

# nexcobot TP-100-2 Teach Pendant User Manual

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## nexcobot TP-100-2 Teach Pendant

### Product Description

TP-100-2 for OMRON TM Plug & Play is a 10.1 handheld teach pendant and well integrated with OMRON TM Robot. Users can use TP-100-2 to directly operate TM Robot from where they have the best view of the process. The handheld control unit is comfortable to use and supports left-handers.

### Overview of TP-100-2

The TP-100-2 is a handheld device that controls robot movements, teaches positions, 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 a hand strap.

### 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.

### Product Usage Instructions

### Warning and Caution symbols

Symbol	Definition
Warning	Indicates potential personal injuries or equipment damage if not observed.
Caution	Indicates necessary precautions to avoid personal injuries or equipment damage.

## Compatibility

Please use robots shipped with Hardware/Software as table below.

**Note:** If your robot comes with a software version older than TMflow 1.76.6300, there are additional installation steps required. In this case, please contact OMRON service team.

OMRON TM robot hardware version	OMRON TM robot software version
3.2 Series	TMflow 1.76.6300 and above

## TP-100-2 plug & play package content

NO.	Items	Q'ty	Figure
1	TP-100-2	1	EXTERNAL 3M
2	CABLE FOR TP-100-2	1	
3	TP-100-HD-JB	1	
4	TP-100-2 TM Plug & Play Accessory	1	

**Note:** Content: 3M Cable\*1 5M / 10M / 20M (option)

**Note:** Content: (1) Junction box\*1 (2) M3\*12mm screw\*4 (3) Connector 12P\*1 +4P\*1+ 3P\*1 (4) CAP\*1 (Option)

Teach Pendant  
TP-100-2 for TM Plug & Play  
User's Manual

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Operating machine or equipment has a certain level of danger. It is the user's responsibility to pay special attention and have safety protection in place before operating any machine or equipment.

NexCOBOT shall not be held for any and all direct or indirect damage or loss to the equipment mentioned in this document due to the use for a purpose other than the intended.

## Revision History

## Product Description

TP-100-2 for OMRON TM Plug & Play is a 10.1" handheld teach pendant and well integrated with OMRON TM Robot. Users can use TP-100-2 to directly operate TM Robot from where they have the best view of the process. The handheld control unit is comfortable to use and supports left-hander.

## 1. Overview of TP-100-2

The TP-100-2 is a handheld device that controls robot movements, teaches positions, 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 hand strap.

## 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.

## TP-100-2 for OMRON TM Plug & Play

### Warning and Caution symbols

The Table below shows the definitions of warning and caution levels described in each paragraph of this Manual. Pay close attention to them when reading each paragraph, and observe them to avoid personal injuries or equipment damage.

### Compatibility

Please use robots shipped with Hardware/Software as table below.

**Note:** If your robot comes with a software version older than TMflow 1.76.6300, there are additional installation steps required. In this case, please contact OMRON service team.

## TP-100-2 plug & play package content

### Content of metal sheet

**Step 1:** Remove the rubber from the controller cabinet

**Step 2:** Fix junction box with front cover with 4 pcs screws

**Step 3:** Circular connector through Metal hole with 4 pcs screws

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

**Step 4:** Connecting the circular connector to Junction box

**Step 5:** Fix the external stand of Grounding to TM controller.

**Step 6:** Connect the ground cable of circular connector to external GND stand.

**Step 7:** Junction wires wiring

1. Content of Junction Wires
2. Pin definition of Junction Wires
3. Connector direction of Junction Wires

**DANGER:**

MAKE SURE the safety pins in the signal wire, such as ES2+, ES2-, are correctly connected to the safety input ports (SAFE+, SI0-1) on the OMRON/ TM control box. Otherwise, the emergency stop button and/or enable switch WILL NOT work correctly.

The above picture is OMRON TM Control Box I/O layout before connecting TP100-2 Junction wires and control box's digital input, as default, is set to sink type (NPN). Please refer to OMRON TM hardware installation manual.

Follow the pin definition of Junction wires, you can connect junction wires to OMRON/ TM control box as below picture.

Connecting junction wires (NPN type) to OMRON/ TM control box.

TP100-2 also support source input (PNP) type connection. The below picture is OMRON/ TM control box I/O layout (PNP) before connecting TP-100-2 junction wires.

And, the below picture is OMRON/ TM control I/O (PNP) after connecting junction wires.

Connecting junction wires (PNP type) to OMRON/ TM control box

**Physical Meaning of Pin**

Please note that the Robot Cable should be connected first before Junction Wires to prevent potential interference.

**CAUTION:**

If the wiring does not follow this approach, the radius of curvature will be too small which may damage the robot cable.

**Step 8:** Fix the front metal cover with 4 pcs screws

**Step 9:** Fix the Right side & Left side metal cover to OMRON/ TM control box with 6 pcs screws

**Note:** These 10 screws are in TP-100-2 TM Plug & Play Accessory (M4x8mm)

**CAUTION:**

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

Step 10: Connecting extension cable to the Junction Box and TP-100-2 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:** DO NOT twist the "black ring" to tighten the connection.

For disconnecting the Junction Box

1. Turn the "first ring" on the plug counterclockwise to disconnect the junction box

**Note1:** DO NOT pull the "black ring" to disconnect the connection

**Note2:** DO NOT CONNECT/DISCONNECT the plug when the Robot Controller is power on

2. (2) Connect extension wire to TP-100-2

**Step 11: Installation check**

**CAUTION:**

Before booting up the robot system, make sure that all of the parts with electrics like teach pendant or safeguard devices have been correctly connected and securely fastened.

**Step 12: Set-up with TMflow**

**Note:**

1. TP-100-2 is only available with HW3.2 control box. Check the hardware version before use.
2. For HW3.2 control box with different version of TMflow, the set-ups are shown individually.
  1. User should first “log-in” and “Get Control” of the Robot.
  2. Click “Input/Display Device” in the “System” page and select “Pendant”.
  3. Click “I/O Setup” in the “Setting” page, “User Defined I/O” input 13 “Stick Stop Button” and “Save”.
  4. Click “Safety” in the “Setting” page, select “Enable Enabling Device” in the “Safety IO Setting” and “Save”.
5. TP-100-2 with TMflow is fully set up! Now you can test the pendant with the six buttons on it. Test with error log button is shown below.

**DANGER:**

Make sure the pendant settings are properly set, then start to use, otherwise the system may be malfunction or lose of function and cause dangerous risks.

**Step 13: Start to use**

Please follow the instruction of OMRON TM Robot related Manual to use

**Technical Data****Dimensions of TP-100-2**

Dimensions of TP-100-HD-JB

**Specification****Operation Behaviors****Membrane Keys**

The TP-100-2's membrane keys are located at the lower-right of the teach pendant. Please note that the Membrane key is only functioning after user's log in TMflow.

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).

## 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.

## 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.


## Channel 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).

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## Documents / Resources

	<p><a href="#">nexcobot TP-100-2 Teach Pendant</a> [pdf] User Manual TP-100-2 Teach Pendent, TP-100-2, Teach Pendant, Pendent</p>
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## References

-  [nexcobot](http://www.nexcobot.com)