

AH&MH 系列人机界面安装说明手册

一、注意 (Note)

- 1、AH&MH 系列人机的通讯接口均支持 RS232、RS485、RS422 通讯，为复合通讯口。在下载工程时，请使用 USB 下载线、U 盘或以太网接口下载。
- 2、为了让人机界面能够正常工作，安装使用时敬请按照本说明书的要求接连机壳地。
- 3、为了让人机界面能够正常工作，安装使用时敬请按照本书说明书的要求接通讯接口的地信号。

二、安全注意事项 (Safety Precautions)

安装、配线、操作、维护以及检查时，应随时注意一下安全注意事项。

安装要求：

- 1、请依照手册指定的方式安装人机界面，以避免可能导致的设备损坏。
- 2、请勿将本产品暴露在有水汽、腐蚀性气体、可燃性气体等物质的场所下使用，以避免可能会造成的触电或火灾。

配线要求：

- 1、请将接地端子连接到 CLASS-3 (100Ω 以下) 接地，以避免接地不良可能会造成的触电或火灾。
- 2、本系列 HMI 使用 24V 电源。其他范围电源的接入，将可能导致部分参数或性能的不稳定，严重的可能导致机器损坏。

操作要求：

- 1、本系列人机界面需配合 TH-PClink 软件设计工程画面，未经二次开发的人机界面，可能会导致不正常的运转。
- 2、请勿在开启电源情况下改变配线，否则可能造成触电或人员受伤。
- 3、请勿以尖锐物品碰触面板，否则可能导致面板凹陷，从而使人机界面无法正常工作。

保养及检查：

- 1、禁止接触人机接口内部，否则可能会造成设备损坏和触电。
- 2、电源启动时，禁止拆下人机接口面板，否则可能会造成设备损坏和触电。
- 3、电源关闭 10 分钟内，不得接触接线端子，残余电压可能造成触电。
- 4、人机界面在操作时，排气孔不可封住，否则容易造成故障。

通讯线材要求：

- 1、请依标准规格采用通讯配线线材。
- 2、通讯线材长度需符合规定内。
- 3、采用正确的接地回路，以避免通讯不良。

三、工作环境 (Work Environment)

本产品在安装之前必须置于其包装箱内，若暂时不使用，为了使该产品能够符合本公司的保修范围及日后的维护，储存时务必注意下列事项：

- 1、必须置于无尘垢、干燥的位置；
- 2、储存位置的环境温度必须参考《产品规格》的范围；
- 3、储存位置的湿度必须参考《产品规格》的范围；
- 4、避免储存于含有腐蚀性气、液体之环境中；
- 5、最适合包装存放在架子或台面。

四、基本检测 (Basic Inspection)

在使用本系列 HMI 之前请做如下的基本检测：

一般检测：

- 1、定期检查人机接口与设备连接处的螺丝是否有松动。
- 2、排气孔应避免油、水或金属粉等异物侵入，且应防止电钻的切削粉落入人机界面内。
- 3、人机界面若设置于有害气体或多粉尘的场所，应防止有害气体与粉尘的侵入。

操作前检测 (未供应控制电源)

- 1、配线端子的接线部请实施绝缘处理。
- 2、通讯配线应正确，否则可能发生异常动作。
- 3、检查是否有异物进入人机界面内部，特别是螺丝或金属片等导电性物体、可燃性物体。
- 4、人机界面附近使用的电子仪器受到电磁干扰时，请使用仪器调校以降低电磁干扰。
- 5、请确定人机接口的供应电源电压是否正确。

运转前检测 (已供应控制电源)

- 1、电源指示灯是否显示。
- 2、与各设备之间通讯动作是否正常。
- 3、人机接口若有异常现象，请与厂商联络。

五、装箱清单 (Packing List)

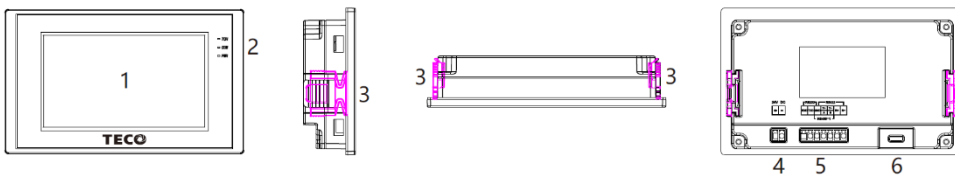
序号	部件	数量
1	触摸屏	1 台
2	HMI 固定卡扣	4 个
3	电源插头	1 个

六、产品规格 (Specifications)

型号 内容	AH430L-2	AH700ELK-2	AH102L-2
电源电压	DC24V		
电源电压范围	DC12V-DC28V		
容许瞬停时间	<5ms		
功率	<5W	<8W	<10W
使用环境温度	-10°C~+55°C		
保存环境温度	-20°C~+70°C		
使用环境湿度	10%~90%RH (无凝露)		
保存环境湿度	10%~90%RH (无凝露)		
耐振动	符合 IEC61131-2 标准 连续振动场合:10Hz~57Hz 0.075mm, 57Hz~150Hz 9.8 m/s ² 不连续振动场合:10Hz~57Hz 0.035mm, 57Hz~150Hz 4.9 m/s ² X、Y、Z 三个方向各 10 次 (80 分钟)		
耐腐蚀	避免腐蚀性气体		
冷却方式	自然风冷		

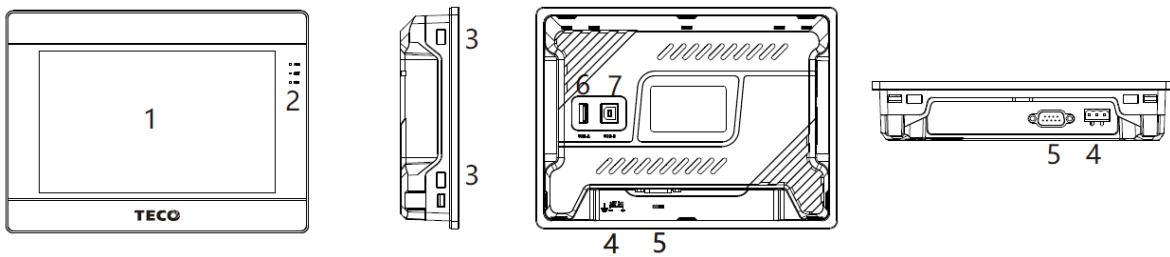
型号 内容	MH700-2	MH1020-2	MH1500-2
电源电压	DC24V		
电源电压范围	DC12V-DC28V		DC18V~DC28V
容许瞬停时间	<5ms		
功率	<8W	<10W	<15W
使用环境温度	-10°C~+55°C		0°C~+50°C
保存环境温度	-20°C~+70°C		-20°C~+60°C
使用环境湿度	10%~90%RH (无凝露)		
保存环境湿度	10%~90%RH (无凝露)		
耐振动	符合 IEC61131-2 标准 连续振动场合:10Hz~57Hz 0.075mm, 57Hz~150Hz 9.8 m/s ² 不连续振动场合:10Hz~57Hz 0.035mm, 57Hz~150Hz 4.9 m/s ² X、Y、Z 三个方向各 10 次 (80 分钟)		
耐腐蚀	避免腐蚀性气体		
冷却方式	自然风冷		

七、人机界面的部件与功能 (Parts And Function)



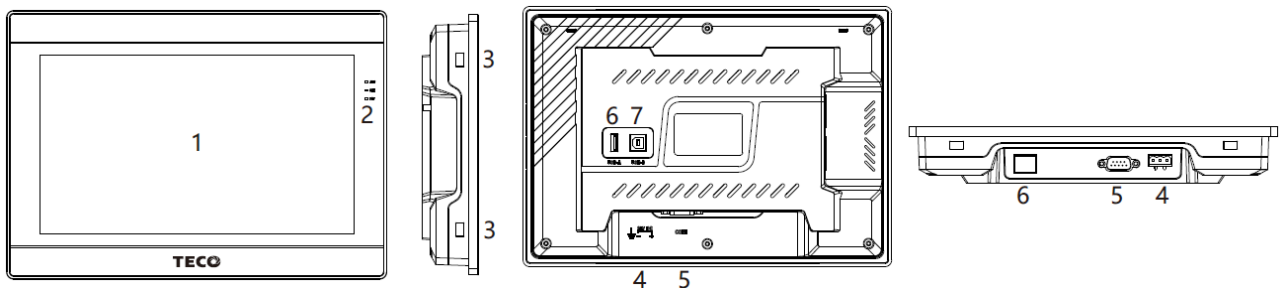
AH430L-2 外观部件说明

1	液晶和触摸屏	2	指示灯	3	固定卡扣	4	电源插槽
5	COM 端子	6	USB-OTG				



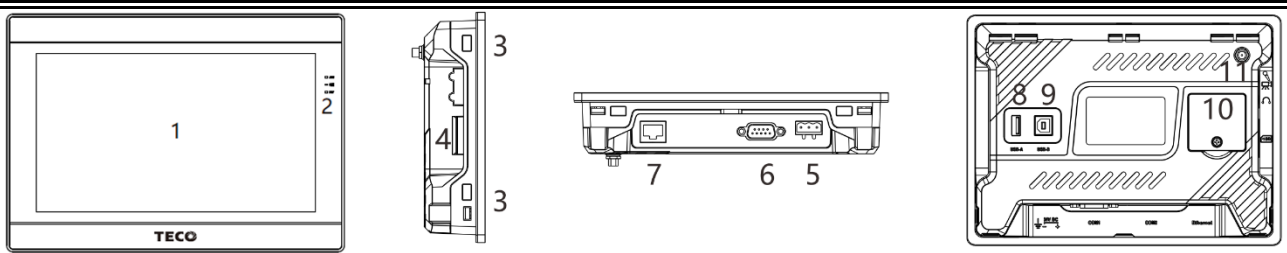
AH700ELK-2 外观部件说明

1	液晶和触摸屏	2	指示灯	3	固定卡扣	4	电源插槽
5	COM 端子	6	USB-A	7	USB-B		



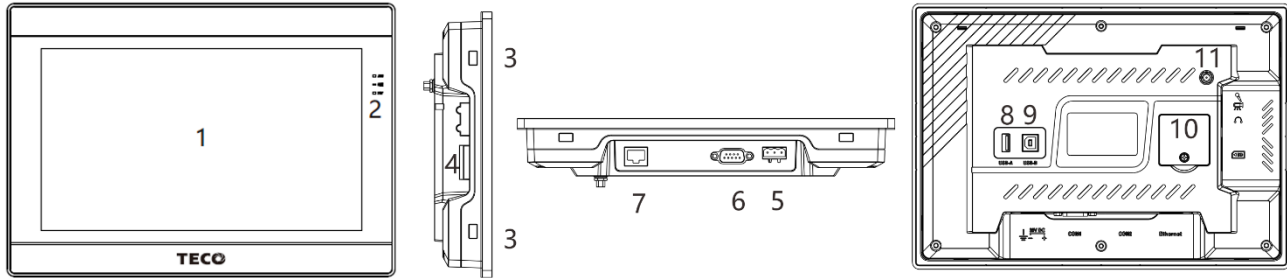
AH102L-2 外观部件说明

1	液晶和触摸屏	2	指示灯	3	固定卡扣	4	电源插槽
5	COM 端子	6	USB-A	7	USB-B		



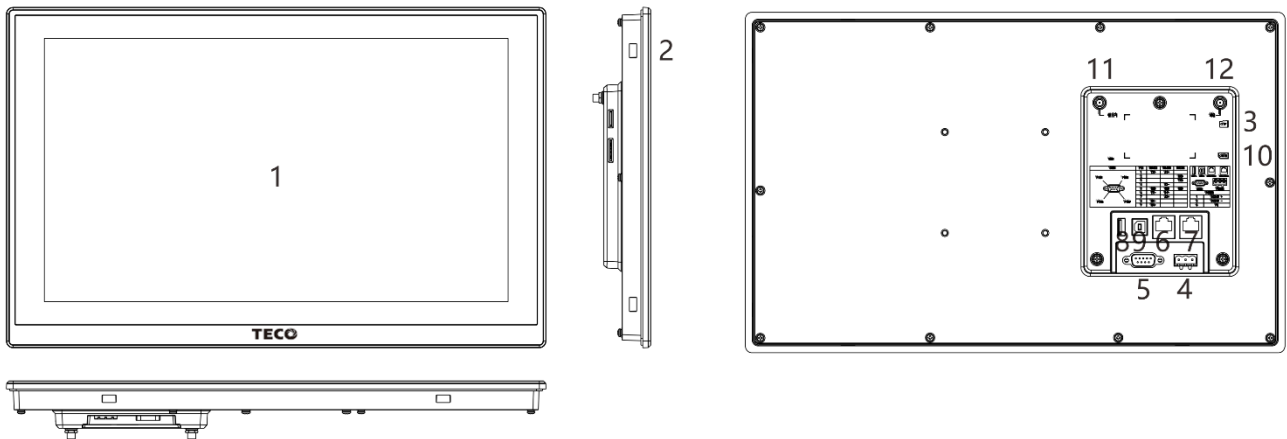
MH700-2 外观部件说明

1	液晶和触摸屏	2	指示灯	3	固定卡扣	4	SD 卡插槽
5	电源插槽	6	COM 口	7	以太网口	8	USB-A
9	USB-B	10	SIM 卡插槽(选配)	11	4G / WIFI 天线(选配)		



MH1020-2 外观部件说明

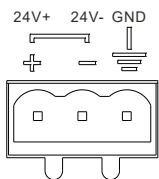
1	液晶和触摸屏	2	指示灯	3	固定卡扣	4	SD 卡插槽
5	电源插槽	6	COM 口	7	以太网口	8	USB-A
9	USB-B	10	SIM 卡插槽(选配)	11	4G / WIFI 天线(选配)		



MH1500-2 外观部件说明

1	液晶和触摸屏	2	固定卡扣	3	TF 卡插槽	4	电源插槽
5	COM 口	6	以太网口 1	7	以太网口 2	8	USB-A
9	USB-B	10	SIM 卡插槽(选配)	11	WIFI 天线(选配)	12	4G 天线(选配)

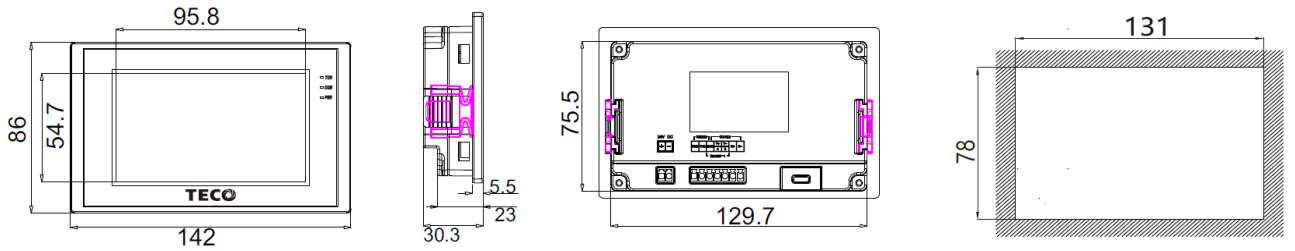
电源接口定义如下（从左到右）：



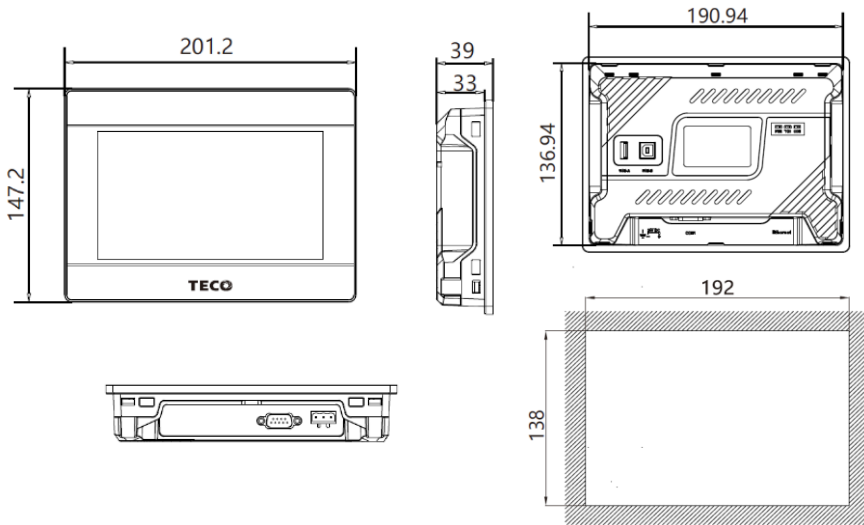
DC24V 正极	DC24V 负极	机壳地
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八、人机界面的尺寸 (The Size Of Product)

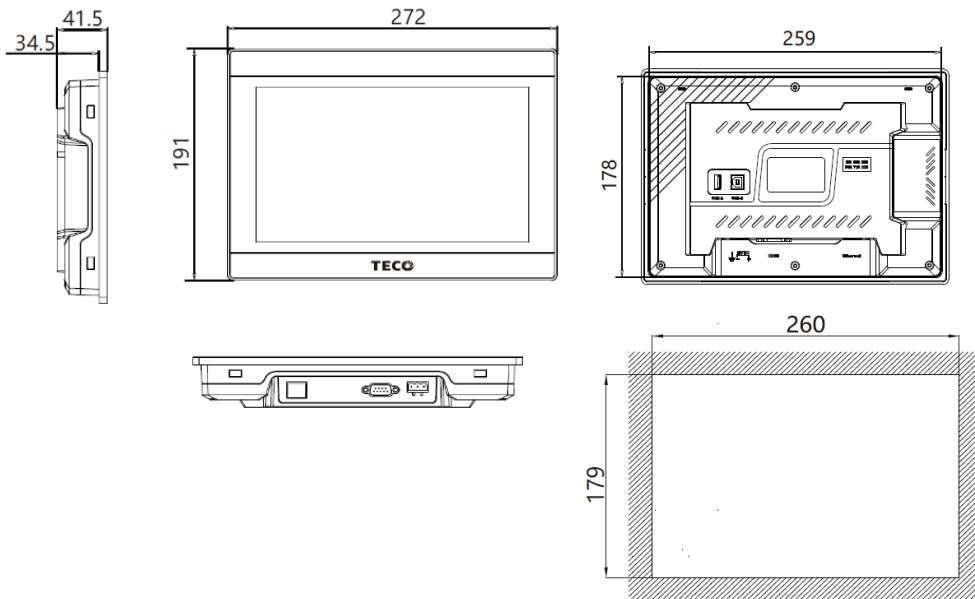
单位: mm, 误差范围±0.5mm



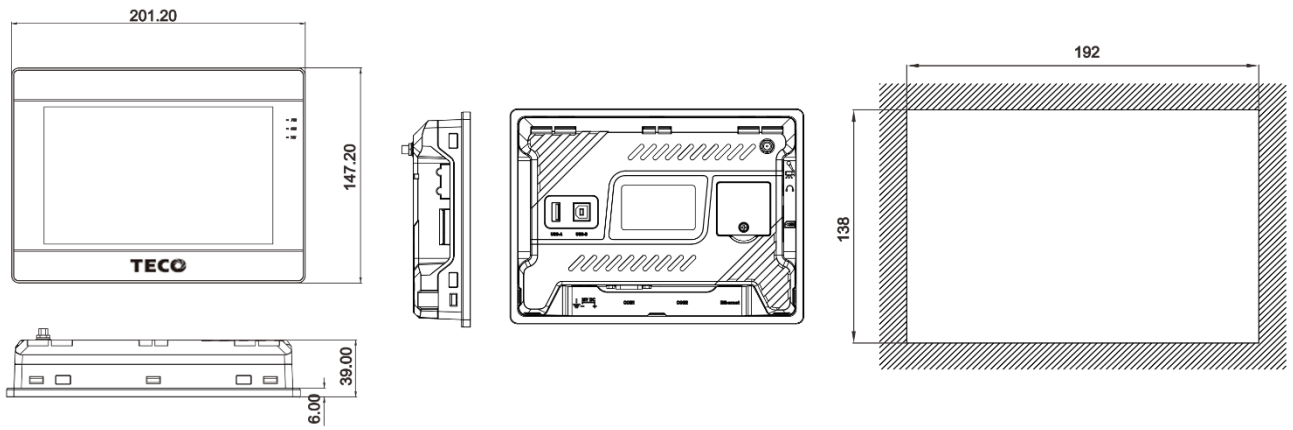
AH430L-2 安装尺寸图



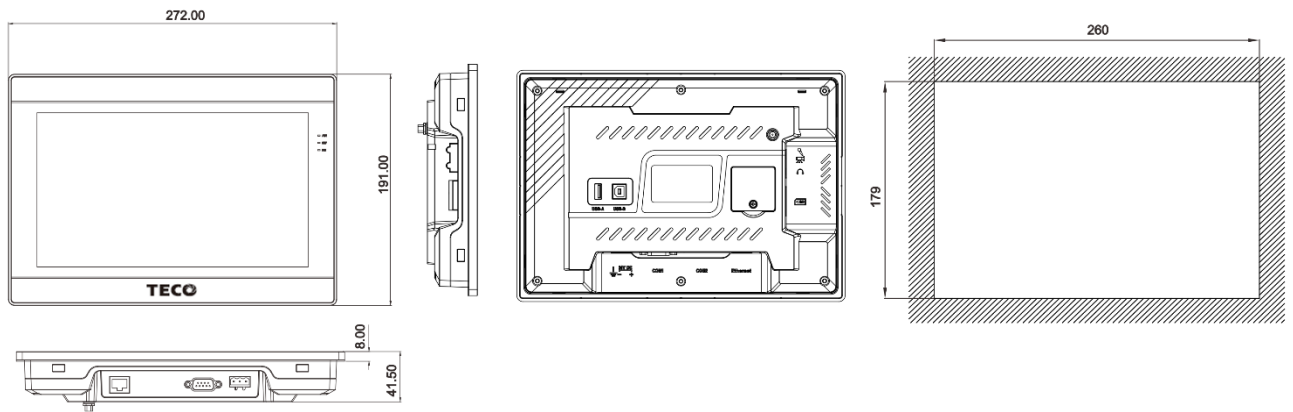
AH700ELK-2 安装尺寸图



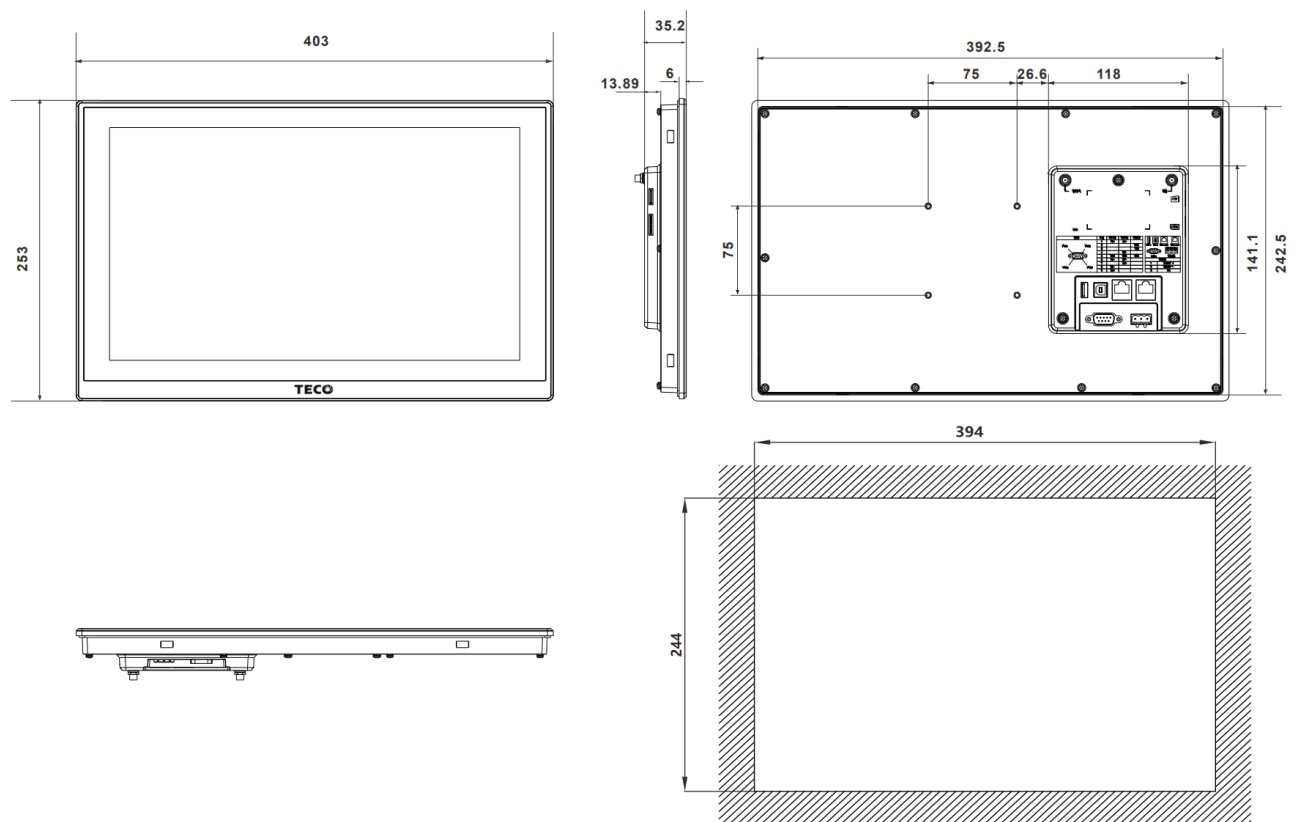
AH102L-2 安装尺寸图



MH700-2 安装尺寸图



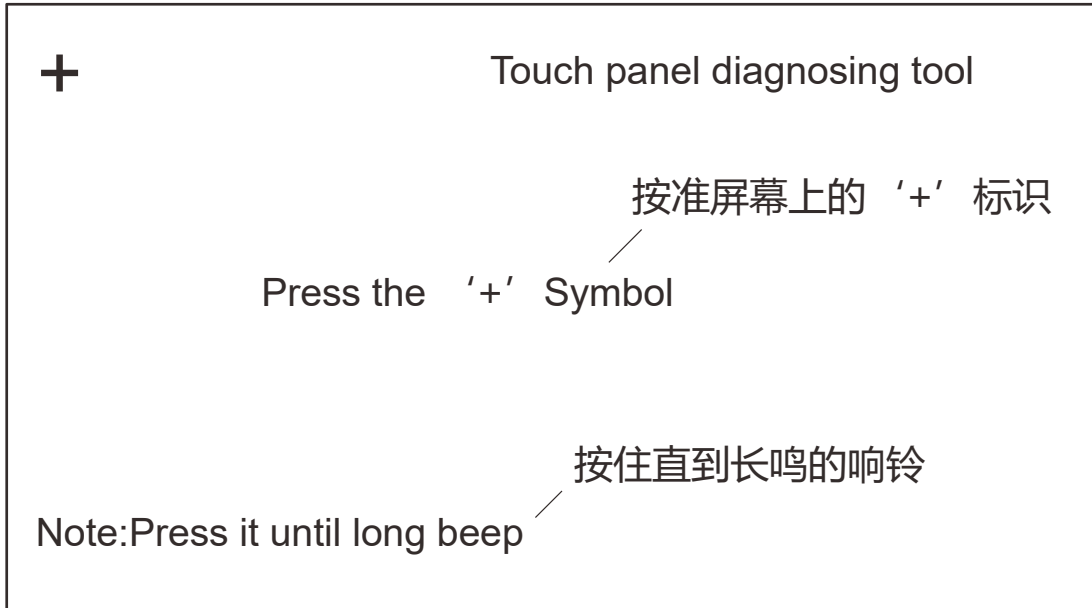
MH1020-2 安装尺寸图



MH1500-2 安装尺寸图

九、触摸屏校正 (Touch Screen calibration)

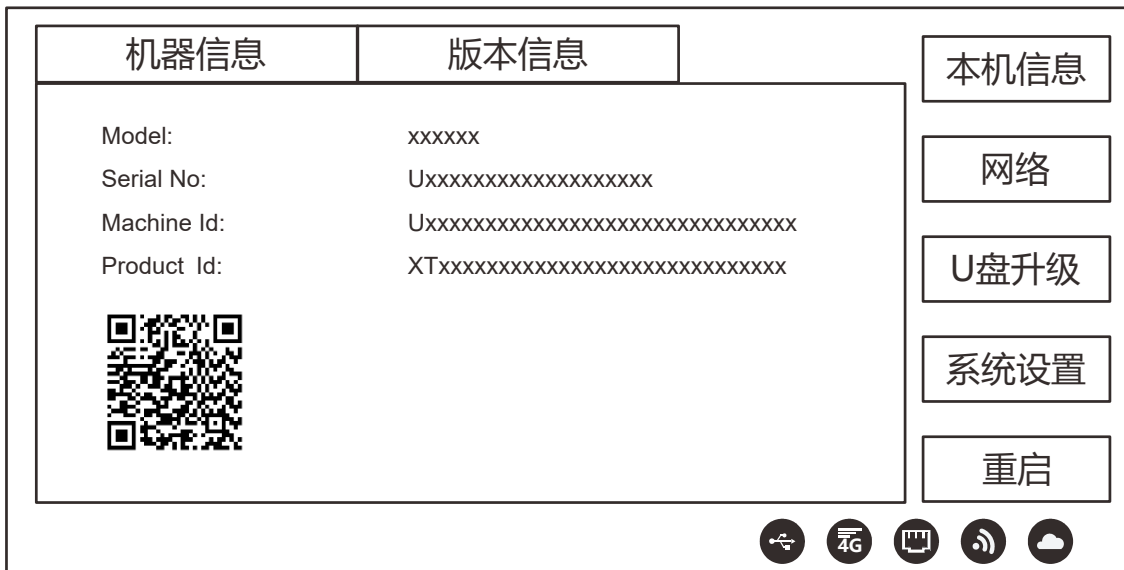
人机界面上电启动后，按住屏幕的左上角大约 3-5 秒钟，出现如下界面：



依次点中左上角、右上角、右下角、左下角、中心点的 ‘+’，重新启动即可。

十、参数设置 (Parameters Setting)

按住屏幕的右上角大约 3-5 秒钟，出现如下界面：



十一、人机界面的安装 (Product Installation)

注意事项：

- 1、安装方向必须依本说明书规定，否则会造成故障。
- 2、为了使冷却循环效果良好，安装人机接口时，其上下左右相邻的物品和挡板（墙），必须保持足够的空间，以避免散热不良造成的设备损坏。

3、使用 type 4x 室内使用等级之外壳平面。

安装步骤：

- 1、确实将防水垫圈装入，然后再安装人机界面到适合的外壳中；
- 2、确实将固定片螺丝组装入内，然后下方钩住前盖螺丝头顶住控制箱内侧；
- 3、请以适合的扭力锁紧螺丝，切记不可以超过此力矩，否则将造成塑料外壳的损坏。
扭力：6.17lb-inch(0.7N-M)

十二、人机界面的接口定义 (Interface Definition)

AH430L-2 接口定义

COM1 接口定义

引脚	定义	引脚	定义
1	RS232 RXD	2	RS232 TXD
3	GND	4	RS422 TX+/RS485 A1+
5	RS422 TX-/RS485 B1-	6	RS422 RX+
7	RS422 RX-		

▲注：AH430L-2 系列 HMI 的端子排中 RS422 和 RS485 通讯方式不能同时使用。

AH700ELK-2/AH102L-2 接口定义

COM1 接口定义

引脚	定义	引脚	定义
1	RS422 TX+/RS485 A+	2	RS232 RXD
3	RS232 TXD	5	GND
6	RS422 TX-/RS485 B-	8	RS422 RX-
9	RS422 RX+		

▲注：AH700ELK-2/AH102L-2 系列 HMI 的 COM 口中 RS422 和 RS485 通讯方式不能同时使用。

MH700-2/MH1020-2/MH1500-2 接口定义

COM1 接口定义

引脚	定义	引脚	定义
1	RS422 TX +/RS485 A1 +	2	RS232 RXD
3	RS232 TXD	4	RS485 B2-
5	GND	6	RS422 TX-/RS485 B1-
7	RS485 A2+	8	RS422 RX-
9	RS422 RX+		

▲注：MH700-2/MH1020-2/MH1500-2 系列 HMI 的 COM1 口中 RS422 和 RS485-1 通讯方式不能同时使用。

注意

本说明书内容若有变更，恕不另行通知，请谅解！

TECO | 台安科技(无锡)有限公司

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AH&M Series HMI Installation Manual

Part 1 General Note

- The communication interfaces of the series of HMI all support RS232, RS485, RS422 communication, which are composite communication ports. When downloading the project, please use the USB download cable, U disk or Ethernet interface to download.
- The power ground must be connected to make the HMI run correctly.
- The communication ground must be connected to make the HMI communicate correctly.

Part 2 Safety Precautions

Notice following safety precautions at any moment when installing, wiring, operating, vindicating and examining.

Installation

- Please set up the HMI according to this manual otherwise it may cause device damage.
- It's forbidden to uncover the product in the environment that has water vapor, corrosive gas or combustible gas, otherwise it may cause short circuit or fire.

Wiring

- Please connect the grounding terminal with class-3ground, otherwise it may cause short circuit or fire.
- The series HMI use 24-volt power supply. Any connection of non-standard power supply will lead to machine damage.

Operation

- The series HMI need TH-PClink software to design project picture. HMI not designed may lead to run abnormally.
- Do not change wiring while the power is ON, otherwise it may cause short circuit or device damage.
- Please do not touch panel with sharp objects, otherwise it may lead to panel depressed, thereby make HMI run abnormality.

Maintenance

- It's forbidden to touch inside HMI, or else it may lead to short circuit or device damage.
- When power on, It's forbidden to dismantle HMI panel, otherwise it may lead to short circuit or device damage.
- Do not touch connection terminal in 10 minutes of turning off power, otherwise residual voltage may lead to short circuit or device damage.
- When operating, exhaust vent should not be sealed LED, otherwise it may lead to failure easily.

Communication

- Please connect to the communication wire according to this manual.
- The length of communication wire should meet the requirement.
- Use the correct ground loops in order to avoid abnormal communication.

Part 3 Work Environment

The product must be placed in the pack box before installation, if not used for a while, in order to make the product accord with the warranty of our company and future maintenance, be sure to notice the following items when stored.

- Storage environment must be dry and dust-free.
- Storage ambient temperature must refer to "Specifications".
- Storage humidity must refer to "Specifications".

- Avoid corrosive gases and liquids in the storage environment.
- Avoid placing the product directly on the ground.

Part 4 Basic Inspection

Please do following basic checking before using the series HMI.

General

- Check if any screw is loose.
- The vent hole should be protected from oil, water and metal powder, and the chip powder of the drill should be prevented from falling into the HMI.
- If there are harmful gases or dust in the HMI operating environment, please take protective measures.

Checking before installation (Unpowered)

- Please deal with connection division of wiring terminal insulated.
- Communication wiring should be correct, otherwise abnormal operation may occur.
- Check for foreign matter entering the interior of the HMI, especially for flammable substances and conductive materials such as screws, metal sheets, etc.
- Please regulate instrument to reduce electromagnetism interference.
- Check HMI supply voltage.

Checking before running (powered)

- Check the status of the power indicator.
- Check if the communication between the HMI and the device is normal.
- If there is any abnormality in the HMI interface, please contact the manufacturer.

Part 5 Packing List

Sequence number	Component	Quantity
1	this series HMI	1
2	HMI LED	4
3	Power terminal	1

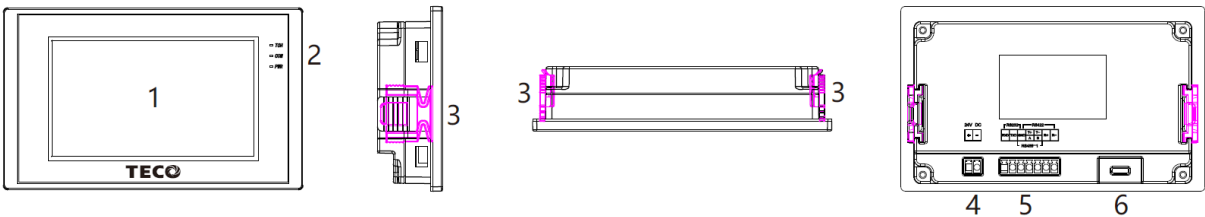
Part 6 Specifications

Module	AH430L-2	AH700ELK-2	AH102L-2
Content			
Power voltage	DC24V		
Power voltage range	DC12V-DC28V		DC18V~DC28V
Permissible instantaneous power failure time	<5ms		
Power consumption	<5W	<8W	<10W
Operating ambient temperature	-10°C~+55°C		
Storage ambient temperature	-20°C~+70°C		
Operating ambient humidity	10%~90%RH (Non-condensing)		
Storage ambient humidity	10%~90%RH (Non-condensing)		
Vibration resistance	Conforms to IEC61131-2 standard: Continuous vibration:10Hz~57Hz 0.0755mm,57Hz~150Hz 9.8m/s ² Intermittent vibration:10Hz~57Hz 0.0035mm,57Hz~150Hz 4.9 m/s ²		

	in each X, Y, Z direction 10 times (80 minutes)
Corrosion resistance	Avoid corrosive gas
Cooling method	Natural air cooling

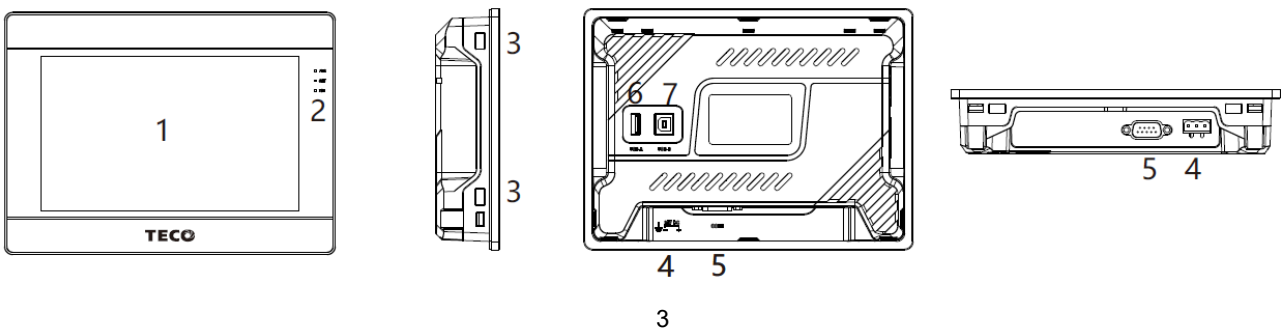
Content \ Module	MH700-2	MH1020-2	MH1500-2
Power voltage	DC24V		
Power voltage range	DC12V-DC28V		DC18V~DC28V
Permissible instantaneous power failure time	<5ms		
Power consumption	<8W	<10W	<15W
Operating ambient temperature	-10°C~+55°C		0°C~+50°C
Storage ambient temperature	-20°C~+70°C		-20°C~+60°C
Operating ambient humidity	10%~90%RH (Non-condensing)		
Storage ambient humidity	10%~90%RH (Non-condensing)		
Vibration resistance	Conforms to IEC61131-2 standard: Continuous vibration:10Hz~57Hz 0.0755mm,57Hz~150Hz 9.8m/s ² Intermittent vibration:10Hz~57Hz 0.0035mm,57Hz~150Hz 4.9 m/s ² in each X, Y, Z direction 10 times (80 minutes)		
Corrosion resistance	Avoid corrosive gas		
Cooling method	Natural air cooling		

Part7 Parts and Function



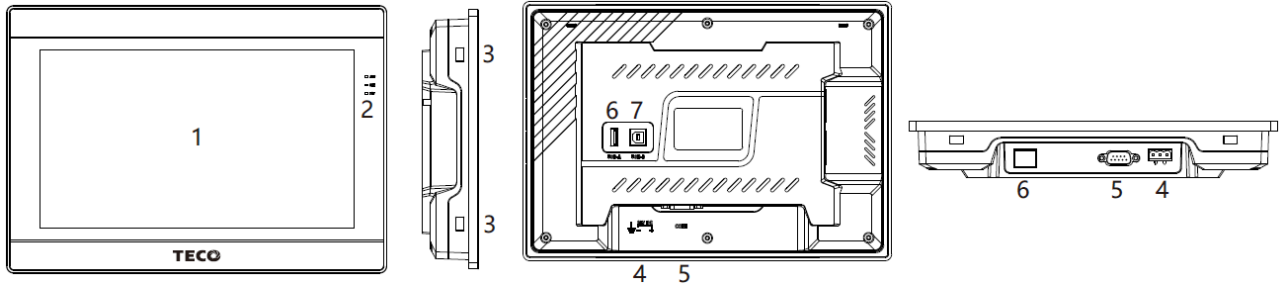
AH430L-2 Components description

1	LCD and touch screen	2	LED	3	Fixed buckle	4	Power terminal
5	COM	6	USB-OTG				



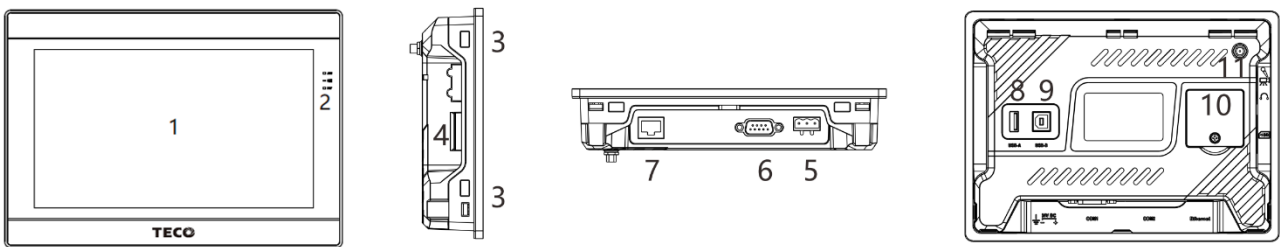
AH700ELK-2 Components description

1	LCD and touch screen	2	LED	3	Fixed buckle	4	Power terminal
5	COM	6	USB-A	7	USB-B		



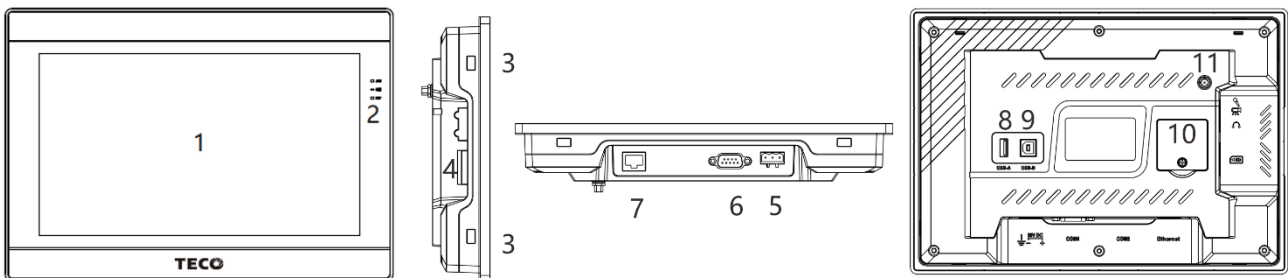
AH102L-2 Components description

1	LCD and touch screen	2	LED	3	Fixed buckle	4	Power terminal
5	COM	6	USB-A	7	USB-B		



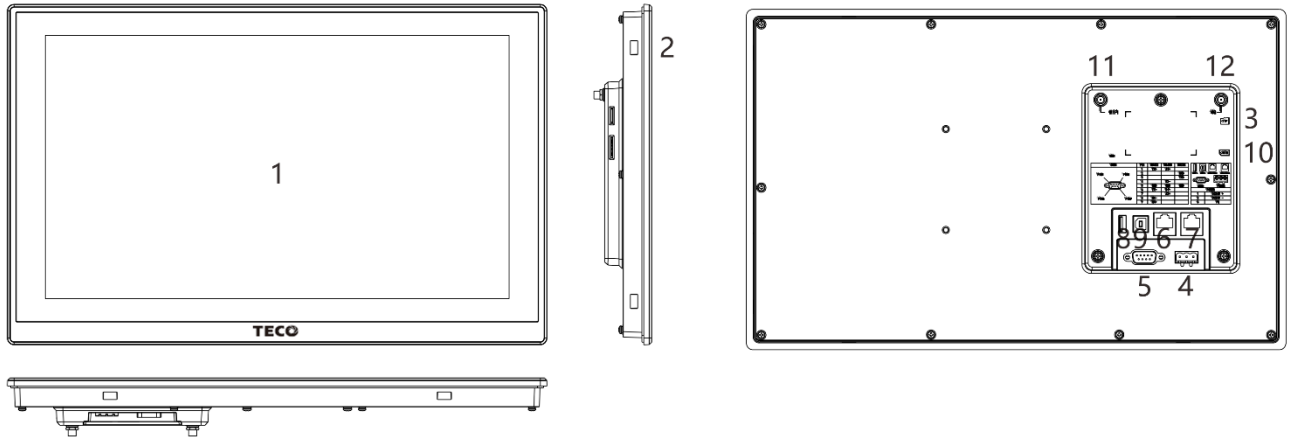
MH700-2 Components description

1	LCD and touch screen	2	LED	3	Fixed buckle	4	SD card slot
5	Power terminal	6	COM	7	Ethernet	8	USB-A
9	USB-B	10	SIM card slot (optional)	11	4G / WIFI antenna (optional)		



MH1020-2 Components description

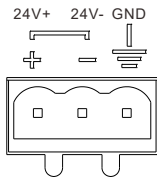
1	LCD and touch screen	2	LED	3	Fixed buckle	4	SD card slot
5	Power terminal	6	COM	7	Ethernet	8	USB-A
9	USB-B	10	SIM card slot (optional)	11	4G / WIFI antenna (optional)		



MH1500-2 Components description

1	LCD and touch screen	2	Fixed buckle	3	TF card slot	4	Power terminal
5	COM	6	Ethernet 1	7	Ethernet 2	8	USB-A
9	USB-B	10	SIM card slot (optional)	11	WIFI antenna (optional)	12	4G antenna (optional)

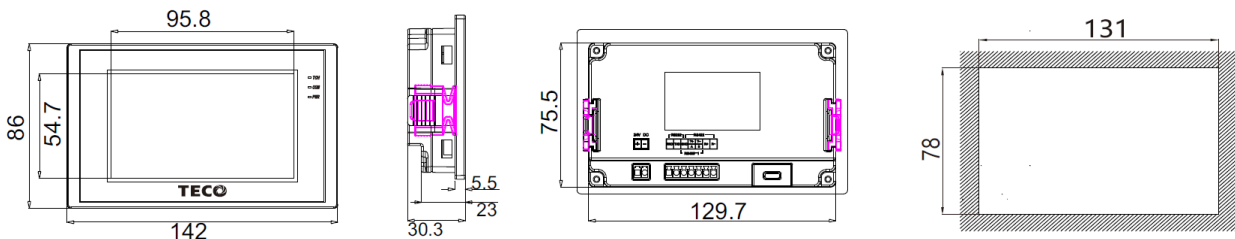
The power interface is defined as follows (from left to right):



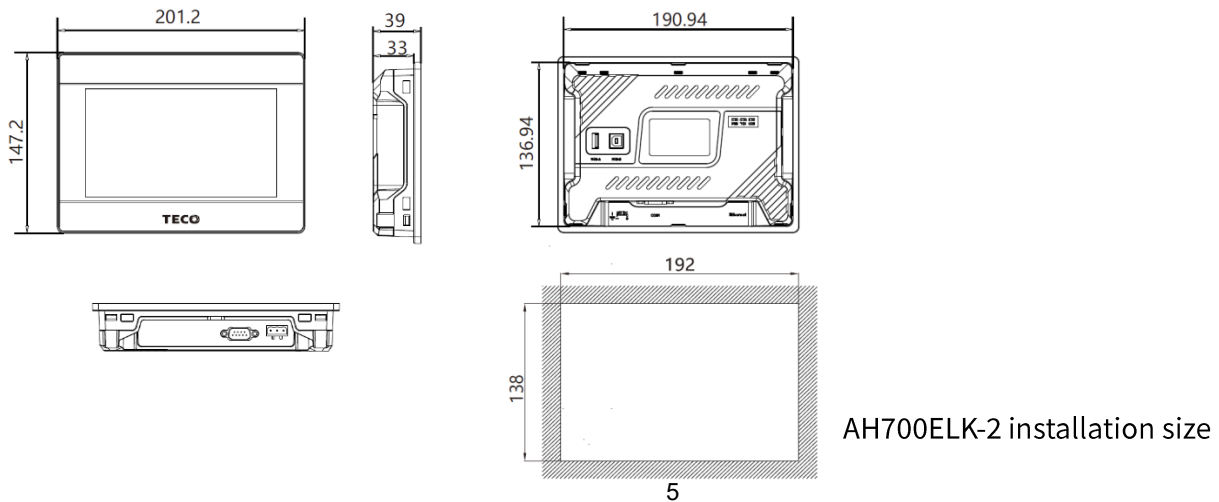
DC 24V+	DC24V-	GND
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Part8 The Size of Product

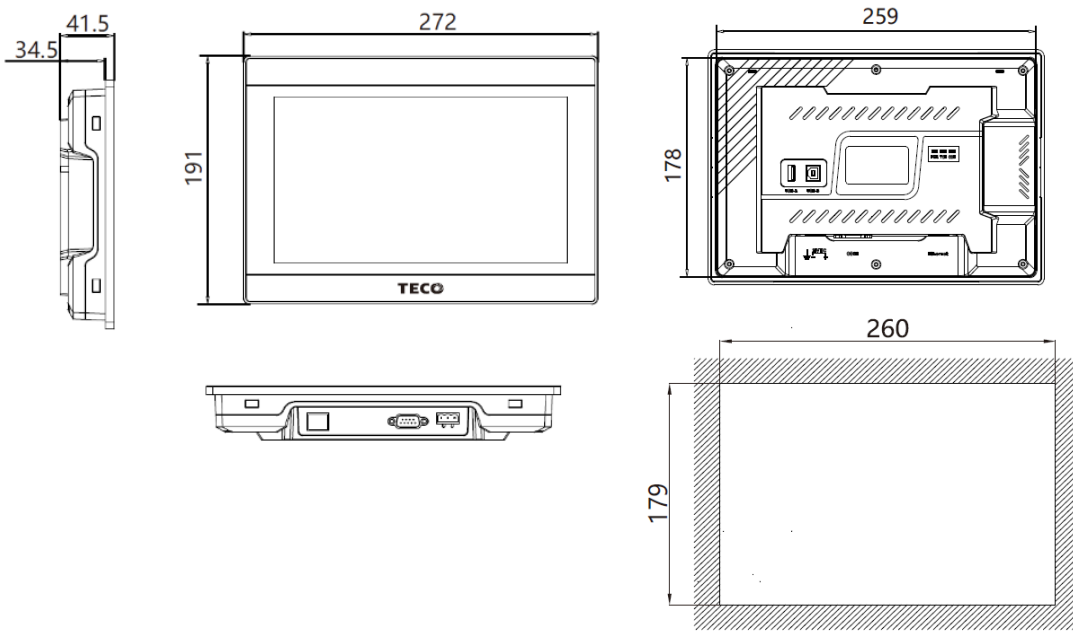
Unit : mm , error range: $\pm 0.5m$



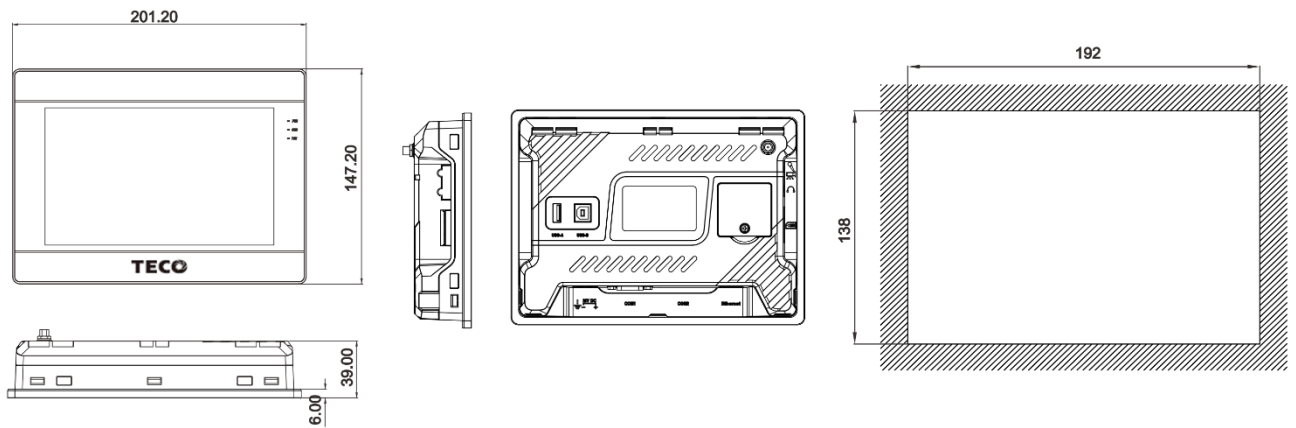
AH430L-2 installation size



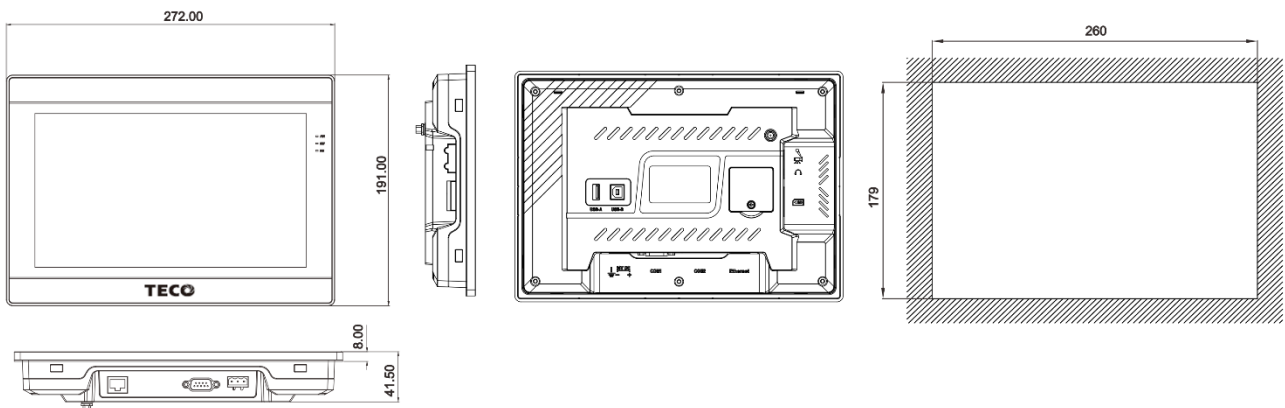
AH700ELK-2 installation size



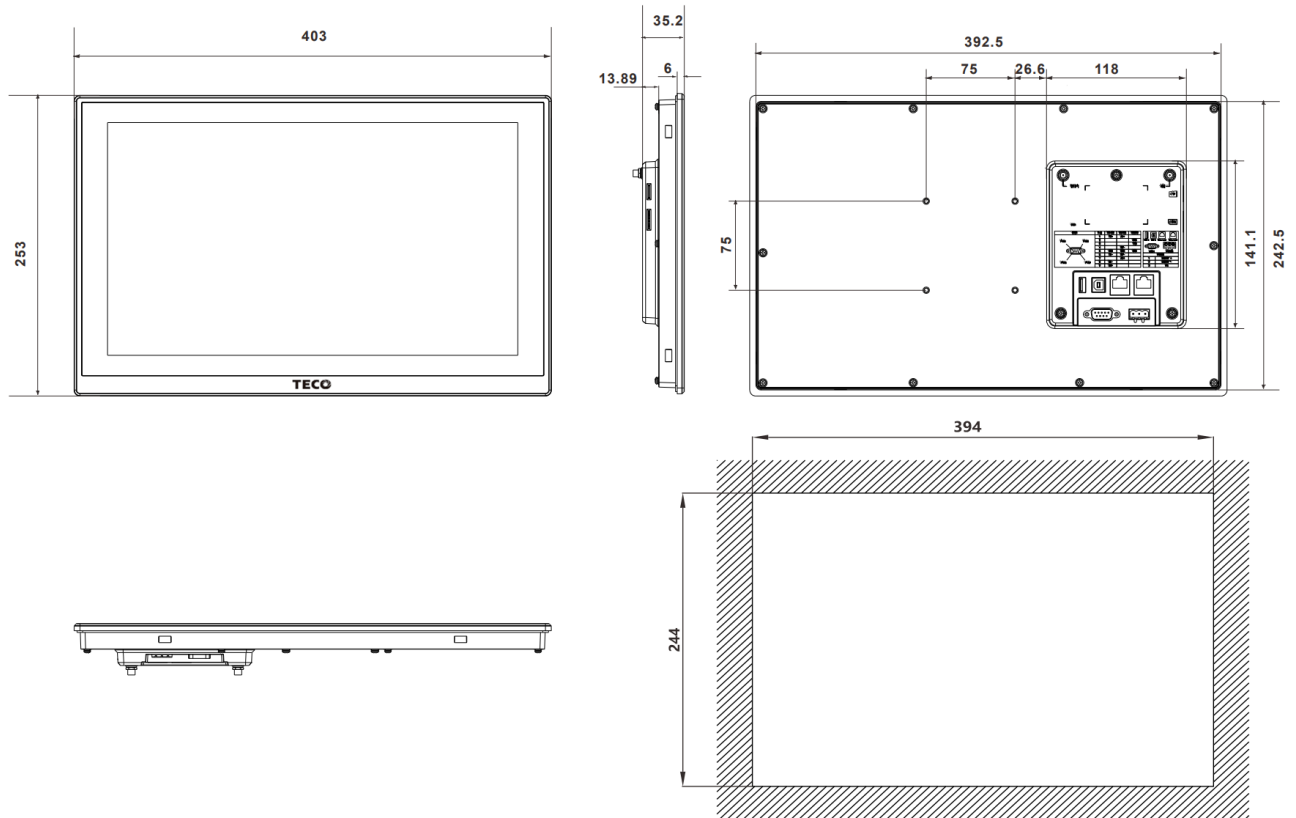
AH102L-2 installation size



MH700-2 installation size



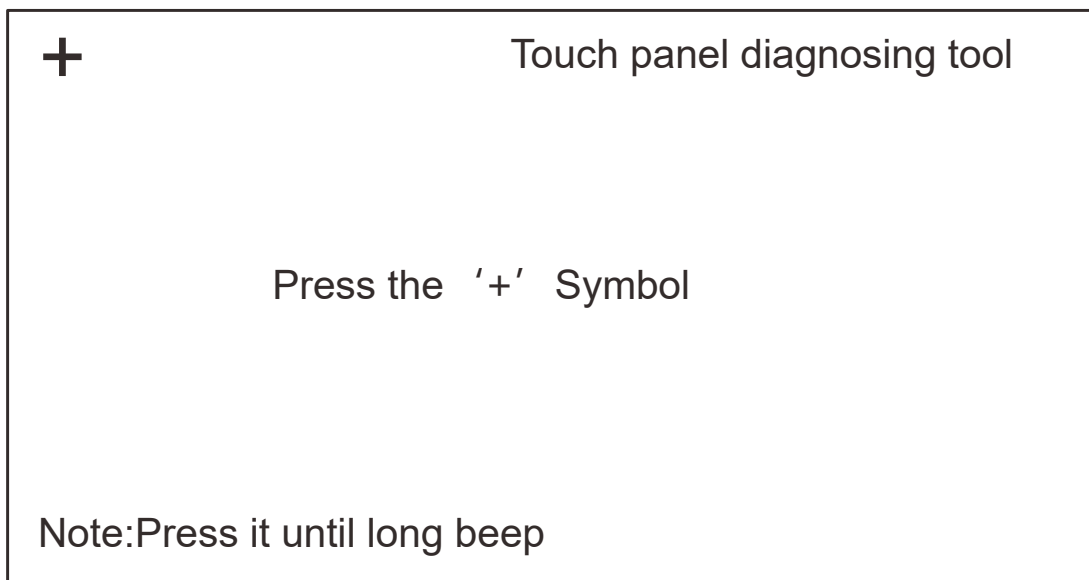
MH1020-2 installation size



MH1500-2 installation size

Part 9 Touch Screen Calibration

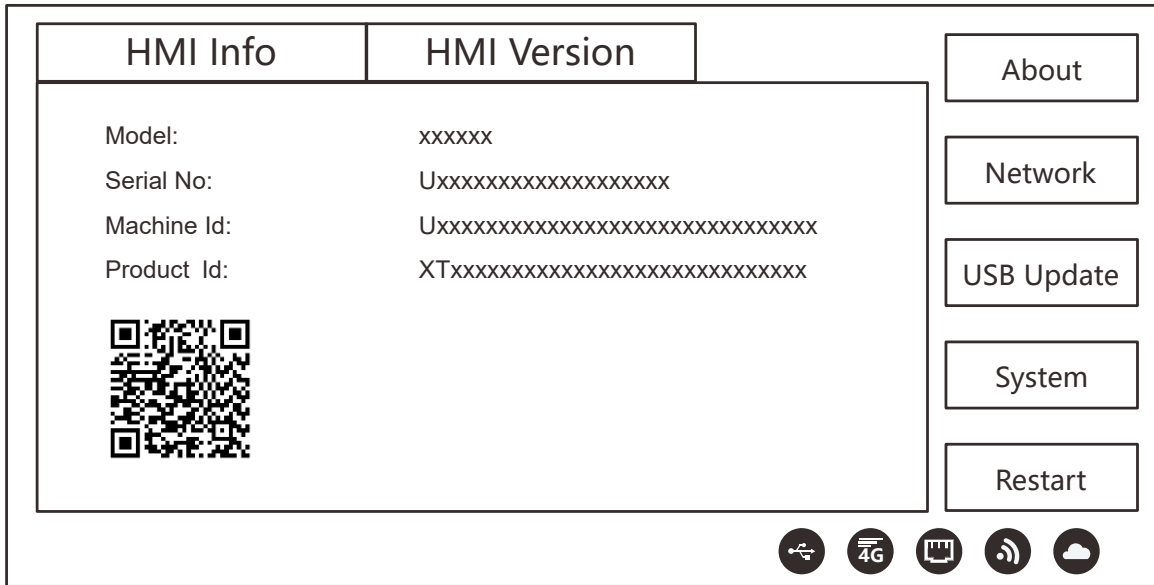
After starting HMI, keep on pressing top left corner of screen about 3 to 5 seconds, an interface will appear as following:



Click top left corner, top right corner, bottom right corner, bottom left corner and the center of '+' in turn and restart.

Part 10 Parameters Setting

Keep on pressing top right corner of screen about 3 to 5 seconds, an interface will appear as following:



Part 11 Product Installation

Notes:

- The installation direction must be in accordance, otherwise it may lead to fault.
- In order to make circle effect greatly, adjacent objects and baffle should be kept on enough space when installation, otherwise it will cause bad cooling.
- Used in crust plane of Type 4X indoor grade.

Installation steps:

- Make sure the waterproof gasket is cased, and then install HMI to the adaptive crust.
- Make sure the fixed piece screw is cased, and then hitch front cover screw to withstand inside control box.
- Please tight screws aptly and remember not to exceed this torque, otherwise it will lead to crustaceous damage. Torque:6.17lb-inch (0.7N-M)

Part 12 Interface Definition

AH430L-2 series interfaces

COM1 definition:

Pin	Definition	Pin	Definition
1	RS232 RXD	2	RS232 TXD
3	GND	4	RS422 TX+/RS485 A1+
5	RS422 TX-/RS485 B1-	6	RS422 RX+
7	RS422 RX-		

▲ Note: RS422 and RS485 cannot be used in COM port of AH430L-2 series HMI at the same time.

AH700ELK-2/AH102L-2 series interfaces

COM1 definition:

Pin	Definition	Pin	Definition
1	RS422 TX+/RS485 A+	2	RS232 RXD
3	RS232 TXD	5	GND
6	RS422 TX-/RS485 B-	8	RS422 RX-
9	RS422 RX+		

▲ Note: RS422 and RS485 cannot be used in COM port of AH700ELK-2/AH102L-2 series HMI at the same time.

MH700-2/MH1020-2/MH1500-2 series interfaces

COM1 definition:

Pin	Definition	Pin	Definition
1	RS422 TX +/RS485 A1 +	2	RS232 RXD
3	RS232 TXD	4	RS485 B2-
5	GND	6	RS422 TX-/RS485 B1-
7	RS485 A2+	8	RS422 RX-
9	RS422 RX+		

▲ Note: RS422 and RS485-1 cannot be used in COM1 port of MH700-2/MH1020-2/MH1500-2 series HMI at the same time.

Notice

The contents of this manual are subject to change without notice.