

Olis Connect User Manual

Universal Robots

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1 Description of Olis Connect

1.1 Introduction

Olis Connect is an integrated hardware/software solution that enables teleoperation of robots over a secure internet connection. With its low-latency video feeds and intuitive arm control, Olis Connect goes beyond what is possible using existing remote desktop/VNC technologies. By removing the constraint of on-site support, teleoperation reduces operational costs, increases equipment utilization and improves profit margins.

Olis Connect enables Teleoperation as a Program Step that can be used in any existing Polyscope program in less than 5 minutes. This facilitates rapid inspection and recovery from failures in your robot programs, even when there is no staff on site. It also enables remote human supervision for the most critical process steps.

1.2 Features

Olis Connect includes a suite of advanced features that enhance remote monitoring and management of your UR robots:

1. Manual Teleoperation of your UR arm: [section 5 \(Manual Teleoperation\)](#)
2. Remote UR program management: [subsection 4.5 \(Managing UR Programs\)](#)
3. Automatic email video notifications: [subsection 4.7 \(Automatic Email Notifications\)](#)
4. Remote VNC access to the UR Pendant: [subsection 3.7 \(UR Pendant VNC Setup\)](#)
5. Custom teleoperation control modes using TCP's and Feature Points: [subsection 5.2 \(Using Robot Control Modes\)](#)

1.3 Hardware

1.3.1 Olis Connect IPC

The Olis Connect IPC is an Industrial PC physically located close to the robot. The Olis Connect IPC interfaces directly with the robot and cameras. A fanless IPC is also available upon request.



Figure 1: Olis Connect IPC

1.3.2 Supported Robots

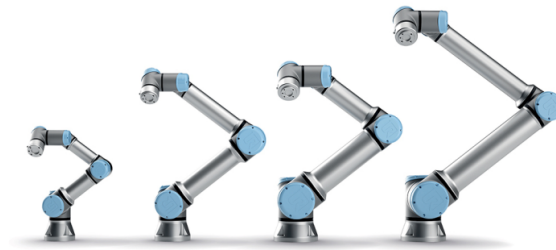


Figure 2: Universal Robots

Olis Connect currently supports the UR3, UR5, UR10 and UR16 for both CB series and E Series.

Supported Polyscope versions: 5.6+ (e-series) and 3.12+ (CB)

1.3.3 Supported Tooling



Figure 3: Robotiq Grippers

Olis Connect natively supports the Robotiq 2F-85 gripper and Robotiq Hand-E Adaptive gripper. Other tooling can be controlled through digital IO and robot programs.

1.3.4 Supported Cameras



Figure 4: Supported Basler Camera



Figure 5: Supported Logitech C920 PRO HD Webcam

Olis Connect currently supports up to 3 USB cameras which should be plugged directly into the Olis Connect IPC USB 3.0 ports.

Officially supported cameras:

- Basler ace acA1300-200uc Color USB 3.0 Camera
- Logitech C920 PRO HD

Note most standard USB cameras will also work.

1.3.5 Supported Gamepads



Figure 6: Supported Xbox One Controller

Olis Connect currently supports Xbox One compatible controllers.

1.4 Network Configuration Overview

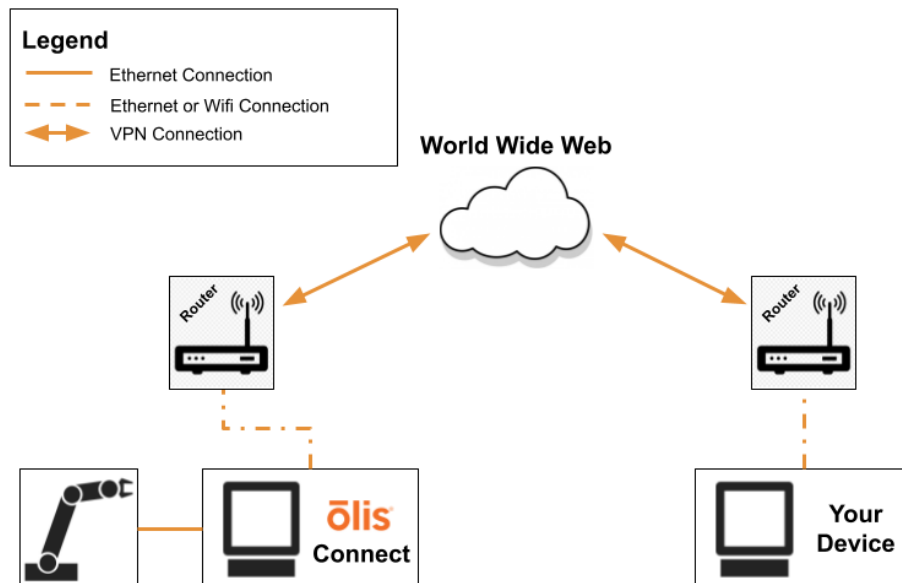


Figure 7: Suggested network configuration

The Olis Connect IPC and UR robot need to be on the same local network or connected directly with an Ethernet cable.

The Olis Connect webpage can then be accessed from another device on the local network or through a VPN. If accessing locally an internet connection is not required.

Olis Connect is 100% edge hosted which means there are no cloud servers storing your

data, the webserver is running locally on the Olis Connect IPC.

Below, [section 3 \(First-Time Setup\)](#) will walk you through setting up your Olis Connect hardware and connecting to a VPN to enable remote operation.

2 *Safety*

This chapter contains important safety information, which must be read and understood by the integrator before the robot is teleoperated for the first time.

The UR Manual provides excellent information and guidance around safety. To conform to good safety practices the integrator must ensure that the applicable safety laws and regulations are observed and that any safety hazards in the robot application are eliminated. This includes:

- Performing a risk assessment,
- Adding safety devices,
- Setting appropriate software settings,
- Validating that total system is designed and installed properly

Olis Connect has two basic modes: Monitor mode and Operate mode. Monitor mode supports passive monitoring of video feeds and robot displays while Operate mode (if available) supports direct robot control. It is essential that the integrator set the system up such that operation is safe in both Monitor mode and Operate mode.

3 First-Time Setup

3.1 Overview

A quick first-time setup is required to enable remote monitoring and/or operation of your robot with Olis Connect.

First-time setup achieves the following:

- Sets up the required hardware.
- Pairs your Olis Connect IPC with your robot.
- Optionally sets up a VPN to enable remote operation.

3.2 Hardware Setup

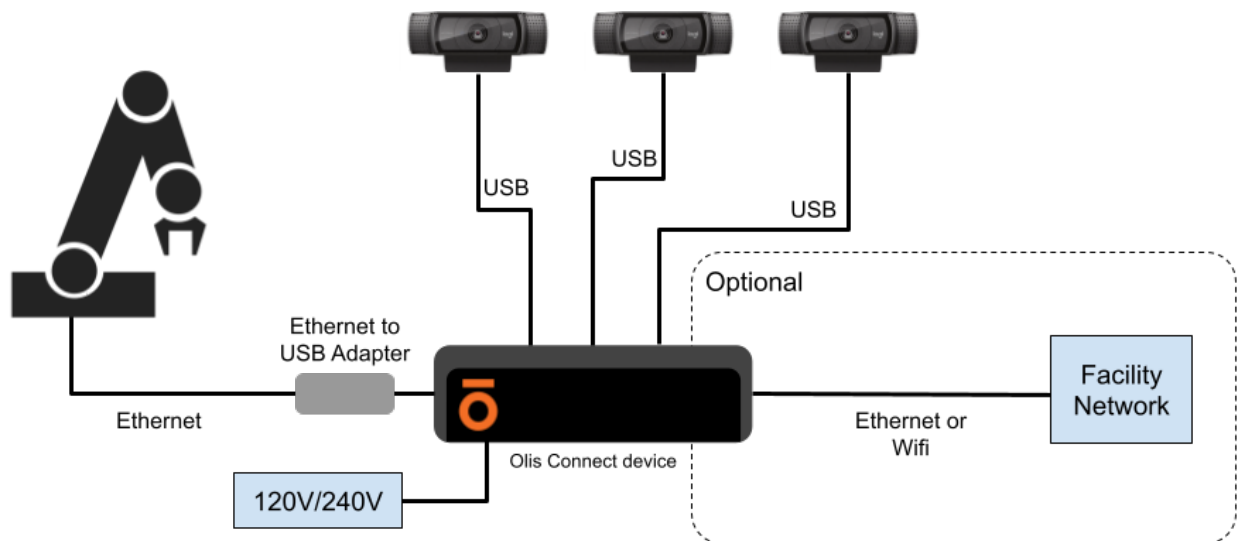


Figure 8: Standard hardware connections

Note it is not necessary to plug a monitor, keyboard or mouse into the Olis Connect.

3.2.1 Power

Power on the robot and Olis Connect IPC.

1. Olis Connect IPC: Connect the included power adapter and plug it into 120/240VAC power.
2. UR Robot: Power on following the standard setup procedure

3.2.2 Cameras

1. Position cameras using the supplied tripods and/or wrist mounting hardware. Camera positions should be configured in the most practical way for your application. Olis generally recommends a 'first-person' camera mounted on the wrist, a 'third-person' camera that shows the whole arm and one camera zoomed in on an area of interest.
2. Connect USB cameras directly into the Olis Connect IPC's blue USB3.0 ports.

3.3 Network Configuration



Figure 9: Olis Connect setup page. This page is only available when the USB stick is plugged in.

Olis Connect has a setup tool that can be used to setup and troubleshoot the Olis Connect network configuration.

3.3.1 Setup Procedure

1. Setup hardware as shown in [Figure 9](#).
2. Power on Olis Connect IPC and the robot.
3. Plug the USB stick into the Olis Connect IPC. This enables a Wi-Fi access point on the Olis Connect IPC

4. Using a laptop, tablet or phone, connect to the access point Wi-Fi network named 'olis-connect-xxx' with password 'olisrobotics'.
5. In a Chrome browser, enter '192.168.12.1' and you will be greeted with the Olis Connect setup page.
6. Follow the guided setup procedure to configure the network for the standard network configuration. For alternative configurations use the manual configuration option.
7. When the setup is complete you will be prompted to unplug the USB key and access the Olis Connect over your local network.

3.3.2 UR Pendant Network Configuration

For the standard network configuration, as shown in [Figure 9](#), you will need to set a static IP address on the UR robot.

Connect one end of the Ethernet cable to the UR robot and the other end to the USB dongle and plug the USB dongle into the Olis Connect IPC. Next, to configure a static IP address, use the UR Pendant to:

1. Navigate to the "Network Configuration Page" of the UR Pendant
2. Select "Static Address" as your network method
3. Set the "IP Address" to 192.168.0.2
4. The "Subnet mask" field and "Default gateway" should both be set to 0.0.0.0
5. The "Preferred DNS server" should be set to 8.8.8.8
6. Click "Apply" and confirm that the network is connected. You may need to reboot your UR robot for the network settings to take effect.

3.3.3 Pairing your Olis Teleop URCap and Olis Connect IPC

The Olis Connect IPC and Olis Teleop URCap need to be paired using the installation panel on the UR pendant. [Figure 10](#) below shows an example of a successful pairing.

1. Download the Olis Teleop URCap from <https://olisrobotics.com/downloads> and put it on a USB drive.
2. Install the Olis Teleop URCap on the robot and restart the robot.
3. On the UR pendant navigate to **Installation | URCaps | Olis Teleop**
4. Select the Olis Connect IPC's IP address from the automatically discovered list or enter it manually

- **E.g. UR and IPC are on the same local network:** UR IP is 192.168.1.45, Olis Connect IPC IP is automatically detected as 192.168.1.87
 - **E.g. UR and IPC are connected directly using an Ethernet cable:** UR IP is 192.168.0.2, Olis Connect IPC IP is set manually to 192.168.0.100
5. **Save the installation state so that the robot stays paired when you reboot the robot or reload the installation state.**

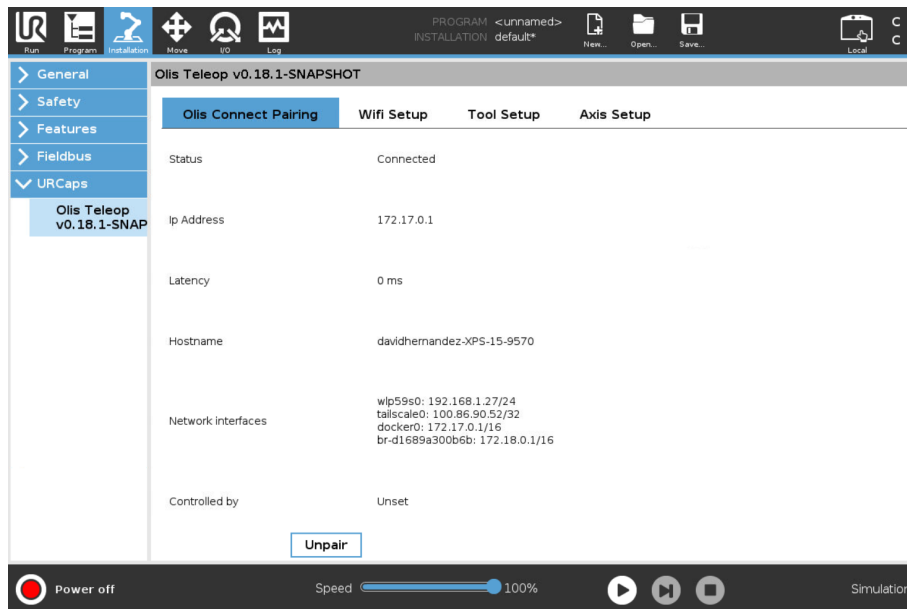


Figure 10: Olis Teleop URCap paired to robot.

3.4 Tooling Setup

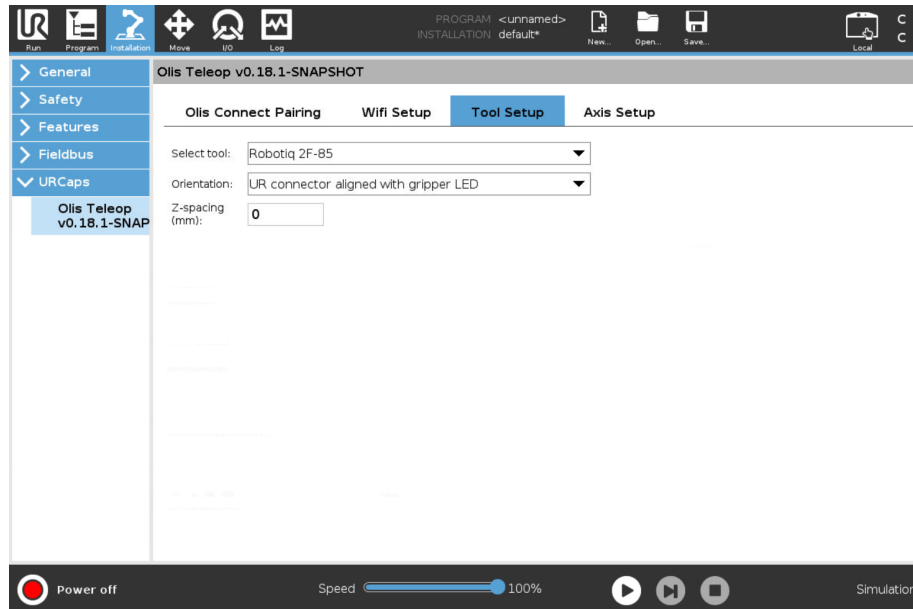


Figure 11: Olis Teleop URCap configuring tooling selection.

Navigate to the Olis Teleop URCap under the Installation page of the UR Pendant. Under the 'Tool Setup' tab, select the tooling configuration for your system.

3.5 Accessing the Olis Connect Website

You can access the Olis Connect website by simply opening a browser and entering the IP address of your Olis Connect IPC. The IP address of the Olis Connect will be displayed during the setup process. When the setup process is complete you can unplug the USB stick and connect to Olis Connect over your local network.

After entering this IP address in a browser on your device (PC, laptop, tablet, etc...) you will see the Olis Connect website as show in [Figure 12](#).

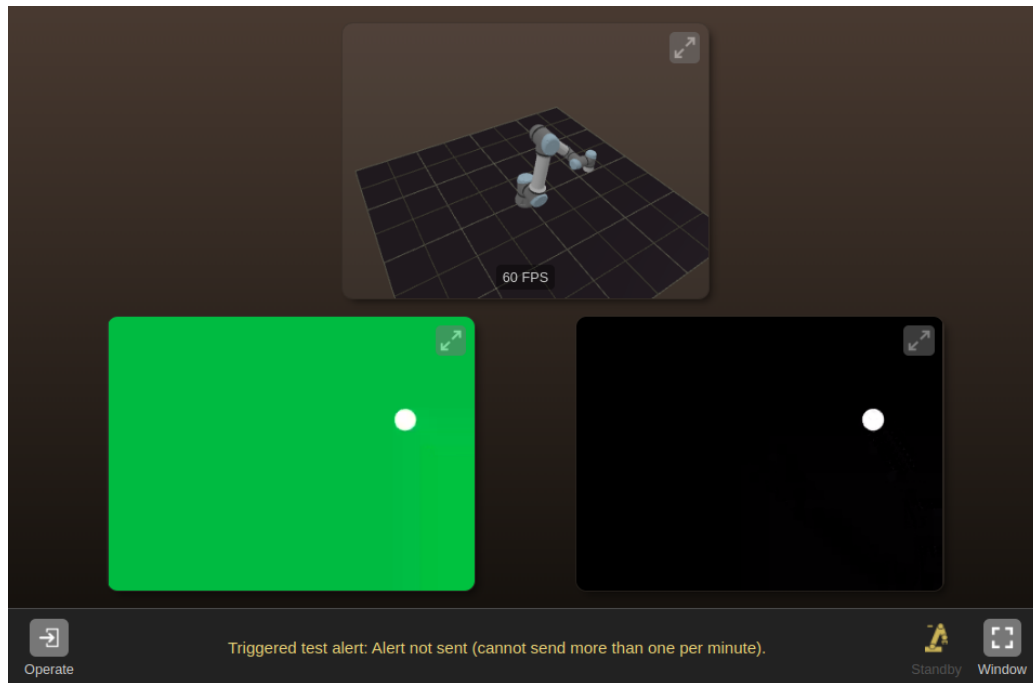


Figure 12: An example of the Olis Connect website landing page.

3.6 VPN Setup (Tailscale)

3.6.1 Overview

You can enable remote operation with Olis Connect through the use of a VPN. In order to do so, you need to connect both your device and the Olis Connect IPC to the same VPN.

Olis Connect provides integrated support for a third-party VPN solution called Tailscale. Tailscale is secure, fast and easy to set up and manage, though Olis Connect will work with most VPNs.

3.6.2 Creating a Tailscale VPN and using the Olis Connect Website Remotely

1. Create a Tailscale Administrator Account at <https://tailscale.com/>
2. Add your Olis Connect to the Tailscale VPN
 - Navigate to the Olis Connect website and take control of the robot, as described in subsection 3.4 (Accessing the Olis Connect Website)
 - Open your tailscale admin page at <https://login.tailscale.com/admin>, navigate to the 'Settings' tab and generate a one-off key, as shown in [Figure 13](#)
 - On the Olis Connect website, navigate to the Setup panel ([Figure 14](#)), enter your Tailscale authentication key, and press 'Connect'.
 - Your Olis Connect IPC should now be listed as 'Connected' in the Tailscale admin page under the 'Machines' tab with an associated IP address. This is the IP address you will use to remotely connect to the Olis Connect IPC from an off-site network.
3. Add your device to the Tailscale VPN
 - Follow the instructions at <https://tailscale.com/download> to install and connect to your Tailscale VPN from your device
 - Once your device is connected to the Tailscale VPN, you simply need to open a browser window and enter the Tailscale IP address of your Olis Connect IPC to open the Olis Connect website

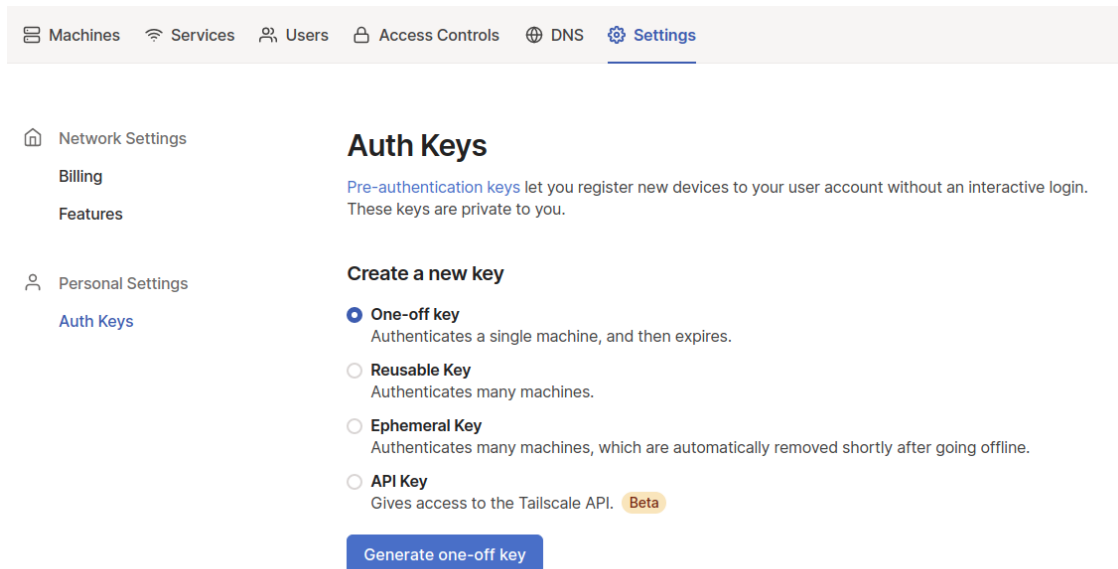


Figure 13: Generating a one-off authentication key at <https://tailscale.com/> to add a new machine to a VPN.

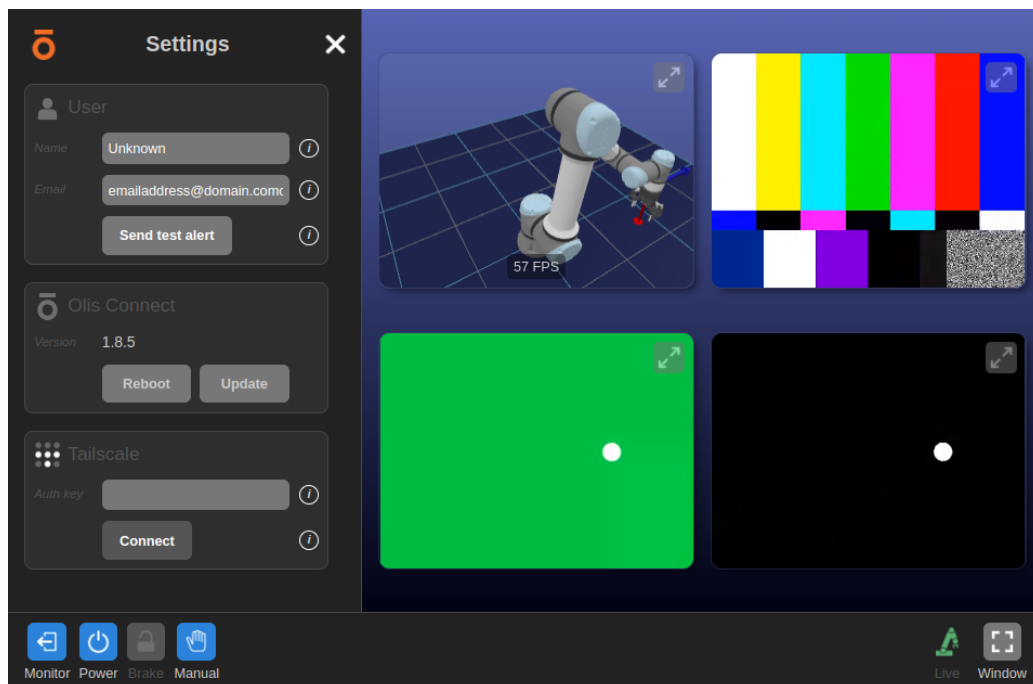


Figure 14: The Olis Connect settings page.

3.6.3 Giving Another User Remote Access to your Robot

Create a Tailscale administrative account for each user and have the main device administrator share the Olis Connect IPC with the other users using Tailscale's node-sharing feature (<https://tailscale.com/kb/1084/sharing/>).

Tailscale supports a wide range of network configuration options, such as purchasing a subscription to add more administrators and devices to your VPN. For most cases, further configuration is not required. Refer to Tailscale's online documentation if you want to explore advanced VPN configuration options.

3.6.4 Tailscale Tips & Tricks

- If you're using a mobile device, you can copy the IP address from your Tailscale app and paste it in your web browser.
- Sometimes the "Magic DNS" setting can cause your mobile device(s) to lose connection to the internet when connected to a Tailscale VPN. If this happens, simply disable this setting to regain connection.

3.7 UR Pendant VNC Setup

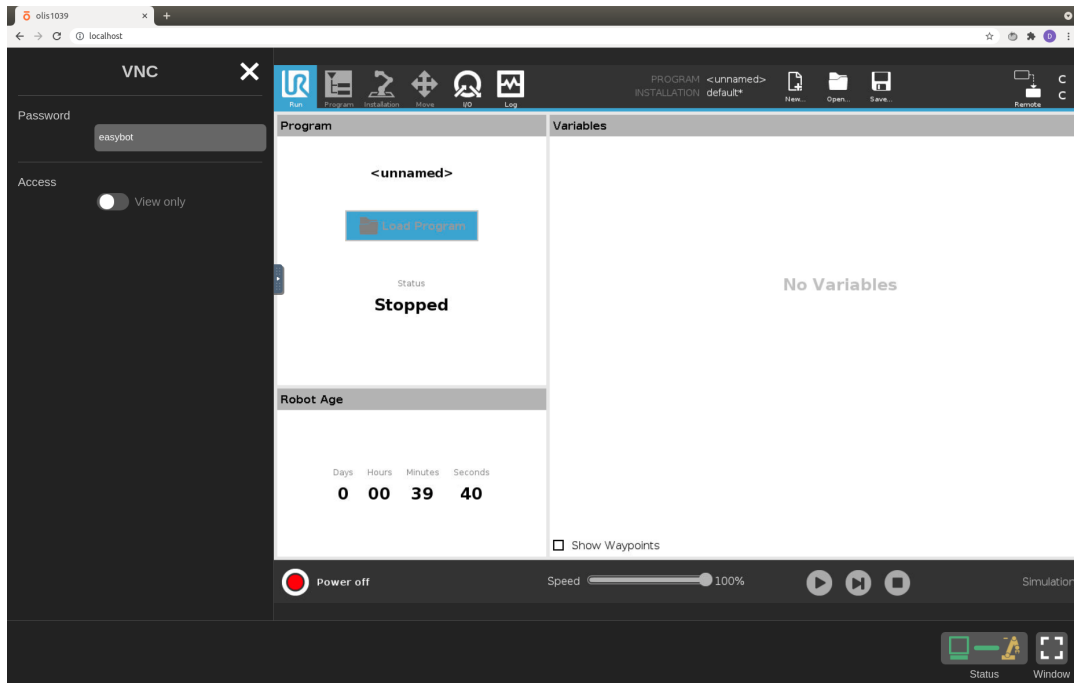


Figure 15: Example of a UR Pendant VNC enabled by Olis Connect.

Olis Connect enables remote VNC access to your UR Pendant. This gives you full access to the capabilities of the UR Pendant from anywhere in the world. Setting up the VNC on your robot requires a quick installation of the VNC server on the UR Pendant using a "Magic File". Once installed, the VNC defaults to View-Only mode for safety reasons, which can be disabled from the Olis Connect Website.

3.7.1 Installation

1. Download the VNC Server installation "Magic File". The latest "Magic File" can be downloaded from the Olis website <https://olisrobotics.com/downloads>.
2. Extract the contents of the downloaded ZIP file into a USB stick and, if needed, edit the password in the file "urmagic_x11vnc.sh". The default password is "easybot". The "urmagic_x11vnc.sh" script and all other contents should be in the root directory of the USB stick.
3. Plug the USB into the UR Pendant and wait for a message on the Pendant screen confirming successful installation.
4. Your UR Pendant is now set up for remote VNC access.

3.7.2 Usage

Use the Main Menu to navigate to the 'VNC' page. Sometimes, the VNC client will take a moment to start up and you may need to press a 'Connect' button after a few seconds have passed. The VNC client will also restart and take a moment to reconnect when you toggle the View-Only mode.

Disabling VNC View-Only mode will launch a dialog confirming that you want to disable View-Only mode. Only disable View-Only mode if you understand the associated safety risks.

If you set up your VNC with a password, you can enter the password in the 'Password' entry box. This will automatically log in to the VNC and prevent you from having to enter it each time you open the VNC page.



Toggle VNC View-Only

Toggle UR Teach Pendant VNC View-Only mode

4 Olis Connect Basics

4.1 Overview

This section provides an overview of the basic features of the Olis Connect software. The instructions in this section assume you have completed the instructions in [subsection 3.3 \(Network Configuration\)](#) and are using the Olis Connect website on your device, as shown in [Figure 16](#)

4.2 Power on Robot

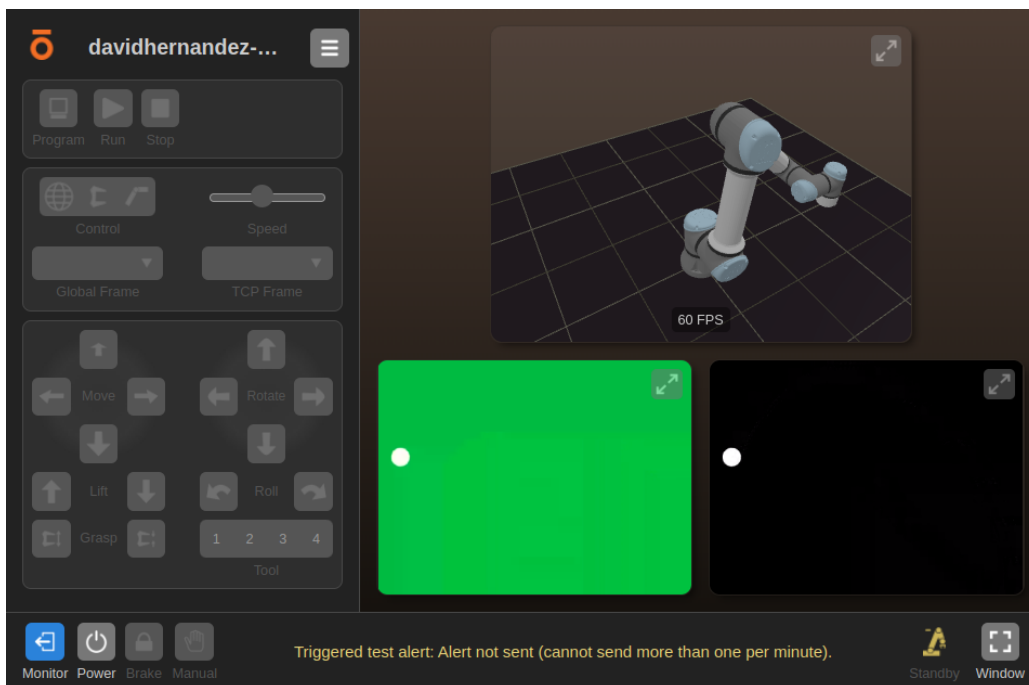


Figure 16: Ready to power on robot.

Powering on the robot is the first step towards running a UR Program or using manual teleoperation. This is equivalent to powering on the robot using the UR Pendant. The background of the Olis Connect website will turn blue, indicating that the robot is powered on.



Power On/Off Button

Powers the robot on or off. Ensure area around arm is clear before enabling.

4.3 Unlock Robot

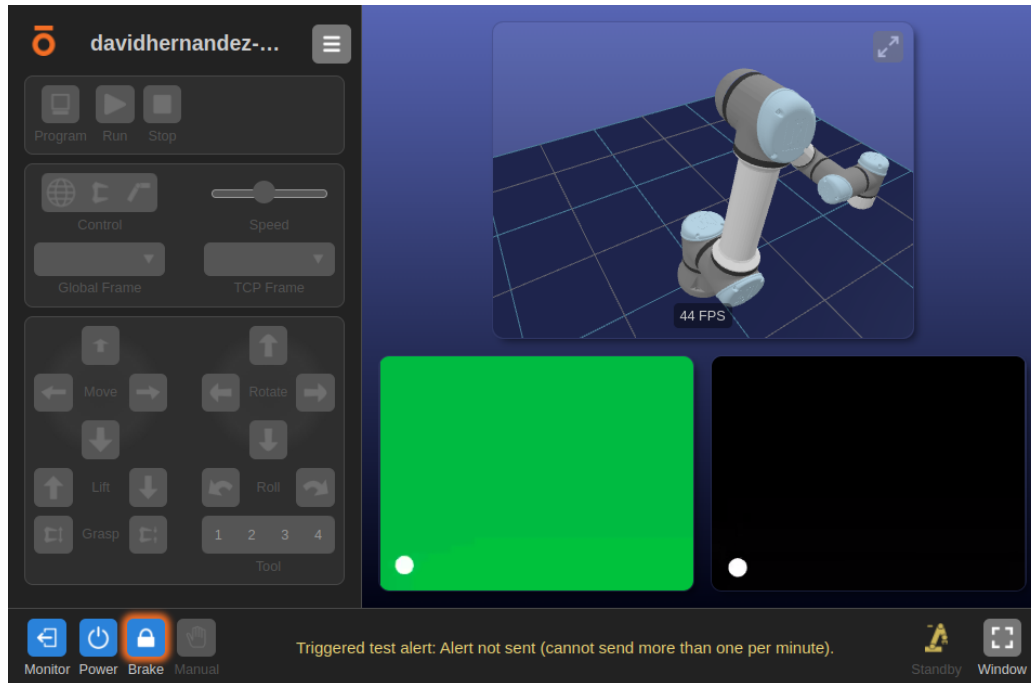


Figure 17: Ready to unlock the robot.

Once the robot is powered on, it can be unlocked by pressing the unlock button.



Brake On/Off Button

Enable/Disable the UR joint brakes. This must be done after powering on the robot or after a protective stop is triggered before you can run a UR Program or use Manual Teleoperation.

4.4 Start Manual Teleoperation

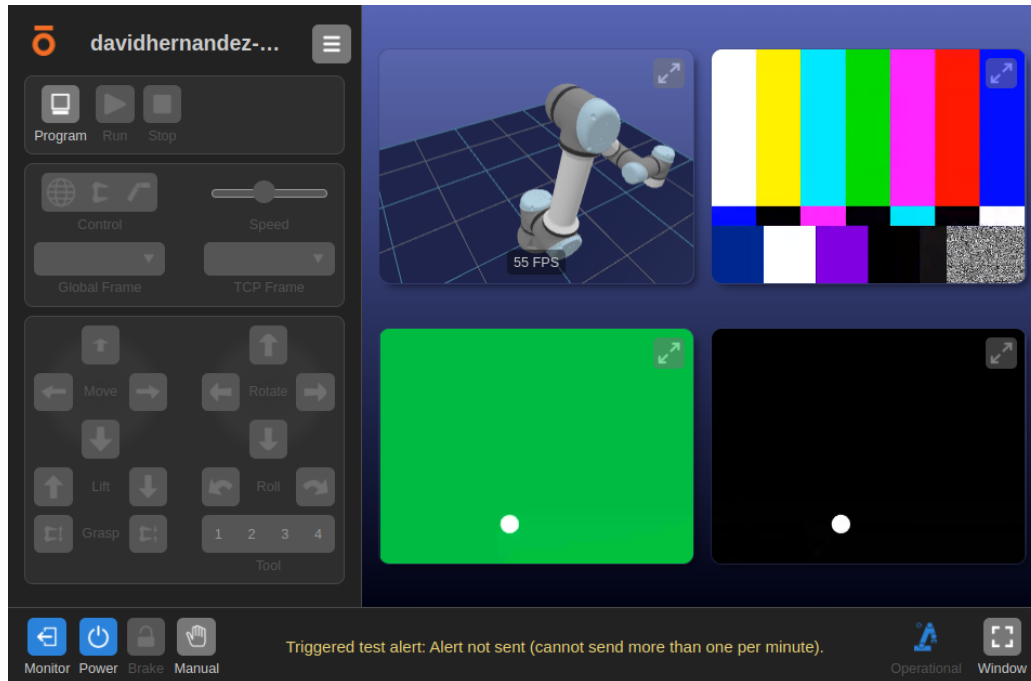


Figure 18: Robot in standby, ready to run Manual Teleoperation or a UR Program

The operator can take manual control of the robot by clicking the 'Manual Teleoperation' button.

See [section 5 \(Manual Teleoperation\)](#) for more information on how to use manual teleoperation.



Manual Teleoperation

A shortcut for starting Manual Teleoperation.

WARNING: This will stop any currently running UR Program.

4.5 Managing UR Programs

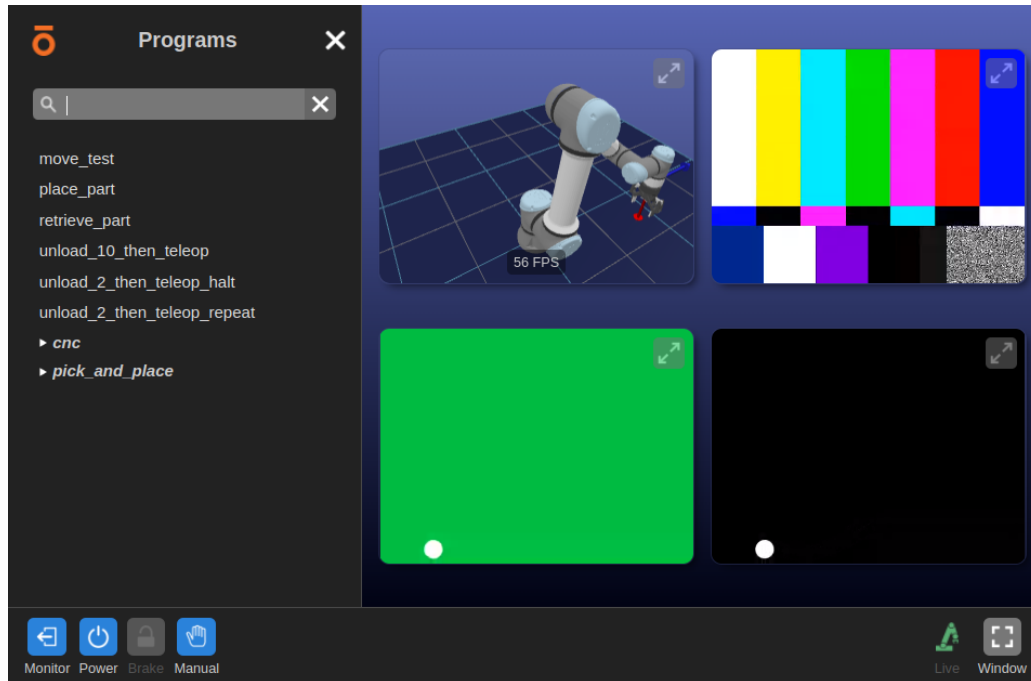


Figure 19: Ready to select UR program.

The 'Polyscope Program Selection' button will display a list of programs on the UR robot that are available to be loaded. Once a program is loaded it can be played, paused or stopped using the buttons shown below.



Polyscope Program Selection

Use this button to select which polyscope program to run.



Run/Resume

Start the selected program, or resume it if paused.



Pause

Pause the running program.



Stop

Stop the running program.

4.6 Using Teleoperation as a UR Program Step

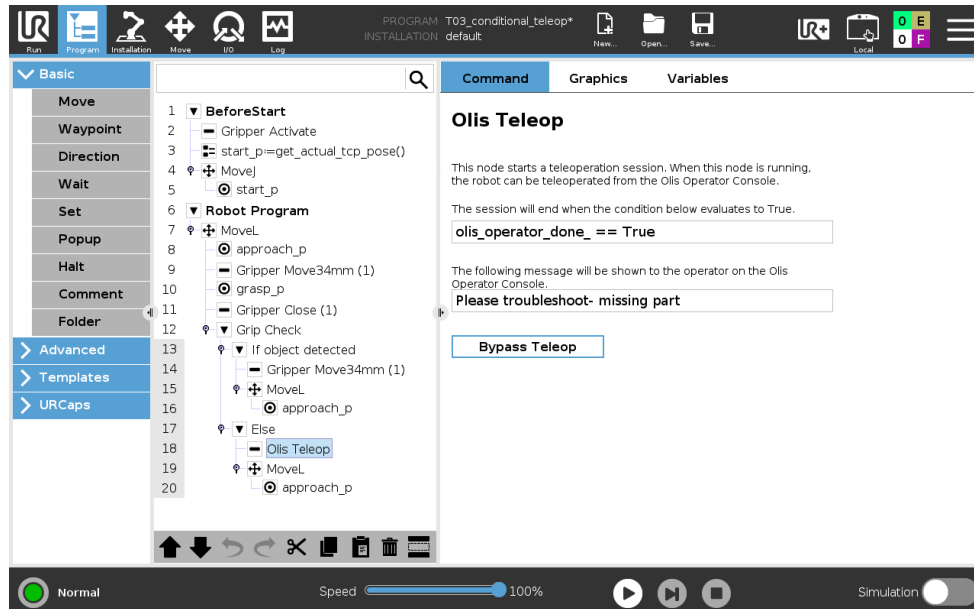


Figure 20: Adding a Teleoperation to a UR Program.

An Olis Teleop step can be added to a UR Program by selecting Olis Teleop under URCaps in the programming view.

When an Olis Teleop step is reached, an email notification (if setup) will be sent out. This notification will include a custom message that you set when adding the Olis Teleop step, as shown in Figure 20. The next person who takes control of the robot will be put into "Manual Teleoperation" mode.

After completing the required teleoperation, the user can resume the running UR Program and the program will continue to the next program step after the Olis Teleop step. This lets you seamlessly integrate Olis Teleop nodes into your UR program, as easily as you would integrate a "Popup" step.

4.7 Automatic Email Notifications

Email notifications include data about what triggered the notification, including video of the robot from the last 30 seconds before the notification was triggered. This provides valuable context that enables you to debug any failure cases in your robot programs and continuously improve your programs to minimize downtime.

To set up automatic notifications, navigate to the "Settings" panel and enter your email after connecting to an Olis Connect IPC, as shown in [Figure 21](#).

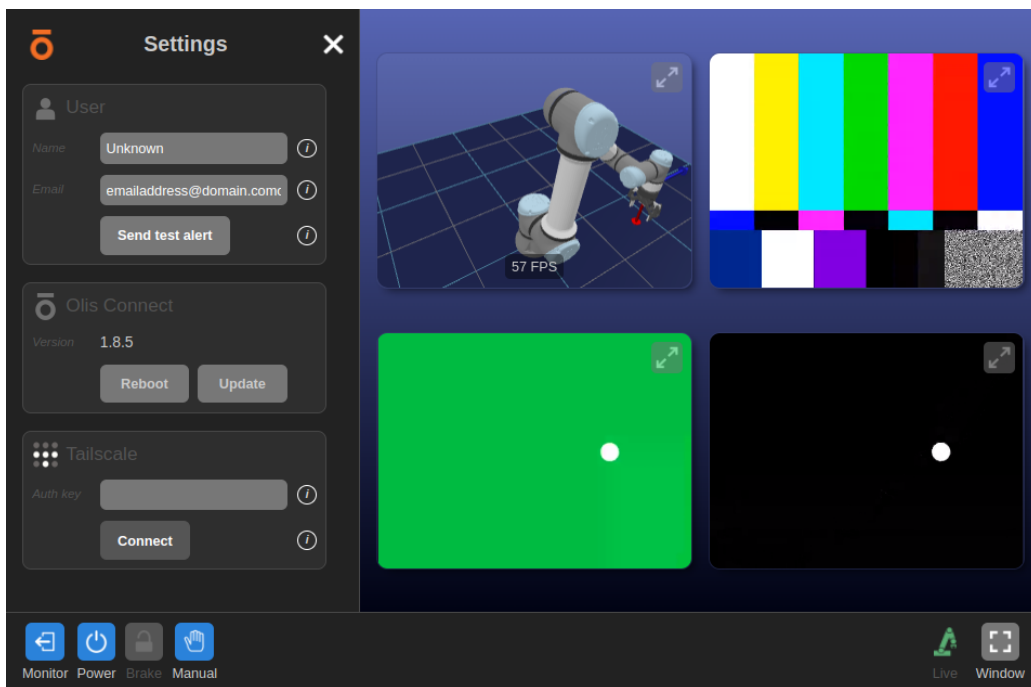


Figure 21: An example of Olis Connect configured for automatic email notifications.

4.8 Tips and Tricks

- **Keyboard & Gamepad Navigation:** Use your keyboard arrows or the "D-pad" on your gamepad to navigate around buttons on the UI. This lets you click buttons and change views without having to use your mouse.
- **Video Feed Zoom & Pan:** Using your mouse, zoom using the scroll wheel and pan using a click-and-drag motion.
- **3D Digital Workspace Zoom & Rotate:** Using your mouse, Zoom using the scroll wheel and rotate using a click-and-drag motion.

5 Manual Teleoperation

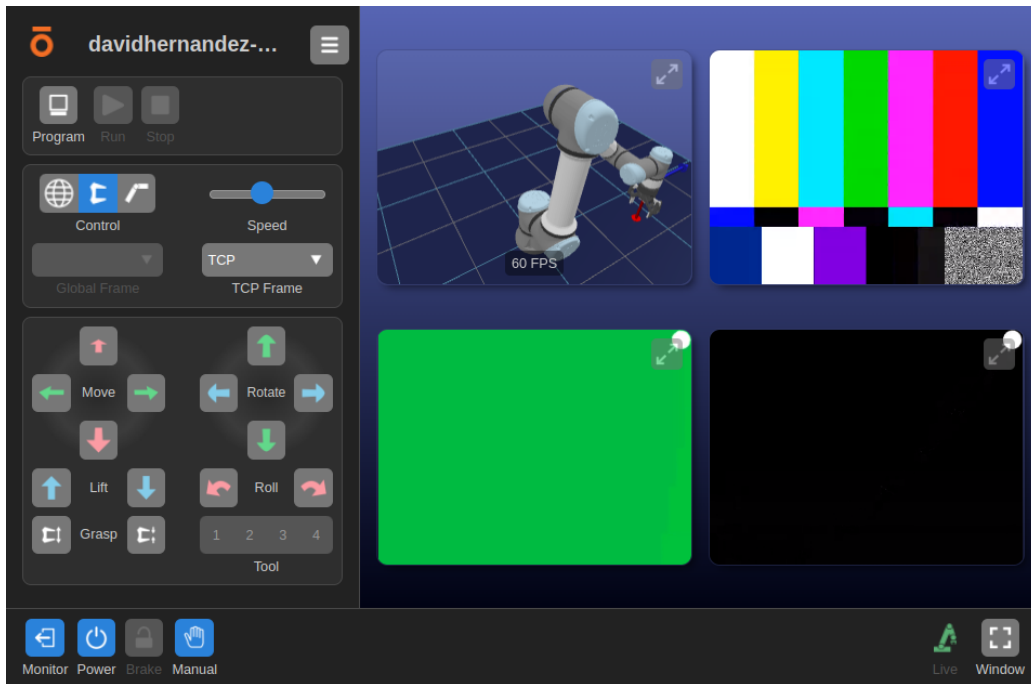


Figure 22: Robot in manual teleoperation mode.

This section explains how to manually teleoperate the robot.

5.1 Input Device Options

Olis Connect supports two input devices for the operator's convenience and preference.

1. **On-Screen Jog Buttons** Allow you to use teleoperation at any moment, even if you're using a device like a tablet. An example of on-screen jog buttons is shown in [Figure 22](#).
2. **Gamepad** A gamepad is often easier and faster to use, but requires you to have a gamepad with you when you want to teleoperate. To use this control mode, simply plug in a gamepad into your device while on the Olis Connect Website.

5.2 Using Robot Control Modes

5.2.1 Overview

Olis Connect defines a selection of control modes which define how the robot moves in response to commands sent from an input device. These control modes provide the pilot

with different ways of controlling the robot to adapt to the task on hand.

The control frames relevant to each control mode are visualized as a red-blue-green coordinate axis in the 3D digital environment. The colors of the jog buttons (for example, in [Figure 22](#)) represent the colors of each corresponding axis of the control frame.

For more information about each control mode and examples of how they are used, refer to [Appendix B \(Teleoperation Control Modes\)](#) in the Appendix.

5.2.2 Control Modes



Global Control Mode

Control position using a fixed reference frame, defined as a “Feature Point” on the UR Pendant.

Control orientation using a selected TCP frame.

The Global Control Mode helps you move in a controlled manner with respect to your robotic workspace, such as when you want to put an object on a shelf directly in front of the robot.



TCP Control Mode

Control position and orientation using a selected TCP tool frame, defined on the UR Pendant.

The TCP Control Mode is useful for driving using the “first-person” perspective of an end-effector (or wrist-mounted camera) and is often the preferred control mode for picking up objects.



Joint Control Mode

Control each joint independently.

This control mode is useful for making large motions quickly and for getting out of awkward arm positions.

6 Updating your Olis Connect Software

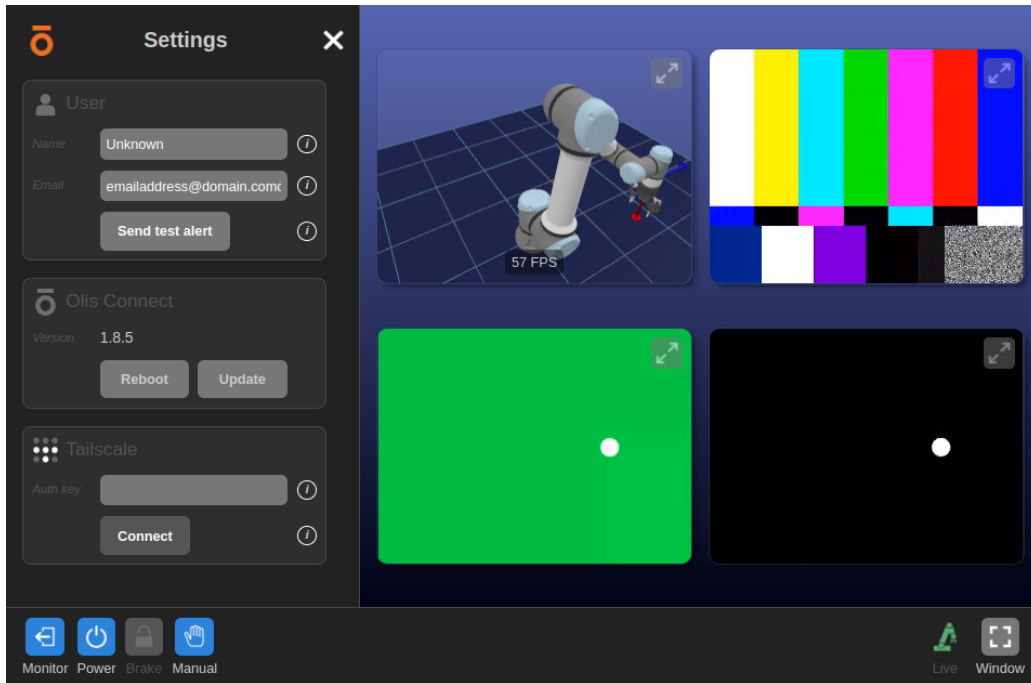


Figure 23: The Olis Connect settings panel. Here you can press "Update" to install any available new version of the Olis Connect software.

To update your Olis Connect software:

1. Ensure that the Olis Connect IPC has internet access.
2. Go to the Olis Connect website from your device.
3. Navigate to the settings panel.
4. Click the "Update" button. After starting an update, the Olis Connect will automatically update, reboot and reconnect. This process can take a couple minutes. After completion, you should verify the updated version.

End-User License Agreement

OLIS Software



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Section 12. Export Control Compliance. You will comply with all applicable export control and sanctions laws and regulations of the United States and any other applicable governmental authority, including without limitation, the U.S. Export Administration Regulations and U.S. sanctions regulations ("Export Control and Sanctions Laws"). You will not, directly or indirectly, export, re-export, transship, transfer, divert or otherwise dispose of any Software or related technology: (i) to any individual, entity, or country prohibited by Export Control and Sanctions Laws, including, without limitation, the prohibition against exports: (A) into, or to a national or resident of, any country subject to a U.S. embargo or similar export restrictions (i.e., Cuba, Iran, Syria, North Korea and Crimea), or (B) to anyone on the U.S. Treasury Department's list of Specially Designated Nationals, the U.S. Department of Commerce's Denied Persons List or Entity List, or other export control lists; or (ii) for any purpose prohibited by Export Control and Sanctions Laws, including, without limitation, nuclear, chemical or biological weapons proliferation or development of missile technology.

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Section 15. Assignment. You may not transfer or assign your rights under this EULA to any third party. Any such transfer or assignment in violation of the foregoing restriction will be void.

Section 16. Governing Law; Jurisdiction. Unless expressly prohibited by local law, this EULA is governed by the laws of the State of Delaware, U.S.A. without regard to any conflict of law principles to the contrary. The 1980 U.N. Convention on Contracts for the International Sale of Goods or any successor thereto does not apply. You hereby irrevocably submit to jurisdiction of the state and federal courts located in Delaware with respect to any proceeding under this EULA or relating to the Product. You will not prosecute any action, suit, proceeding or claim arising under or by reason of this EULA except in such courts.

Section 17. Attorneys' Fees. In any action or proceeding to enforce rights under this Agreement, the substantially prevailing party will be entitled to recover costs and reasonable attorneys' fees.

Section 18. Data. The Product may contain functionality that will transmit data to Olis for Product support and Software update purposes. Olis agrees to use such data in compliance with applicable laws and regulations.

Section 19. Severability. If any provision of this EULA is held by a court of competent jurisdiction to be invalid, illegal, or unenforceable, the remainder of this EULA will remain in full force and effect.

Section 20. Entire Agreement. This EULA sets forth the entire agreement of Olis and you with respect to the Product and the subject matter hereof and supersedes all prior and contemporaneous understandings and agreements whether written or oral. No amendment, modification or waiver of any of the provisions of this EULA will be valid unless set forth in a written instrument signed by the party to be bound thereby.

[end]

Appendix A *Connecting your Olis Connect IPC to a WiFi Network*

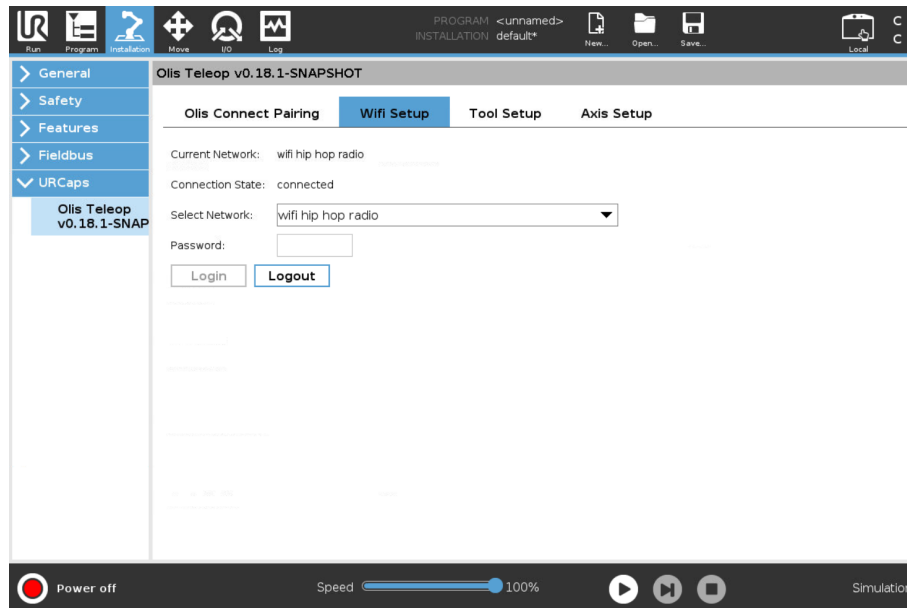


Figure 24: WiFi Setup Page of Olis Teleop URCap.

For a fast and stable connection, we recommend connecting your Olis Connect IPC to your local network by directly connecting it to your router via an Ethernet connection. There are times when this may not be possible. For example, you may have your Olis Connect IPC onboard a mobile robot. In these cases, you can use your UR Pendant to connect to a WiFi network from the Olis Teleop URCap Installation page.

To do so, you must first pair your URCap to your Olis Connect IPC, as described in section [subsection 3.3 \(Network Configuration\)](#). Next, connect the provided WiFi antennas to the back of your Olis Connect IPC. Finally, go to the “WiFi Setup” tab, select the WiFi network that you want to connect to, enter the network’s password (if required) and press “Login”. After a few seconds, the “Current Network” and “Connection State” statuses will let you know if you have successfully connected to the network.

You can now access the Olis Connect Website from any computer that is also connected to that WiFi network by entering the IP address of the Olis Connect IPC into a web browser.

Appendix B Teleoperation Control Modes

Often, an operator will use a combination of control modes while completing different parts of a task. For example, an operator may use Joint Control to get out of an awkward arm position, then use Global Control to get close to an area of interest and then use TCP control to line up with and grasp an object of interest.

B.1 TCP Control Mode

The TCP control mode lets you operate the UR arm from the "perspective" of the gripper, or of a wrist-mounted camera. The TCP control mode can be configured to facilitate teleoperation within your particular hardware setup.

By default, TCP control mode is set up for easy teleoperation with a simple forward-facing gripper mounted on the robot. As its name suggests, the TCP control mode can be adapted to a different setup by creating a TCP on the UR Pendant, and setting that as the new TCP control mode frame, using the button described below. When defining a new TCP frame, the x-axis (red) should point in the desired forward direction of motion, the y-axis (green) should point in the desired left direction of motion and the z-axis (blue) should point in the desired upward direction of motion.

TCP's created on the UR Pendant are automatically detected by Olis Connect software. You can select from a list of currently available TCP's using the "TCP Frame" dropdown menu, as shown in [Figure 22](#). When a TCP is selected as the control frame while using the TCP control mode, it is visualized by a 3D axis in the 3D digital environment. This lets you validate that it's correctly aligned with the 3D model of the UR arm.

For example, you can create two TCP's for a dual gripper, one for each gripper, with the x-axis (red) pointing in the forward direction of the gripper, the y-axis (green) pointing to the left of the gripper and the z-axis (blue) pointing up from the gripper. By selecting the TCP for one of the two grippers, you can more easily pick up an object with that gripper. You will be able to move forward/back, left/right, up/down and rotate from the "perspective" of that gripper.

B.2 Global Control Mode

The Global control mode lets you control the UR arm in a fixed "world" or "base" frame. The Global control mode can be configured to facilitate teleoperation within your particular hardware setup.

The Global control mode lets you translate the UR arm in a global base frame. By default, the global base frame is the "zero" coordinate frame of the robot, which is defined by the UR Pendant. This frame is located at the base of the robot, below the azimuth joint, and

has a z-axis (or "up" direction) pointing up towards the robot. Similarly to the TCP control mode, you can modify this base frame for your particular application. This is done by defining a new "Feature Point" using the UR Pendant and selecting it as the global base frame using the button described below. The rotation of the gripper occurs around the selected TCP frame, as described in [subsection B.1 \(TCP Control Mode\)](#). Again, the x-axis (red) should point in the desired forward direction of motion, the y-axis (green) should point in the desired left direction of motion and the z-axis (blue) should point in the desired upward direction of motion.

"Feature Points" created on the UR Pendant are automatically detected by Olis software. When you are using Global control mode, both the global base frame (defining the direction of translation) and the TCP frame (defining the direction of rotation) are visualized in the 3D digital environment. This lets you validate that both axes are correctly aligned with the 3D model of the UR arm.

For example, if your robot is interacting with objects on a surface that is tilted up at a 45 degree angle with respect to the ground plane, you can define a "Feature Point" that is also tilted at a 45 degree angle. After selecting this "Feature Point" as your global base frame, you will be able to move the UR arm perfectly parallel or perpendicular to the tilted surface, facilitating teleoperation tasks that involve that surface.