



DOP-B04

Instruction Sheet

(1) Preface

Thank you for purchasing DELTA's DOP-B series. This instruction sheet will be helpful in the installation, wiring and inspection of Delta HMI. Before using the product, please read this instruction sheet to ensure correct use. You should thoroughly understand all safety precautions before proceeding with the installation, wiring and operation. Place this instruction sheet in a safe location for future reference. Please observe the following precautions:

- Install the product in a clean and dry location free from corrosive and inflammable gases or liquids.
- Ensure that all wiring instructions and recommendations are followed.
- Ensure that HMI is correctly connected to a ground. The grounding method must comply with the electrical standard of the country (Please refer to NFPA 70: National Electrical Code, 2005 Ed.).
- Do not disassemble HMI, modify or remove wiring when power is applied to HMI.
- Do not touch the power supply during operation. Otherwise, it may cause electric shock.

(2) Safety Precautions

Carefully note and observe the following safety precautions when receiving, inspecting, installing, operating, maintaining and troubleshooting. The following words, DANGER, WARNING and STOP are used to mark safety precautions when using the Delta's HMI product. Failure to observe these precautions may void the warranty!

Installation



- Comply with quick start for installation. Otherwise it may cause equipment damage.
- Do not install the product in a location that is outside the stated specification for the HMI. Failure to observe this caution may result in electric shock, fire, or explosion.
- Do not install the product in a location where temperatures will exceed specification for the HMI. Failure to observe this caution may result in abnormal operation or damage the product.
- Please note that this equipment has obtained EMC registration for commercial use. In the event that it has been mistakenly sold or purchased, please exchange it for equipment certified for home use.
- Do not use this product as an alarm device for disaster early warning that may result in personal injury, equipment damage, or system emergency stop.

Wiring



- Connect the ground terminals to a class-3 ground (Ground resistance should not exceed 100Ω). Improper grounding may result in communication error, electric shock or fire.

Operation



- The users should use Delta Screen Editor software to perform editing in Delta's HMI product. To perform editing and confirming HMI programs without using Delta Screen Editor software in Delta's HMI product may result in abnormal operation.
- To prevent the personal injury and equipment damage, when designing HMI programs, please ensure that a communication error occurred between Delta's HMI product and the connecting controller or equipment will not result in system failure or malfunction.
- Please be sure to backup the screen data and HMI programs in case they are lost, accidentally deleted or worse.



- Do not modify wiring during operation. Otherwise it may result in electric shock or personal injury.
- Never use a hard or pointed object to hit or strike the screen as doing this may damage the screen and let the screen has not respond at all, and then cause HMI to work abnormally.

Maintenance and Inspection



- Do not touch any internal or exposed parts of the HMI as electrical shock may result.
- Do not remove operation panel while power is on. Otherwise electrical shock may result.
- Wait at least 10 minutes after power has been removed before touching any HMI terminals or performing any wiring and/or inspection as an electrical charge may still remain in the HMI with hazardous voltages even after power has been removed.
- Turn the power off before changing backup battery and check system settings after finishing change. (all data will be cleared after changing battery).
- Be sure the ventilation holes are not obstructed during operation. Otherwise malfunction may result due to bad ventilation or overheating troubles.

Wiring Method



- Do not use a voltage that will exceed specification for the HMI. Failure to observe this caution may result in electric shock or fire.
- Remove the terminal block from the HMI before wiring.
- Insert only one wire into one terminal on the terminal block.
- If the wiring is in error, perform the wiring again with proper tools. Never use force to remove the terminals or wires. Otherwise, it may result in malfunction or damage.
- For the power line that forced to take out, ensure to check wiring again and restart.

Communication Wiring



- Comply with communication wiring specification for wiring.
- Wiring length should comply with the stated specification for the HMI.
- Proper grounding to avoid bad communication quality.
- To avoid noise and interference, the communication cable, all power cables, and motor power cable should be placed in separate conduits.

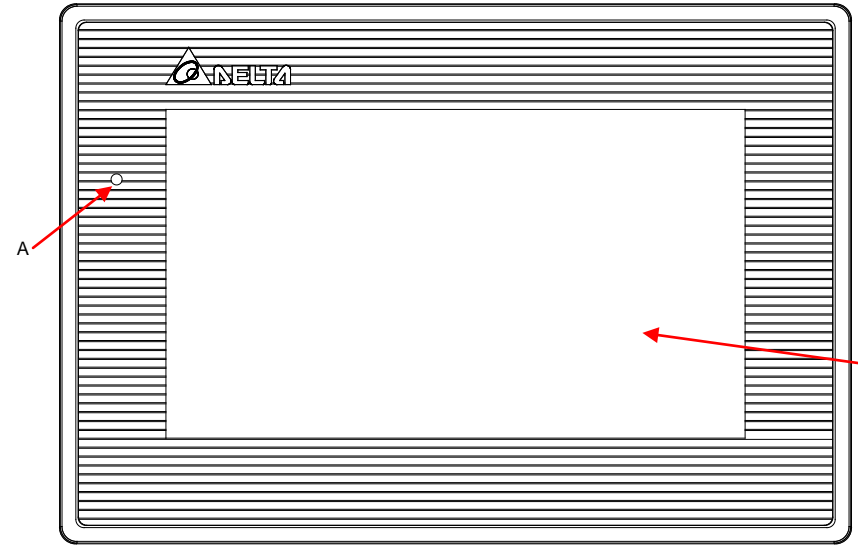
(3) Model Explanation

DOP - B 04 S 2 11
(1) (2) (3) (4) (5) (6)

(1) Product Name	DOP: Delta Operation Panel
(2) Series	B: B Series HMI
(3) Display Size	04: 4.7 inches TFT LCD
(4) Type	S: Standard
(5) Resolution	2: WQVGA
(6) Version	-

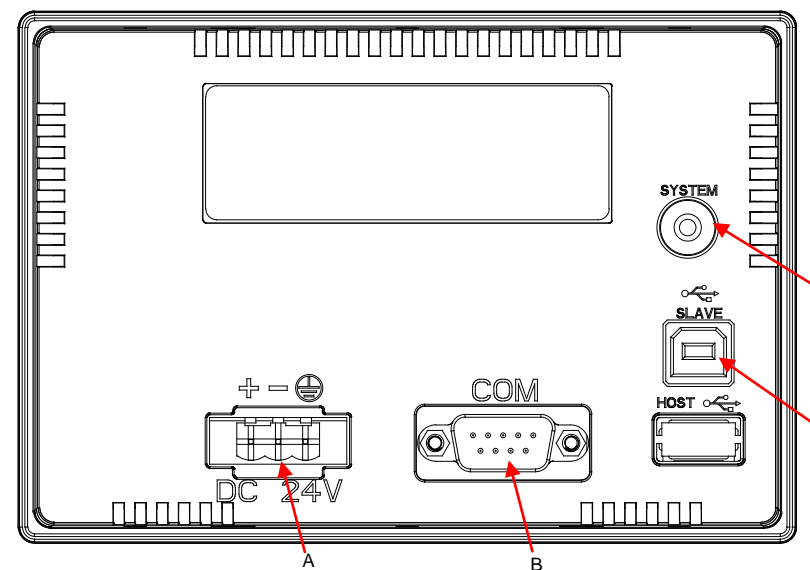
(4) Parts Names

DOP-B04S211 (Front View)



A	Power LED Indicator (Lights in green when HMI works normally.)
B	Touch Screen / Display

DOP-B04S211 (Rear View)



A	Power Input Terminal	D	System Key
B	COM1	-	-
C	USB Slave	-	-

(5) Installation and Storage Conditions

The product should be kept in the shipping carton before installation. In order to retain the warranty coverage, the HMI should be stored properly when it is not to be used for an extended period of time. Some storage suggestions are:

- Store in a clean and dry location free from direct sunlight.
- Store within an ambient temperature range of -20°C to +60°C (-4°F to 140°F).
- Store within a relative humidity range of 10% to 90% and non-condensing.
- Do not store the HMI in a place subjected to corrosive gases and liquids.
- Correctly packaged and placed on a solid and durable surface.
- Do not mount the HMI adjacent to heat-radiating elements or in direct sunlight.
- Do not mount the HMI in a location subjected to corrosive gases, liquids, or airborne dust or metallic particles.
- Do not mount the HMI in a location where temperatures and humidity will exceed specification.
- Do not mount the HMI in a location where vibration and shock will exceed specification.
- Do not mount the HMI in a location where it will be subjected to high levels of electromagnetic radiation.

(6) Installation and Wiring

Installation Notes:

- Improper installation will result in malfunction and greatly reduce the life of the HMI. Be sure to follow the guidelines in this quick start when installing the HMI.
- In order to ensure the HMI being well ventilated, make sure that the ventilation holes are not obstructed and must provide sufficient free space around HMI.
- To ensure the panel is well protected, be sure to install a waterproof gasket into HMI.
- For use on a flat surface of a Type 4X "Indoor Use Only" enclosure or equivalent.
- The allowable thickness of the panel for mounting should be less than 5 mm.

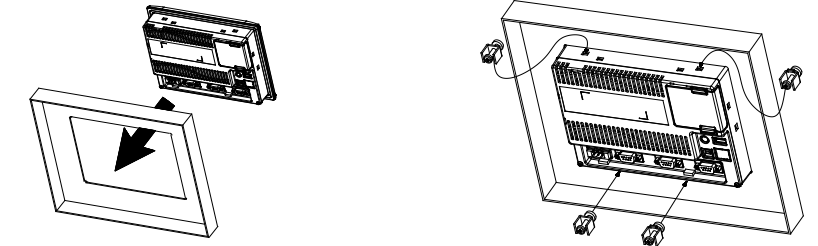
Installation Method:

Step 1:

Ensure to put waterproof gasket into HMI and then insert the HMI into the panel cutout.

Step 2:

Ensure to insert fasteners into the HMI's insertion slots and turn the screw till screws touch panel cutout.

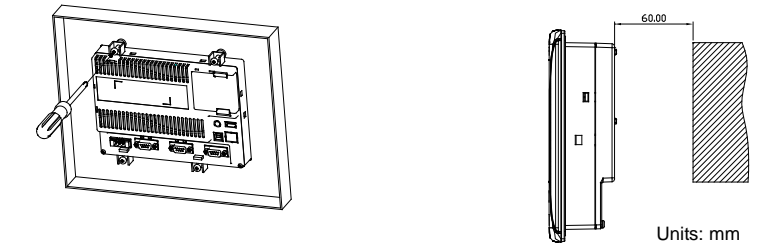


Step 3:

Turn the screw with less than torque 0.7N.M to avoid damage to plastic box.
Torque: 6.17lb-inch (0.7N-M)

Step 4:

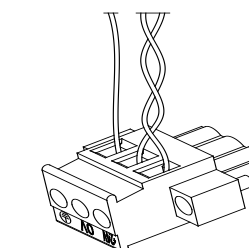
Keep at least 60mm distance from rear of HMI product to the wall, installation surface or the other controllers for heat dissipation.



Recommended wiring is in the table below:

Type	Wire Gauge (AWG)	Stripped length	Torque
Solid	28 ~ 12	7 ~ 8 mm	5 kg-cm (4.3 lb-in)
Stranded	30 ~ 12	7 ~ 8 mm	5 kg-cm (4.3 lb-in)

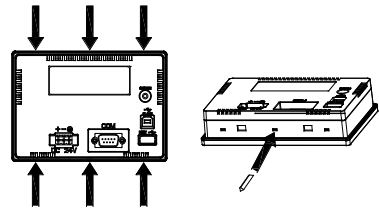
Be sure to perform wiring by referring to the following figure (power supply connector).



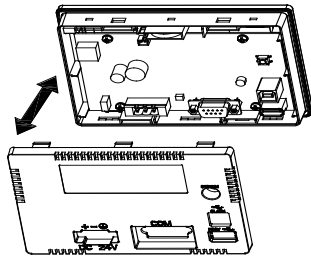
(7) How to Replace A Battery

Please do not use batteries of different manufacturer, type or capacity. The batteries are Delta's optional parts. Please contact our local distributors or Delta sales representatives for the detail.

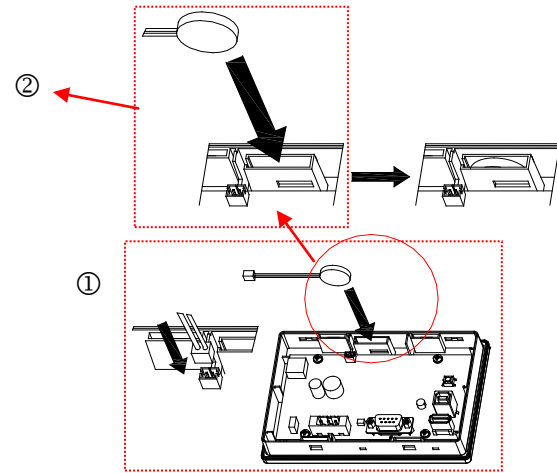
Step 1: Loosen the latches (see the arrow in the picture) located at the outside cover.



Step 2: Open the rear cover.



Step 3: Complete the following steps, ① and ② to replace a battery.



(8) Basic Inspection

Item	Content
General Inspection	<ul style="list-style-type: none"> Periodically inspect the screws of the connection between the HMI and device. Tighten screws as necessary as they may loosen due to vibration and varying temperatures. Ensure that oil, water, metallic particles or any foreign objects do not fall inside the HMI, control panel or ventilation slots and holes. As these will cause damage. Ensure the correct installation and the control panel. It should be free from airborne dust, harmful gases or liquids.
Inspection before operation (power is not applied)	<ul style="list-style-type: none"> Ensure that all wiring terminals are correctly insulated. Ensure that all wiring is correct or damage and or malfunction may result. Visually check to ensure that there are not any unused screws, metal strips, any conductive or inflammable materials inside HMI. Ensure to lower electromagnetic interference when devices are influenced by it. Ensure that the external applied voltage to HMI is correct and matched to the controller.
Inspection before operation (power is applied)	<ul style="list-style-type: none"> Check if power LED lights. Check if the communication among devices is normal. Please contact our local distributors or Delta sales representative if there are any abnormal conditions.

(9) Pin Definition of Serial Communication

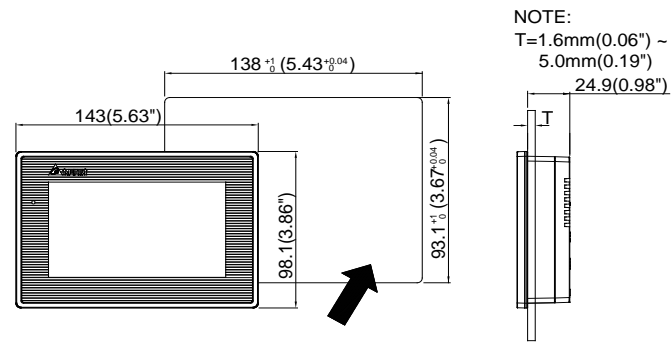
COM1 Port

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

Note: Blank = No Connection.

(10) Dimensions

DOP-B04S211



(11) Specifications

MODEL		DOP-B04S211
LCD MODULE	Display Type	4.7" TFT LCD (65536 colors)
	Resolution	480 x 272 pixels
	Backlight	LED Back Light (less than 20,000 hours half-life at 25°C) (Note 1)
	Display Size	103.68 x 58.75mm
Operation System		Delta Real Time OS
MCU		32-bit RISC Micro-controller
NOR Flash ROM		Flash ROM 4 MB (OS System: 2MB / User Application: 2MB)
SDRAM		8Mbytes
Backup Memory		32Kbytes
Sound Effect Output	Buzzer	Multi-Tone Frequency (2K ~ 4K Hz)/85dB
	AUX	N/A
Ethernet Interface		N/A
Memory Card		N/A
USB		1 USB Client Ver 1.1
Serial COM Port	COM1	RS-232 (supports hardware flow control)/RS-422/RS-485
	COM2	N/A
	COM3	N/A
Function Key		N/A
Perpetual Calendar (RTC)		Built-in
Cooling Method		Natural air circulation
Safety Approval		CE
Waterproof Degree		IP65/NEMA4
Operation Voltage (Note2)		DC +24V (-10% ~ +15%) (please use isolated power supply)
Voltage Endurance		AC500V for 1 minute (between charging (DC24V terminal) and FG terminals)
Power Consumption (Note 2)		2.64W
Backup Battery		3V lithium battery CR2032 x 1
Backup Battery Life		It depends on the temperature used and the conditions of usage, about 3 years or more at 25°C.
Operation Temperature		0°C ~ 50°C
Storage Temperature		-20°C ~ +60°C
Ambient Humidity		10% ~ 90% RH [0 ~ 40 °C], 10% ~ 55% RH [41 ~ 50 °C] Pollution Degree 2
Vibration		IEC 61131-2 compliant 5Hz ≤ f < 8.3Hz = Continuous: 3.5mm, 8.3Hz ≤ f ≤ 150Hz = Continuous: 1.0g
Shock		IEC 60068-2-27 compliant 15g peak for 11 ms duration, X, Y, Z directions for 6 times
Dimensions (W) x (H) x (D) mm		143 x 98.1 x 31.2
Panel Cutout (W) x (H) mm		138 x 93.1
Weight		Approx. 295g