### (3) Description of each part

#### DOP-110CS (front view)



# **DOP-110CS**

## Instruction Sheet

#### (1) General precautions

Thank you for purchasing this product. This instruction sheet provides information about the DOP-100 series HMI. Before using this product, please read through this instruction sheet carefully to ensure the correct use of the product. Please keep this sheet handy for quick reference whenever needed. Before finishing reading this sheet, please follow the instructions below:

- Install the product in an indoor location, which is free of vapor, corrosive and inflammable gas and liquids.
- Please refer to the wiring diagram when connecting the wires.
- Ensure your HMI is correctly grounded. The grounding method must comply with the national electrical standard (please refer to NFPA 70: National Electrical Code, 2005 Ed.).
- Do not disassemble the HMI or change the wiring when power is on.
- Do not touch the power supply when power is on, or it may cause electric shock.
- When the HMI displays a low power notification and requires a battery change, please contact your local distributor or Delta Customer Service Center for the replacement. Do not change the batteries by yourself.
- This product can be used with other industrial automation equipment. Please read through this sheet carefully and install the product according to the instructions to avoid danger.
- Cleaning method: please use a dry cloth to clean the product.
- This product must be used at an altitude below 2,000 m.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- For repair and maintenance, please contact Delta Electronics, Inc. Address: No.18, Xinglong Rd., Taoyuan City, Taiwan. TEL: +886-3-3626301.

If you have any inquiry during operation, please contact our local distributors or Delta sales representatives. The content of this instruction sheet may be revised without prior notice. Please consult our distributors or download the latest version at Delta's website (<u>http://www.delta.com.tw/ia)</u>.

#### (2) Communication port pin assignment

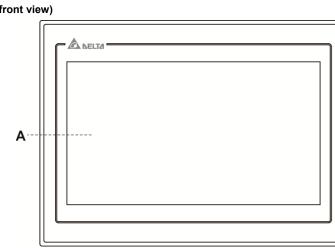
#### DOP-110CS COM1

| COM Port               | Pin | MODE1<br>RS-232 |
|------------------------|-----|-----------------|
|                        | 1   | -               |
|                        | 2   | RXD             |
|                        | 3   | TXD             |
| $\left(1, 5, 5\right)$ | 4   | -               |
|                        | 5   | GND             |
|                        | 6   | -               |
|                        | 7   | RTS             |
|                        | 8   | CTS             |
|                        | 0   |                 |

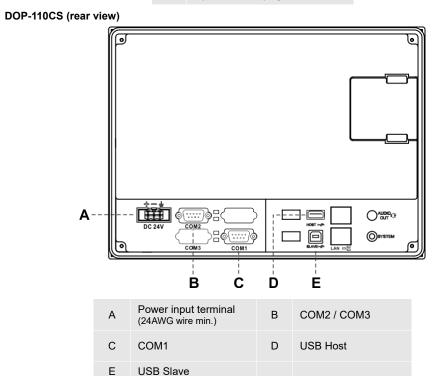
#### DOP-110CS COM2

|          |     | MO     | DE1    | МО     | DE2    | MOE    | DE3    |
|----------|-----|--------|--------|--------|--------|--------|--------|
| COM Port | Pin | COM2   | COM3   | COM2   | COM3   | COM2   | COM3   |
|          |     | RS-232 | RS-485 | RS-485 | RS-485 | RS-232 | RS-422 |
|          | 1   | -      | -      | D+     | -      | -      | TXD+   |
|          | 2   | RXD    | -      | -      | -      | RXD    | -      |
|          | 3   | TXD    | -      | -      | -      | TXD    | -      |
|          | 4   | -      | D+     | -      | D+     | -      | RXD+   |
|          | 5   | GND    |        | GND    |        | GND    |        |
|          | 6   | -      | -      | D-     | -      | -      | TXD-   |
|          | 7   | RTS    | -      | -      | -      | RTS    | -      |
|          | 8   | CTS    | -      | -      | -      | CTS    | -      |
|          | 9   | -      | D-     | -      | D-     | -      | RXD-   |

Note: mark "-" means connection is not required.

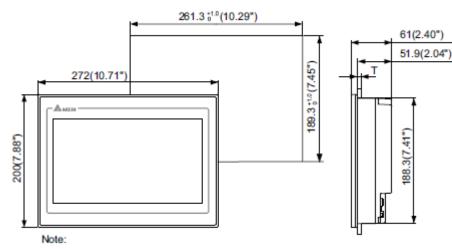


A Operation / display area



#### (4) Mounting dimensions

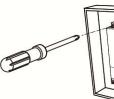
#### DOP-110CS



T=1.6 mm ~ 6 mm(0.063" ~ 0.24")

Step 3:

case



| Wiring: |
|---------|
|---------|

| Туре     | Wire gauge (AWG) | Stripped length | Torque              |
|----------|------------------|-----------------|---------------------|
| Solid    | 24 – 12          | 7 – 8 mm        | 5 kg-cm (4.3 lb-in) |
| Stranded | 24 – 12          | 7 – 8 mm        | 5 kg-cm (4.3 lb-in) |



Unit: mm (inch)

Operation temperature: 0°C to 50°C (32°F to 122°F) Storage temperature: -20°C to 60°C (-4°F to 140°F) (5) Installation and wiring

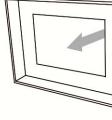
#### Precautions.

- adjacent objects or walls.
- (for indoor use only).
- Copper conductor only.

Installation steps:

Step 1:

Put the waterproof gasket into the HMI and then insert the HMI into the panel cutout.





Incorrect installation may result in malfunction.

To ensure the HMI is well ventilated, make sure there is sufficient space between the HMI and the

This product should be used on a case / platform which conforms to enclosure Type 4X standard

The maximum panel thickness for mounting must be no greater than 5 mm.

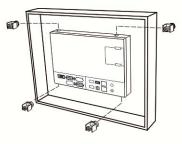


Tighten the screws with the torque less than 0.5 N-M / 0.7 N-M to avoid damage to the plastic

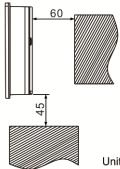
Torque for DOP-110CS: 6.17 lb-inch (0.7 N-M)



Step 2: Place the fasteners into the slots and tighten the screws until reaching the panel cutouts.

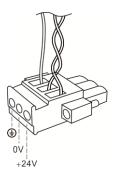


Step 4: For heat dissipation, please keep a minimum clearance of 60 mm on the rear of the HMI.



Unit: mm

Please refer to the following diagram when wiring the power connector. The temperature rating of the cable must be greater than 75°C (167°F).



#### (6) Hardware specifications

| Panel type10.1" TFT LCD (65535 colors)Resolution1024 x 600 pixelsBacklightLED Back Light<br>(half-life under room temperature 25°C > 20,000 hours)'1Display<br>range226 mm x 128.7 mmBrightness300 cd / m² (Typ.)ARM Cortex-A8 (800 MHz)Flash ROM256 MbytesTouchscreen > 1,000,000 operatedN/AOUD N/AN/AN/ACOM1RS-232 (supporting flow control)'2  |                                 | •            |   |  |
|--|---------------------------------|--------------|---|--|
| Resolution   1024 x 600 pixels     Backlight   LED Back Light<br>(half-life under room temperature 25°C > 20,000 hours)*     Display<br>range   226 mm x 128.7 mm     Brightness   300 cd / m² (Typ.)     CPU   ARM Cortex-A8 (800 MHz)     Flash ROM   256 Mbytes     RAM   256 Mbytes     Touchscreen   4-wire resistive touchscreen > 1,000.000 operated     Buzzer   Multi-tone Frequency (2K - 4K Hz) / 80dB     Network interface   N/A     USB   1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0     So   N/A     COM1   RS-232 (supporting flow control)*2     COM3   RS-422 / RS 485°     Auxiliary turction key   N/A     CoM3   RS-422 / RS 485°     Auxiliary turction key   N/A     CoM3   RS-422 / RS 485°     Auxiliary turction key   N/A     CoM3   RS-422 / RS 485°     Auxiliary turction key   N/A     CoM3   RS-422 / RS 485°     Auxiliary turction key   N/A     CoM3   RS-422 / RS 485°     Auxiliary turction key   | Мо                              |              | DOP-110CS   |  |
| Display<br>range   LED Back Light<br>(half-life under room temperature 25°C > 20,000 hours)*1     Display<br>range   226 mm x 128.7 mm     BackLight   226 mm x 128.7 mm     Bightness   300 od / m² (Typ.)     CPU   ARM Cortex-A8 (800 MHz)     Flash ROM   256 Mbytes     RAM   256 Mbytes     Touchscreen   4-wire resistive touchscreen > 1,000,000 operated     Buzzer   Multi-tone Frequency (2K - 4K Hz) / 80dB     Network interface   N/A     USB   1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0     Setial<br>communication<br>port   COM1   RS-232 (supporting flow control)*2     COM2   RS-232 (supporting flow control)   RS485*2     Auxiliary function key   N/A   COM2     Cooling method   Natural cooling   CE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)     Panel waterroof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     DC +24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (solated from MAINS by double insulation)     Leakage current   500 V <sub>nc</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption*   10.4  |                                 | Panel type   | 10.1" TFT LCD (65535 colors)  |  |
| Display<br>range   Generation   Constraints     Bisplay<br>range   226 mm x 128.7 mm     Bisplay<br>range   300 od / m² (Typ.)     CPU   ARM Cortex-A8 (800 MHz)     Flash   256 Mbytes     RAM   256 Mbytes     Touchscreen   4-wire resistive touchscreen > 1,000,000 operated     Buzzer   Multi-tone Frequency (2K - 4K Hz) / 80dB     Network interface   N/A     USB   1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0     Setial   COM1   RS-232 (supporting flow control) <sup>72</sup> COM2   RS-232 (supporting flow control) <sup>72</sup> COM3   RS-422 / RS-485 <sup>72</sup> Auxiliary function key   N/A     Coloing method   Natural cooling     CE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)     Panel waterroof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     DC + 24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (solated from MAINS by double insulation)     Leakage   S00 V <sub>nc</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption <sup>72</sup> 10.4 W (Max) <sup>3</sup> Backup battery life   | Display                         | Resolution   | · · · · · · · · · · · · · · · · · · ·                                     |  |
| range   226 mm x 128./ mm     Brightness   300 cd / m² (Typ.)     CPU   ARM Cortex-A8 (800 MHz)     Flash ROM   256 Mbytes     RAM   256 Mbytes     Touchscreen   4-wire resistive touchscreen > 1,000,000 operated     Buzzer   Multi-tone Frequency (2K - 4K Hz) / 80dB     Network interface   N/A     USB   1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0     Sol   N/A     COM1   RS-232 (supporting flow control) <sup>72</sup> Serial communication port   COM2     RS-422 / RS-485 <sup>72</sup> COM3     Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Operation voltage <sup>72</sup> 10.4 W (Max) <sup>3</sup> Backup battery   30 lithium battery CR2032 × 1     Power consumption <sup>72</sup> 10.4 W (Max) <sup>3</sup> Backup battery life   About 3 years or more at 25°C (subject to operation temperature and condition)   |                                 | Backlight    |   |  |
| CPU ARM Cortex-A8 (800 MHz)   Flash ROM 256 Mbytes   RAM 256 Mbytes   Touchscreen 4-wire resistive touchscreen > 1,000,000 operated   Buzzer Multi-tone Frequency (2K - 4K Hz) / 80dB   Network interface N/A   USB 1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0   Serial communication port COM1 RS-232 (supporting flow control) /2   COM2 RS-232 (supporting flow control) / RS485'2   COM3 RS-422 / RS-485'2   Auxiliary function key N/A   Calendar Built-in   Cooling method Natural cooling   Approvals CE / UL (please use shielding network cable and magnetic ring with the filter of 300 ohm / 100 MHz)   Panel waterproof level IP65 / NEMA4 / UL TYPE 4X (indoor use only)   Operation voltage*2 500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)   Power consumption*2 10.4 W (Max)*3   Backup battery 3V lithium battery CR2032 × 1   Backup battery life About 3 years or more at 25°C (subject to operation temperature and condition)   Operation temperature 0°C to 50°C (24°F to 140°F)   Operation temperature -20°C to +60°C (4°F to 140°F)  |                                 |              | 226 mm x 128.7 mm   |  |
| Flash ROM 256 Mbytes   RAM 256 Mbytes   Touchscreen 4-wire resistive touchscreen > 1,000,000 operated   Buzzer Multi-tone Frequency (2K - 4K Hz) / 80dB   Network interface N/A   USB 1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0   Serial communication port COM1 RS-232 (supporting flow control) <sup>7</sup> COM2 RS-232 (supporting flow control) / RS485 <sup>72</sup> COM3 RS-422 / RS-485 <sup>72</sup> Auxiliary function key N/A   Calendar Built-in   Cooling method Natural cooling $Approvals$ CE / UL (please use shielding network cable and magnetic ring with the fitter of 300 ohm / 100 MHz)   Panel waterproof level IP65 / NEMA4 / UL TYPE 4X (indoor use only)   Operation voltage <sup>12</sup> 500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)   Power consumption <sup>12</sup> 10.4 W (Max) <sup>3</sup> Backup battery 3V lithium battery CR2032 × 1   Backup battery life About 3 years or more at 25°C (subject to operation temperature and condition)   Operation temperature 0°C to 50°C (32°F to 122°F)   Operation temperature -20°C to +60°C (4°F to 140°F)   Operating environment 1   |                                 | Brightness   | 300 cd / m² (Typ.)  |  |
| RAM256 MbytesTouchscreen4-wire resistive touchscreen > 1,000,000 operatedBuzzerMulti-tone Frequency (2K - 4K Hz) / 80dBNetwork interfaceN/AUSB1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0SDN/ASerial<br>communication<br>portCOM1RS-232 (supporting flow control)'2CoM2RS-232 (supporting flow control) / RS485'2COM3RS-422 / RS-485'2Auxiliary function keyN/ACalendarBuilt-inCooling methodNatural coolingApprovalsCE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)Panel waterproof levelIP65 / NEMA4 / UL TYPE 4X (indoor use only)Operation voltage'2500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption*210.4 W (Max)*3Backup battery3V lithium battery CR2032 × 1Backup battery3V lithium battery CR2032 × 1Storage temperature-20°C to +60°C (4°F to 140°F)Operation resistanceConforms to IEC61131-2: continuous witration 5 Hz - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous witration 5 Hz - 53.Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1G<br>Conforms to IEC60088-2.27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension274 x 189.3  | CF                              | PU           | ARM Cortex-A8 (800 MHz)   |  |
| Touchscreen4-wire resistive touchscreen > 1,000,000 operatedBuzzerMulti-tone Frequency (2K - 4K Hz) / 80dBNetwork interfaceN/AUSB1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0SDN/ACOM1RS-232 (supporting flow control)'?Communication<br>portCOM2COM3RS-422 / RS-485'2Auxiliary function keyN/ACalendarBuilt-inCooling methodNatural coolingApprovalsCE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)Panel waterproof levelIP65 / NEMA4 / UL TYPE 4X (indoor use only)Operation voltage'2500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption*210.4 W (Max) '3Backup battery3V lithium battery CR2032 × 1Abcut 3 years or more at 25°C<br>(subject to operation temperature<br>(subject to operation temperature<br>0°C to 50°C (32°F to 122°F)Storage temperature<br>20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2; continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 13<br>Conforms to IEC60088-2.7:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 times<br>Dimension<br>(W) x (H) x (D) mmDimension<br>(W) x (H) x (D) mm261 3 x 189 3   | Flash                           | ROM          | 256 Mbytes  |  |
| Buzzer   Multi-tone Frequency (2K - 4K Hz) / 80dB     Network interface   N/A     USB   1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0     SD   N/A     Serial communication port   COM1   RS-232 (supporting flow control)/2     COM2   RS-232 (supporting flow control) / RS485 <sup>72</sup> COM3   RS-422 / RS-485 <sup>72</sup> Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Dperation voltage <sup>12</sup> 500 V <sub>Ac</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption <sup>2</sup> 10.4 W (Max) <sup>3</sup> Backup battery   3V lithium battery CR2032 × 1     Backup battery life   About 3 years or more at 25°C (subject to operation temperature   0°C to 50°C (32°F to 122°F)     Operation resistance   Conforms to IEC601131-2: continuous witration 5 Hz - 8.3 Hz with amplitude 35 mm; 8.3 Hz - 150 Hz with amplitude 1G     Operating environment   10% to 90% RH I0°C - 40°C], 10% to 55% RH [41°C - 50°C]; pollution degree: 2     Co  | RA                              | M            | 256 Mbytes  |  |
| Network interface   N/A     USB   1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0     SD   N/A     Serial communication port   COM1   RS-232 (supporting flow control)'2     COM2   RS-232 (supporting flow control) / RS485'2     COM3   RS-422 / RS-485'2     Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Operation voltage*   DC +24V (-15% to +15%) (please use an isolated power supply) supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)     Leakage current   500 V <sub>Ac</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption*2   10.4 W (Max)*3     Backup battery   3V lithium battery CR2032 × 1     Backup battery life   About 3 years or more at 25°C (subject to operation temperature and condition)     Operation temperature   0°C to 50°C (32°F to 122°F)     Storage temperature   -20°C to +60°C (-4°F to 140°F)     Operating environment   10% to 90% RH [0°C - 40°C], 1  | Touchs                          | screen       | 4-wire resistive touchscreen > 1,000,000 operated                         |  |
| USB   1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0     SD   N/A     Serial communication port   COM1   RS-232 (supporting flow control) <sup>72</sup> Serial communication port   COM2   RS-232 (supporting flow control) / RS485 <sup>72</sup> Auxiliary function key   N/A   RS-422 / RS-485 <sup>72</sup> Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Operation voltage <sup>22</sup> DC +24V (-15% to +15%) (please use an isolated power supply) supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)     Leakage current   500 V <sub>Ac</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption <sup>22</sup> 10.4 W (Max) <sup>3</sup> Backup battery   3V lithium battery CR2032 × 1     Backup battery   Over to 50°C (32°F to 122°F)     Storage temperature   -20°C to +60°C (-4°F to 140°F)     Operating environment   10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C]; pollution degree: 2     Vibration resistance   Conforms to IEC6  | Buz                             | zer          | Multi-tone Frequency (2K - 4K Hz) / 80dB                                  |  |
| SD   N/A     Serial communication port   COM1   RS-232 (supporting flow control)'2     COM2   RS-232 (supporting flow control) / RS485'2     COM3   RS-422 / RS-485'2     Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Operation voltage'2   Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)     Leakage current   500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption'2   10.4 W (Max)'3     Backup battery   3V lithium battery CR2032 × 1     Backup battery life   About 3 years or more at 25°C (subject to operation temperature and condition)     Operation temperature   -20°C to 50°C (32°F to 122°F)     Storage temperature   -20°C to 60°C (-4°F to 140°F)     Operating environment   10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C]; pollution degree: 2     Vibration resistance   Conforms to IEC60068-2-27: pollution degree: 2     Vibration resistance   | Network                         | interface    | N/A   |  |
| Serial<br>communication<br>port   COM1   RS-232 (supporting flow control) <sup>2</sup> COM2   RS-232 (supporting flow control) / RS485 <sup>22</sup> COM3   RS-422 / RS-485 <sup>12</sup> Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Operation voltage <sup>12</sup> DC +24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)     Leakage current   500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption <sup>2</sup> 10.4 W (Max) <sup>13</sup> Backup battery   3V lithium battery CR2032 × 1     Backup battery life   (subject to operation temperature and condition)     Operation temperature   0°C to 50°C (32°F to 122°F)     Storage temperature   -20°C to +60°C (-40° F to 140°F)     Operating environment   10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2     Vibration resistance   Conforms to IEC60131-2: confuncus vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1G                                       | US                              | SB           | 1 USB Slave Ver. 2.0; 1 USB Host Ver. 2.0                                 |  |
| Serial<br>communication<br>port   COM2   RS-232 (supporting flow control) / RS485 <sup>-2</sup> COM3   RS-422 / RS-485 <sup>-2</sup> Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Operation voltage <sup>-12</sup> DC +24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)     Leakage current   500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption <sup>-12</sup> 10.4 W (Max) <sup>-3</sup> Backup battery   3V lithium battery CR2032 × 1     Backup battery life   About 3 years or more at 25°C<br>(subject to operation temperature and condition)     Operation temperature   -20°C to +60°C (-4°F to 140°F)     Operating environment   10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2     Vibration resistance   Conforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1G     Shock resistance   Conforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 times | S                               | D            | N/A   |  |
| COMPUNCTION   COM2   RS-232 (supporting flow control) / RS485 <sup>-2</sup> Auxiliary function key   RS-422 / RS-485 <sup>-2</sup> Auxiliary function key   N/A     Calendar   Built-in     Cooling method   Natural cooling     Approvals   CE / UL (please use shielding network cable and magnetic ring with the filter of 300 ohm / 100 MHz)     Panel waterproof level   IP65 / NEMA4 / UL TYPE 4X (indoor use only)     Operation   DC + 24V (-15% to +15%) (please use an isolated power supply) Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)     Leakage current   500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)     Power consumption <sup>-2</sup> 10.4 W (Max) <sup>-3</sup> Backup battery   3V lithium battery CR2032 × 1     Backup battery   About 3 years or more at 25°C (subject to operation temperature and condition)     Operation temperature   -20°C to 50°C (32°F to 122°F)     Storage temperature   -20°C to +60°C (-4°F to 140°F)     Operation revironment   10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C]; pollution degree: 2     Vibration resistance   Conforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1G     Shock resistance   Conforms to IEC600  |                                 | COM1         | RS-232 (supporting flow control) <sup>*2</sup>                            |  |
| COM3RS-422 / RS-485 <sup>-2</sup> Auxiliary function keyN/ACalendarBuilt-inCooling methodNatural coolingApprovalsCE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)Panel waterproof levelIP65 / NEMA4 / UL TYPE 4X (indoor use only)Operation voltage <sup>-12</sup> DC +24V (-15% to +15%) (please use an isolated power supply)<br>supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)Leakage current500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption <sup>-12</sup> 10.4 W (Max) <sup>-13</sup> Backup battery3V lithium battery CR2032 × 1<br>About 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature-20°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operation resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1G<br>Conforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesWibration resistanceDimension<br>(W) × (H) × (D) mm272 × 200 × 61Mounting dimension261 3 × 189 3  | communication                   | COM2         | RS-232 (supporting flow control) / RS485 <sup>*2</sup>                    |  |
| CalendarBuilt-inCooling methodNatural coolingApprovalsCE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)Panel waterproof levelIP65 / NEMA4 / UL TYPE 4X (indoor use only)Operation voltage'2DC + 24V (-15% to +15%) (please use an isolated power supply)<br>supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)Leakage current500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption'210.4 W (Max) '3Backup battery3V lithium battery CR2032 × 1Backup battery life(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1G<br>Conforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | port                            | COM3         | RS-422 / RS-485 <sup>*2</sup>   |  |
| Cooling methodNatural coolingApprovalsCE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)Panel waterproof levelIP65 / NEMA4 / UL TYPE 4X (indoor use only)Operation voltage'2DC +24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)Leakage current500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption'210.4 W (Max) '3Backup battery3V lithium battery CR2032 × 1Backup battery lifeAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Auxiliary fu                    | Inction key  | N/A   |  |
| ApprovalsCE / UL (please use shielding network cable and magnetic ring with<br>the filter of 300 ohm / 100 MHz)Panel waterproof levelIP65 / NEMA4 / UL TYPE 4X (indoor use only)Operation voltage'2DC +24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)Leakage current500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption'210.4 W (Max)'3Backup battery3V lithium battery CR2032 × 1Backup battery lifeAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GDimension<br>(W) x (H) x (D) mm272 x 200 x 61Wounting dimension<br>(W) x (H) x (D) mm272 x 200 x 61  | Cale                            | ndar         | Built-in  |  |
| Approvalsthe filter of 300 ohm / 100 MHz)Panel waterproof levelIP65 / NEMA4 / UL TYPE 4X (indoor use only)Operation voltage'2DC +24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)Leakage current500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption'210.4 W (Max)'3Backup battery3V lithium battery CR2032 × 1Backup battery lifeAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Cooling                         | method       | Natural cooling   |  |
| Operation voltage'2DC +24V (-15% to +15%) (please use an isolated power supply)<br>Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)Leakage current500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption'210.4 W (Max)'3Backup battery3V lithium battery CR2032 × 1Backup battery lifeAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Appro                           | ovals        |   |  |
| Operation Voltage 1Supplied by Class 2 or SELV circuit (isolated from MAINS by double insulation)Leakage current500 V <sub>AC</sub> for 1 minute (between DC24V terminal and FG terminal)Power consumption*210.4 W (Max)*3Backup battery3V lithium battery CR2032 × 1Backup batteryAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistance11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3  | Panel wate                      | rproof level | IP65 / NEMA4 / UL TYPE 4X (indoor use only)                               |  |
| Power consumption*210.4 W (Max)*3Backup battery3V lithium battery CR2032 × 1Backup battery lifeAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3  | Operation voltage <sup>*2</sup> |              | ,                                   |  |
| Backup battery3V lithium battery CR2032 × 1Backup battery lifeAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Leakage                         | ecurrent     | 500 $V_{\text{AC}}$ for 1 minute (between DC24V terminal and FG terminal) |  |
| Backup battery lifeAbout 3 years or more at 25°C<br>(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3  | Power con                       | sumption*2   | 10.4 W (Max) *3   |  |
| Backup battery life(subject to operation temperature and condition)Operation temperature0°C to 50°C (32°F to 122°F)Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Backup                          | battery      | 3V lithium battery CR2032 × 1   |  |
| Storage temperature-20°C to +60°C (-4°F to 140°F)Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3  | Backup b                        | attery life  |   |  |
| Operating environment10% to 90% RH [0°C - 40°C], 10% to 55% RH [41°C - 50°C];<br>pollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Operation to                    | emperature   | 0°C to 50°C (32°F to 122°F)   |  |
| Operating environmentpollution degree: 2Vibration resistanceConforms to IEC61131-2: continuous vibration 5 Hz - 8.3 Hz with<br>amplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Storage temperature             |              | -20°C to +60°C (-4°F to 140°F)  |  |
| Vibration resistanceamplitude 3.5 mm; 8.3 Hz - 150 Hz with amplitude 1GShock resistanceConforms to IEC60068-2-27:<br>11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3  | Operating environment           |              |   |  |
| Shock resistance11 ms, 15 G Peak, in X, Y, Z directions each for 6 timesDimension<br>(W) x (H) x (D) mm272 x 200 x 61Mounting dimension261 3 x 189 3   | Vibration resistance            |              |   |  |
| (W) x (H) x (D) mm   272 x 200 x 61     Mounting dimension   261 3 x 189 3   | Shock resistance                |              |   |  |
| Mounting dimension 261.3 x 189.3   |                                 |              | 272 x 200 x 61  |  |
|  | Mounting dimension              |              | 261.3 x 189.3   |  |
| Weight Approx. 1330 g  |                                 |              | Approx. 1330 g  |  |

Note:

- The half-life of the backlight is defined as the maximum luminance being reduced by 50% when the maximum drive current is supplied to the HMI. The life of LED backlight shown here is estimated at the room temperature of 25°C with ambient humidity.
- 2. The withstand voltage of the isolated power circuit is 1500V peak for 1 minute.
- 3. The HMI power consumption is the power consumed when the HMI is not connecting with other peripheral devices. To ensure normal operation of the HMI, the recommended capacity of the power supply is 1.5 to 2 times of the specified power consumption.
- 4. Isolated power supply is recommended.
- For the DOPSoft programming software of the DOP-100 series and the user manual, you can download them at <u>http://www.delta.com.tw/ia</u>.
- 6. DOP-100 series can be used with other industrial automation equipment. Please read through this sheet carefully and install the product according to the instructions to avoid danger.