ARCS2 User Manual

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Introduction

ARCS2 by AIRGATE is a software-only solution for Universal Robots, allowing remote VNC access to select robots. The solution offers an easy-to-use, secure & encrypted connection to the robot, and allows remote control both locally and remotely (via VPN). ARCS2 also offers a backup service, allowing easy backups of any programs on the robot to an external USB hard drive.

Installation

System requirements

- UR Robot firmware v. 5.6.0 or newer
- LAN connection (*Required for local access*)
- E-series or CB-series robot

Step by step
To install ARCS2 follow these steps:

Step 1
Download the ARCS2 solution, either provided by email or on the AIRGATE website, www.airgate.dk. Save the URCAP to an external USB hard drive.

Step 2
Make sure the robot is connected to the local area network (LAN). Pressing the menu button in the uppermost-right corner reveals an IP address – if this is 0.0.0.0, you are **not** connected to a LAN. If this is the case, contact your system administrator.

Step 3
Insert the USB storage device into the robot and install the URCap from the **Settings** -> **URCaps** menu. Press the + button and navigate to the URCap on the USB storage device and select it. Restart the robot by pressing **Restart** button as shown in figure 1.
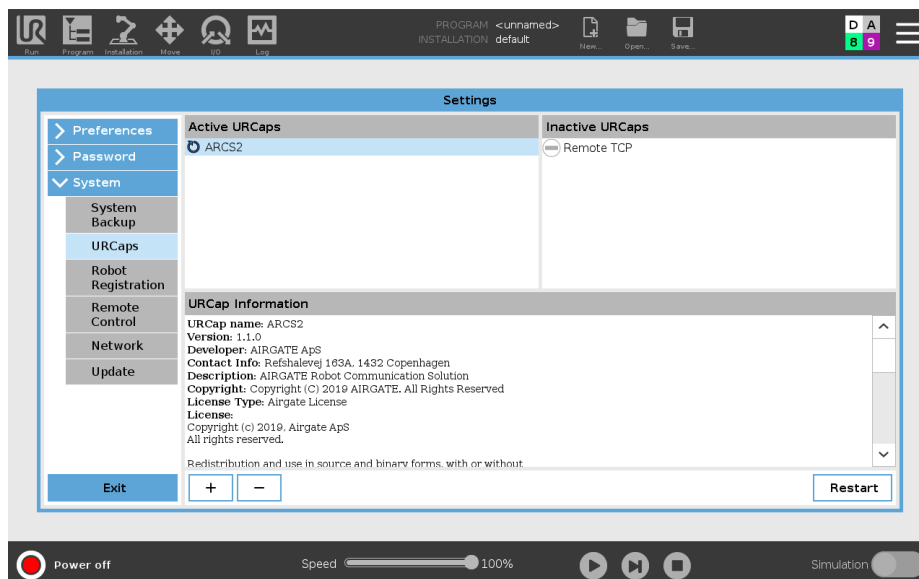
System Setup

After opening the ARCS2 solution for the first time, you are prompted for your 16-character license key, as shown on figure 2. This only needs to be entered once and will only work for the robot to which the license is bound to.
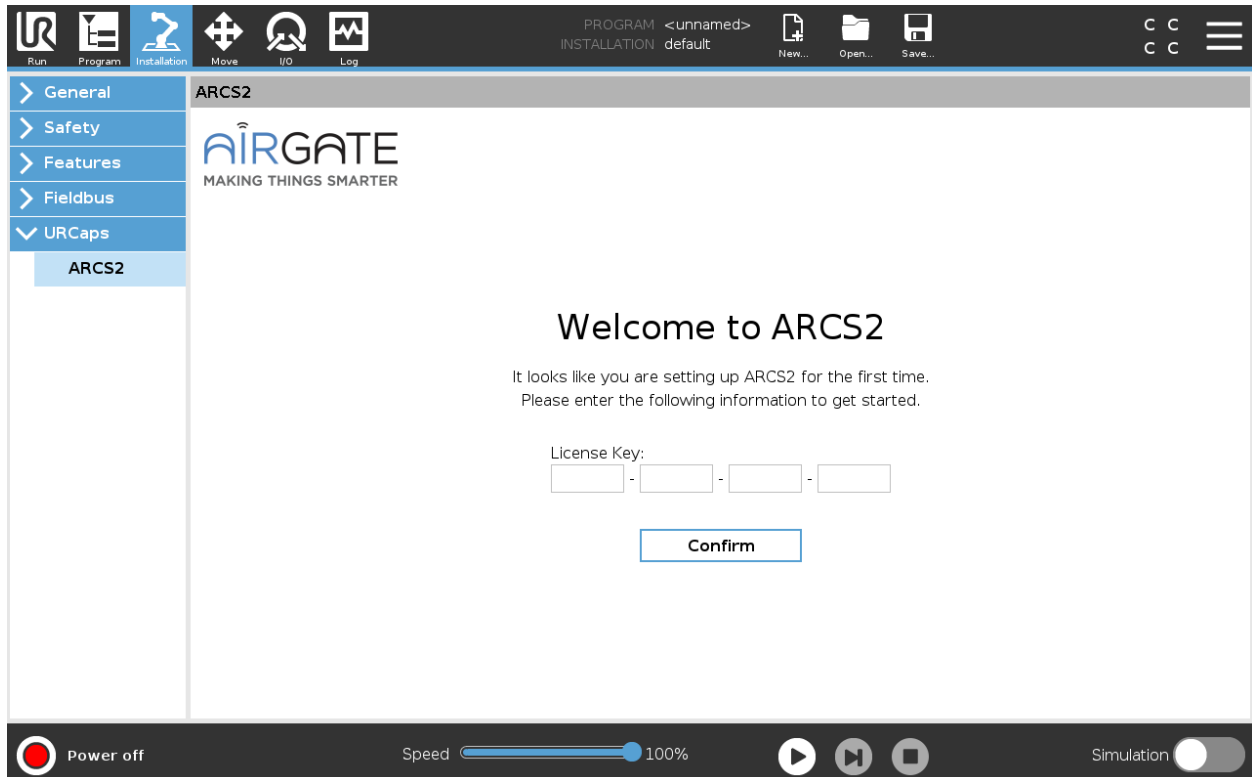

Figure 2

Remote Access

The remote access page provides you with the option to either enable or disable both VNC and SSH access to the robot. By default, VNC requires SSH tunnel mode (encrypted & secure), but checking the box **Enable unencrypted VNC port** will open the unsecure VNC port, allowing non-SSH tunneled connections. Beware that the default VNC connection mode is unencrypted and therefore vulnerable to eavesdropping.

We highly recommend leaving the VNC port disabled and only using SSH-tunneled mode. It is also possible to disable the SSH port (otherwise always on), to restrict what type of access is allowed to your robot.

When using SSH tunneled mode, you will be prompted for a SSH username and password – by default, user: **root** and password: **easybot**. These SSH credentials are also used when establishing a traditional SSH connection.

To enable either of them, simply press the **Enable**/**Disable** button for the corresponding service as shown in figure 3. This will then start the services.
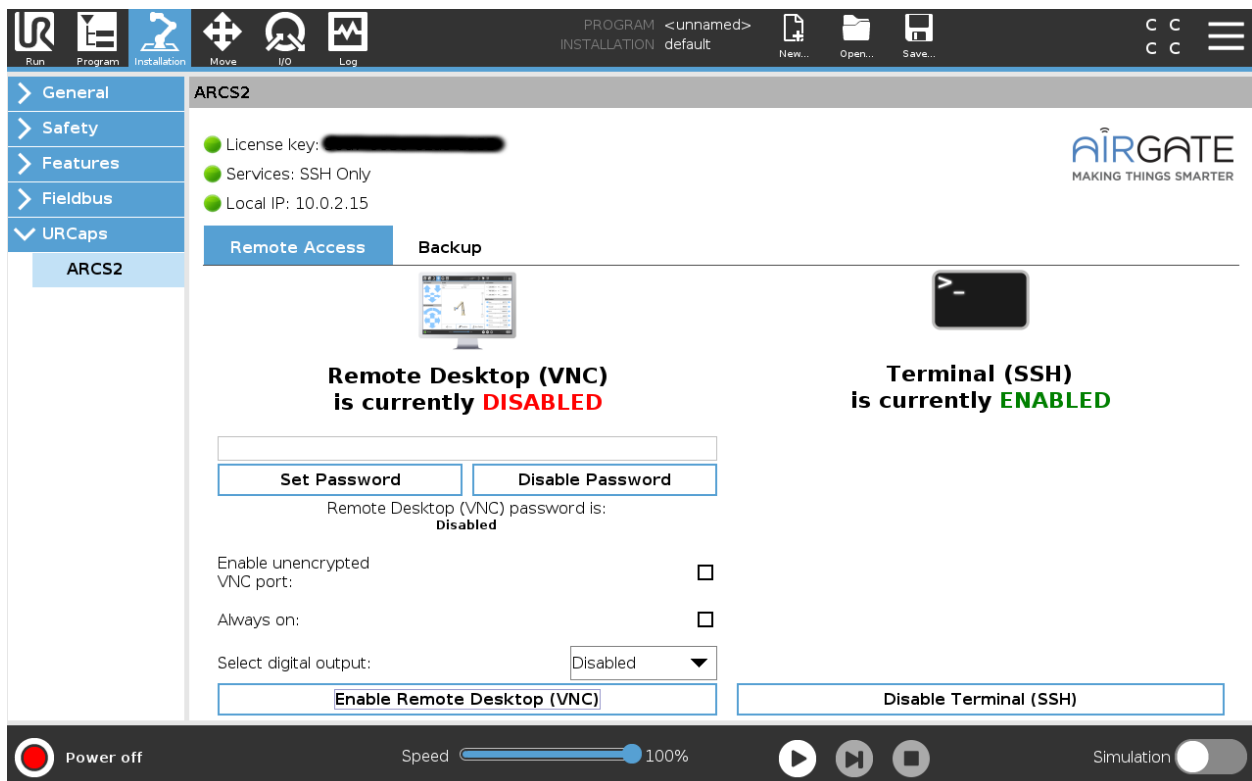

Figure 3

To set a password for use with remote desktop (VNC) press the text field, enter your chosen password and press **Set Password**. If you want to disable the password, simply press **Disable Password**.
Note, input on the teach pendent are disabled during an active VNC connection, for security reasons.

ARCS2 also detects an active VNC connection and can change one of the digital outputs to high, this is to indicate that the robot is currently being operated remotely to any personnel around the robot.

Use the **dropdown** to select the output port number that ARCS2 should use.

Backup

ARCS2 Backup allows the user to safely backup robot programs made on the robot. Simply select all the programs you wish to backup and press **Backup to external USB storage**. The selected programs are then zipped and saved to the USB drive connected to the robot. See figure below for an example.
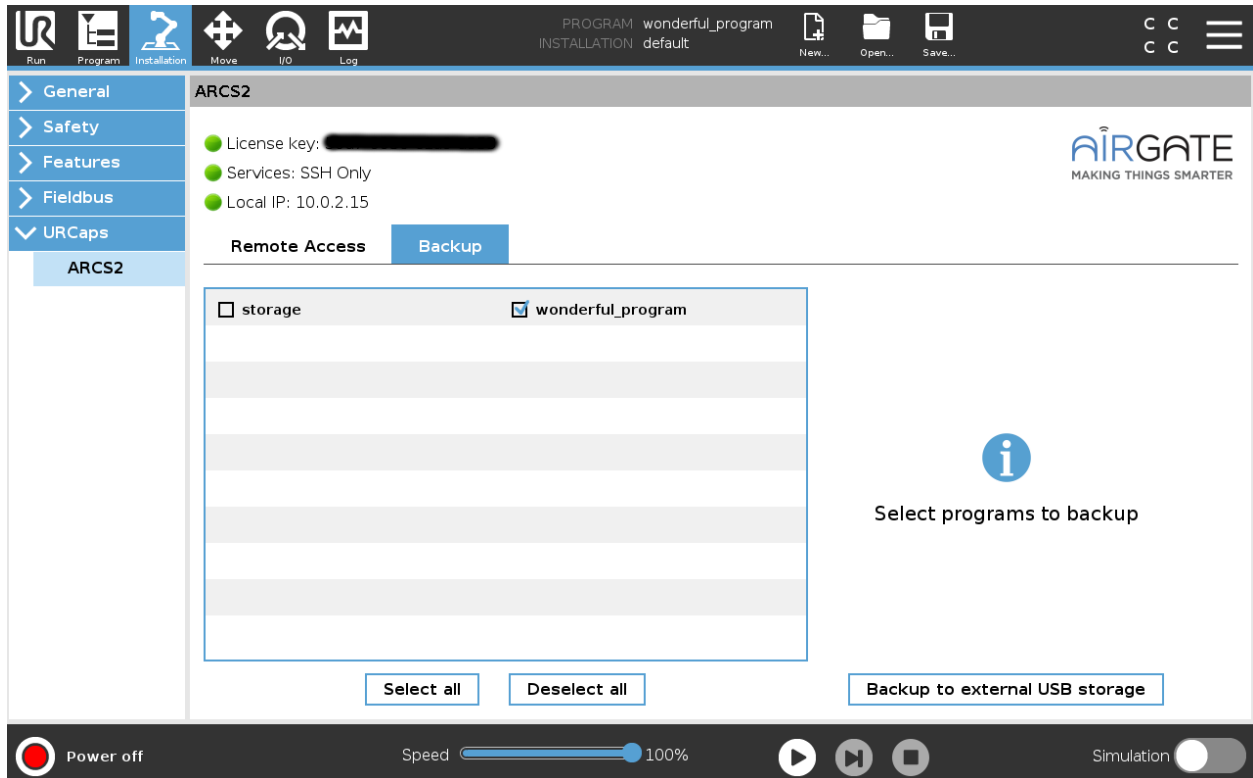
Establishing a connection

To access a local robot with ARCS2 activated, use either VNC or SSH. To establish a VNC connection, most standard VNC viewers will work. TightVNC is commercially free and has been tested on ARCS2.

If the need arises to access the robot from a connection outside the LAN, then this is also possible by using a VPN:

- Setup a VPN server on the same LAN as the robot you are trying to access. OpenVPN is a open-source VPN server, capable of this, but any VPN server will work.
- Establish the connection from the outside viewer to the recently setup VPN server.
- Check that you are now on the same network as the robot – try opening a terminal or command line and type: `ping <ip address of robot>`. If the command is successful, then you have a working VPN connection into the correct LAN environment.
- Connect via VNC or SSH as you usually would on a local area network.