DOP-112MX
DOP-112WX
DOP-115MX
DOP-115WX

High color · User-friendly
Delta Electronics, Inc.
No.18, Xinglong Rd., Taoyuan City
33068, Taiwan

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
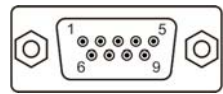
- Install the product in an indoor location, which is free of vapor, corrosive and inflammable gas.
- Please refer to the wiring diagram when connecting the wires.
- Ensure your HMI is correctly grounded. The grounding method must comply with the national electrical standard (please refer to NFPA 70: 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 (http://www.delta.com.tw/ia).
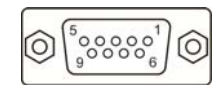
(2) Communication port pin assignment

COM1 / COM2 of DOP-112MX / DOP-112WX / DOP-115MX / DOP-115WX

COM Port	Pin	MODE1		MODE2		MODE3	
		COM1	COM2	COM1	COM2	COM1	COM2
		RS-232	RS-485	RS-232	RS-422	RS-485	RS-485
	1	-	-	-	TXD+	D+	-
	2	RXD	-	RXD	-	-	-
	3	TXD	-	TXD	-	-	-
	4	-	D+	-	RXD+	-	D+
	5	GND		GND		GND	
	6	-	-	-	TXD-	D-	-
	7	RTS	-	RTS	-	-	-
	8	CTS	-	CTS	-	-	-
	9	-	D-	-	RXD-	-	D-

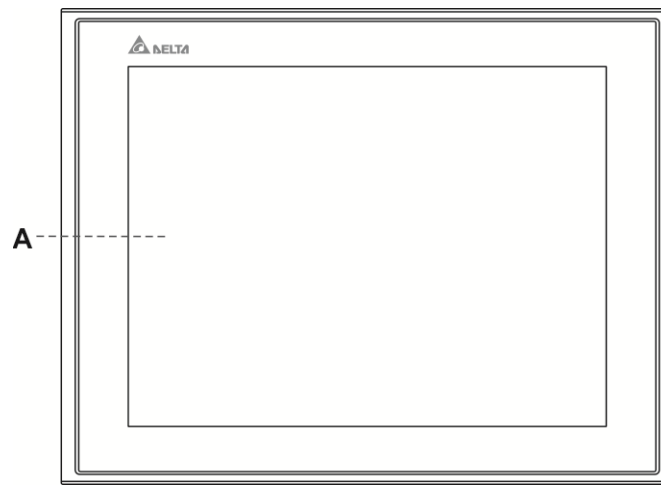### COM3 / COM4 of DOP-112MX / DOP-112WX / DOP-115MX / DOP-115WX

COM Port	Pin	MODE1		MODE2		MODE3	
		COM3	COM4	COM3	COM4	COM3	COM4
		RS-232	RS-485	RS-232	RS-422	RS-485	RS-485
	1	-	-	-	TXD+	D+	-
	2	RXD	-	RXD	-	-	-
	3	TXD	-	TXD	-	-	-
	4	-	D+	-	RXD+	-	D+
	5	GND		GND		GND	
	6	-	-	-	TXD-	D-	-
	7	RTS	-	RTS	-	-	-
	8	CTS	-	CTS	-	-	-
	9	-	D-	-	RXD-	-	D-

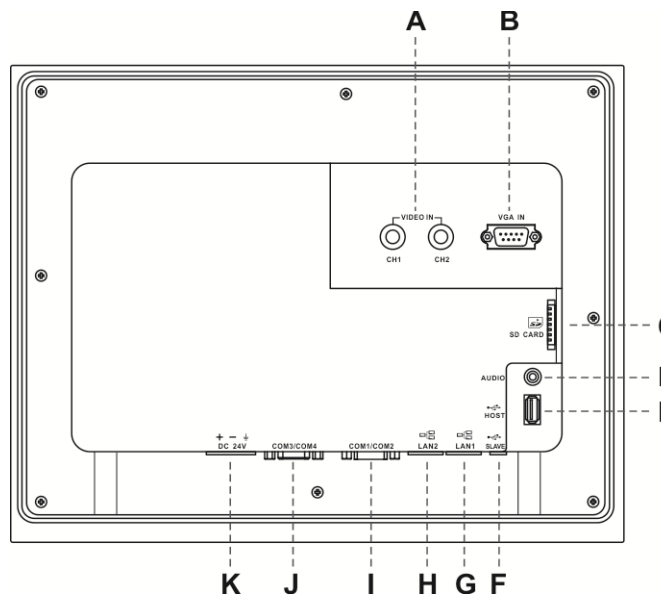Note: mark "-" means connection is not required.

(3) Description of each part

DOP-112MX / DOP-112WX (front view)

A	Operation / display area

DOP-112MX / DOP-112WX (rear view)

A	Video In (CH1 / CH2) Only for DOP-112MX	B	VGA In Only for DOP-112MX
C	SD Card	D	Audio
E	USB Host	F	Mini USB
G	LAN1 (100M bps)	H	LAN2 (100M bps)
I	COM1 / COM2	J	COM3 / COM4
K	Power input terminal (24AWG wire min.)	-	-

DOP-115MX / DOP-115WX (front view)
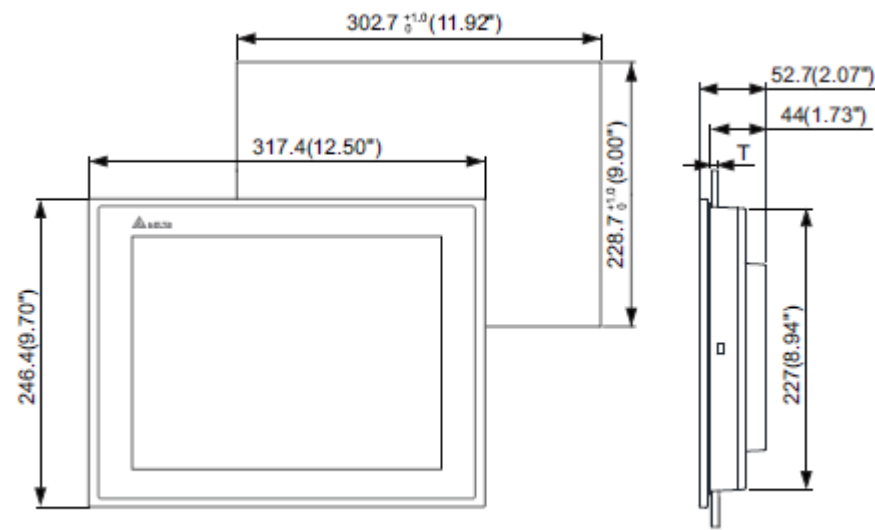

A	Operation / display area

DOP-115MX / DOP-115WX (rear view)
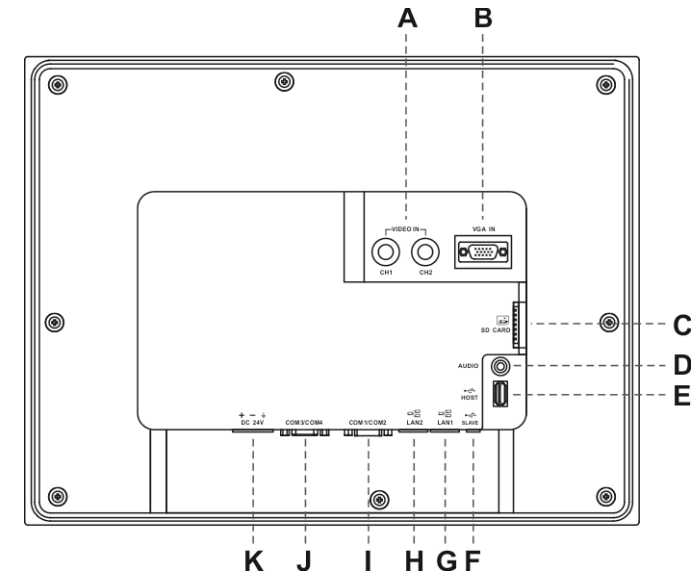
A	Video In (CH1 / CH2) Only for DOP-115MX	B	VGA In Only for DOP-115MX
C	SD Card	D	Audio
E	USB Host	F	Mini USB
G	LAN1 (100M bps)	H	LAN2 (100M bps)
I	COM1 / COM2	J	COM3 / COM4
K	Power input terminal (24AWG wire min.)	-	-

(4) Mounting dimensions

DOP-112MX / DOP-112WX

302.7 $^{+1.0}_{0}$ (11.92")
317.4 (12.50")
228.7 $^{+1.0}_{0}$ (9.00")
227 (8.94")
52.7 (2.07")
44 (1.73")
246.4 (9.70")
T

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

Unit: mm (inch)

Operating temperature: 0°C to 50°C (32°F to 122°F)
Storage temperature: -20°C to 60°C (-4°F to 140°F)

DOP-115MX / DOP-115WX

*4-R8
372.4 $^{+0.5}_{0}$ (14.66")
387.7 (15.26")
283.7 $^{+0.5}_{0}$ (11.17")
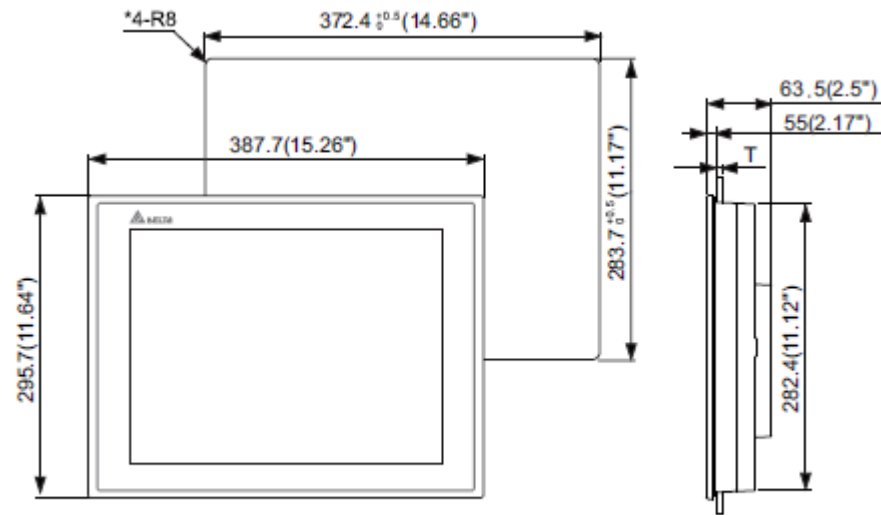282.4 (11.12")
295.7 (11.64")
63.5 (2.5")
55 (2.17")
T

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

Operating 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:

- Incorrect installation may result in malfunction
- To ensure the HMI is well ventilated, make sure there is sufficient space between the HMI and the adjacent objects or walls.
- This product should be used on a case / platform which conforms to enclosure Type 4X standard (for indoor use only).
- The maximum panel thickness for mounting must be no greater than 5 mm.
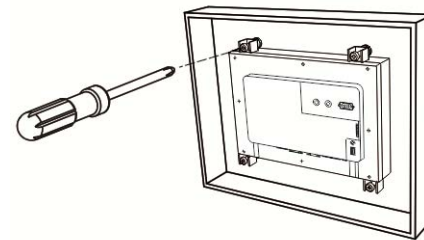
Installation steps:

Step 1:
Put the waterproof gasket into the HMI and then insert the HMI into the panel cutout.
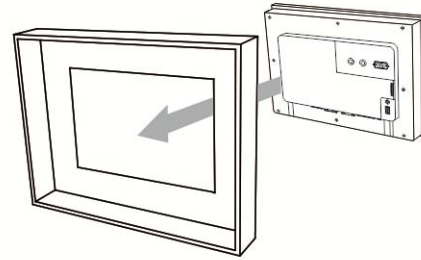
Step 2:
Place the fasteners into the slots and tighten the screws until reaching the panel cutouts.
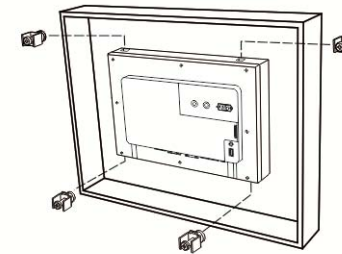
Step 3:
Tighten the screws with the torque less than 0.5 N-M / 0.7 N-M to avoid damage to the plastic case.
Torque for DOP-112MX / 112WX / 115MX / 115WX: 6.17 lb-inch (0.7 N-M)

Step 4:
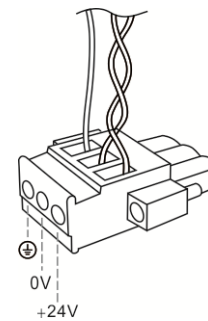For heat dissipation, please keep a minimum clearance of 60 mm on the rear of the HMI.
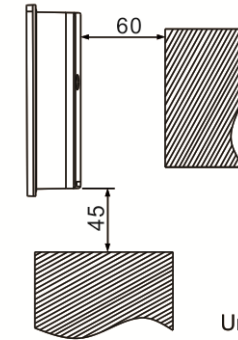
60
45
Unit: mm

Wiring:

Type	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)

⚠ **WARNING** 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).

0V
+24V

(6) Hardware specifications

	Model	DOP-112MX DOP-112WX	DOP-115MX DOP-115WX
Display	Panel type	12" TFT LCD (24-bit color)	15" TFT LCD (24-bit color)
	Resolution	1024 x 768 pixels	
	Backlight	LED Back Light (half-life under room temperature 25°C > 50,000 hours)[1]	
	Display range	245.76 mm x 184.32 mm	304.1 mm x 228.1 mm
	Brightness	500 cd / m² (Typ.)	450 cd / m² (Typ.)
CPU		Dual Core 1GHz	
Flash ROM		8GB	
RAM		DDR3 1000MHz 1GB	
Touchscreen		4-wire resistive touchscreen > 10,000,000 operated	
Buzzer		Multi-Tone Frequency (2K – 4K Hz) / 85 dB	
Network interface		100M bps x 2	
USB		1 Mini USB Ver 2.0; 1 USB Host Ver 2.0	
SD		SD x 1	
Serial communication port	COM1	RS-232 (supporting flow control) / RS485 [2]	
	COM2	RS-422 / RS485 [2]	
	COM3	RS-232 (supporting flow control) / RS-485 [2]	
	COM4	RS-422 / RS485	
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	
Operation voltage[2]		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_{AC} for 1 minute (between DC24V terminal and FG terminal)	
Power consumption[2]		16.08 W (Max)[3]	21.12 W (Max)[3]
Backup battery		3V lithium battery CR2032 × 1	
Backup battery life		About 3 years or more at 25°C (subject to operating temperature and condition)	
Operating 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], 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 IEC60068-2-27: 11 ms, 15 G Peak, in X, Y, Z directions each for 6 times	
Dimension (W) x (H) x (D) mm		317.4 x 246.4 x 52.7	387.7 x 295.7 x 63.5
Mounting dimension (W) x (H) mm		302.7 x 228.7	372.4 x 283.7
Weight		Approx. 2,110 g	Approx. 3,200 g

Note:
1. 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.
5. For the DOPSoft programming software of the DOP-100 series and the user manual, you can download them at http://www.delta.com.tw/ia.
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.