect) to connect to a different network from LAN.

Specific connection of external peripherals are implemented on request.

4.2 Ethernet

TPAC1007 has a 10/100Mbit/s Ethernet port with auto-configuration, the connection cable between TPAC1007 and a personal computer can be either straight or cross.

4.3 Micro SD-Card

On TPAC1007 is it possible to insert a micro SD card up to 64 GB to use applications or data or data logging. System automatically manage the memory.



4.4 Configuration DIP switches

In the rear part of panel, there is a two pole DIP switch, these switches are used for boot configuration.

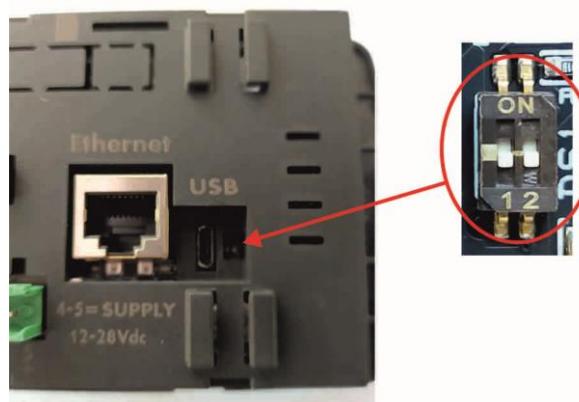
The TPAC1007 is able to boot in three different modes:

- Internal FLASH
- SD card
- USB

To select the needed boot mode is sufficient to set the switches before power up the panel.

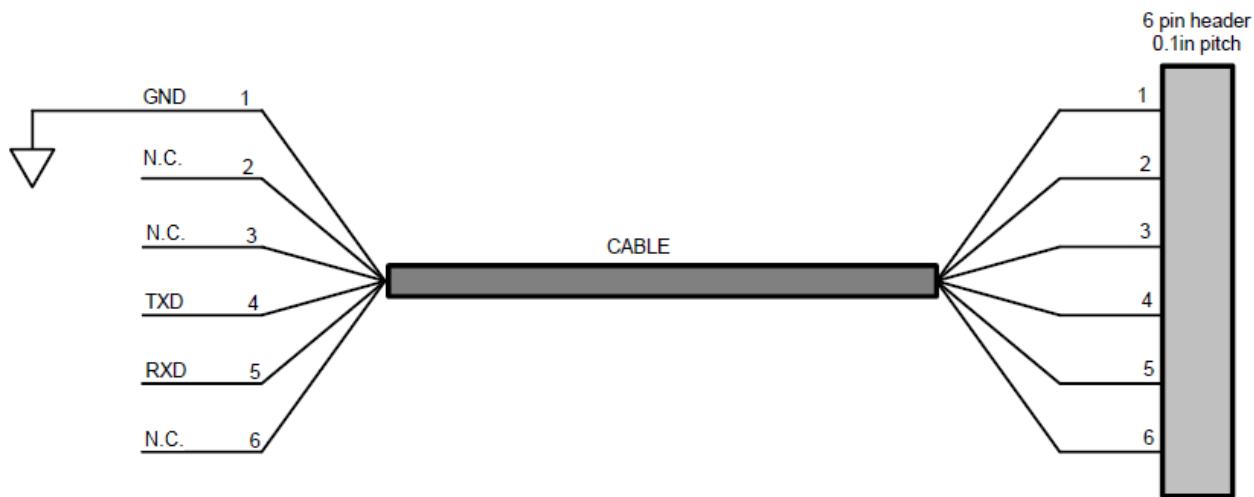
Switches configuration is shown in the next table

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	



4.5 UART debug

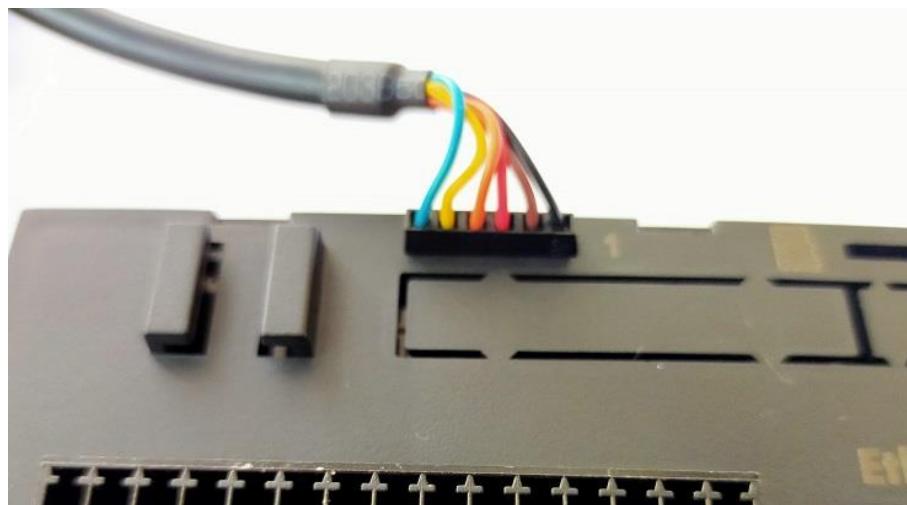
In the bottom side of the rear panel there is six pole header for debug purpose, the port is a TTL UART with the following pinout.



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

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

The use of this port is recommended for advanced users.



5 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.

5.1 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”.

Table 8

Variable name	Description	R/W	Description
PLC_FWrevision	Revision	RO	Expansion firmware revision
PLC_HWconfig	HW configuration	RO	
PLC_DigDir_1 PLC_DigDir_2 PLC_DigDir_3 PLC_DigDir_4 PLC_DigDir_4 PLC_DigDir_5 PLC_DigDir_6 PLC_DigDir_7 PLC_DigDir_8	Digital I/O type	RW	1 bit to 8 1 output 0 input bit 9 to 16 not used
PLC_AnInConf_1	Analogue input configuration 1	RW	Bit 0..3 input 1 configuration <ul style="list-style-type: none"> • analogue input configuration 4 bit for each channel • 0 not configured • 1 current • 2 voltage • 3 TCJ (J type thermocouple) • 4 TCK (K type thermocouple) • 5 TCT (T type thermocouple) • 6 PT100E (1 digit Resolution) range: -40 +800°C • 7 PT100R (0.1 digit Resolution) range: -40 +200°C • 8 TCS (S type thermocouple) • 9 TCB (B type thermocouple) • 10 TCR (R type thermocouple)
PLC_AnInConf_2	Analogue input configuration 2	RW	Bit 0..3 input 2 configuration <ul style="list-style-type: none"> • analogue input configuration 4 bit

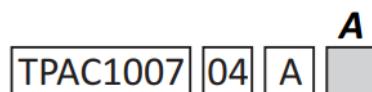
			<ul style="list-style-type: none"> for each channel: • 0 not configured • 1 current • 2 voltage • 3 TCJ (J type thermocouple) • 4 TCK (K type thermocouple) • 5 TCT (T type thermocouple) • 6 PT100E (1 digit Resolution) range: -40 +800°C • 7 PT100R (0.1 digit Resolution) range: -40 +200°C • 8 TCS (S type thermocouple) • 9 TCB (B type thermocouple) • 10 TCR (R type thermocouple)
PLC_AnInConf_3	Analogue input configuration 3	RW	<p>Bit 0..3 input 3 configuration</p> <ul style="list-style-type: none"> • analogue input configuration 4 bit for each channel: • 0 not configured • 1 current • 2 voltage • 3 TCJ (J type thermocouple) • 4 TCK (K type thermocouple) • 5 TCT (T type thermocouple) • 6 PT100E (1 digit Resolution) range: -40 +800°C • 7 PT100R (0.1 digit Resolution) range: -40 +200°C • 8 TCS (S type thermocouple) • 9 TCB (B type thermocouple) • 10 TCR (R type thermocouple)
PLC_AnOutConf_1	Analogue output configuration 1	RW	<ul style="list-style-type: none"> • 0 not configured • 1 current • 2 voltage • 3 pwm
PLC_AnOutConf_2	Analogue output configuration 2	RW	<ul style="list-style-type: none"> • 0 not configured • 1 current • 2 voltage • 3 pwm
PLC_AnOutConf_3	Analogue output configuration 3	RW	<ul style="list-style-type: none"> • 0 not configured • 1 NOT USED • 2 voltage • 3 pwm
PLC_AnOutConf_4	Analogue output configuration 4	RW	<ul style="list-style-type: none"> • 0 not configured • 1 NOT USED

			<ul style="list-style-type: none"> • 2 voltage • 3 pwm
PLC_AnIn_1	Analog input value 1	RO	Conf 1: 0 ÷ 20000 resolution 5 digit value: 0.0 ÷ 20.000mA
			Conf 2: 0 ÷ 10000 resolution 3 digit value: 0.0 ÷ 10.000V
			Conf 3: 0 ÷ 600 resolution 1 digit value: 0 ÷ 600°C
			Conf 4: 0 ÷ 1200 resolution 1 digit value: 0 ÷ 1200°C
			Conf 5: 0 ÷ 400 resolution 1 digit value: 0 ÷ 400°C
			Conf 6: -40 ÷ 800 resolution 1 digit value: -40 ÷ 800°C
			Conf 7: -400 ÷ 2000 resolution 1 digit value: -40.0 ÷ 200.0°C
			Conf 8: 0 ÷ 1710 resolution 1 digit value: 0 ÷ 1710°C
			Conf 9: 100 ÷ 1800 resolution 1 digit value: 0 ÷ 1800°C
			Conf 10: 0 ÷ 1500 resolution 1 digit value: 0 ÷ 1500°C
PLC_AnIn_2	Analog input value 2	RO	Conf 1: 0 ÷ 20000 resolution 5 digit value: 0.0 ÷ 20.000mA
			Conf 2: 0 ÷ 10000 resolution 3 digit value: 0.0 ÷ 10.000V
			Conf 3: 0 ÷ 600 resolution 1 digit value: 0 ÷ 600°C
			Conf 4: 0 ÷ 1200 resolution 1 digit value: 0 ÷ 1200°C
			Conf 5: 0 ÷ 400 resolution 1 digit value: 0 ÷ 400°C
			Conf 6: -40 ÷ 800 resolution 1 digit value: -40 ÷ 800°C
			Conf 7: -400 ÷ 2000 resolution 1 digit value: -40.0 ÷ 200.0°C
			Conf 8: 0 ÷ 1710 resolution 1 digit value: 0 ÷ 1710°C
			Conf 9: 100 ÷ 1800 resolution 1 digit value: 100 ÷ 1800°C
			Conf 10: 0 ÷ 1500 resolution 1 digit value: 0 ÷ 1500°C
PLC_AnIn_3	Analog input value 3	RO	Conf 1: 0 ÷ 20000 resolution 5 digit value: 0.0 ÷ 20.000mA
			Conf 2: 0 ÷ 10000 resolution 3 digit value: 0.0 ÷ 10.000V
			Conf 3: 0 ÷ 600 resolution 1 digit value: 0 ÷ 600°C

			resolution 1 digit	
			Conf 4: $0 \div 1200$ resolution 1 digit	value: $0 \div 1200^\circ\text{C}$
			Conf 5: $0 \div 400$ resolution 1 digit	value: $0 \div 400^\circ\text{C}$
			Conf 6: $-40 \div 800$ resolution 1 digit	value: $-40 \div 800^\circ\text{C}$
			Conf 7: $-400 \div 2000$ resolution 1 digit	value: $-40.0 \div 200.0^\circ\text{C}$
			Conf 8: $0 \div 1710$ resolution 1 digit	value: $0 \div 1710^\circ\text{C}$
			Conf 9: $100 \div 1800$ resolution 1 digit	value: $100 \div 1800^\circ\text{C}$
			Conf 10: $0 \div 1500$ resolution 1 digit	value: $0 \div 1500^\circ\text{C}$
PLC_Tamb	Cold junction temperature	RO	$0 \div 1000$ resolution 1 digit	value: $0.0 \div 100.0$
PLC_Encoder	encoder value	RO	encoder value	
PLC_DigIn_1 PLC_DigIn_2 PLC_DigIn_3 PLC_DigIn_4 PLC_DigIn_5 PLC_DigIn_6 PLC_DigIn_7 PLC_DigIn_8 PLC_DigIn_9 PLC_DigIn_10 PLC_DigIn_11 PLC_DigIn_12	digital input	RO	digital input value	
PLC_DigOut_1 PLC_DigOut_2 PLC_DigOut_3 PLC_DigOut_4 PLC_DigOut_5 PLC_DigOut_6 PLC_DigOut_7 PLC_DigOut_8	digital outputs	RW	digital output command	
PLC_AnOut_1	Analogue output 1	RW	Conf 1	$0 \div 2000$
			Conf 2	$0 \div 1000$
			Conf 3	$0 \div 100$
PLC_AnOut_2	Analogue output 2	RW	Conf 1	$0 \div 2000$
			Conf 2	$0 \div 1000$
			Conf 3	$0 \div 100$
PLC_AnOut_3	Analogue output 3	RW	Conf 2	$0 \div 1000$
			Conf 3	$0 \div 100$
PLC_AnOut_4	Analogue output	RW	Conf 2	$0 \div 1000$

	4		Conf 3	$0 \div 100$
PLC_EncoderStart	Enable encoder	RW	1: enable bidirectional encoder 2: enable up count only encoder Input A = 0 counter UP Input A = 1 counter down Input B counter	
PLC_EncoderReset	Reset Encoder	RW	1: encoder/counter reset	
PLC_Heartbeat	Heartbeat	RO	I/O board Heartbeat	
PLC_time	Time	RO	time elapsed [s]	
PLC_timeMin	Time min	RO	start window 10 seconds	
PLC_timeMax	Time max	RO	end window 10 seconds	
PLC_AnIn...Filter	Average	RW	analogue input average	
PLC_timeWin	Time window	RW	graph window	
PLC_Version	PLC	RO	PLC version	
PLC_EngineStatus	Status	RO	PLC status	
PLC_ResetValues	Reset	RW	diagnostic variables reset	
PLC_Capture		RO	time in (μ s) between 2 edges of digital input IN9	
PLC_buzzerOn	Buzzer	RW	buzzer sound (enable = 1 / disable = 0)	
PLC_PLC_Version	PLC version	RW		
PLC_HMI_Version	HMI version	RW		
PLC_Year	currently year	RO		
PLC_Month	currently month	RO		
PLC_Day	currently day	RO		
PLC_Hours	currently hour	RO		
PLC_Minutes	currently minutes	RO		
PLC_Seconds	currently seconds	RO		
PLC_WATCHDOGEN	Watchdog	RW	enable Watchdog	
PLC_WATCHDOG_ms	Watchdog	RW	reset Watchdog timer	
PLC_BEEP_VOLUME	beep volume (when buzzerOn)	RW		
PLC_TOUCH_VOLUME	touch volume	RW		
PLC_ALARM_VOLUME	alarm volume (when alarm)	RW		
PLC_BUZZER	Buzzer	RW	enable dynamic buzzer sound (0x44332211 up=0x11(%) on=0x22(cs) off=0x33(cs) rep=0x44(times))	

6 How to order



A - Configuration

Option A	Option B	Option D	Option E	Configurations Inputs / outputs
2	2	3	---	Analog inputs 0÷10V, 0÷20mA, 4÷20mA, PT100, J, K, T, S, B, R
2	2	2	---	Analog outputs 0÷10V, 0÷20mA, 4÷20mA, PWM
2	2	---	---	Analog outputs 0÷10V, PWM
4*	1	4*	---	Digital inputs
8	8	8	8	Programmable digital inputs/outputs
---	3	---	---	Analog inputs 0÷10V
1	1	1	1	RS485 2 wires optoisolated
---	---	---	1	RS485 4 wires not optoisolated

* As an alternative A and D option: 1 mono/bidirectional encoder and 2 digital inputs

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

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