

# TP04G-AS2

## Instruction Sheet

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安 裝 說 明

### Text Panels

文本顯示器系列

文本显示器系列

TP-0143230-01

2022-09-06





# Warning

**ENGLISH**

**EN** ⚡ *TP04G-AS2 is an OPEN-TYPE device. It should be installed in a control cabinet free of airborne dust, humidity, electric shock and vibration. To prevent non-maintenance staff from operating TP04G-AS2, or to prevent an accident from damaging TP04G-AS2, the control cabinet in which TP04G-AS2 is installed should be equipped with a safeguard. For example, the control cabinet in which TP04G-AS2 is installed can be unlocked with a special tool or key.*

**EN** ⚡ *DO NOT connect AC power to any of I/O terminals, otherwise serious damage may occur. Please check all wiring again before TP04G-AS2 is powered up. After TP04G-AS2 is disconnected, Do NOT touch any terminals in a minute. Make sure that the ground terminal ⊕ on TP04G-AS2 is correctly grounded in order to prevent electromagnetic interference.*

**FR** ⚡ *TP04G-AS2 est un module OUVERT. Il doit être installé que dans une enceinte protectrice (boîtier, armoire, etc.) saine, dépourvue de poussière, d'humidité, de vibrations et hors d'atteinte des chocs électriques. La protection doit éviter que les personnes non habilitées à la maintenance puissent accéder à l'appareil (par exemple, une clé ou un outil doivent être nécessaire pour ouvrir a protection).*

**FR** ⚡ *Ne pas appliquer la tension secteur sur les bornes d'entrées/Sorties, ou l'appareil TP04G-AS2 pourra être endommagé. Merci de vérifier encore une fois le câblage avant la mise sous tension du TP04G-AS2. Lors de la déconnection de l'appareil, ne pas toucher les connecteurs dans la minute suivante. Vérifier que la terre est bien reliée au connecteur de terre ⊕ afin d'éviter toute interférence électromagnétique.*

## ① Introduction

### ■ Model Explanation

Thank you for choosing Delta TP Series. TP04G-AS2 has the features of high resolution 128×64 dots and is able to display 8×4 Chinese character. It provides multilingual display and two built-in communication ports, one is for RS-232/RS-422 and the other is for RS-485. RS-232 and RS-485 can be used simultaneously. Besides, it also supports built-in RTC, communication/alarm LED indicators. Regarding the editing software, there are various objects and images for the user's requirements.

### ■ Product Outline



### ■ Panel Function Explanation

Panel component	Explanation
Alarm LED indicator (RED)	Status 1: When power is on, LED will start to blink slowly Status 2: When there is an abnormal situation, LED will blink quickly along with an alarm sound.
RS-232 LED indicator (yellow)	LED will blink when transmits program and communicates via RS-232.
RS-485/RS-422 LED indicator (green)	LED will blink when communicates via RS-485/RS-422.
Displaying area	Liquid Crystal Module display area. It is used to display current program status.
Escape/Exit key	It is used to cancel an incorrect input, or to exit a programming step.
Shift key	It is used to select function keys F0 ~ F9 and other keys for special function.
Arrow keys	UP/Pg Up: It is used to increase the value or move up one page. Pg Dn/DOWN: It is used to decrease the value or move down one page. Left: This key is left direction key and it can be used to select the position of the value. Right: This key is right direction key and it can be used to select the position of the value.
Enter key	It is used to input a value or accept a programming command.
Function keys	F0/F5: It is used to be constant 0 (F0) and 5 (Shift+F0) when it is in the system menu, the user can use it to define functions separately when they are in user page. F1/F6: It is used to be constant 1 (F1) and 6 (Shift+F1) when it is in the system menu, the user can use it to define functions separately when they are in user page. F2/F7: It is used to be constant 2 (F2) and 7 (Shift+F2) when it is in the system menu, the user can use it to define functions separately when they are in user page.

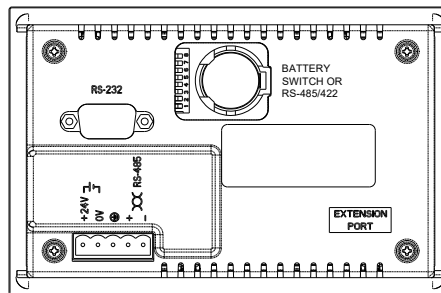
## Panel component

## Function keys

F3/F8: It is used to be constant 3 (F3) and 8 (Shift+F3) when it is in the system menu, the user can use it to define functions separately when they are in user page.

F4/F9: It is used to be constant 4 (F4) and 9 (Shift+F4) when it is in the system menu, the user can use it to define functions separately when they are in user page.

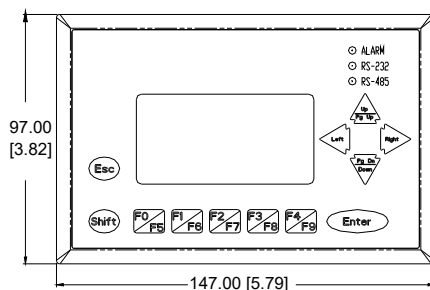
## Back Panel



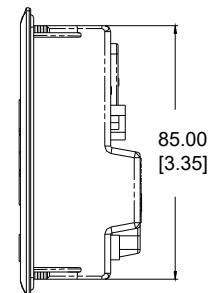
5 PIN terminal/Wire gauge: 12-24 AWG/Torque: 4.5 lb.-inch

## Dimension

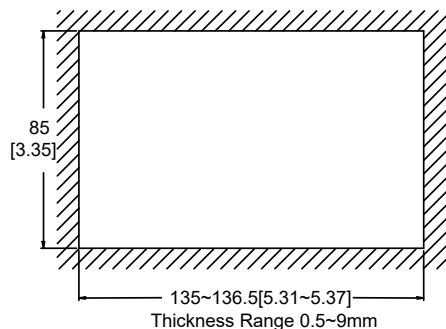
Front panel (unit: mm [inch])



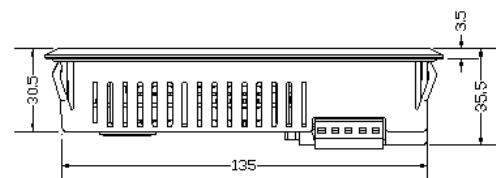
Right side diagram (unit: mm [inch])



Mounting dimension (unit: mm [inch])



Vertical view (unit: mm)



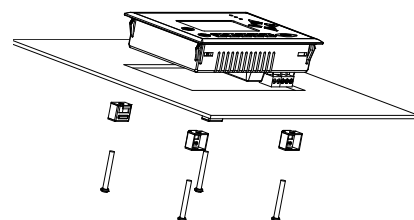
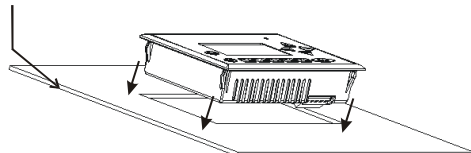
## Installation

Please insert TP04 series to the opening hole of panel and tighten the screws. However, if a firm mounting TP04 series to the panel is needed, please use the mounting fixed support accessory which is packed together with TP04 series, then insert the fixed support in the back and tighten the screws.

⚠ If the fixed support is not installed well, Delta will not guarantee the waterproof function. The screw torque should be 4-5(kg-cm). DO NOT exceed this specification when tightening the screws; otherwise TP04 series may be damaged.

*Notes: Only the front panel is guaranteed by ingress protection rating. The control panel itself must comply with the testing conditions required by the applied ingress protection rating.*

Please leave sufficient space (more than 50mm) around the unit for heat dissipation.  
Thickness: 0.5~9.0mm



# ② Specifications

## ■ Function Specifications

Item		TP04G-AS2
Display screen	Screen type	STN-LCD
	Display color	Monochromatic
	Backlight	The back-light automatic turn off time is 1 ~ 99 minutes (0 = DO NOT turn off) (The back-light life is about 50 thousand hours at 25°C)
	Resolution	128x64 dots
	Display range	(W) x (H) = 72 x 40 (unit: mm); 3.00" (diagonal preferred)
	Contrast adjustment	10 levels of adjustment
	Language/Font	ASCII: (Code page 850) Alphanumeric (including European characters) Taiwan: (Big 5 codes) Traditional Chinese Fonts China: (GB2324-80 codes) Simplified Chinese Fonts
	Display text	5×8 dots 25 characters×8 rows
		8×8 dots 16 characters×8 rows
		8×12 dots 16 characters×5 rows
		8×16 dots 16 characters×4 rows
	Font Size	ASCII: 5×8, 8×8, 8×12, 8×16
	Alarm LED indicator (RED)	1. Power on indication (Blink for three times); 2. Communication error alarm; 3. Special indication by user programming.
	RS-232 LED indicator (yellow)	It will blink when transmitting program and communicating by using RS-232.
	RS-485/RS-422 LED indicator (green)	It will blink when communicating by using RS-485/RS-422.
Program memory		256KB flash memory
RAM of system		32K Byte
External interface	Serial communication port RS-232 (COM1)	Unsynchronized transmission method: RS-232; Data length: 7 or 8 bits, Stop bits: 1 or 2 bits; Parity: None/Odd/Even; Transmission speed: 9,600 bps ~ 115,200 bps; RS-232: 9 PIN D-SUB male.
	Extension communication port RS-422 (COM1) RS-485 (COM2)	Unsynchronized transmission method: RS-485 / RS-422; Data length: 7 or 8 bits; Stop bits: 1 or 2 bits; Parity: None/Odd/Even; Transmission speed: 9,600 bps ~ 115,200 bps; RS-422: 9 PIN D-SUB male; RS-485: 5 PIN removal terminal.
	Extension interface	1. Update firmware version. 2. The slot for program copy card.
	Battery cover	3V DC battery for HMI
	5 PIN removal terminal	Include 24V DC input and RS-485 communication input

## ■ Electrical Specifications

Specifications	TP04G-AS2
Communication interface	COM1: RS-232; COM2: RS-485.
Waterproof class of front panel	IP66 / NEMA4X / UL Type4X (Indoor use only)
Operating temperature for hardware	0 ~ 50°C; 20 ~ 90% RH (non-condensing)
Storage temperature for hardware	-20 ~ 60°C
Vibration	0.5mm displacement, 10-55Hz, three vibrations lasting 2 hours in each direction
Shock	10g peak, 11ms duration, three shocks lasting 2 hours in each direction
Radiated emission	CISPR11, Class A
Electrostatic discharge immunity	EN61000-4-2
Radiated immunity	EN61000-4-3
Electrical fast transient	EN61000-4-4
Altitude	0~2000 meters
Weight/dimensions	0.24kg; 147×97×35.5mm (Width(W)×Height(H)×Deep(D))
Cooling method	Natural air cooling

# ③ Password Function

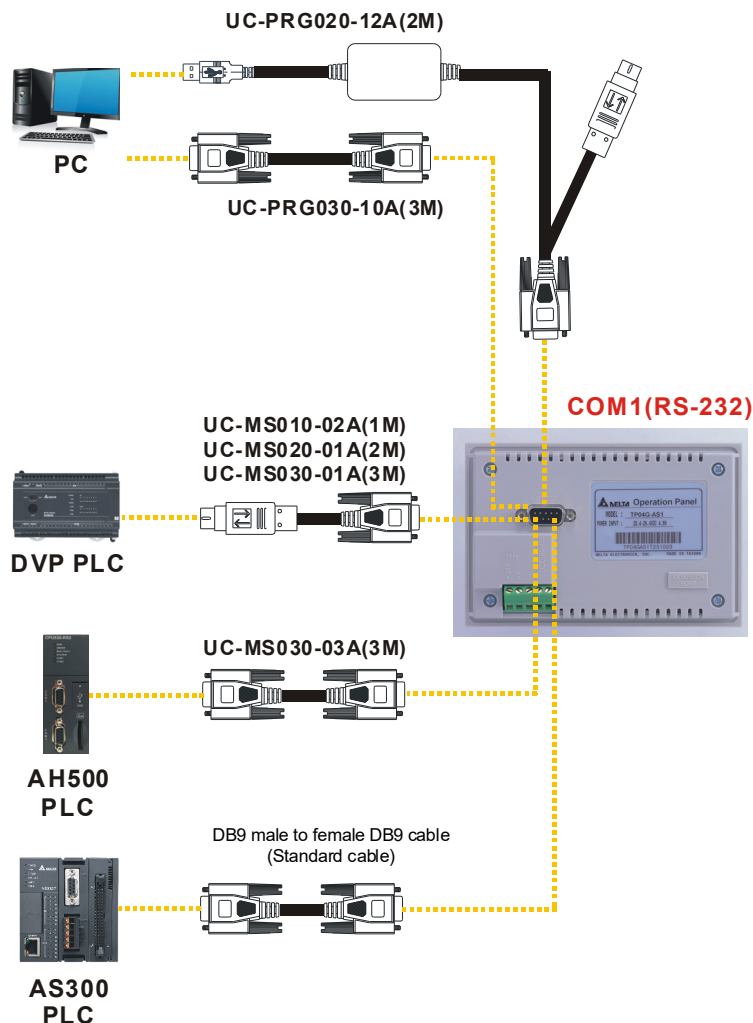
1. If the user forgot the password, the password can be cleared by using the following code: **6888**. This universal code will clear the password and all TP04 series internal programs. The TP04 series will be reset to the factory settings by using this code also. Please pay close attention when using it.
2. The password can be the alphabet from A to Z or the number from 0 to 9. But it must use the function keys F0 ~ F9 to input the password characters. Please refer to the following table.  
 F0/F5: Scrolls in a loop as follows 0→5→A→B→C→D→E→F→0  
 F1/F6: Scrolls in a loop as follows 1→6→G→H→I→J→K→1  
 F2/F7: Scrolls in a loop as follows 2→7→L→M→N→O→P→2  
 F3/F8: Scrolls in a loop as follows 3→8→Q→R→S→T→U→V→3  
 F4/F9: Scrolls in a loop as follows 4→9→W→X→Y→Z→4

## ④ Hardware Operation

When the user wants to startup TP04 series, a 24V DC power is needed. After applying 24V DC power to TP04 series, it will enter into the startup display and then enter the user-designed program. Pressing Esc key and holding on for 5 seconds can return to system menu. There are five selections in the system menu and are described below.

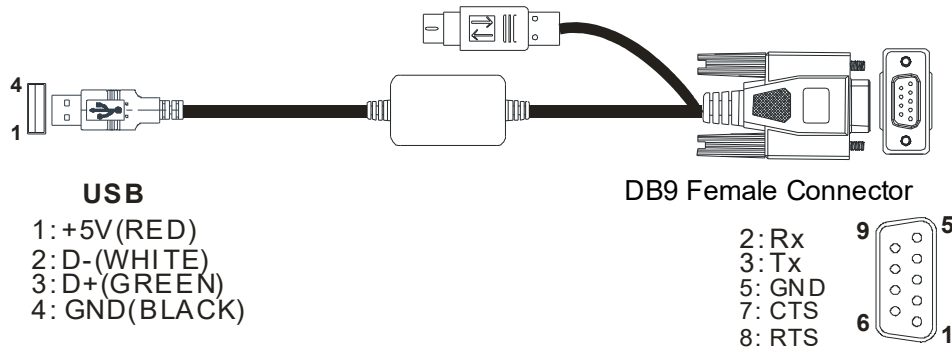
Selections	Explanation
Download program	Use the connection cable (UC-PRG020-12A (2M)) to connect the TP04 serial communication port RS-232 to a PC. Then use the TPEditor/ DIAScreen software to download an application program to TP04.
Upload program	Use the connection cable (UC-PRG020-12A (2M)) to connect the TP04 serial communication port RS-232 to a PC. Then use the TPEditor/ DIAScreen software to upload an application program from TP04.
Copy program	Transfer a program between two TP04 units. 1: transmit programs. 2: receive programs When transmit programs and data between two TP04 units. Set one TP04 to "Receive Program" mode and the other TP04 to "Transmit Program" mode. Please use twisted pair wires to connect the two units via the RS-485 ports.
TP04 settings	There are 9 items that used to modify TP04 system settings: 1. Communication protocol: Setting the address of TP04, the control port of PLC, and the communication string for either RS-232 or RS-485. 2. Contrast: Adjust the contrast of LCM display screen. 3. Back-light: adjust the automatic turn off time of LCM. Setting range is 00 ~ 99 minutes. If set to 00, the LCM Back-light will not turn off. 4. Date and Time: It is used to set the TP04 built-in RTC including year, month, day, hour, minute, second and week. Also the internal battery capacity display is shown here. 5. Buzzer: Used to set the buzzer sound, normal mode or quiet mode. 6. Language Setting: Used to set the displayed language. English, Traditional Chinese, Simplified Chinese or user defined language. 7. Password setting: Used to set, enable, and disable the password function. If the password function is enabled, it will require the user to input a password before entering any system menu. The factory password is <b>1234</b> . 8. Startup display: Used to select the TP04 startup display. User can select "user defined" to use the file that designed by TPEditor/ DIAScreen and download to TP04. 9. Comm. indicator: The user can determine if the RS-232 and RS-485 LEDs will blink or not during communication.
PLC connection	There are three methods to connect to PLC: 1. Using TP04 serial communication port (COM1) RS-232: set 8-pin DIP switch to RS-485 mode and connect the cable (UC-MS010-02A(1M)/UC-MS020-01A(2M)/UC-MS030-01A(3M)) to program communication I/O RS-232C of PLC. 2. Using extension communication port (COM2): set 8-pin DIP switch to RS-485 mode and connect 5-pin removal terminal of extension communication port to RS-485 of PLC with twisted pair. 3. Using extension communication port (COM2): set 8-pin DIP switch to RS-422 mode and connect four pins (6, 7, 8, 9) of 9 PIN D-SUB male to RS-422 of PLC with 4-wire cable.
Execution	Execute the internal program that download from TPEditor/DIAScreen or transmitted from other TP04 units. When program is in execution, the user can return to system menu by pressing Escape/Exit (Esc) key for 5 seconds.

# ⑤ Communication Connection

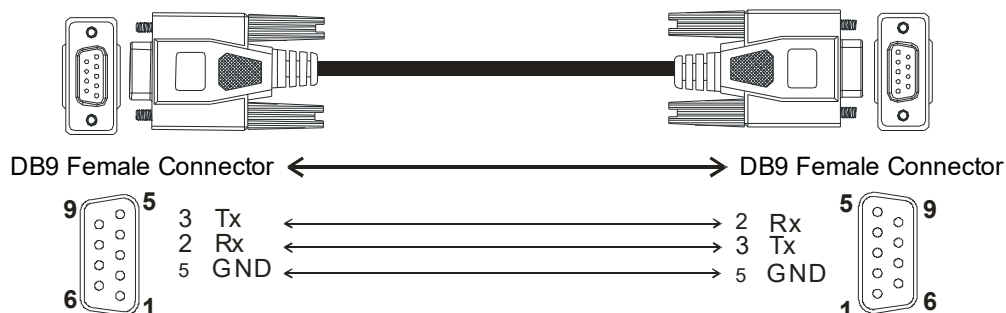


■ Connect a PC to TP04G via connection cable UC-PRG020-12A (2M) / UC-PRG030-10A(3M)

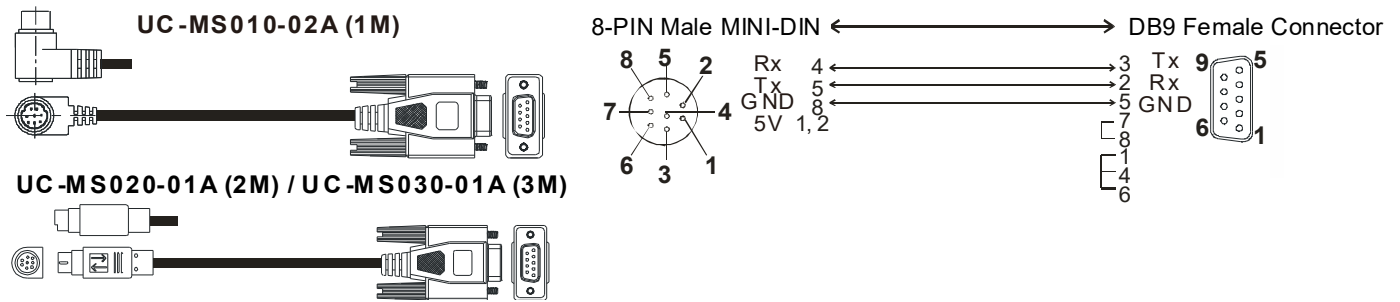
## 1. UC-PRG020-12A (2M)



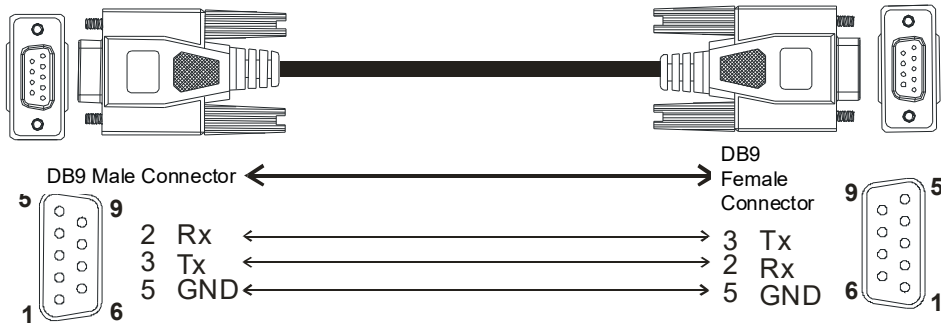
## 2. UC-PRG030-10A (3M)



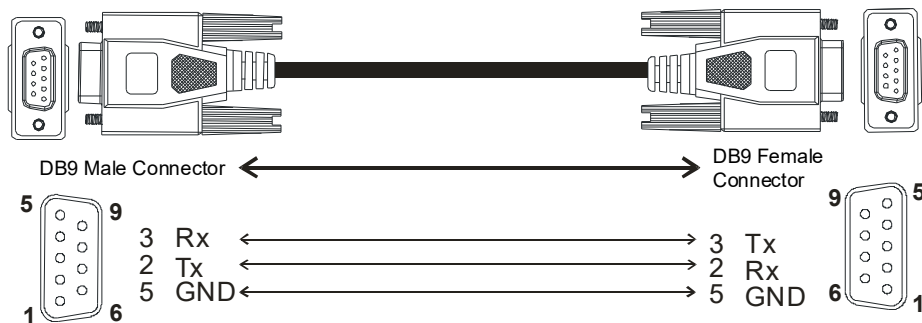
## ■ Connect a DVP-PLC to TP04G via cable UC-MS010-02A(1M)/UC-MS020-01A(2M)/UC-MS030-01A(3M)



## ■ Connect a AH-PLC to TP04G via cable UC-MS030-03A(3M)



## ■ Connect a AS-PLC to TP04G via DB9 (MALE) to DB9 (FEMALE) standard cable



## ■ The Pin definition of 9 PIN D-SUB

### 1. RS-232

RS-232 9 PIN D-SUB male		
2	Rx	
3	Tx	
5	GND	

### 2. RS-422

RS-422 9 PIN D-SUB male		
5	GND	
6	Rx +	
7	Rx -	
8	TX +	
9	TX -	

## ■ Switch between RS-422/RS-485 (by using 8-PIN DIP switch)

8-PIN DIP switch	RS-485	RS-422
SW1 ~ SW4	On	Off
SW5 ~ SW8	Off	On

# ⑥ Battery Life and Precision of Calendar Timer

## ■ Battery Life

Temperature (°C)	-20	0	20	60
Life (Year)	1.972	2.466	2.712	2.835

## ■ Precision of Calendar Timer

1. At 0°C/32°F, less than -117 seconds error per month.
2. At 25°C/77°F, less than 52 seconds error per month.
3. At 55°C/131°F, less than -132 seconds error per month.