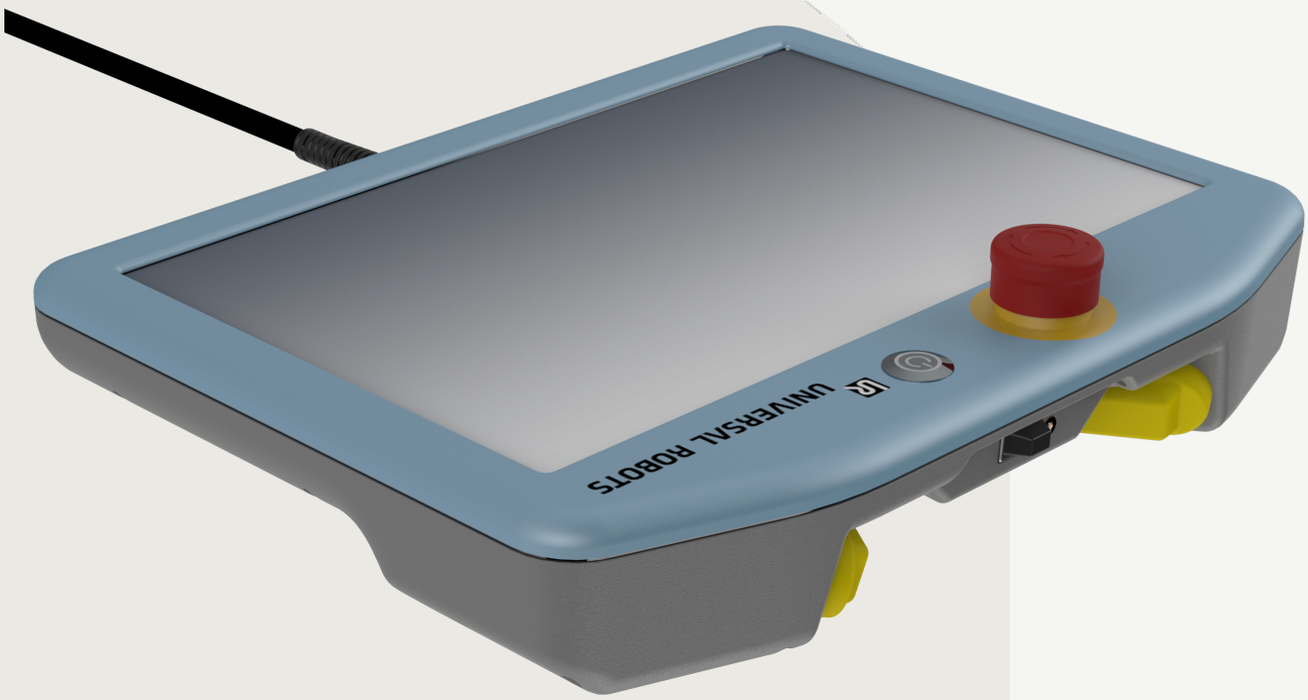
UNIVERSAL ROBOTS

Installation Guide

3PETP



Original instructions (en)

PolyScope X


718-625-00

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1. Introduction

About this document

This guide describes how to install a Universal Robots Teach Pendant with 3-Position Enabling (3PE) Device on a Universal Robots e-Series robot and how to configure the software.
The product is also referred to as the 3PE Teach Pendant (3PE TP).

What's in the box

The box contains the following parts:

- 3PE Teach Pendant
- This guide

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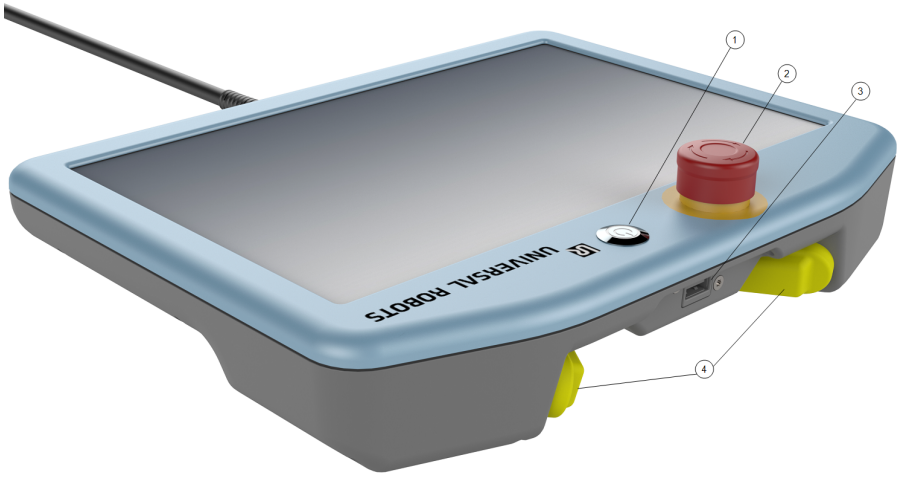
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3. Product description

Description

The 3PETP is a Universal Robots Teach Pendant with built-in 3-Position Enabling Device functionality.
The enabling buttons are on the underside of the Teach Pendant, as illustrated below. You can use wither button, according to your preference. If the 3PE TP is disconnected, an external 3PE device must be connected and confirmed in the Installation.



1	Power button	2	Emergency Stop button
3	USB port (comes with a dust cover)	4	3PE buttons

A Freedrive robot symbol is located under each 3PE button, as illustrated below.



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Installation Notice

NOTICE

Failure to install the 3PETP properly can result in damage to equipment or property.

- The 3PE Teach Pendant must be installed properly in order to meet regulatory requirements.

Use of Product

The 3PETP is only certified for use with Universal Robots e-Series control boxes.

Components

The 3PETP is only certified for use with Universal Robots e-Series control boxes.

Requirements

The robot system software, using the 3PE Teach Pendant must be newer than V5.8.0

NOTICE

Installing an 3PETP in a robot system using software version older than V5.8.0 can result in damage to equipment or property.

- Verify your software system number before installing the 3PETP.

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4. Cleaning Your Teach Pendant

Cleaning

You can wipe away any dust/dirt/oil observed on the Teach Pendant using a cloth and one of the following cleaning agents: Water, 70% Isopropyl alcohol, 10% Ethanol alcohol or 10% Naphtha.

Please refer to the robot user manual for additional information on cleaning methods.

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5. Safety

5.1. Safety Message Types

Description

Safety messages are used to emphasize important information. Read all the messages to help ensure safety and to prevent injury to personnel and product damage.



WARNING

Indicates a hazardous situation that, if not avoided, can result in death or serious injury.



WARNING: ELECTRICITY

Indicates a hazardous electrical situation that, if not avoided, can result in death or serious injury.



WARNING: HOT SURFACE

Indicates a hazardous hot surface where injury can result from contact and non-contact proximity.



CAUTION

Indicates a hazardous situation that, if not avoided, can result in injury.



GROUND

Indicates grounding.



PROTECTIVE GROUND

Indicates protective grounding.



NOTICE

Indicates the risk of damage to equipment and/or information to be noted.



READ MANUAL

Indicates more detailed information that should be consulted in the manual.

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5.2. General safety precautions

Description

Read the general safety precautions before installing the 3PE TP.
For more information on safety, refer to the Safety chapter in the robot User Manual.



WARNING: ELECTRICITY

Installing or maintaining equipment connected to a power source can lead to electric shock.

- Disconnect the equipment from the power source before installation or maintenance.



WARNING

Incorrect connection of the power source or ground wires can result in equipment damage or personnel injury.
Damage caused by invalid power source connection is not covered by warranty. Before starting the operation:

- Ensure that the power source wiring is correct.
- Ensure that the grounding is correct.



WARNING

Failure to verify and validate safeguarding and functionality can result in death or serious injury.

- Ensure all risk reduction works as intended and achieves the needed risk reduction.



WARNING

Failure to perform a risk assessment before installation and operation can result in personnel injury or equipment damage.

- Perform a risk assessment before installation and operation.
- Read the UR User Manual and UR Service Manual.



NOTICE

This product is designed for use as part of the Universal Robots e-Series robot. General safety considerations that are valid for the Universal Robots e-Series robot are also valid for this product.

- For more information on safety, refer to the Safety section in the Universal Robots e-Series robot User Manual.

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6. Hardware Installation

Description

UR Series robots natively support a built-it 3 Position Enabling functionality.
e-Series robots do not have built-in 3 Position Enabling functionality.
You can use the following instructions to replace a Teach Pendant and install a 3 Position Enabling Teach Pendant (3PE TP).

Required items

You need the following items to install the 3PE Teach Pendant:

- 3PE Teach Pendant

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To remove a Teach Pendant

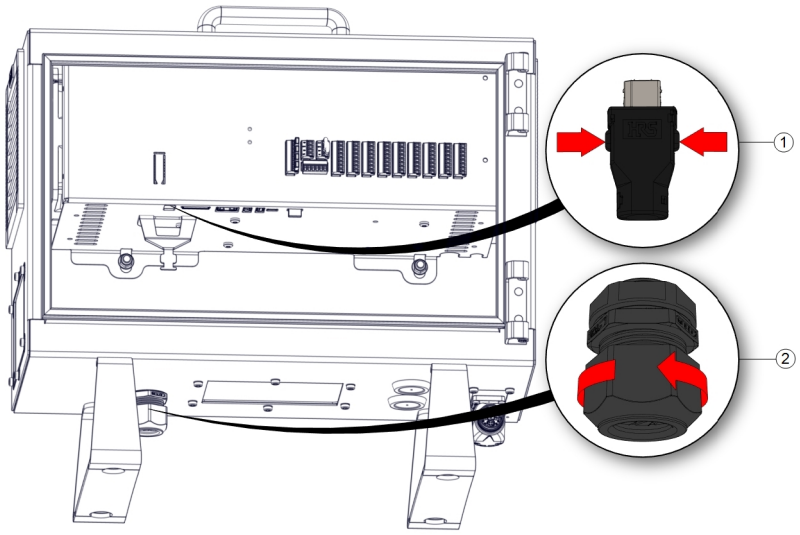
NOTICE

Replacing the Teach Pendant can result in the system reporting a fault on start-up.

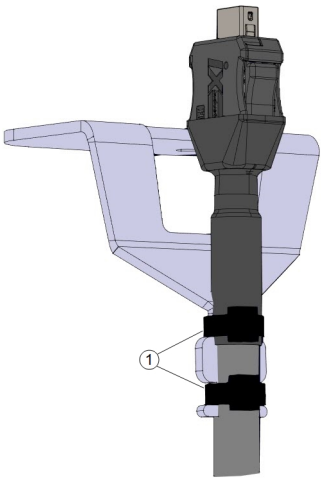
- Always select the correct configuration for the type of Teach Pendant.

To remove the standard Teach Pendant:

1. Power down the control box and disconnect the main power cable from the power source.
2. Remove and discard the two cable ties used for mounting the Teach Pendant cables.
3. Press in the clips on both sides of the Teach Pendant plug as illustrated, and pull down to disconnect from the Teach Pendant port.
4. Fully open/loosen the plastic grommet at the bottom of the control box and remove the Teach Pendant plug and cable.
5. Gently remove the Teach Pendant cable and Teach Pendant.



1	Clips	2	Plastic grommet



1	Cable ties

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To install a 3PE Teach Pendant

1. Place the Teach Pendant plug and cable in through the bottom of the control box and fully close/tighten the plastic grommet.
2. Push the Teach Pendant plug into the Teach Pendant port to connect.
3. Use two new cable ties to mount the Teach Pendant cables.
4. Connect the main power cable to the power source and power on the control box.

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7. 3PETP Configuration PolyScope X

Description

The **Hardware** section allows you to select the type of Teach Pendant to be connected to the Control Box, so the robot's safety system knows what hardware to expect at power-up.
Your selection must match the physically connected hardware to prevent starting the robot while the safety system expects an emergency stop source that is not actually present.
The selections are:

- **3PE Enabled**. The robot operates with a three-position enabling Teach Pendant (3PE TP).
- **Without 3PE**. The robot is used with a Teach Pendant that does not include the three-position enabling device.
- **None**. No Teach Pendant is connected.



NOTICE

For safety reasons, the robot will not start if the selection does not reflect the connected hardware.

3PE Enabled

The connected Teach Pendant has an integrated 3-Position Enabling device (3PE TP). The 3PE buttons are a safety-critical interface where motion in Manual Mode requires you to hold one of the two underside enabling buttons at the center light-press position. When you release or fully press the button, an immediate Category 2 safety stop (SF19 - 3PE Stop) is triggered.
These are its main characteristics:

- Mandatory for UR15, UR20, UR30 per ISO 10218-1:2025.
- Unlocks Manual High Speed through the slider in the footer that lets TCP/elbow speed temporarily exceed 250 mm/s during teaching.
- Required to use Backdrive through the physical 3PE switch and to enable Freedrive through the rapid light-press, release, light-press, hold gesture.
- Plug-and-play; no URCap required

Without 3PE

The connected Teach Pendant is a standard e-Series Teach Pendant that does not have the integrated 3-Position Enabling buttons. The robot accepts a TP for operating PolyScope X, but motion in Manual Mode is not gated by a 3PE press.
These are its main characteristics:

- Allowed for e-Series robots only under ISO 10218-1:2011 certification.
- A risk assessment may still require an external 3PE enabling device wired to the safety I/O (3PE Stop input) if you are inside a safeguarded space during Manual Mode.
- Manual Mode is locked to the default 250 mm/s reduced speed.

None

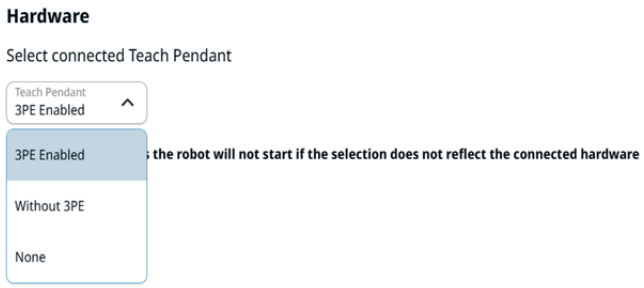
The **None** option supports setups where a Teach Pendant is not required or physically present, enabling more streamlined and flexible deployments, especially in automated or remote-controlled environments.
It gives you three key benefits:

- Supports headless configurations where no Teach Pendant is used.
- Simplifies hardware requirements for minimal setups.
- Improves start-up flexibility by removing dependency on Teach Pendant presence.

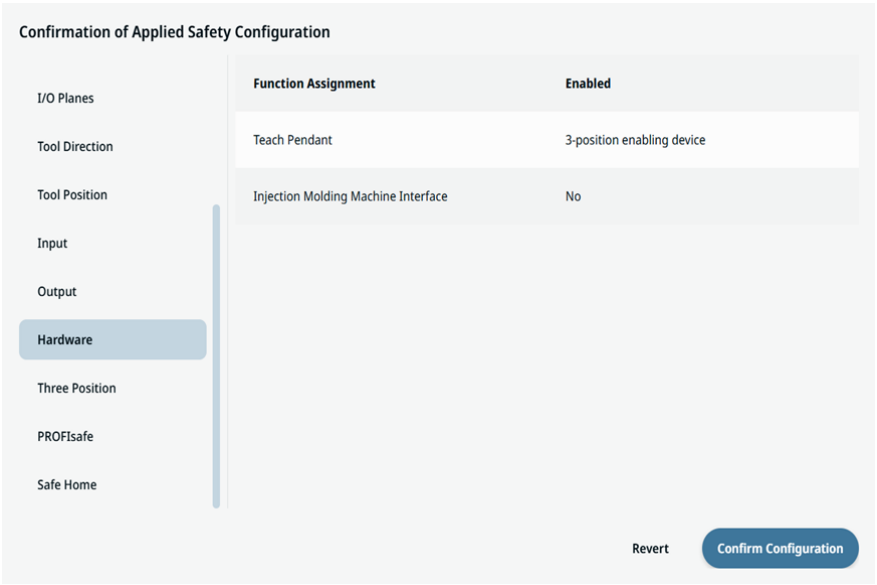
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How to access Hardware

1. Tap **Hardware** on the left panel of the Safety application screen.
2. Unlock the main screen in the topmost right part, enter your safety password, and **Confirm**.
3. On the central panel, tap the **Teach Pendant** field, and select from the drop down.



4. Tap **Apply** beside the Lock button.
5. Tap **Apply and restart** in the pop-up of Apply Safety Configuration.
6. A Confirmation of Applied Safety Configuration pop-up screen appears, and you can either **Revert** or **Confirm Configuration**.



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8. 3PE Teach Pendant Button Functions

Description This section describes the functions of the 3-Position Enabling Device buttons on the 3PE Teach Pendant.

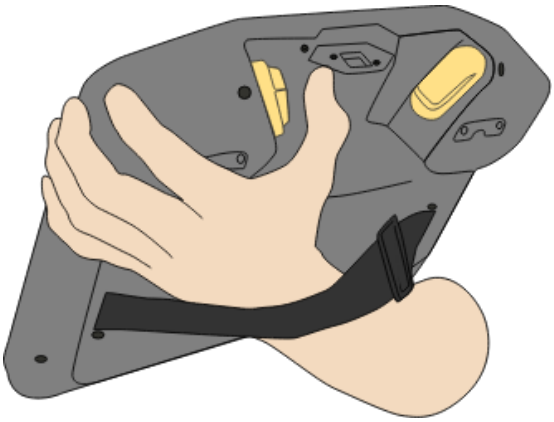
8.1. Using the 3PE Buttons

Description

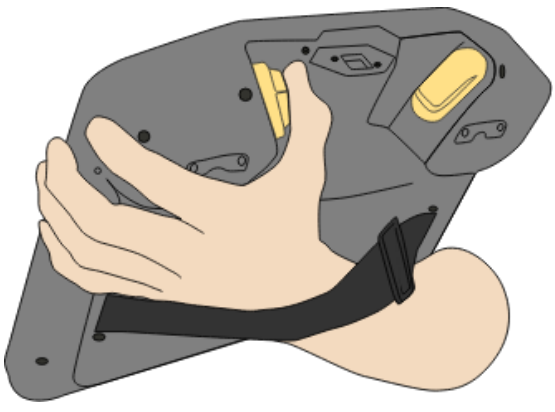
NOTICE
The 3PE buttons are only active in Manual mode. In Automatic mode, robot movement does not require 3PE button action.

The table below describes the functions of the 3PE buttons.

Position		Description	Action
1	Release	There is no pressure on the 3PE button. It is not pressed.	Robot movement is stopped in Manual mode. Power is not removed from the robot arm, and the brakes remain released.
2	Light-press (Grip lightly)	There is some pressure on the 3PE button. It is pressed to a middle point.	Allows your program to play when the robot is in Manual mode.
3	Tight-press (Grip tightly)	There is full pressure on the 3PE button. It is pressed all the way down.	Robot movement is stopped in Manual mode. The robot is in 3PE Stop.



Button release



Button press

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To play a program	1. On PolyScope, ensure the robot is set to **Manual mode**, or switch to **Manual mode**. 2. Maintain a light-press on the 3PE button. 3. On PolyScope, tap **Play** to run the program. The program runs if the robot arm is in the first position of the program. If the robot is not in the first position of the program, the **Move Robot into Position screen** appears.
Stop a program	Release the 3PE button or, on PolyScope, tap **Stop**.
Pause the program	Release the 3PE button, or, on PolyScope, tap **Pause**. To continue the program execution, keep the 3PE button light pressed and tap **Resume** on PolyScope.

8.2. Using Freedrive

Description	Freedrive allows the robot arm to be manually pulled into desired positions and/or poses.
Use the 3PE button to freedrive the robot arm	Rapidly light-press, release, light-press again and keep holding the 3PE button in this position. Now you can pull the robot arm into a desired position, while the light-press is maintained.

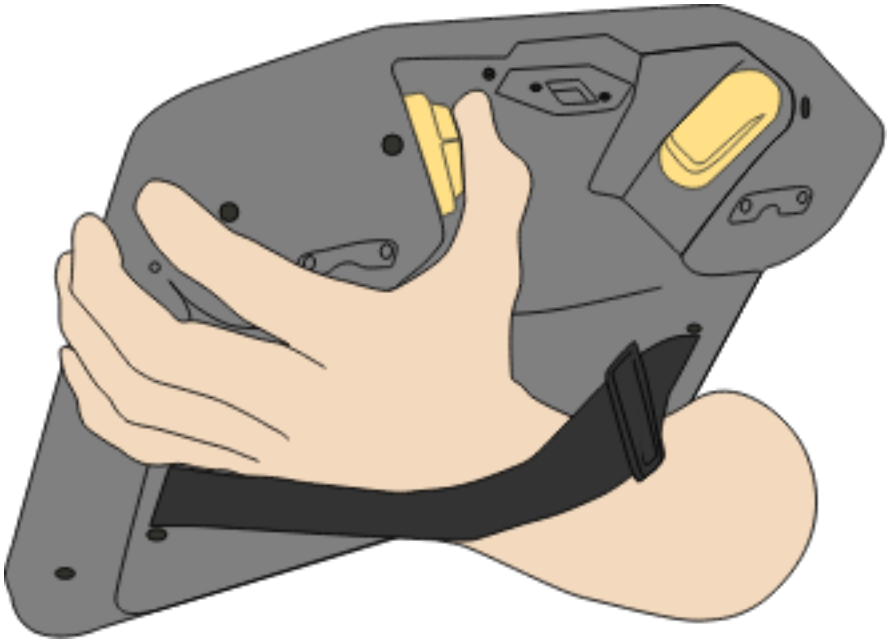
8.3. Using Move Robot into Position

Description	Move Robot into Position allows the robot arm to move to that start position, after you complete a program. The robot arm must be in the start position before you can run the program. For more information, refer to the Move Robot into Position section in the robot User Manual.

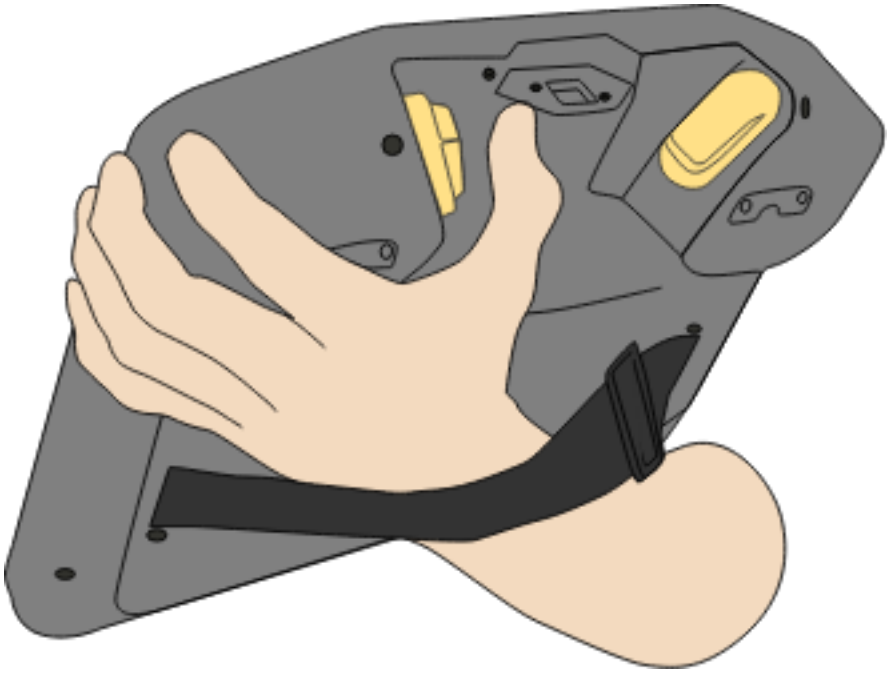
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To use the 3PE button to move the robot arm into position:

1. When your program is complete, press **Play**
2. Select **Play from beginning**.
   On PolyScope, the **Move Robot into Position** screen appears displaying robot arm movement.
3. Light-press and hold the 3PE button.



4. Now, on PolyScope, press and hold Automove, for the robot arm to move to the start position.
   The Play Program screen appears.
5. Maintain a light-press on the 3PE button to run your program.
6. Release the 3PE button to stop your program.



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9. Compliance

Description	The recommendations, certificates and declarations, below, are valid for Universal Robots Teach Pendant with integrated 3-position enabling (3PE) device.
Shipping Materials	As stated by our suppliers, Universal Robots e-Series robots shipping materials comply with the ISPM-15 requirements for producing wood packaging material and are marked accordingly.
Certification of Quality	Universal Robots is certified compliant with the standard ISO 9001:2015 by Bureau Veritas. Universal Robots e-Series robots undergo continuous internal testing and end-of-line test procedures. UR testing processes undergo continuous review and improvement.
Third Party Certification	Universal Robots Teach Pendant with 3-Position Enabling (3PE) Device is certified compliant with the standard EN ISO 10218-1.

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