



TH
series HMI manual 【Hardware】

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TH series HMI

1-1 Features

- 16.77 million color TFT-LCD, highlighted screen, fuller color and more realistic display effect
- High speed 400MHz CPU and 128MB memory, excellent data processing ability, faster download speed, greatly improve the startup and loading speed, reduce waiting time and picture jump, and make the animation effect more smooth
- The maximum size is 15.6 inches, and other sizes include 4.3 ", 7", 8 "and 10.1"
- The new thin series has a fashionable appearance, and the bayonet seal is installed to effectively prevent the entry of external dust and oil stain
- The communication capability is upgraded. It can communicate with multiple PLCs at the same time. RJ45 Ethernet interface supports communication with Siemens S7-1200, S7-200 smart and other Modbus-TCP devices, breaking the traditional serial communication mode and forming an open network structure.

1-1-1 Product features

■ Display

- 16 million true colors TFT-LCD, support BMP and JPG format, better color and display;
- Precise touch calibration function;
- 128MB memory, perform high speed data download, high speed loading and high-speed operation.
- Memory capacity increase substantially;
- Support multi-language: Chinese, English, Japanese, Korean, German, French, Arabic, etc. The fonts support any size, artistic effect, bold, italic, etc.
- Rich images of material, screen operation

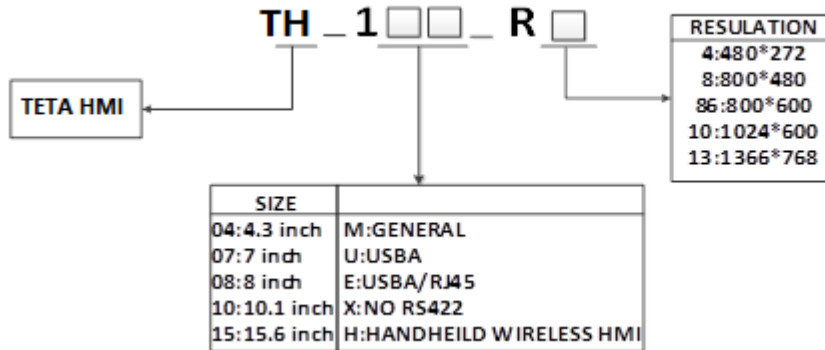
■ Control

- Switch control, dynamic monitor and display data, bar map, real time trend map, time trend map, XY trend map, discrete/continue column map, real time alarm, history alarm record...
- User-defined data collection and saving function
- Set user authority, 9 levels password protection
- Simulate online/offline, upload/download data, configuration function
- Powerful C function block
- USB-A port inside, connect flash disk to copy data, speed up to 480Mbps
- Special USB-B port for data download, make the data transfer faster
- User-defined animation design
- Contain all function of TH series
- Multiple download modes and penetration functions. (Note: TH series need USB penetration through network module A-BOX-U.)

■ **Communication**

- Two ports communication independently, can connect two different devices at the same time (TH-104X/M/U/E-R4 has single port)
- E series add Ethernet interface communication, can communicate with Siemens S7-1200 and other Modbus-TCP devices
- Drive the panel printer directly, economical and flexible (TH-104X/M/U/E-R4 /TH-107X-R8 cannot support print function)
- Support free format communication, user edits the driver program

1-1-2 Module naming rule



Special models

- (1) TH-107X-R8: compact type of TH-107M-R8, it has USB-B port, one RS232 port, without clock.
- (2) TH-107X-R8: compact type of TH-107M-R8, it has USB-B port, two RS232 ports, with clock.

1-1-3 Product models

Model	4.3"	7"	8"	10.1"	15.6"
Black ultrathin		TH-107M-R8 TH-107U-R8 TH-107E-R8		TH-110M-R10 TH-110U-R10 TH-110E-R10	TH-115M-R13 TH-115U-R13 TH-115E-R13
Gray ultrathin	TH-104M-R4 TH-104U-R4 TH-104E-R4 TH-104X-R4				
General	TH-104M-R4 TH-104U-R4 TH-104E-R4 TH-104M2-R4 TH-104U2-R4	TH-107M-R8 TH-107U-R8 TH-107E-R8	TH-108M-R86 TH-108E-R86 TH-108U-R86	TH-110M-R8 TH-110E-R8 TH-110U-R8 TH-110M-R10 TH-110U-R10 TH-110E-R10	TH-115E-R13
Cost-saving	TH-104X-R4	TH-107X-R8			

1-2 General specifications



The flash erasure life is 100000 times.

1-2-1 TH gray ultrathin model

Model		TH-110M-R10 TH-110U-R10 TH-110E-R10	TH-107M-R8 TH-107U-R8 TH-107E-R8
Features	Screen size	10.1"	7"
	Resolution	1024*600	800*480
	LCD	TFT LCD, LED backlight	
	Display color	16.77 million colors	
	Brightness	200 cd/m2	
	Touch panel	4-wire resistor touch screen	
	LCD life	Above 50000 hours, ambient temperature 25°C, 24 hours operation	
Memory	128MB		
Interface	PLC port	RS232/RS485/RS422	
	Download port	RS232/RS485	
	USB-A port	Flash disk port, USB2.0	
	USB-B port	USB download port, USB2.0	
	Ethernet port	RJ45, ET model supported	
Electric features	Input voltage	DC24V (voltage range: DC22V-DC26V)	
	Consumption current	270mA	200mA
	Allowable power loss	Below 10ms (less than 1s in fact)	
	Voltage impact resistance	AC1000V, 10mA, less than 1 minute (signal and ground)	
	Insulation resistance	Above 10MΩ, DC500V	
Environment	Operation temperature	0-50°C	
	Storage temperature	-20-60°C	
	Operation humidity	10%RH-90%RH (no condensation)	
	Anti-interference ability	Voltage noise: 1500Vp-p, pulse width 1us, 1 minute	
	Air	No corrosive gas	
	Cooling mode	Natural air cooling	
	Protection level	Front cover IP65	
Dimension	Display area	219.6*131.76	154.08*85.92

	(mm)		
	Outline dimension (mm)	278.0*192.3*44.0	207.0*148.0*38.5
	Opening hole (mm)	260.2*179.2	192.0*138.5

1-2-2 TH black ultrathin model

Model		TH-110M-R10 TH-110U-R10 TH-110E-R10
Features	Screen size	10.1"
	Resolution	1024*600
	LCD	TFT LCD, LED backlight
	Display color	16.77 million colors
	Brightness	200 cd/m2
	Touch panel	4-wire resistor touch screen
	LCD life	Above 50000 hours, ambient temperature 25°C, 24 hours operation
	Memory	128MB
Interface	PLC port	RS232/RS485/RS422
	Download port	RS232/RS485
	USB-A port	Flash disk port, USB2.0, UT/ET model supported
	USB-B port	USB download port, USB2.0
	Ethernet port	RJ45, ET model supported
Electric features	Input voltage	DC24V (voltage range: DC22V-DC26V)
	Consumption current	270mA
	Allowable power loss	Below 10ms (less than 1s in fact)
	Voltage impact resistance	AC1000V, 10mA, less than 1 minute (signal and ground)
	Insulation resistance	Above 10MΩ, DC500V
Environment	Operation temperature	0-50°C
	Storage temperature	-20-60°C
	Operation humidity	10%RH-90%RH (no condensation)
	Anti-interference ability	Voltage noise: 1500Vp-p, pulse width 1us, 1 minute
	Air	No corrosive gas
	Cooling mode	Natural air cooling
	Protection level	Front cover IP65

Dimension	Display area (mm)	219.6*131.76
	Outline dimension (mm)	278.0*192.3*44.0
	Opening hole (mm)	260.2*179.2

1-2-3 TH general model

Model		TH-115E-R13	TH-110E-R10	TH-110M-R8	TH-108E-R86	TH-107E-R86	TH-104E-R4	TH-104M-R4	TH-104U-R4	TH-104X-R4	TH-104M2-R4	TH-104U2-R4	
Features	Screen size	15.6	10.1	10.1	8	7	4.3						
	Resolution	1366*768	1024*600	800*480	800*600	800*480	480*272						
	LCD	TFT LCD, LED backlight											
	Display color	16.77 million colors											
	Brightness	250	200										
	Touch panel	4-wire resistor touch screen											
	LCD life	Above 50000 hours, ambient temperature 25°C, 24 hours operation											
	Memory	128MB											
Interface	PLC port	RS232/RS485/RS422											
	Download port	RS232/RS485							RS232/RS485 (only MT2/UT2 model supported)				
	USB-A port	Flash disk port, USB2.0, UT/ET model supported											
	USB-B port	USB download port, USB2.0											
	Ethernet port	RJ45, ET model supported											
Electric features	Input voltage	DC24V (voltage range: DC22V-DC26V)											
	Consumption current	730mA	270mA	250mA	200mA	180mA							
	Allowable power loss	Below 10ms (less than 1s in fact)											
	Voltage impact resistance	AC1000V, 10mA, less than 1 minute (signal and ground)											

	Insulation resistance	Above 10MΩ, DC500V				
Environment	Operation temperature	0-50°C				
	Storage temperature	-20-60°C				
	Operation humidity	10%RH-90%RH (no condensation)				
	Anti-interference ability	Voltage noise: 1500Vp-p, pulse width 1us, 1 minute				
	Air	No corrosive gas				
	Cooling mode	Natural air cooling				
	Protection level	Front cover IP65				
Dimension	Display area (mm)	344.23* 193.54	219.6*131.76	162.0* 121.5	154.08 * 85.92	95.04*53.86
	Outline dimension (mm)	410.0* 270.0* 65.0	272.2*191.7*51.2	224.4* 170.8* 45.5	200.4* 146.9* 48.5	152.0*102.0*41.8
	Opening hole (mm)	399.0* 259.0	260.2*179.7	211.4* 157.8	192.0* 138.5	144.0*94.0

Note: TG465-MT/UT V3.0 and up version PLC port supported RS422.

1-2-4 TH-X cost-saving model

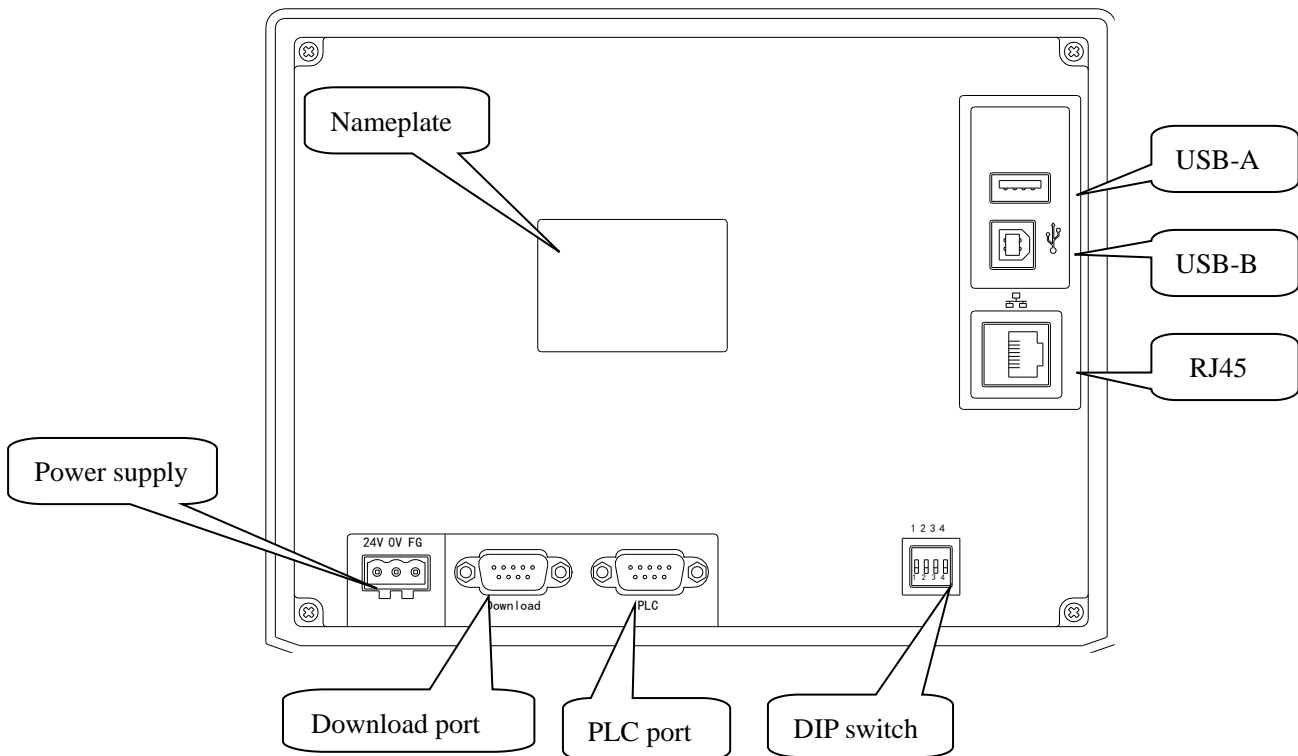
Model		TH-107X-R8
Features	Screen size	7"
	Resolution	800*480
	LCD	TFT LCD, LED backlight
	Display color	16.77 million colors
	Brightness	200 cd/m2
	Touch panel	4-wire resistor touch screen
	LCD life	Above 50000 hours, ambient temperature 25°C, 24 hours operation
Interface	Memory	128MB
	PLC port	RS232
	Download port	RS232
	USB-A port	\
	USB-B port	USB download port, USB2.0
	Ethernet port	\

Electric features	Input voltage	DC24V (voltage range: DC22V-DC26V)
	Consumption current	200mA
	Allowable power loss	Below 10ms (less than 1s in fact)
	Voltage impact resistance	AC1000V, 10mA, less than 1 minute (signal and ground)
	Insulation resistance	Above 10MΩ, DC500V
Environment	Operation temperature	0-50°C
	Storage temperature	-20-60°C
	Operation humidity	10%RH-90%RH (no condensation)
	Anti-interference ability	Voltage noise: 1500Vp-p, pulse width 1us, 1 minute
	Air	No corrosive gas
	Cooling mode	Natural air cooling
	Protection level	Front cover IP65
Dimension	Display area (mm)	154.08*85.92
	Outline dimension (mm)	207.4*148.0*38.5
	Opening hole (mm)	192.0*138.5

1-3 Hardware

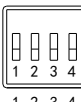
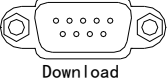
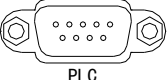



1-3-1 Hardware structure

The back side of TH series HMI:



1-3-2 Ports introduction

TH series HMI port:

Outline	Name	Function
	DIP switch	Force-download, touch area adjustment
	Download port	RS232/RS485 (TH-104except M2/U2, TH-107X-R8 no this port, TH-107X-R8 supported RS232)
	PLC port	RS232/RS485/RS422 (TH-104X-R4 and this series V3.0 and below version only supported RS232/RS485, TH-107X-R8 /TH-107X-R8 only supported RS232)
	USB-A	Connect to flash disk to store data, flash disk to import project (HMI hardware version V2.D3C and above)
	USB-B	Connect USB cable to download/upload program
	Ethernet port	Support Siemens S7-1200, S7-200 Smart and other devices which support Modbus-TCP protocol

1. DIP switch

TH series has 4-bit DIP switch at the back side; they can set the function of COM1 port.

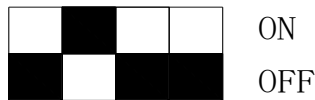
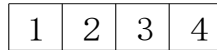
Switch	DIP1	DIP2	DIP3	DIP4	Function
State	ON	OFF	OFF	OFF	Undefined
	OFF	ON	OFF	OFF	Force-download mode
	OFF	OFF	ON	OFF	System menu: Adjust clock and touch panel, Import program of flash disk
	OFF	OFF	OFF	ON	Undefined



If the screen cannot show normally after downloading the program, please use force-download.

Step:

- (1) Cut off the power of TH, turn ON DIP switch 2;
- (2) Power on TH, connect the download cable to PC to download the program;
- (3) Turn OFF DIP switch 2 after finishing the download, repower on the TH.



2. Communication interface

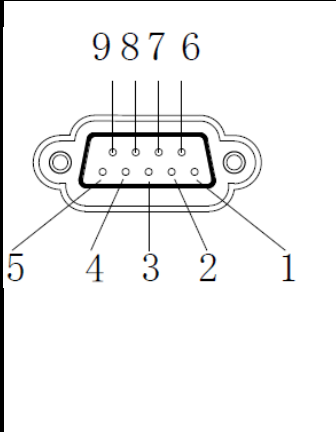
The Pins definition of download port:

Pin	Name	Description
1	NC	Unused terminal
2	RXD	RS232 receive
3	TXD	RS232 send
4	A	RS485 + signal
5	GND	Signal ground
6	NC	Unused terminal
7	B	RS485 - signal
8	NC	Unused terminal
9	NC	Unused terminal

Note:

- (1) TH-104X/M/U/E-R4, TH-107X-R8 don't have this port.
- (2) If the interface mode is not supported by this communication port of a specific model, the corresponding pin is an empty signal.

The Pins definition of PLC port:

	Pin	Name	Description
	1	TD+	RS422 send +
	2	RXD	RS232 receive
	3	TXD	RS232 send
	4	A	RS485 + signal
	5	GND	Signal ground
	6	TD-	RS422 send -
	7	B	RS485 - signal
	8	RDD-	RS422 receive -
9	RDD+	RS422 receive +	

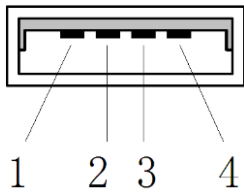
Note: If the interface mode is not supported by this communication port of a specific model, the corresponding pin is an empty signal.

3. USB-A port

USB-A (accord with USB2.0) of TH series HMI has below function:

- Backup management, data export/import, the speed can up to 480 Mbps.

USB-A port definition



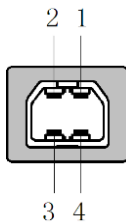
Pin	Name	Description
1	+5V	+5V voltage signal
2	DATA+	Data signal +
3	DATA-	Data signal -
4	-5V	-5V voltage signal

4. USB-B port

TH has one USB-B port (accord with USB2.0), located at the back side of TH, the functions are shown as below:

- To download the data, the speed can up to 480Mbps.

USB-B port definition





Pin	Name	Description
1	+5V	+5V voltage signal
2	DATA-	Data signal -
3	DATA+	Data signal +
4	GND	Ground signal

- (1) Please use shielded USB cables.



- (2) Please install USB driver before using. Download the driver from www.tetaelectric.com

- (3) Connect TH with PC, open Teta Hmi software, click “ or ” to download the program.

5. RJ45 port

The pins definition of RJ45 port

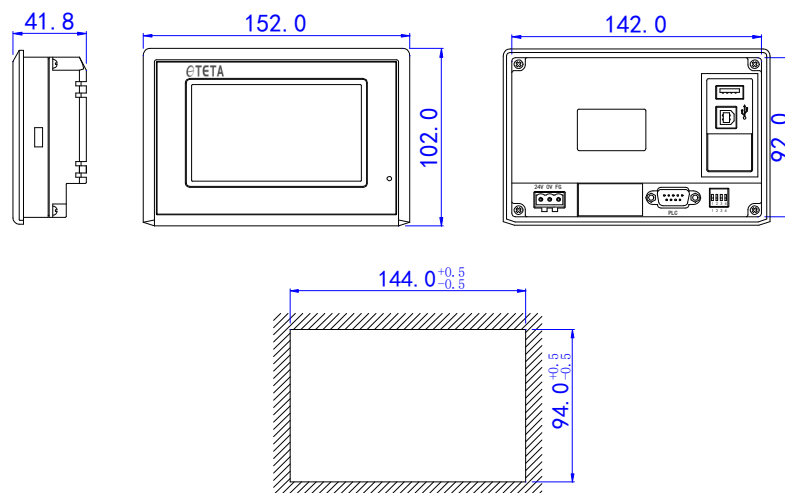
	Pin	Color	Name	Explanation
	1	Orange white	TXD+	Send +
	2	Orange	TXD-	Send -
	3	Green white	RXD+	Receive +
	4	Blue	-	-
	5	Blue white	-	-
	6	Green	RXD-	Receive -
	7	Brown white	-	-
	8	Brown	-	-

1-4 Dimensions and installation

1-4-1 Product dimensions

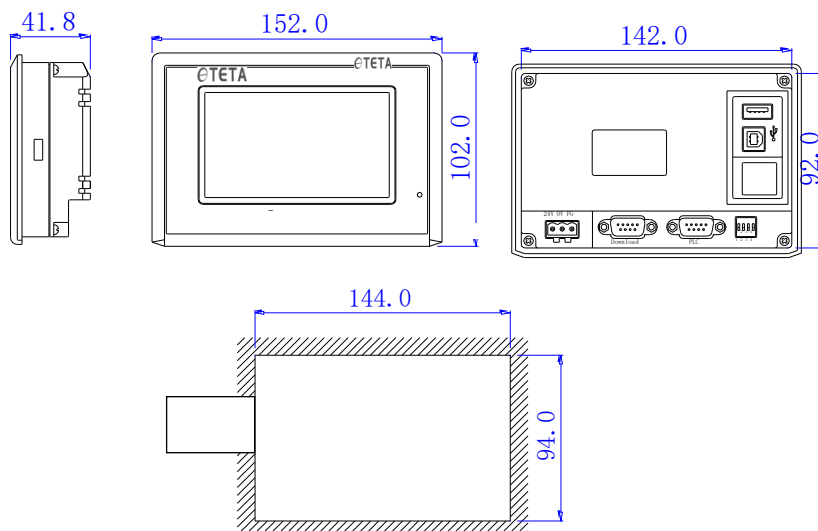
■ TH-104X/M/U/E-R4

Unit: mm



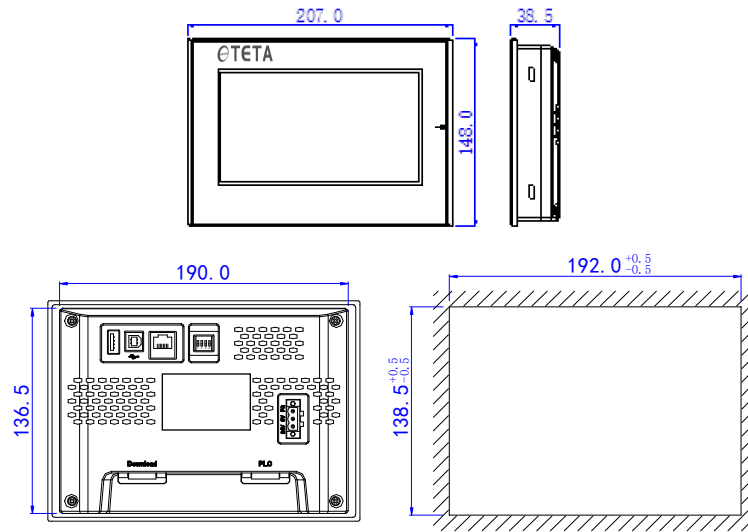
■ TH-104M2/U2-R4

Unit: mm



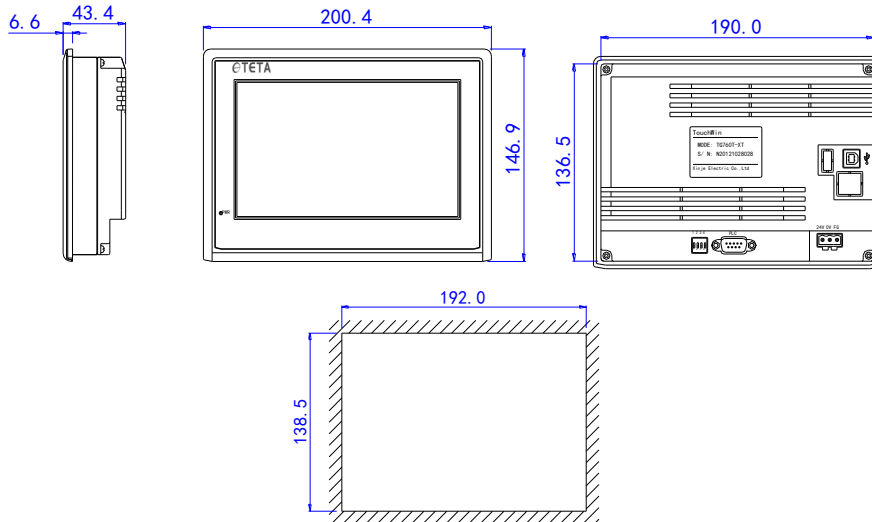
■ TH-107X-R8/TH-107M-R8/TH-107U-R8/TH-107E-R8

Unit: mm



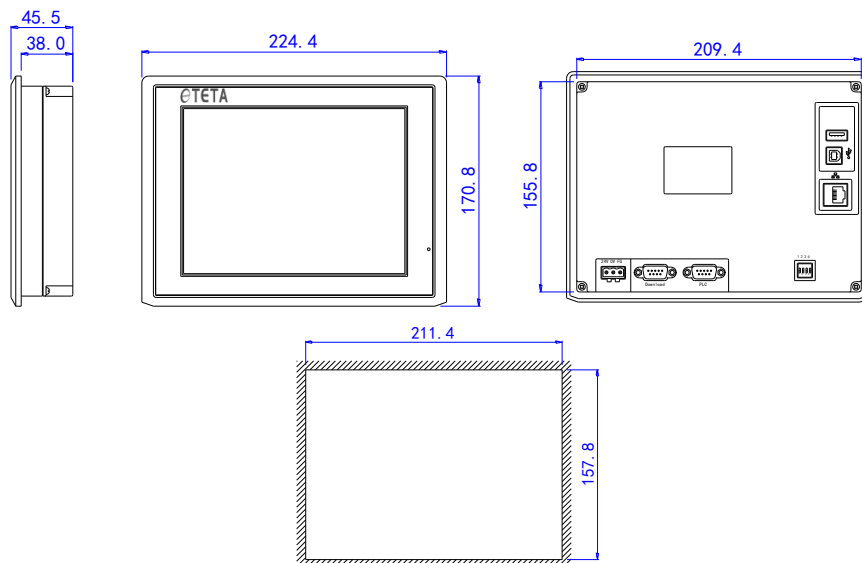
■ TH-107X-R8

Unit: mm



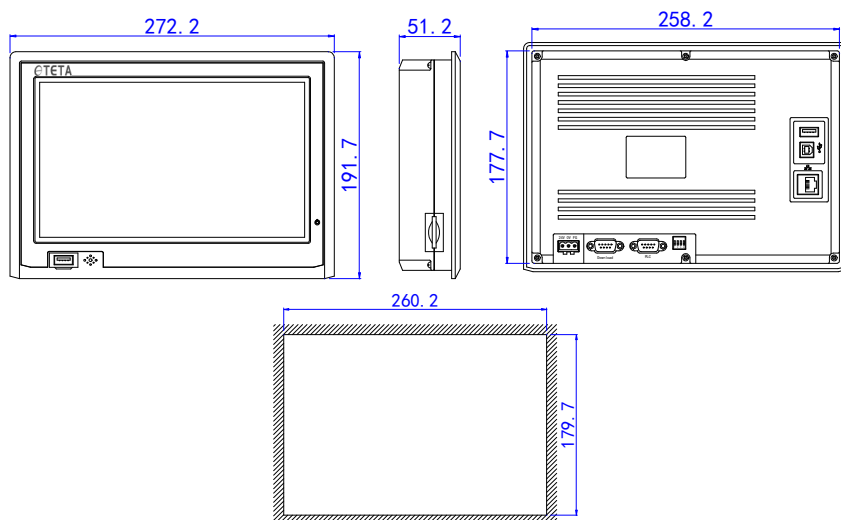
■ TH-108M-R86/TH-108E-R86

Unit: mm



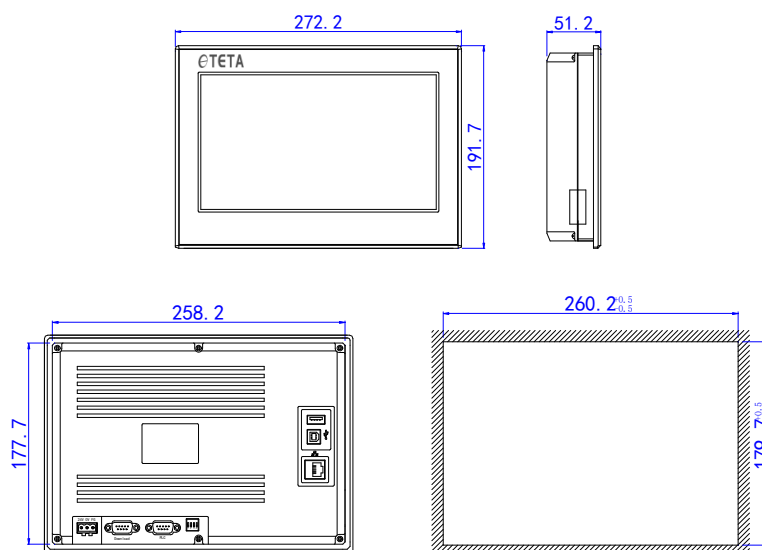
■ TH-110M-R8/TH-110E-R8

Unit: mm



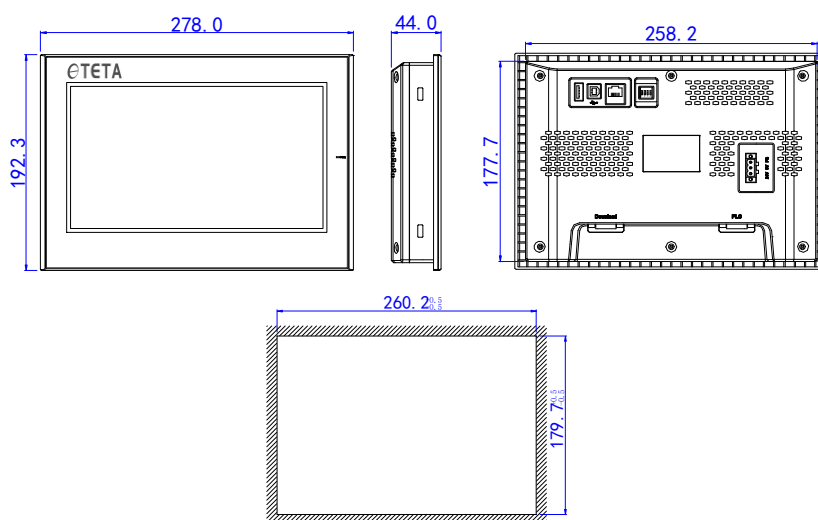
■ TH-110M/E/U-R10

Unit: mm



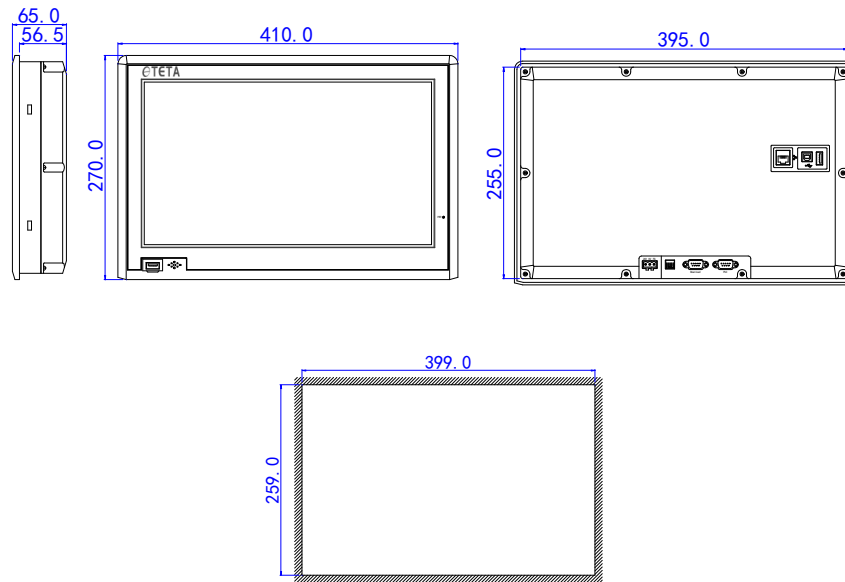
■ TH-110M/E/U-R10

Unit: mm



■ TH-115E-R13

Unit: mm

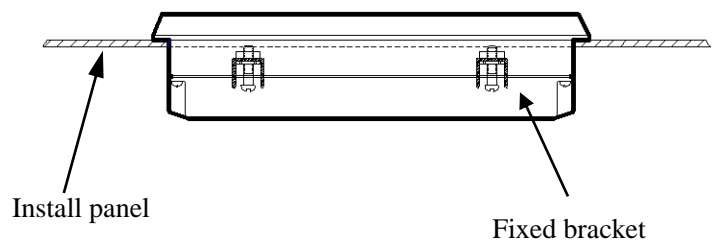
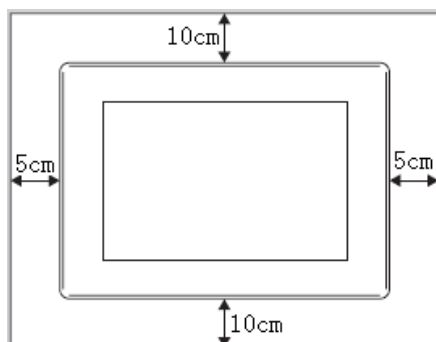


1-4-2 Installation and using environment

Install requirements:

TH has four ferric mounting racks when out of factory, there are two square holes on the up, down side of TH, use mounting rack to fix the TH with control cabinet.

In order to avoid TH temperature too high after long time working, please keep 10cm space on the up/down and 5cm on the left/right side of the TH when installing.



Install steps:

1. Refer to the dimension in the former chapter to open a rectangle mounting hole in the control cabinet;
2. Add airproof circles in the airproof slot when installing;
3. Insert the bottom of TH into the mounting hole of control cabinet;
4. Insert the install rack into the fix hole of TH then tighten the screw;
5. Connect TH and PLC with communication cable.

Notice: The communication cable can be offered by the supplier or made by user according to the connection diagram, input +24V DC power to start working

Environment:

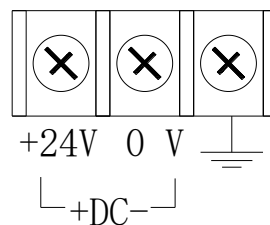
Please use TH series touch screen indoor.

**Do not use TH in below environment:**

Inflammable gas, steam, dust, fast vary temperature, high humidity (it may cause moisture inside TH).

Power supply requirements:

TH series touch screen use DC +24V power supply only. The permitted voltage range is 20V~26V. The connection is as below:



Besides, if connect high voltage or AC power supply with TH, the TH may be damaged and cause electric shock to human body.



If use the DC +24V output of PLC, make sure the PLC has enough current to drive the TH.



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