








TP02G-AS1

Terminal Panels Series

Instruction Sheet

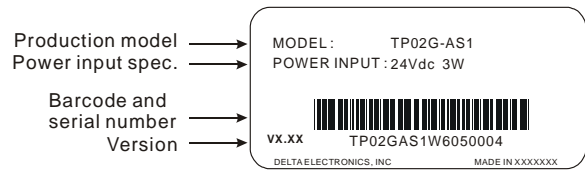
1 WARNING

-  Please read this manual thoroughly before using the TP02G.
-  DANGER! DC input power must be OFF before any maintenance. Do not connect or remove wires and connectors while power up to the circuit. Only qualified technicians are allowed to do the maintenance.
-  The display panel of the TP02G is waterproof. But please keep away grease, corrosive liquids or sharp objects from contacting the TP02G.
-  DANGER! The TP02G requires 24VDC input power. The 24VDC input power should not be connected to the RS-485 communication port. The unit may be destroyed and can't be repaired if the input power is improperly applied. Please confirm the input power wiring is correct before power up.
-  DANGER! An electrical charge will remain on the DC-link capacitors for 1 minute after power has been removed. This residual power may be hazardous and the TP02G should not be worked on until this charge has dissipated. To prevent personal injury, do not conduct any wiring or investigation on the TP02G until 1 minute after power off. Do not touch any terminals while power is applied to the TP02.
-  CAUTION! Always ground the TP02G using the grounding terminal. This will not only act as a safety, but also help filter electrical noise. The grounding method must comply with the laws of the country where the unit is to be installed.
-  CAUTION! If you turn the fixed support that is packaged together with TP02G too tight, TP02G may be damaged.

2 INTRODUCTION

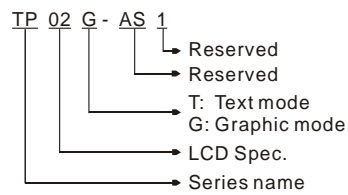
2.1 Model Explanation

■ Nameplate

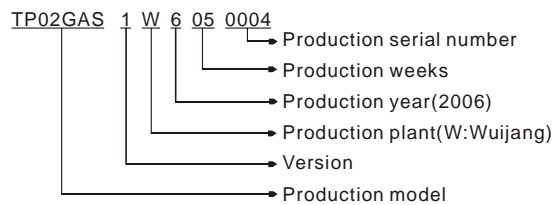


Note: The words of "MADE IN XXXXX" will be different due to the manufacturing location.

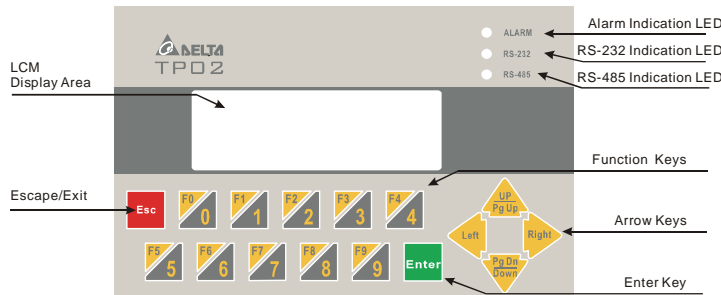
■ Model Explanation



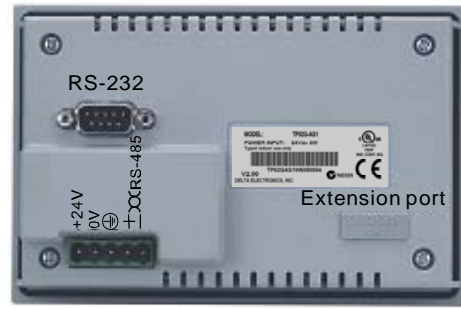
■ Serial Number Explanation



2.2 Outline



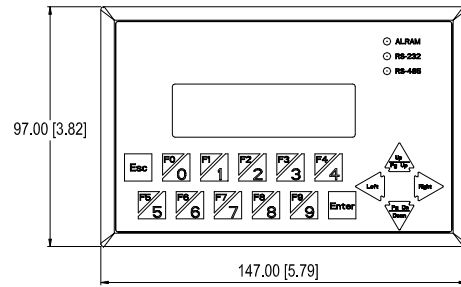
Back Panel



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

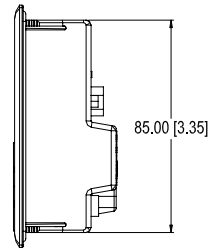
2.3 Dimensions

■ Front Panel



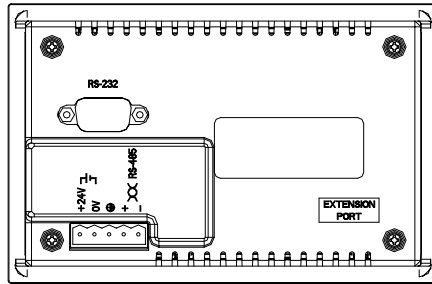
Unit: mm[inch]

■ Right Side Diagram

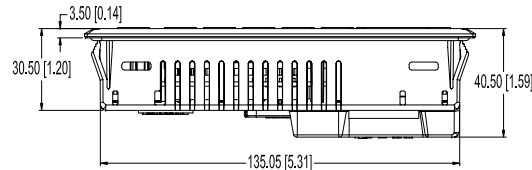


Unit: mm[inch]

■ Back side

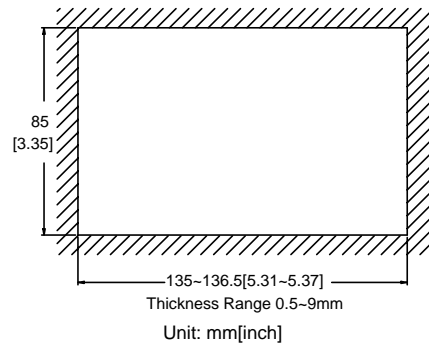


■ Vertical View




Unit: mm[inch]

■ Mounting Panel Dimension



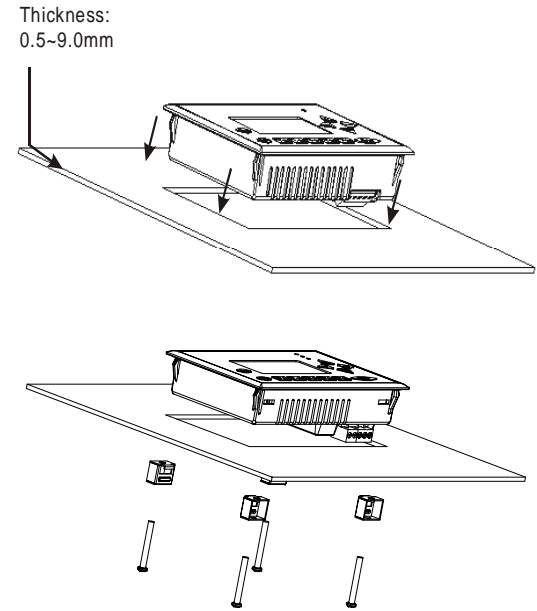
Installation Method

One easy way is insert TP02G to the opening hole of panel and tight up the screws. However, if a firm mounting TP02G to the panel is needed, please use the fixed support accessory which is packed together with TP02G, then infix the fixed support in the back and tight up the screws.

 If you turn the screw exceeds torque: 4-5(kg-cm), TP02G may be damaged.

(Note : the flat surface should be a Type 4 "Indoor Use Only" enclosure or equivalent.)

Please leave sufficient space (more than 50mm) around the unit for heat dissipation.



Panel Function Explanation

Panel Component	Explanation
Alarm Indication LED	Status 1: When power is on, the LED will blink slowly for three times. Status 2: When there is an abnormal situation, the LED will blink quickly along with an alarm sound.
RS-232 Indication LED (Yellow)	Will blink when transmitting program and communicating by using RS-232.
RS-485 Indication LED (Green)	Will blink when communicating by using RS-485.
Esc (Escape/Exit)	Used to cancel an incorrect input, or to Exit a programming step.
Arrow Keys	UP/Pg Up: Used to increase the value or move screen up one page. Pg Dn/DOWN: Used to decrease the value or move screen down one page. Left: Left direction key. (move cursor to left) Right: Right direction key. (move cursor to right)
Enter key	Used to input a value or accept a programming instruction.
Function Keys	F0/0: used as a constant 0, or user can define it as function F0. F1/1: used as a constant 1, or user can define it as function F1. F2/2: used as a constant 2, or user can define it as function F2. F3/3: used as a constant 3, or user can define it as function F3. F4/4: used as a constant 4, or user can define it as function F4. F5/5: used as a constant 5, or user can define it as function F5. F6/6: used as a constant 6, or user can define it as function F6. F7/7: used as a constant 7, or user can define it as function F7. F8/8: used as a constant 8, or user can define it as function F8. F9/9: used as a constant 9, or user can define it as function F9.

3 SPECIFICATION

Electrical Specification

Item	TP02G-AS1
Function Key / Digital Key	F0/0~F9/9, ESC, ENTER and ARROW keys
External Input Power	24V (3W Max.)
Memory Capacity	256K Byte
CPU	Hitachi HD64F3064F
RAM of System	32K Byte
Communication Interface	Com1: RS-232 and Com2: RS-485
Waterproof Class of Front Panel	IP65/NEMA4
Environment Condition	0~50°C, relative humidity 20-90% RH (non-condensing)
Storage Temperature of Hardware	-20~60 °C

Item	TP02G-AS1
Vibration	0.5mm displacement, 10-55Hz, X, Y, Z three directions and two hours for each direction
Impact	10G, 11ms, from X, Y, Z three directions and three times for each direction
RF Radiation Test	CISPR22, Class A
Static Electricity Discharge test	EN61000-4-2/1995
RF Radiation test	EN61000-4-3/1995
High Frequency Transient test	EN61000-4-4/1995
Weight / Dimension	0.24kg / 147×97×35.5mm(Width W × Height H × Deep D)
Cooling Method	Natural air-cooling

Function Specification

ITEM		TP02G-AS1
Display Screen	Screen	STN-LCD
	Color	Monochromatic
	Back-light	The back-light automatic turn off time is 1~99 minutes (0 = do not to turn off) (back-light life is about 50 thousand hours at 25℃)
	Resolution	160X32 dots
	Display Range	72 mm (W) X 22 mm (H)
	Contrast	15-step contrast adjustment
	Language Font	ASCII: characters (including European Fonts) Taiwan: (BIG 5 code) traditional Chinese character font China: (GB2324-80 code) simplified Chinese character font
	Font Size (ASCII) ALARM Indication LED RS-232 Indication LED (Yellow) RS-485 Indication LED (Green)	5 X 8, 8 X 8, 8 X 12, 8 X 16
		1. Power on indication (blink for three times) 2. Will blink for communication error or other alarm 3. Special Indication by user programming
		It will blink when transmitting program and communicating by using RS-232.
		It will be blink when communicating by using RS-485.
	Screen	STN-LCD
	Color	Monochromatic
	Back-light	The back-light automatic turn off time is 1~99 minutes (0 = do not to turn off) (back-light life is about 50 thousand hours at 25℃)
	Resolution	160X32 dots
	Program Memory	256KB flash memory
External Interface	Serial Communication (COM1)	Asynchronous transmission method: RS-232 Data length: 7 or 8 bits Stop bits: 1or 2 bits Parity: None/Odd/Even Transmission speed: 4800bps~115200bps
		Update program version
	Extension Communication port (COM2)	Asynchronous transmission method: RS-485 Data length: 7 or 8 bits Stop bits: 1 or 2 bits Parity: None/Odd/Even Transmission speed: 4800bps~115200bps
	Extension Slot	The slot for program copy card
	5-pin terminal	There are DC 24V input and RS-485 input

4PROGRAM COPY CARD

The function of program copy card that TP02G provides to copy user program, system function and passwords is different from the copy program. It is used to copy the whole HMI environment settings and application programs to another HMI rapidly. It can save much time and manpower. The operation is in as follows. Definition: program copy card →PCC, TP Series →TP

Definition: Program Copy Card →PCC, TP Series →TP

Step	TP→PCC	PCC→TP
1	Turn the switch on the PCC to TP→PCC	Turn the switch on the PCC to PCC→TP
2	Insert the PCC into the extension slot of TP	Insert the PCC into the extension slot of TP
3	Input the power to TP	Input the power to TP
4	It will display "remove PCC" on the screen and power on again	It will display "remove PCC" on the screen and power on again

HMI display message

Copy HMI program to PCC (TP→PCC)	Copy PCC program to HMI (PCC→TP)
If the model type of TP does not correspond with the model type of program of PCC, TP will display “TP series and PCC is different Press Enter to Confirm TP series→PCC Press Esc to Exit”.	If there is no program in PCC, TP will display “The PCC is Empty PCC→TP series is illegal”.
TP will display “TP →PCC series Please wait !” during transmission.	TP will display “PCC→TP series Please wait !” during transmission.
If the model type of TP does not correspond with the model type of program of PCC, TP will display “TP series and PCC is different Press Enter to Confirm TP series→PCC Press Esc to Exit”.	If there is no program in PCC, TP will display “The PCC is Empty PCC→TP series is illegal”.

5PASSWORD FUNCTION

- If user forgot the password, password can be cleared via using the following code: **9888**. This universal code will clear the password and all internal programs of TP02. The TP02 will be re-set to the factory settings.
- Users may use 0~9 and A~Z as characters for the password. Users must use the function keys F0~F9 to input the password characters.

F0: scrolls in a loop as follows 0 → A → B → C → D → E → F → 0
F1: scrolls in a loop as follows 1 → G → H → I → J → K → 1
F2: scrolls in a loop as follows 2 → L → M → N → O → P → 2
F3: scrolls in a loop as follows 3 → Q → R → S → T → U → V → 3
F4: scrolls in a loop as follows 4 → W → X → Y → Z → 4
F5: it just can be used to be constant 5.
F6: it just can be used to be constant 6.
F7: it just can be used to be constant 7.
F8: it just can be used to be constant 8.
F9: it just can be used to be constant 9.

6HARDWARE OPERATION

After power supplies to TP02G, the alarm indication LED will blink for three times and startup display, on the LCM display area will show "No User Data in Memory, Press ESC 5 seconds, Return to System".

The steps to Startup the TP02G:

- Connect power line,
- Apply 24V DC power,
- Enter into the startup display,
- Enter the user-designed program
- Press ESC key and hold on for 5 seconds to return to system menu.

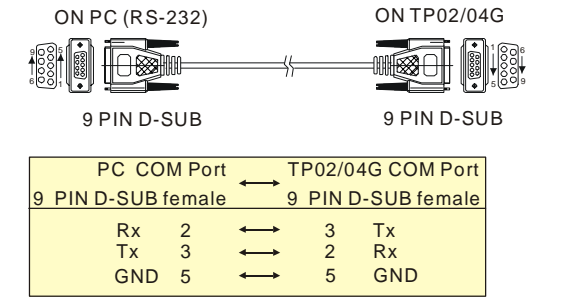
There are five selections in the system menu and are described below.

SELECTIONS	EXPLANATION
Download Program	Use the connection cable (DVPACAB530) to connect the serial communication port RS-232 of TP02 to a PC. Then use the TPEdit software to download an application program to the TP02.
Upload Program	Use the connection cable (DVPACAB530) to connect the serial communication port RS-232 of TP02 to a PC. Then use the TPEdit software to upload an application program from the TP02.
Copy Program	Transfer a program between two TP02 units. 1: transmit programs 2: receive programs When transmitting programs and data between two TP02 unit. Set one TP02 to “Receive Program” mode and the other TP02 to “Transmit Program” mode. Please use twisted pair wires to connect the two units via the RS-485 ports.
TP02 Settings	Used to modify the TP02 system settings. There are 8 items that may be modified. 1. Communication Protocol: Set the address of TP02, 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 seconds. If set to 00, the LCM Back-light will not turn off. 4. Buzzer: Used to set the buzzer sound, normal mode or quiet mode. 5. Language Setting: Used to set the displayed language. English, Traditional Chinese, simplified Chinese or user defined language. 6. 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 the system menu may be accessed. The factory password is 1234. 7. Startup Display: Used to select the TP02 startup display. 8. Comm. Indicator: The user can determine if the RS-232 and RS-485 LEDs will blink or not during communication.

Execution	Execute the internal program. When entering execution program, you can return to system menu by pressing Escape/Exit (Esc) key for 5 minutes.
PLC Connection	There are two methods to connect to PLC: 1. Use the connection cable (DVPACAB215 or DVPACAB230) to connect program communication I/O RS-232C of PLC to serial communication port (COM1) RS-232 of TP02. 2. Use twisted cable to connect RS-485 of PLC to extension communication port (COM2) RS-485.

7COMMUNICATION CONNECTION

- TP may connect to a PC by using connection cable DVPACAB530



- TP may connect to a DVP-PLC by using connection cable DVPACAB215 / DVPACAB230 / DVPACAB2A30

