3 October 2024

CobotVNC User Manual

www.nutai.com

Overview

Overview

Introduction

What is CobotVNC?

CobotVNC is a URCap software that will allow you to remotely access your UR robot within the same local network through Virtual Network Computing (VNC).

This will allow you to view your robot's teach pendant from any VNC client device, being able to safely control and program your UR remotely, as well as transfer files.

Suitable applications:

- Remote programming
- Remote assistance
- Remote debugging
- Remote backup
- Program deployment
- Robot training

Warning: we are not responsible for any damage caused by misuse of this product. An e-Series robot is used in this manual, so the indicated images or procedures may differ in CB-Series.

Overview

Requirements

Requirements needed to use this URCap satisfactorily:

- Universal Robots e-Series / CB-Series
- PolyScope software 5.3.0[1] / 3.9.0 or higher[2]
- Ethernet connection to a local network
- USB device (only for installation)

[1] From PolyScope 5.10, for correct operation, check that the *Dashboard Server* service is enabled in *Settings* -> *Security* -> *Services*.

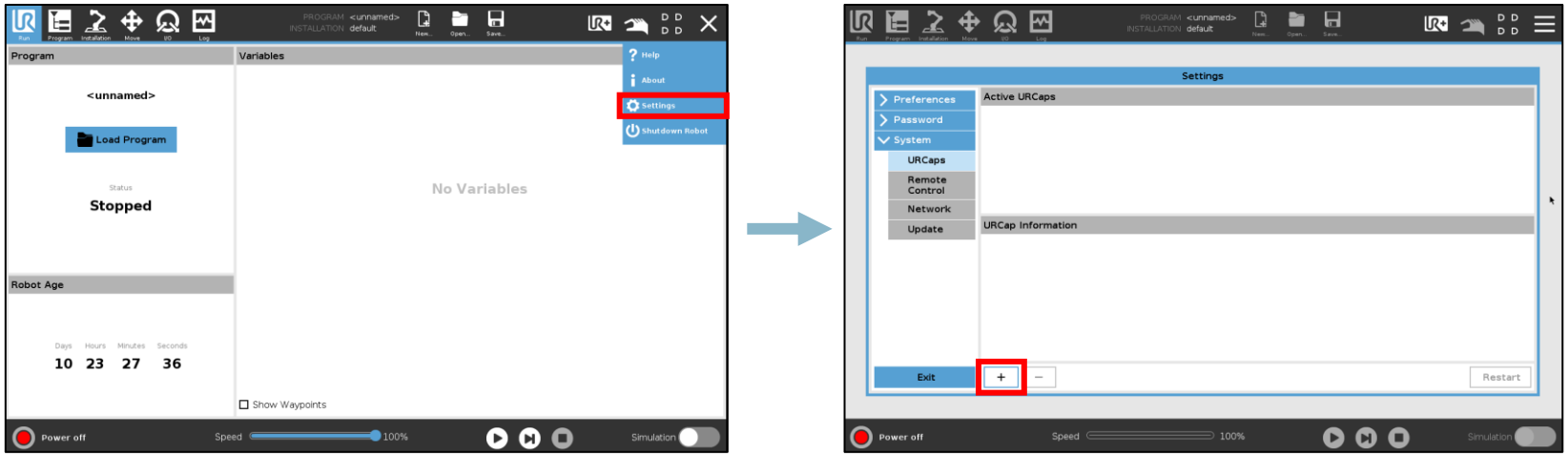
[2] Download and instructions for upgrading PolyScope: https://www.universal-robots.com/download

Overview

Installation

1. Copy the installation file `cobotvnc-{version}.urcap` into a USB device and plug the USB into your robot's teach pendant.

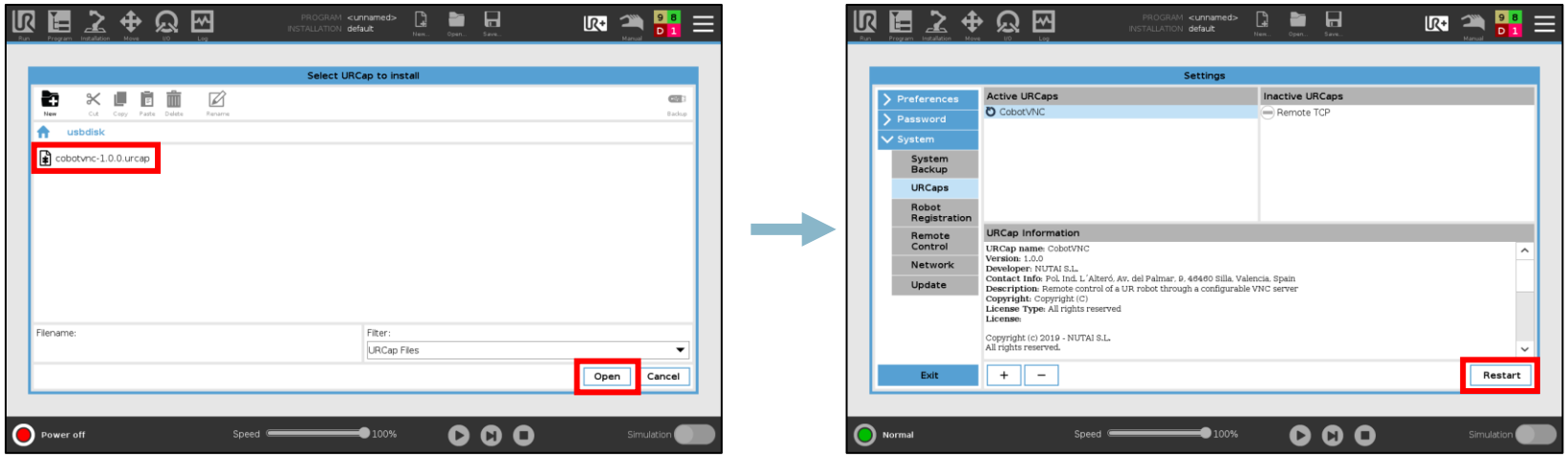
2. Go to *Settings* in the upper right menu, then *System* -> *URCaps* and click on the install button (+).



Installation

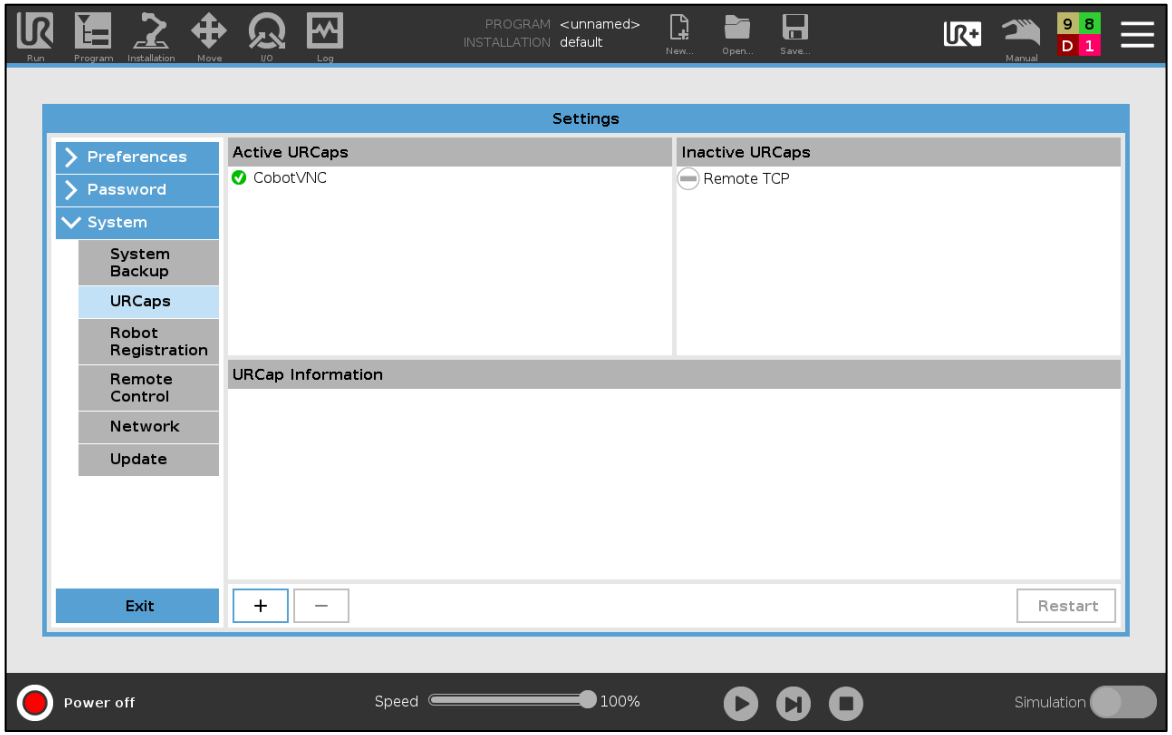
3 Navigate through your USB device, select the URCap and click on the *Open* button.

4 Click on *Restart* button to apply installation.



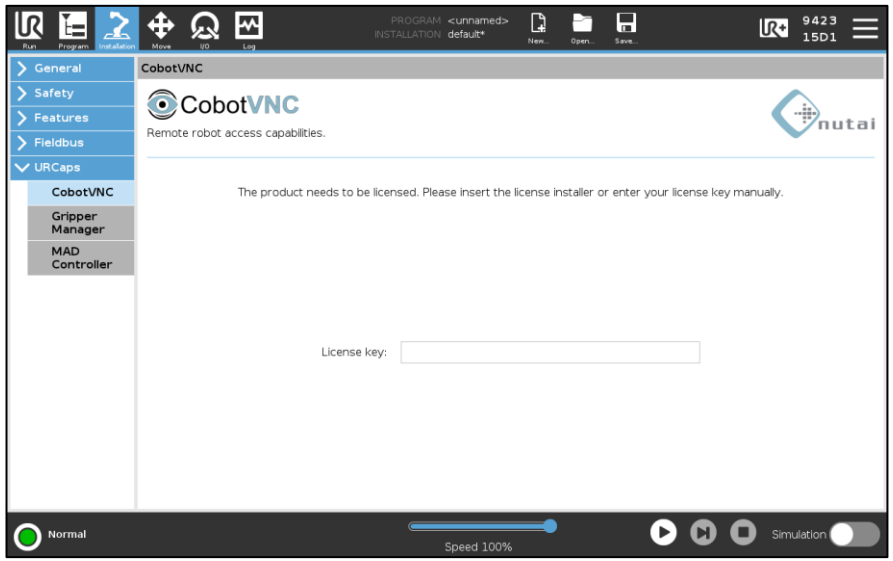
Installation

5 Once restarted, if it has been successfully installed you should see the URCap along with the ✅ mark.



Installation

6 The next step is to license the URCap. To do this, insert the USB with the license installer[1] into the robot's teach pendant. Wait until the green confirmation message is displayed and restart the robot.

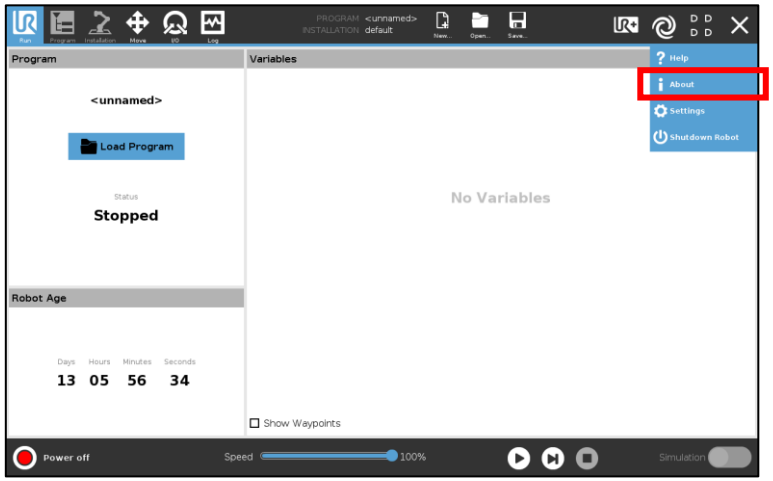


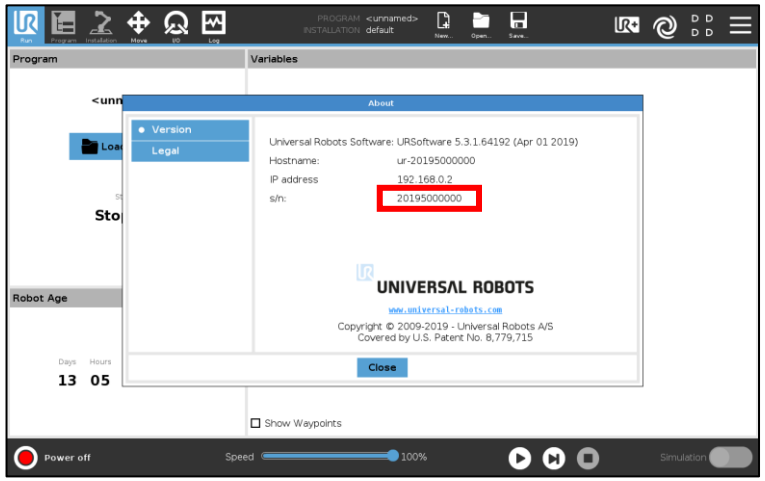
[1] You can also license the product manually by entering your license key.

[2] Make sure to always keep the robot's system date up-to-date to avoid licensing issues.

Installation

How do I request my license key?
Check the serial number[1] of your robot and send it to us by email[2].





[1] We need the serial number of the robot controller, which can be seen following the steps above. Usually, it is the same as the one shown on the robot arm, but you should check it.

[2] Contact us at sales@nutai.com

Installation

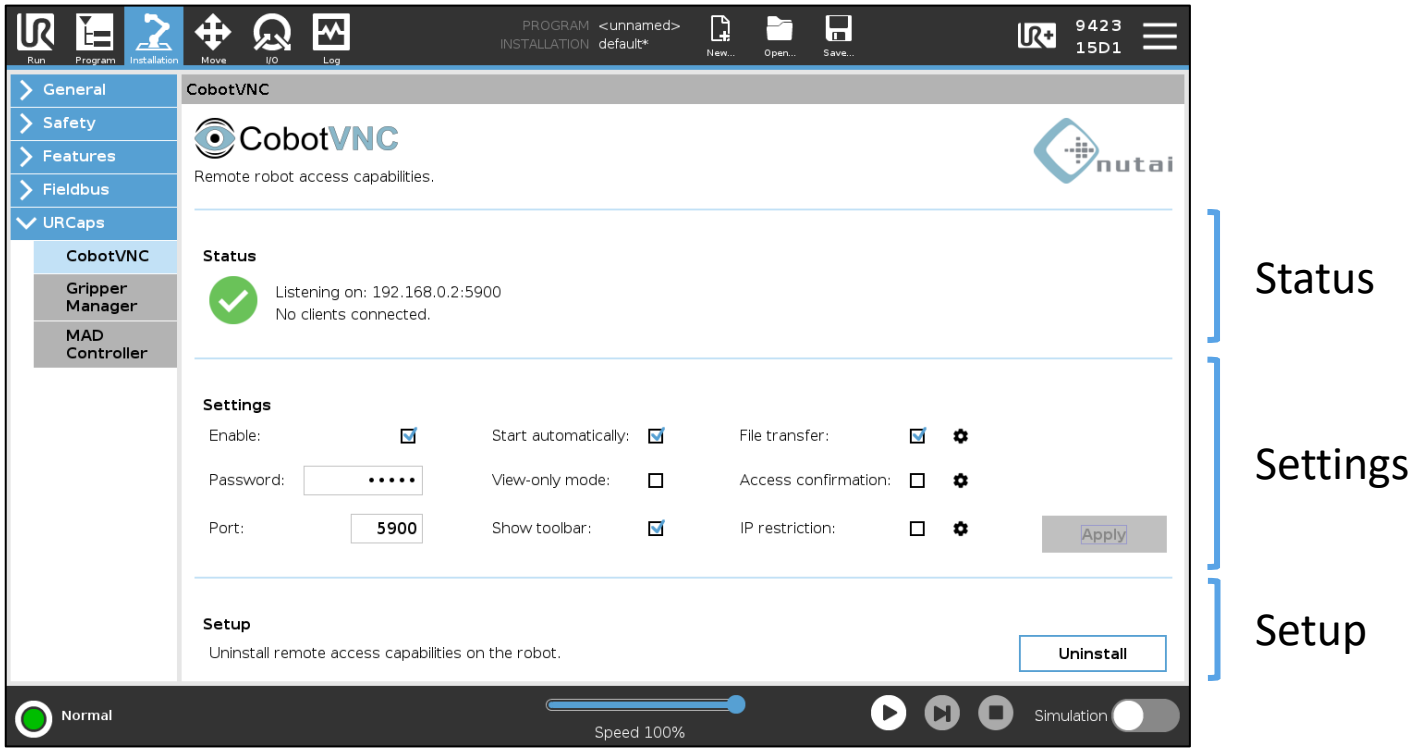
7 Finally, to use CobotVNC you must install the VNC capabilities on the robot. Go to *Installation* -> *CobotVNC* and click on *Install* button.

Note: the installation may take approximately 10-15 seconds to complete.

Overview

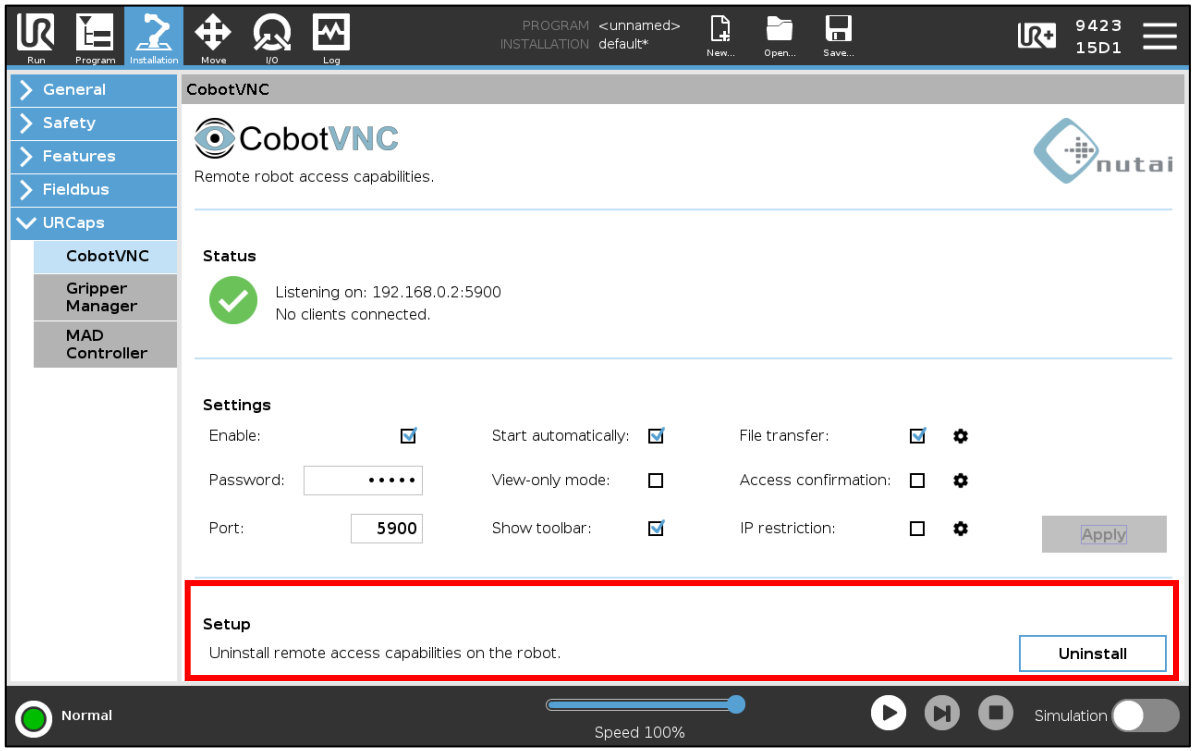
Functionalities

You can configure all the features of the URCap from the installation window.
This window is divided into 3 sections: *Status*, *Settings* and *Setup*:



Functionalities

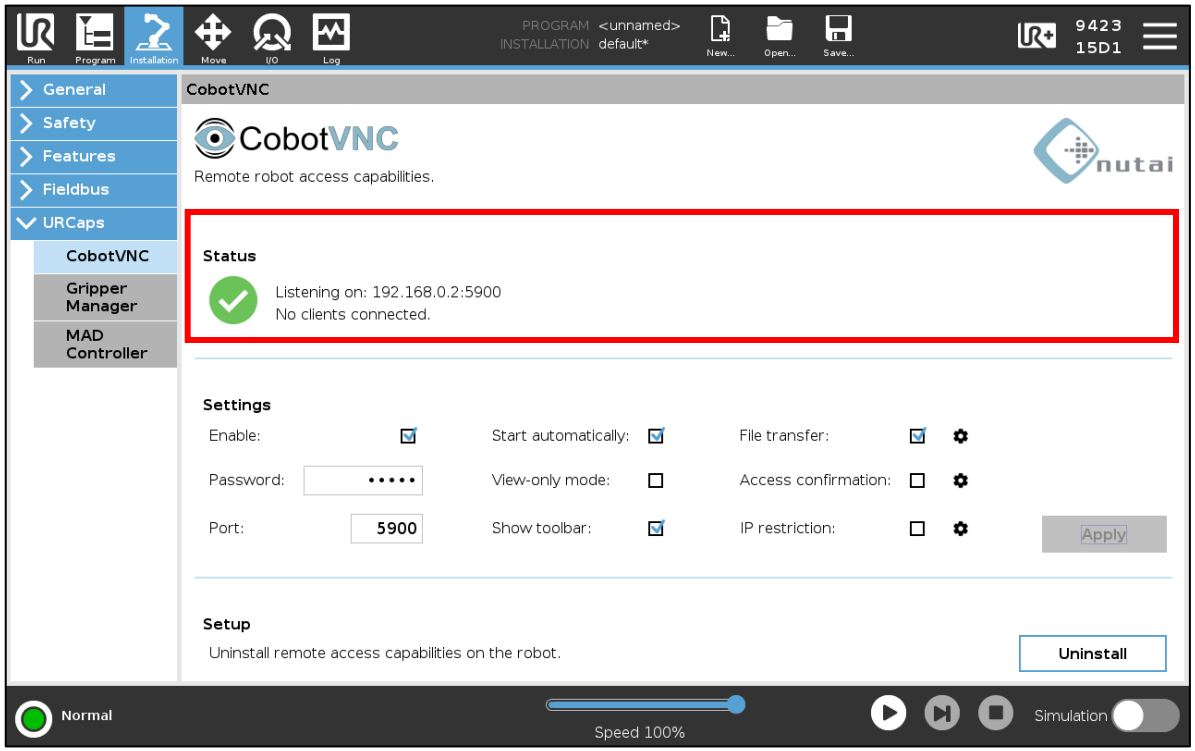
In the *Setup* section you can install or uninstall the necessary software on the robot to make use of the VNC service.



Setup

Functionalities

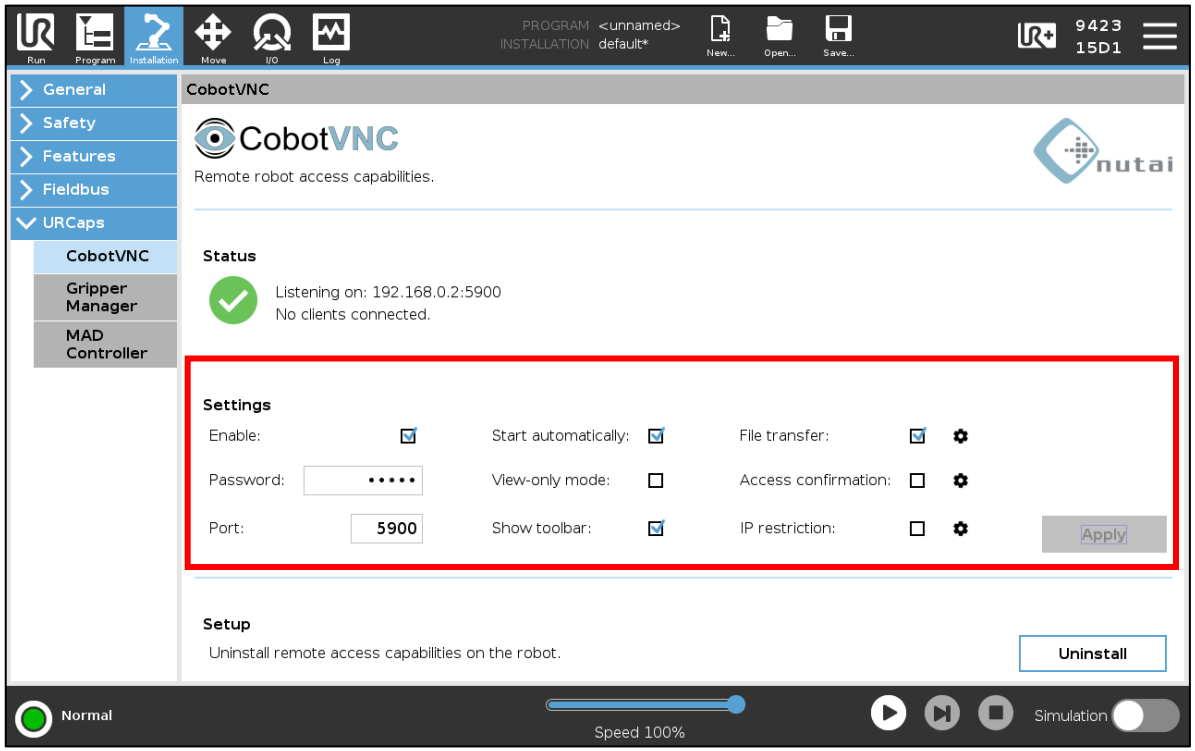
In the *Status* section you can check the status of the VNC service, as well as the IP and listening port and the number of connected clients.



Status

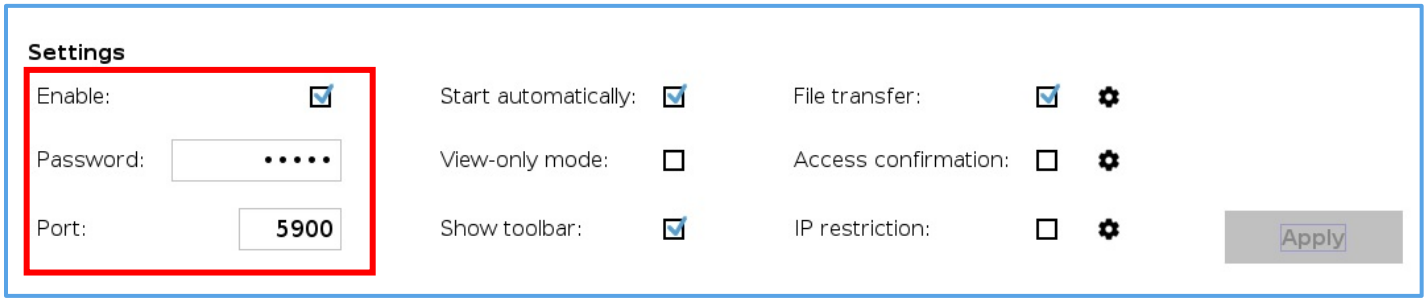
Functionalities

In the *Settings* section you can configure all the functionalities available in the URCap. Each of them is detailed in the following slides.



Settings

Functionalities

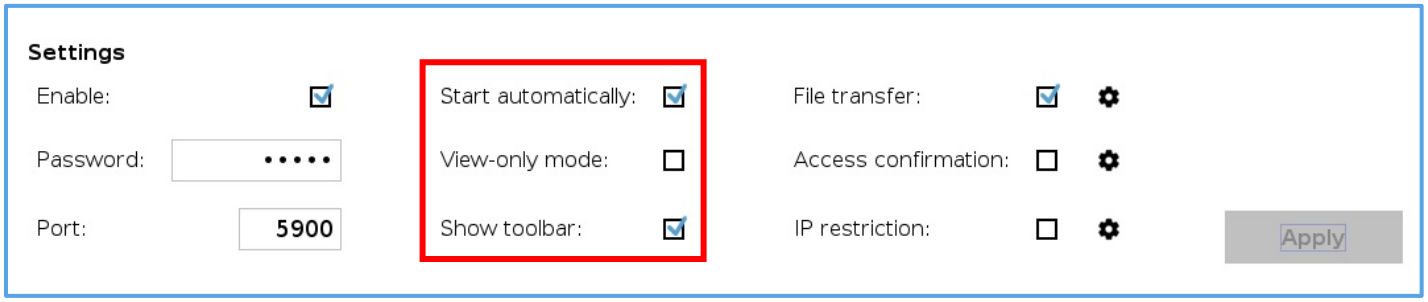


- **Enable**: enable or disable the VNC service.
  - The emergency push button must be released to enable the service

- **Password**: set up an access password.
  - The password is limited to 8 characters
  - The default password is *cobotvnc*
  - It can be left blank, but it is not recommended for safety reasons

- **Port**: server listening port.
  - The default port is the standard for the VNC protocol, 5900

Functionalities

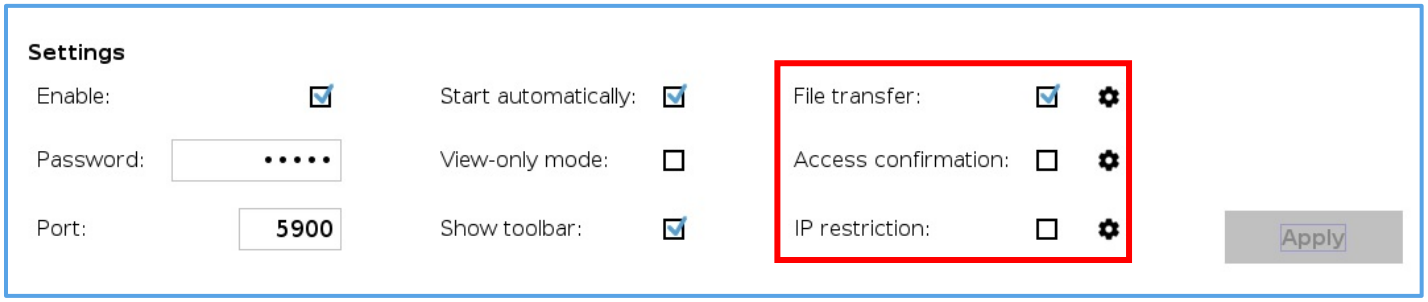


- **Start automatically**: starts the VNC service automatically when the robot is turned on.

- **View-only mode**: disables all interaction of clients with the robot by allowing them to only see the teach pendant.
  - This mode allows the connection of multiple clients

- **Show toolbar**: show or hide the URCap toolbar.
  - The robot must be restarted to apply the changes

Functionalities



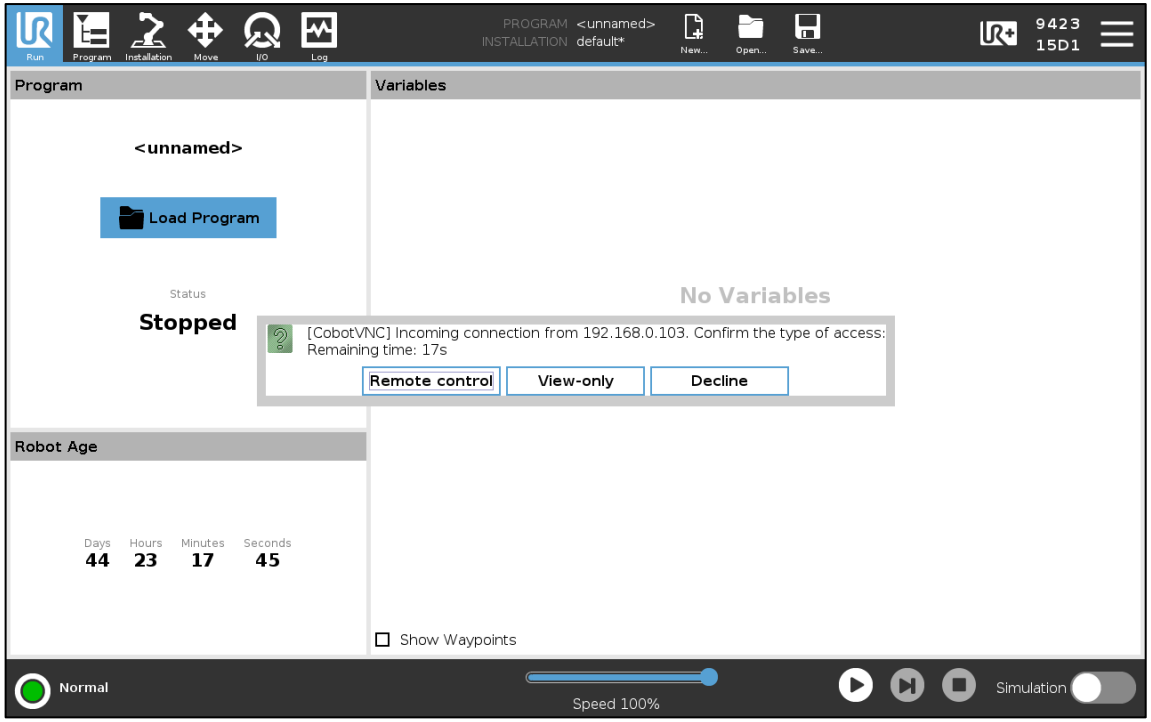
- **File transfer**: allows bidirectional file transfer.
  - You can configure the client software to use: UltraVNC (any version) or TightVNC (version `2.0.X`)
  - File transfer is not supported in view-only mode

- **Access confirmation**: displays a popup to confirm the client access type.
  - Allows you to configure the popup timeout
  - Access confirmation is not supported in view-only mode

- **IP restriction**: limits the clients IP addresses that are allowed to connect.
  - Allows you to configure a list of allowed IP addresses and/or subnets

Functionalities

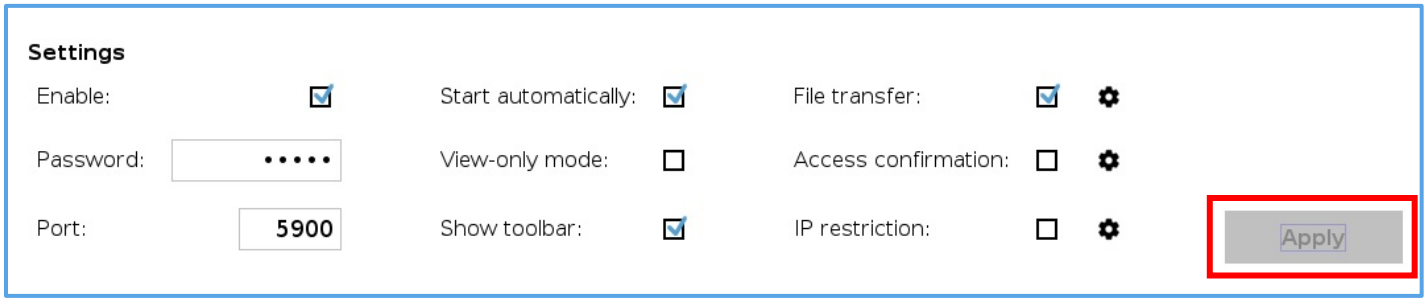
In the **access confirmation** popup, you can choose which access to grant to the client trying to connect: remote control, view-only or decline the connection. After the timeout, the connection will be automatically declined.



Functionalities

In the **IP restriction**, use the configuration button to enter a comma-separated list of allowed IP addresses (e. g. `192.168.0.100`) or subnets (e. g. `192.168.0.*`).

Functionalities



Once you have set your settings, press *Apply* button to restart the VNC service and apply[1] the changes to your current configuration[2] [3].

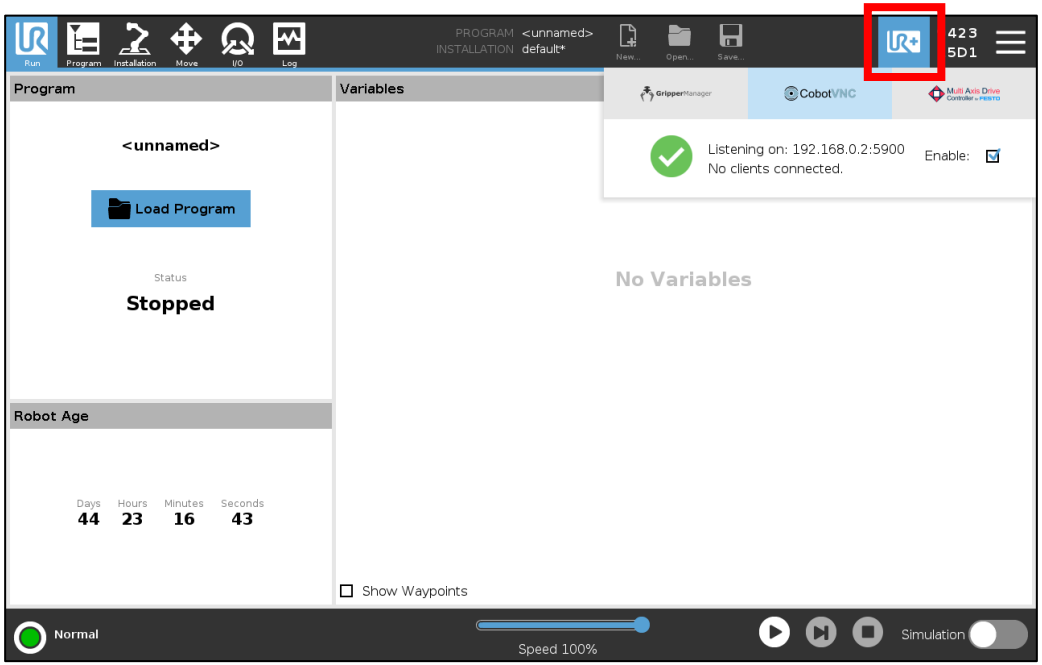
[1] You must save the installation file (from the option 💾) if you want your settings to persist when you restart the robot.

[2] If a new installation file is loaded, you must press the *Apply* button to load your new configuration.

[3] Once enabled, you can access the robot from any VNC client available for desktop (Windows, Mac, Linux), tablet, smartphone, etc. connected to the same local network.

Functionalities

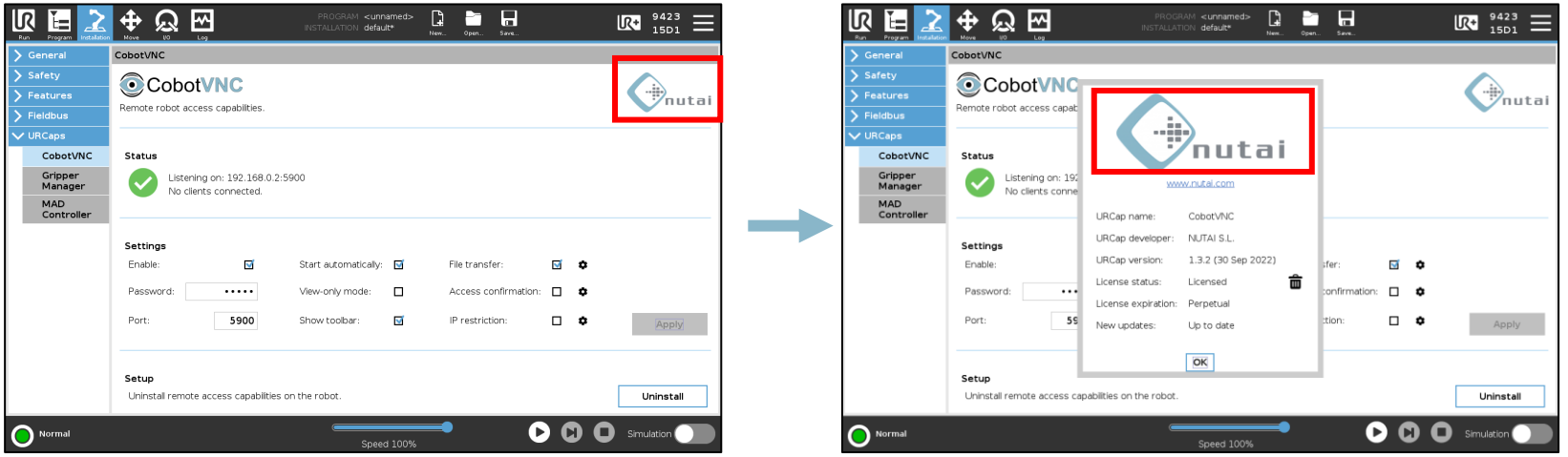
You can also access the URCap toolbar[1] from anywhere to check the status of the VNC service and enable or disable it.



[1] The toolbar is only available on e-Series.

Functionalities

You can access the URCap information and check for software updates by clicking on the logo located in the upper right corner.



Functionalities

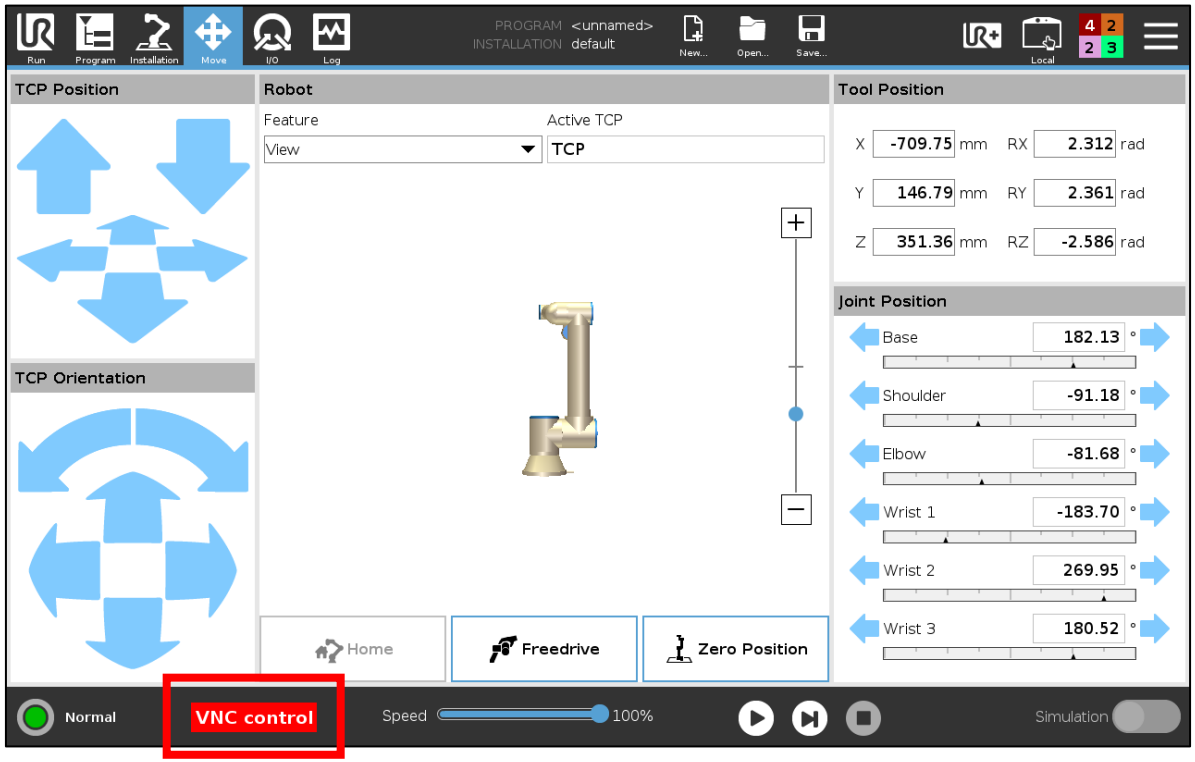
From the URCap information popup you can also access the advanced settings panel by keeping the NUTAI logo pressed for 3s.

From here you can make additional settings such as connection timeout, behavior on emergency stops or debugging.

Overview

Safety

For safety reasons, when there is a VNC client controlling the robot a warning message is displayed and **the teach pendant touchscreen is temporarily disabled**:



Safety

The teach pendant touchscreen will be re-enabled[1] in the following situations[2]:

- When the VNC client is disconnected
- When the emergency push button is pressed[3]

[1] This only applies to the remote control in no view-only mode, in order to meet the safety requirements of a single simultaneous robot control point (ISO 10218).

[2] The re-enable process can take up to 1 second.

[3] The user can force the return to the teach pendant control by pressing the emergency push button, which will disable the VNC service (as long as this option is not disabled exceptionally from the advanced settings panel).

Safety

If you have a teach pendant with a 3PE button, by default you will not be able to perform movements in manual mode through the remote connection as it will be necessary to hold down the 3PE button for safety reasons.

In the event that movements are required via the remote connection —and exclusively under your own responsibility— it is possible to configure a safety input signal[1] (*3-Position Enabling Device*) to bypass this functionality.

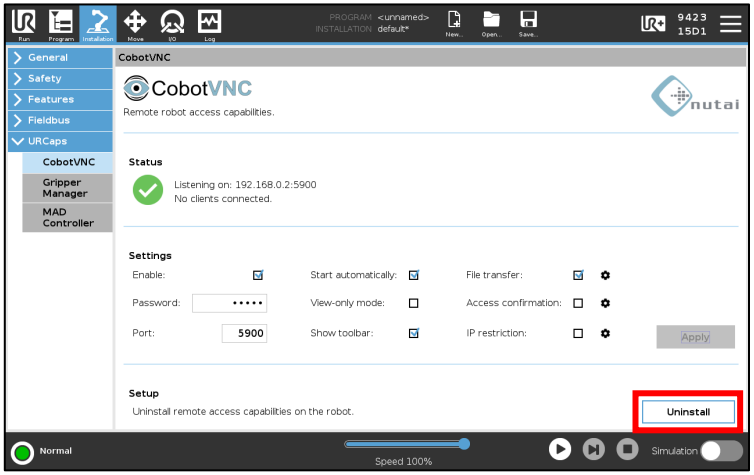
[1] Please refer to the Universal Robots user manual for more details.

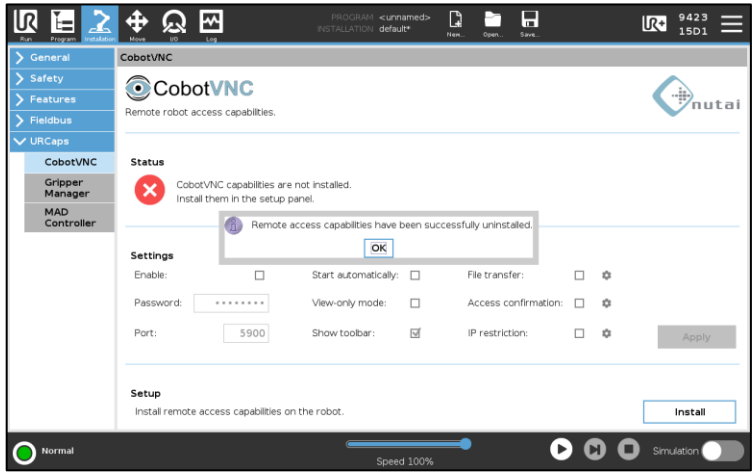
Overview

Uninstallation

To properly uninstall the URCap you must first uninstall the VNC capabilities:

1. Go to *Installation* -> *CobotVNC* and click on the *Uninstall* button

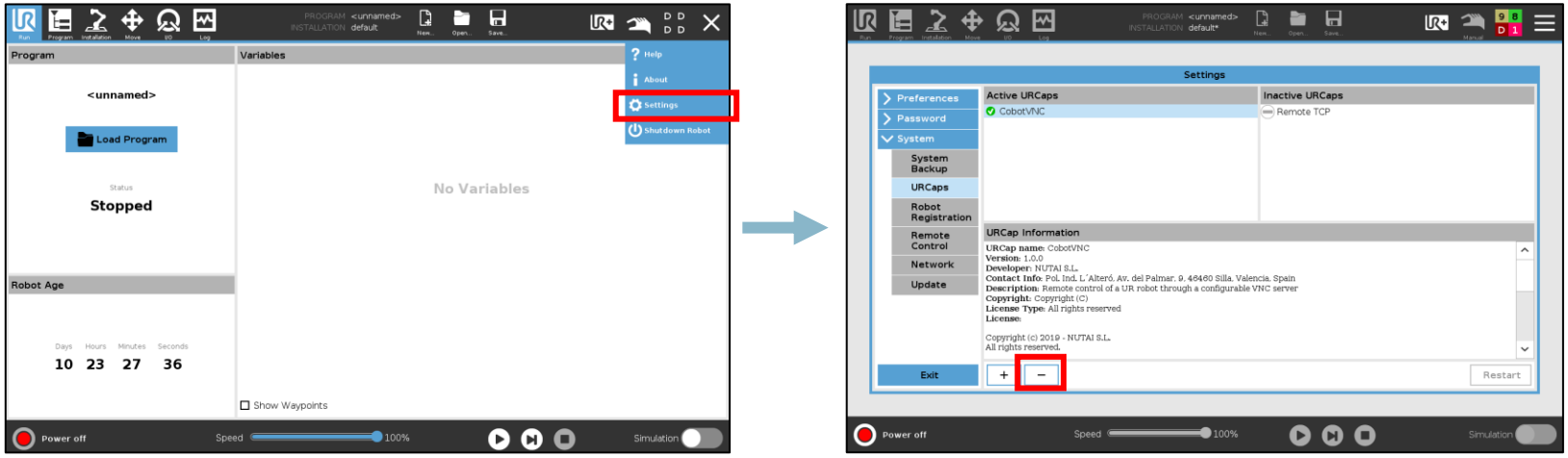




Uninstallation

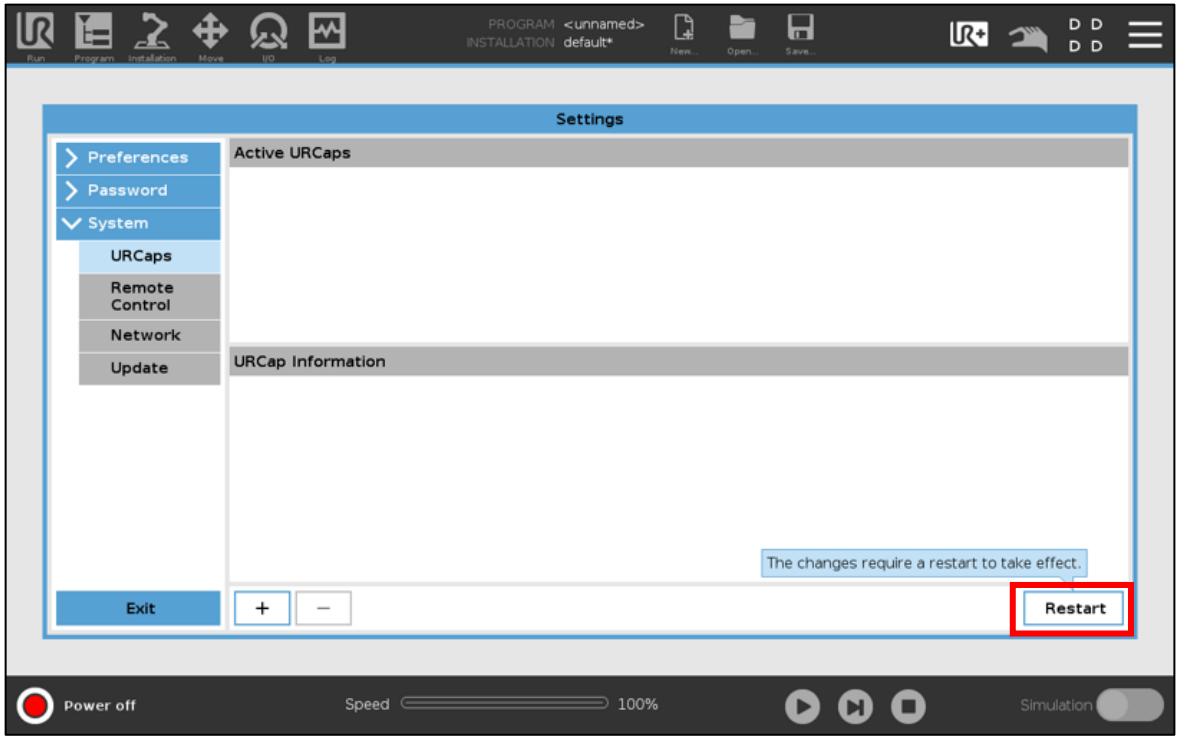
2 Now go to *Settings* in the upper right menu, then *System* -> *URCaps*

3 Select *CobotVNC* and click on the uninstall button (-)



Uninstallation

4 Finally click on the *Restart* button to apply the uninstallation



Overview

Best practices

We advise you to follow the following recommendations:

- Avoid having other VNC software installed to prevent conflicts[1]
- Move the robot remotely safely to avoid damaging your environment
- Connect the robot to a secure local network to avoid intrusions
- Set a VNC password in the settings panel and store it securely[2]

[1] Having other VNC software installed may cause application or connection port conflicts.

[2] Sharing your VNC password can compromise your robot access security from other users connected to the same local network.

Overview

Support

For further information, please contact:

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