

Teach Pendant TP-100-2

User's Manual



V1.5

December 5, 2023



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Revision History

Rev.	Description
1.0	First Version release
1.1	Modify the External cable of Accessory Page 3 Content: 3M /5M /10M / 20M Cable*1 Optional
	Modify the interface of Specification page7 - Control connector: HDB-44 female > Removable HDB-44 control cable that cable length: 3M / 5M /10M / 20M (Optional)
	Modify the Environment of Specification page7 Operating temperature: 0°C to 50°C
1.2	Revise Page 3: Circular connector cable (30cm) photo
	Revise Page 9 : Pin define of Junction Cable from VGA to HDMI
1.3	Modify Page 19 Switch Button 1.3 External Cable
1.5	Page 3 CH1.3 External Cable





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1.0 Product Description

The TP-100-2 teach pendant provides the freedom and convenience by allowing users to move away from the host computer and control the robot locally. It incorporated the Multi-Touch projected capacitive (PCAP) touchscreen technology to reduce the number of buttons and consequently streamlined the operation of the industrial robots.



1.1. Overview of TP-100-2

The TP-100-2 is a handheld device that controls robot movements, teaches locations, and runs robot programs. It features an ergonomic housing with safety elements, a 10.1" WXGA resolution panel, and the Multi-Touch PCAP touchscreen technology. The control unit is comfortable to use and has an optional shoulder strap.



Front




Back

1.2. Handling of TP-100-2



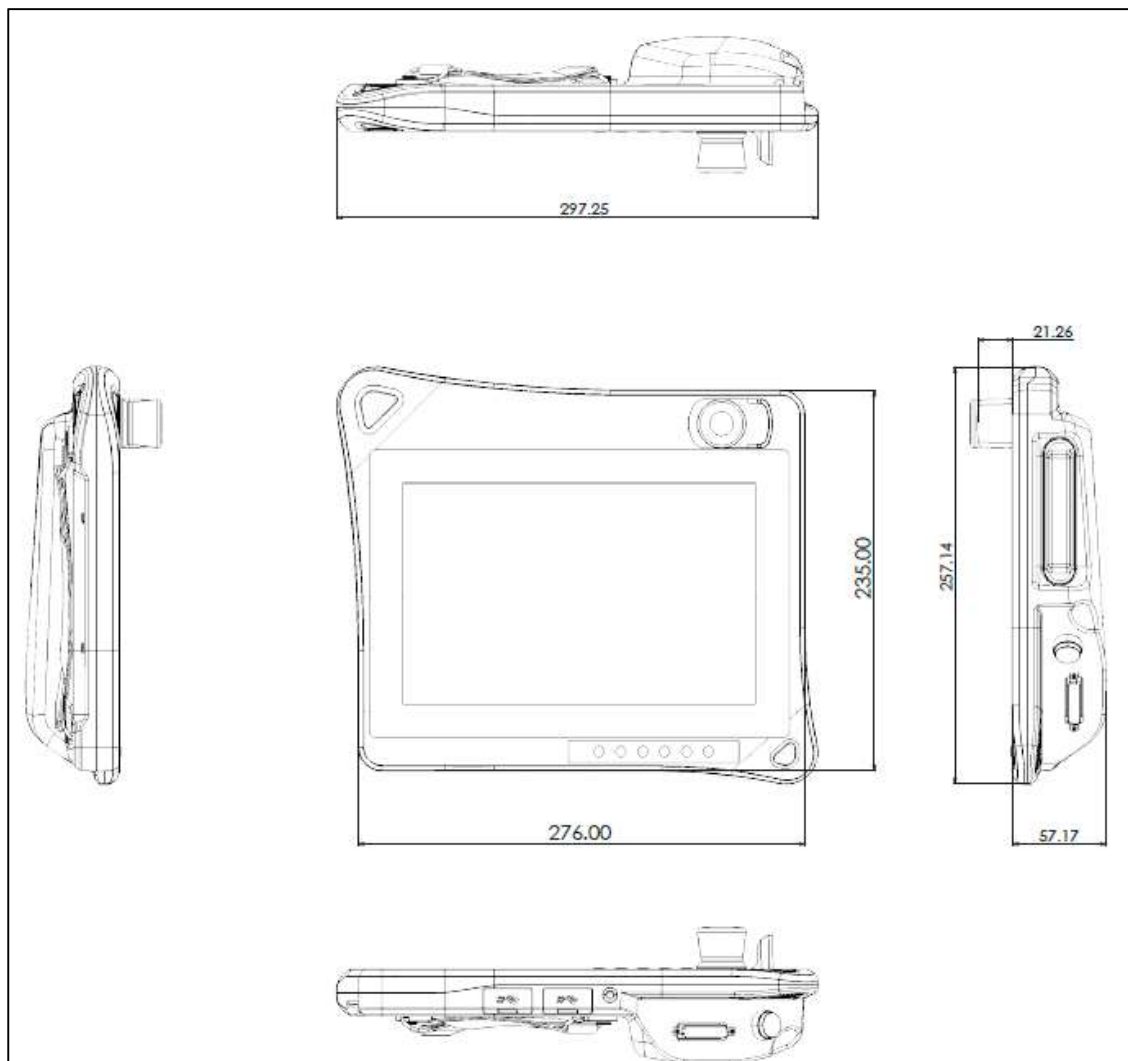
The TP-100-2 teach pendant is designed to operate in a horizontal / landscape format. When operating the device, make sure to connect all necessary cables from the teach pendant to the host computer.

1.3. TP-100-2 Accessory

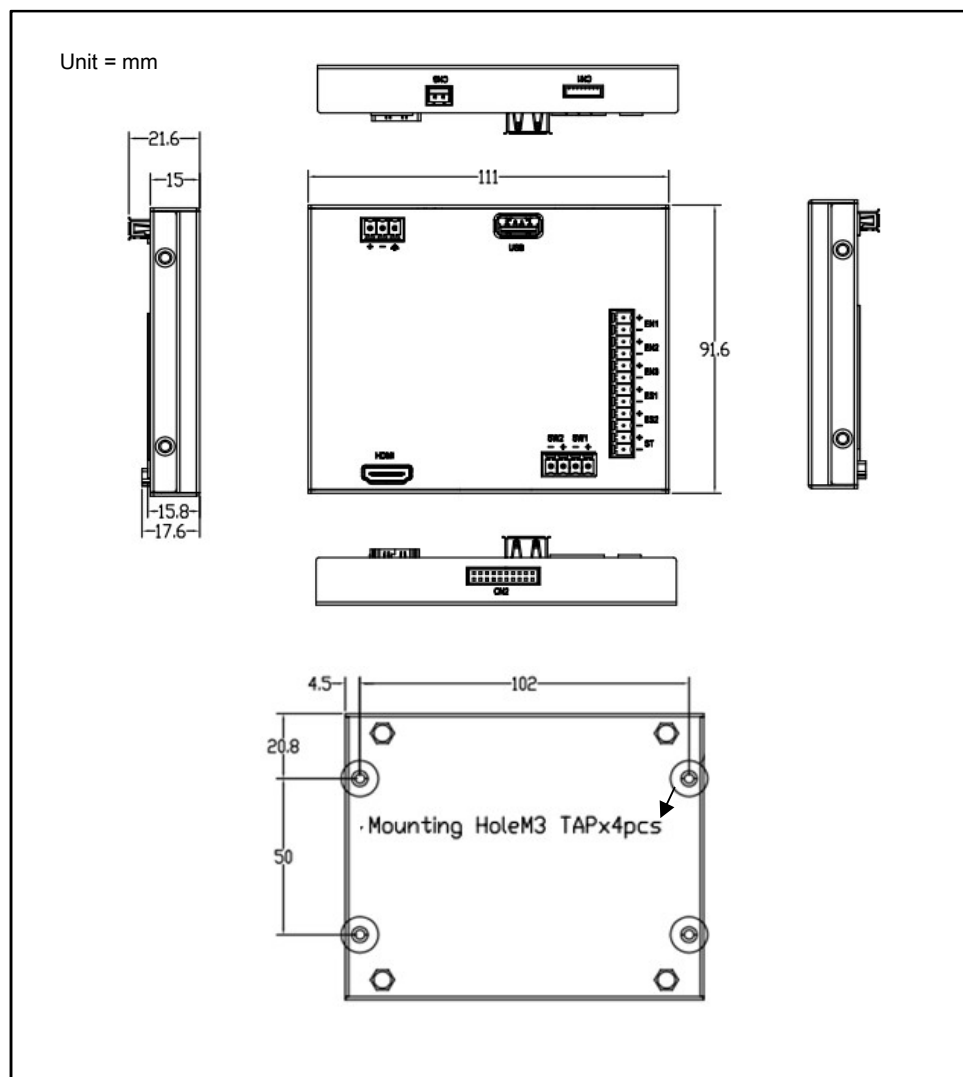
NO.	Items	Q'ty	Figure	Note
1	TP-100-2	1		
2	External Cable	1		Optional Content: 3M /5M /10M / 20M Cable*1
3	TP-100-HD-JB	1		Content: (1) Junction box*1 (2) M3*12mm screw*4 (3) Connector 12P*1 +4P*1+ 3P*1
4	Circular connector cable (30cm)	1		Connecting the circular connector wire to Junction box and external cable
5	External GND stand			Content: -M4*12mm screw for GND stand
6	Option accessory	1		(1) TP-100 Holders *1 (2) CAP*1 for circular connector

2.0 Technical Data

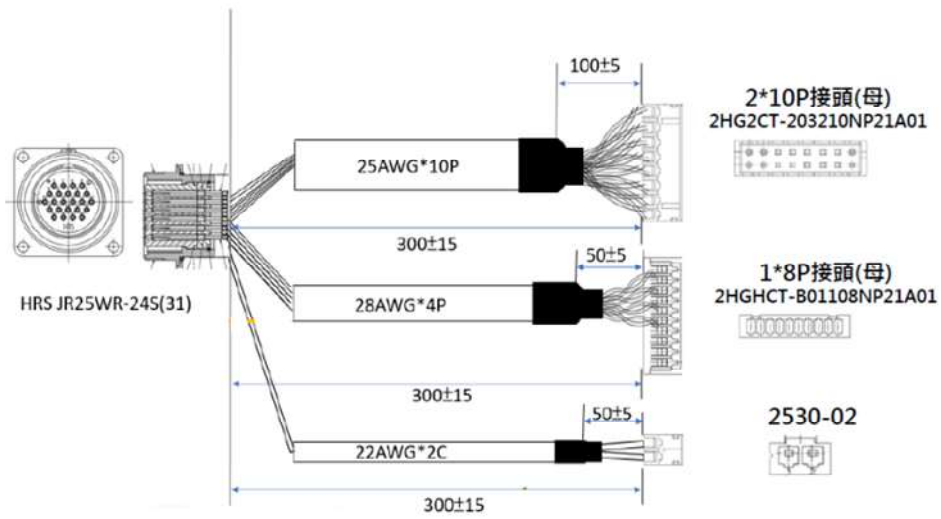
2.1. Dimensions of TP-100-2



2.2. Dimensions of TP-100-HD-JB



2.3. Dimension of Circular connector cable (30cm)

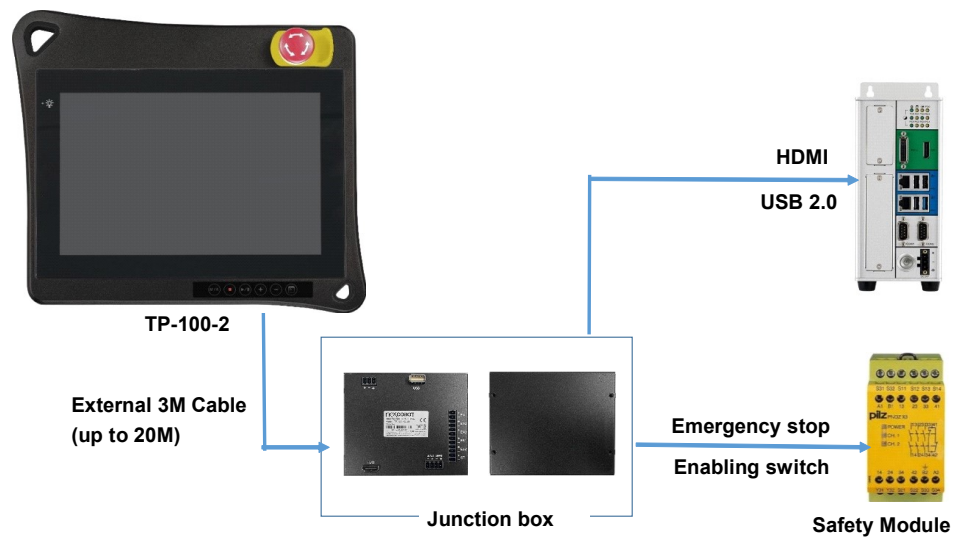


2.4. Specification

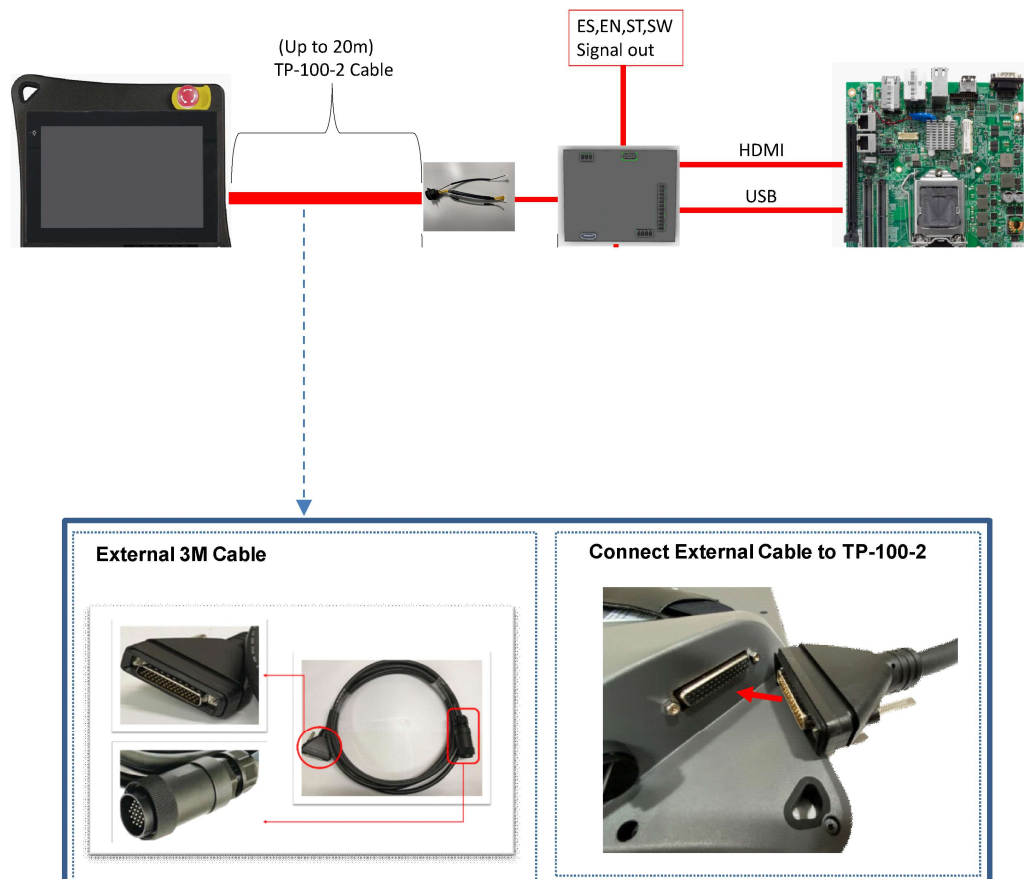
Technical Data	TP-100-2	Technical Data	TP-100-2
Panel	<ul style="list-style-type: none"> - 10.1", 16:10, WXGA, 1280 x 800 - Luminance: 400 cd/m2 - Contrast ratio: 800:1 - LCD color: 16.7M - Viewing angle: 89 (U), 89 (D), 89 (L), 89 (R) - Backlight: LED 	Interface	<ul style="list-style-type: none"> - Data back-up: 2 x USB 2.0 - Control connector: HDB-44 female <ul style="list-style-type: none"> > Removable HDB-44 control cable that cable length: 3M / 5M /10M / 20M (Optional) > including power, E-stop button, 3-Position Enabling switch, Buttons Switch, USB 2.0 and HDMI
Touch	<ul style="list-style-type: none"> - Touch: 5 points P-Cap - Touch light transmission: 87% - Touch interface: USB - Anti-scratch surface: 7H hardness 	Ratings	<ul style="list-style-type: none"> - Power supply voltage: 24 Vdc (19.2 to 28.8 Vdc) - Current consumption: > 0.265A(max.) at 24Vdc
Safety Elements	<ul style="list-style-type: none"> - Emergency Stop Button <ul style="list-style-type: none"> > 2 NC channels, B10d=130,000 > Contact function: latching > Reset: by rotating - 3-Position Enabling Switch <ul style="list-style-type: none"> > 3 channels 2NO & 1 NC, B10d=100,000 	Mechanical	<ul style="list-style-type: none"> - Dimension: <ul style="list-style-type: none"> > 297.3 x 257.2 x 57.2 mm (78.5mm including E-stop button) - Weight (without external control cable): 1.5Kg - IP protection class: Full IP65 - Color: <ul style="list-style-type: none"> > Front bezel: aluminum magnesium alloy; color: Black > Back cover: ABS+PC; color: Pantone 432C
Operating Elements	<ul style="list-style-type: none"> - 2-Position button switch (1 NO& 1 NC) - 6 membrane keys 	Environment	<ul style="list-style-type: none"> - Operating temperature: 0°C to 50°C - Storage temperature: -20°C to 75°C - Operating humidity: 10%~90% relative humidity, non-condensing - Vibration resistance/shock-proof/free-fall according to EN 61131-2
System	<ul style="list-style-type: none"> - TP-100-2: HDMI input - USB 2.0 upstream 	Certifications	<ul style="list-style-type: none"> - CE (EN 61000-6-2; EN61000-6-4) for installation in industrial environments - FCC Class A

3.0 Connection and Wiring


3.1. Connection



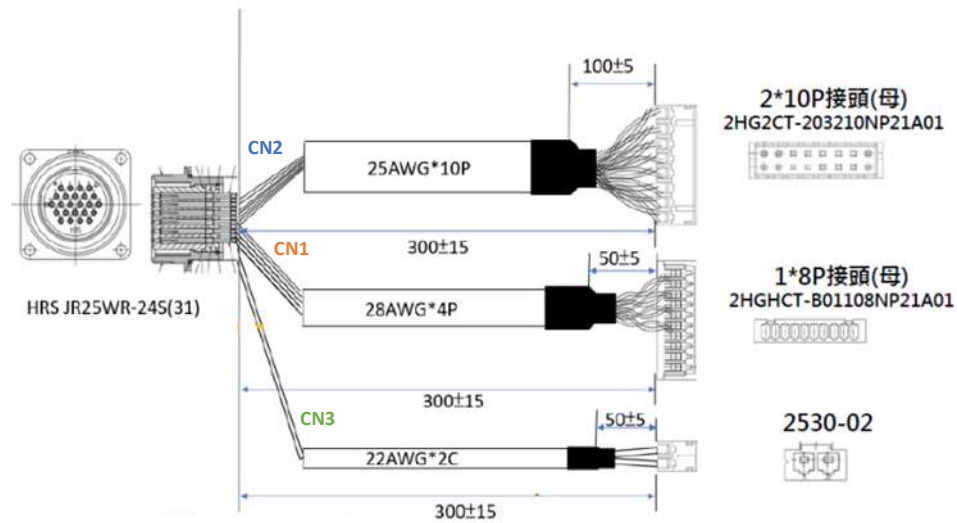
3.2. Wiring example



Pin define of Junction Cable

Function	Pin	Description
DC24V	+	DC power input (24V, 0V, Shielding)
	-	
		
HDMI	VGA	HDMI signal for display
USB	USB	USB 2.0 of TP-100-2
Enabling Switch	EN1+	An enabling switch is a 3-position (OFF-ON-OFF) switch to allow a machine operation only when the switch is lightly pressed and held in the middle position.
	EN1-	
	EN2+	
	EN2-	
	EN3+	
	EN3-	
Emergency Stop Button	ES1+	Emergency stop button are switches that quickly and reliably provide two-channel signal for switching machines and systems to a safe state in an emergency.
	ES1-	
	ES2+	
	ES2-	
Switch Button	SW1+	A general-purpose button which provide two-channel signal and can be used as power switch of system.
	SW1-	
	SW2+	
	SW2-	
Membrane Stop Key	ST+	The stop key on membrane provides a hard-wired signal can be used as program stop function.
	ST-	

Pin define of Circular connector cable



25AWG*10P (CN2)		
HRS Connector JR25WR-24S(31)	Pin Define	2*10P Con. (Female)
1	CHASIS_GND	18
	CHASIS_GND	19
	CHASIS_GND	20
4	ES_NC_1-A	8
5	ES_NC_1-B	10
6	ES_NC_2-A	12
7	ES_NC_2-B	14
8	ES_NO_1-A	5
9	ES_NO_1-B	7
10	ES_NO_2-A	9
11	ES_NO_2-B	11
12	SW_NC_1-A	1
13	SW_NC_1-B	3
14	SW_NO_1-A	2
15	SW_NO_1-B	4
16	C_STOP_O_2	6

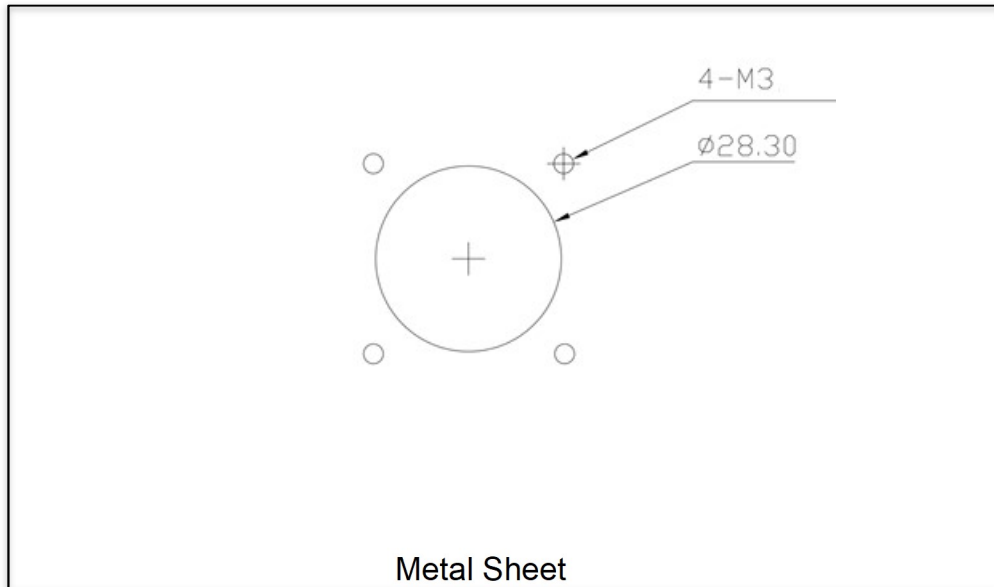
28AWG*4P (CN1)		
HRS Connector JR25WR-24S(31)	Pin Define	1*8P Con. (Female)
17	BI_DA-	2
18	BI_DA+	1
19	BI_DB-	4
20	BI_DB+	3
21	BI_DC-	6
22	BI_DC+	5
23	BI_DD-	8
24	BI_DD+	7

22AWG*2C (CN3)		
HRS Connector JR25WR-24S(31)	Pin Define	2530-02 Con.
2	DC Power+	1
3	DC Power-	2

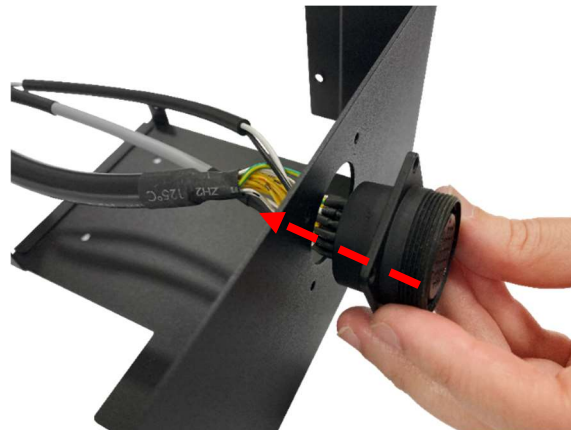
3.3. Installation the Junction Box

Step 1: Drill a hole on the metal sheet for fixing the circular connector

NOTE: M3*L6 screws *4

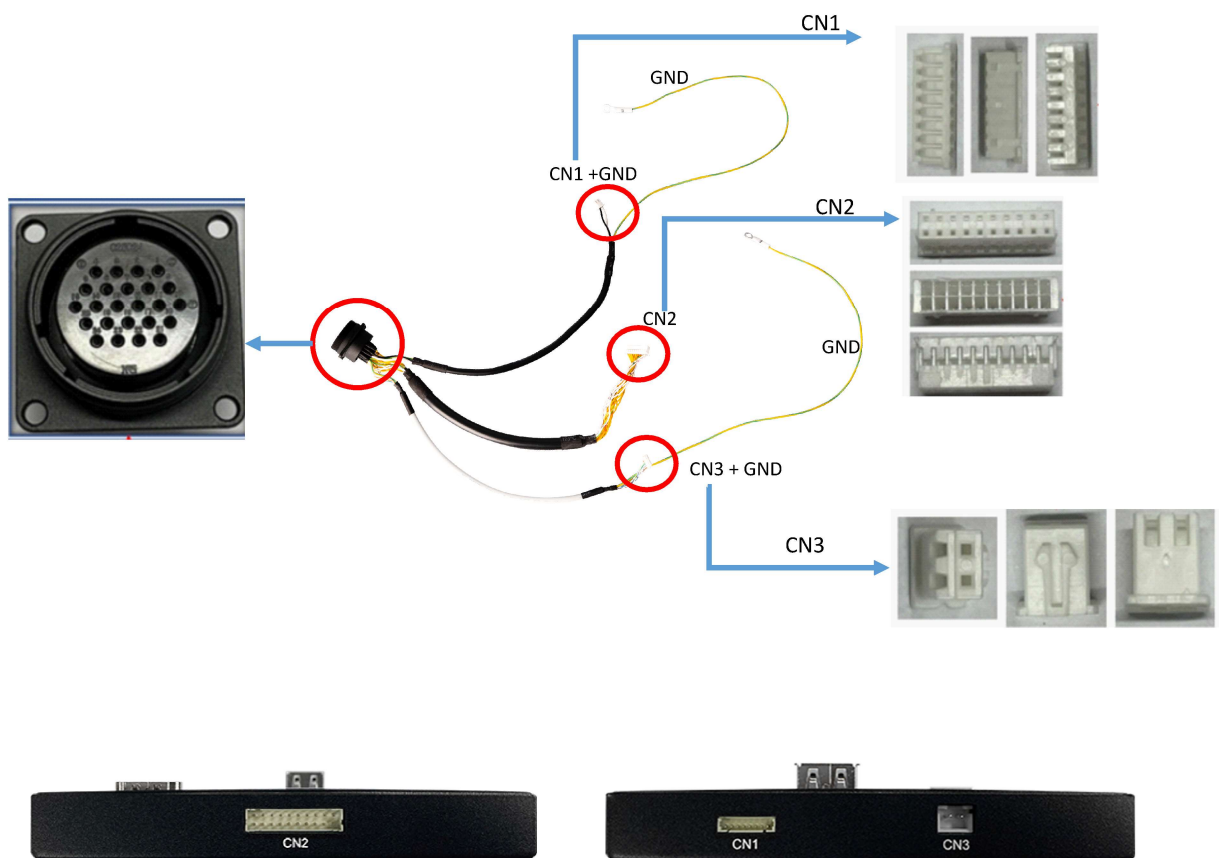
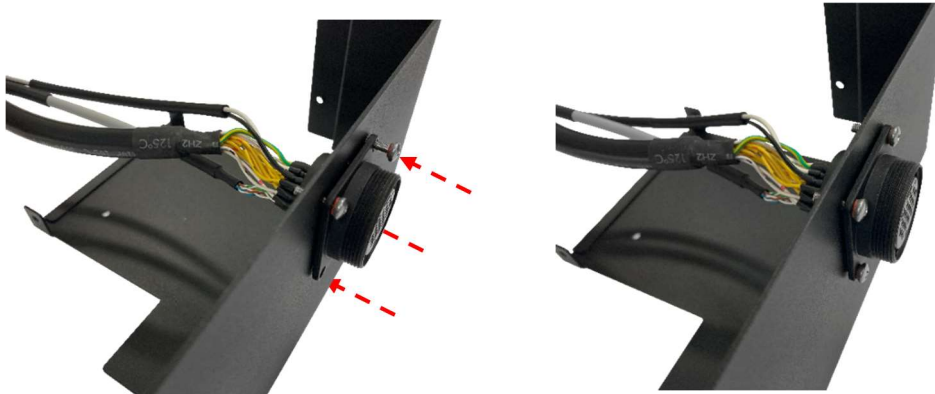


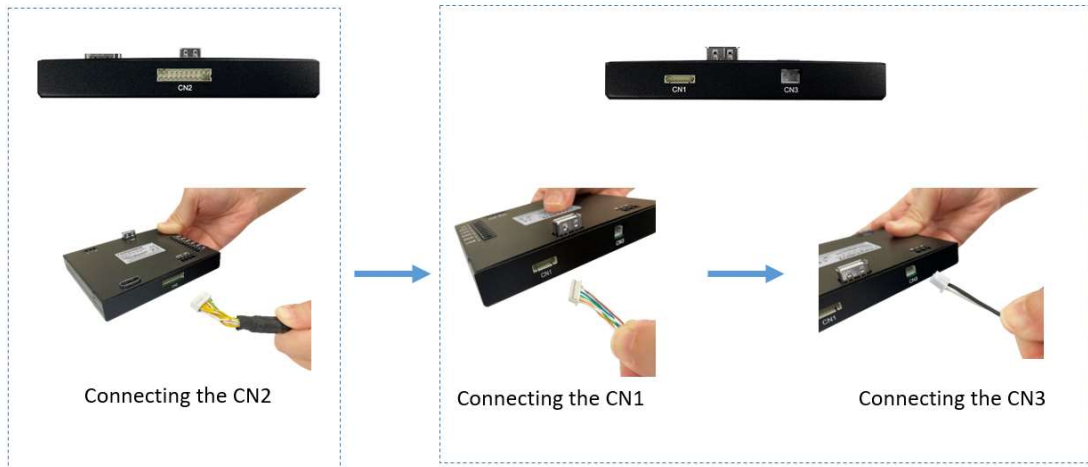
Step 2: Fix the metal sheet made sure the circular connector cable can through the holes of metal



Step 3: Fix the circular connector cable with metal sheet with 4 pcs screws

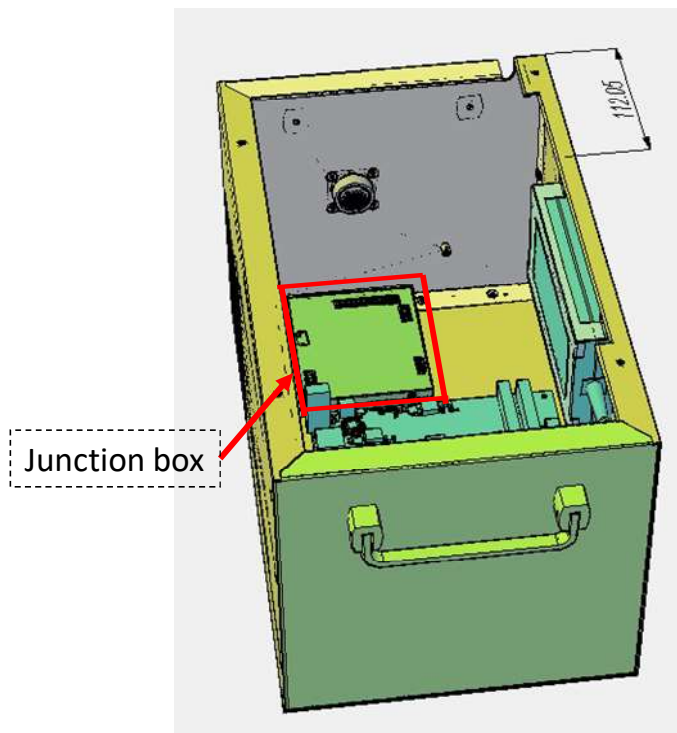
Note: M3*L6 screws *4





Step 5: Fix junction box on the metal sheet

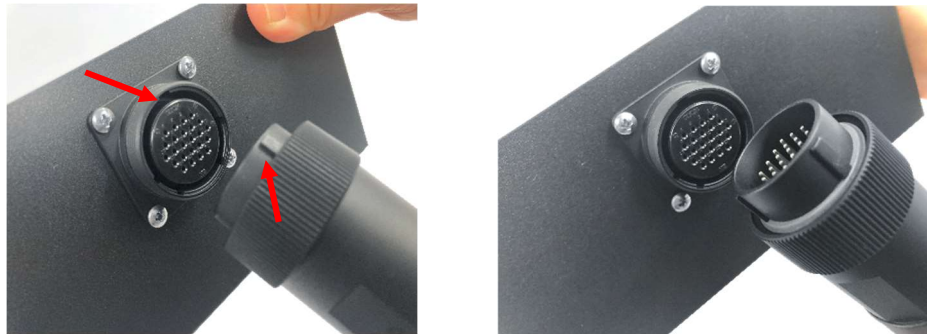
Note: These 4 screws are in TP-100-HD-JB



3.4. Connecting extension cable to the Junction Box

Circular connectors that meet military specifications are used to connect with the junction box. The connector consists of a plug (male, pin) and a receptacle (female, socket). Follow the steps below to connect the junction box with the teach pendant.

- (1) Align the notch of the plug with the latch of the receptacle.



- (2) Turn the “first ring” on the plug clockwise until you cannot turn it anymore until the junction box and plug are tightly connected.



Note 1: DO NOT twist the “black ring” to tighten the connection.



3.5. For disconnecting the Junction Box

- (1) Turn the “first ring” on the plug counterclockwise to disconnect the junction box.



Note 2: DO NOT pull the “black ring” to disconnect the connection.



Connect extension wire to TP-100-2



CAUTION:

DO NOT power on the system before finishing wiring. DO NOT remove the wiring during power on, which may result in damage to the system.

4.0 Operation Behaviors



4.1. Membrane Keys



The TP-100-2's membrane keys are located at the lower-right of the teach pendant. Review the key definitions below:

Key Definition	Defined Keyboard Mapping
M/A	[Ctrl] + [Shift] + [m]
Stop	[Ctrl] + [Shift] + [s]
Play/Pause	[Ctrl] + [Shift] + [p]
+	[Ctrl] + [Shift] + []]
-	[Ctrl] + [Shift] + [[]
Error Log	[Ctrl] + [Shift] + [e]

The stop key on membrane provides a hard-wired signal and connects to ST+ and ST- at the back of junction box. When the stop button is pressed, the ST+ and ST- status will then change from Normal Open (NO) to Normal Close (NC).



4.2. Emergency Stop Button

The Emergency Stop button locates at the upper-right corner of the TP-100-2 and connects to ES1 and ES2 at the back of the junction box. When an emergency occurs, the Emergency Stop button is pressed to stop all activities, the ES1 and ES2's status will then change from Normal Close (NC) to Normal Open (NO). To reset the button, turn it clockwise or counterclockwise to raise the button.



4.3. Enabling Switch

The Enabling switch checks the two-channel mechanical switching elements and filter out any asynchronous output signals. It ensures the approval control (circuit 1 and circuit 2) and both outputs of the teach pendant are synchronized at all time.



	Position Pin	Position 1	Position 2	Position 3
	Position travel (mm)	0.0	3.0	6.0
When pressing the switch	EN1 +	Open	Close	Open
	EN1 -			
	EN2 +	Open	Close	Open
	EN2 -			
	EN3 +	NA	NA	NA
	EN3 -			
When releasing the switch	EN1 +	Open	Open	Open
	EN1 -			
	EN2 +	Open	Open	Open
	EN2 -			
	EN3 +	NA	NA	NA
	EN3 -			

4.4. Switch Button



The switch button connects to SW1 at the back of the junction box. When the switch button is pressed, the SW1 status will change from Normal Close (NC) to Normal Open (NO).

	Pin	Contact
When pressing the switch	SW1 +	Open
	SW1 -	
	SW2 +	Close
	SW2 -	
When releasing the switch	SW1 +	Close
	SW1 -	
	SW2 +	Open
	SW2 -	