USER MANUAL

FOR USING WEBLOGIC™

v1.25.0

Original Instructions

Contents

1. Introduction

1.1. Important Safety Notice

DANGER:

You must read, understand, and follow all safety information in this manual, the robot manual, and all associated equipment before initiating robot motion. Failure to comply with safety information could result in serious injury or death.

1.2. Scope of the Manual

The manual covers the following OnRobot products and their components:

1.2.1. VGC10

Tool	Version
VGC10	v1

1.2.2. Software and Firmware

1.2.2.1. Compute Box Software

The manual covers the following Compute Box software version:

Software	Version
Compute Box	v6.5.x

NOTE:

When the used Compute Box has lower software/firmware version, update the Compute Box. For detailed instructions, see 5.1.4. Web Client: Update Menu.

1.3. Naming Convention

1.3.1. Compute Box/Eye Box

Eye Box and Compute Box are used interchangeably.

1.4. Copyright

subject to change without notice and should not be construed as a commitment by OnRobot A/S. This manual is periodically reviewed and revised.

OnRobot A/S assumes no responsibility for any errors or omissions in this document.

2. Safety

The robot integrator is responsible for ensuring that the applicable safety laws and regulations in the country concerned are observed and that any significant hazards in the complete robot application are eliminated. This includes, but is not limited to:

- Performing a risk assessment for the complete robot system
- Conduct a risk assessment and implement appropiate safety measures when interfacing with other machines
- Interfacing other machines and additional safety devices if defined by the risk assessment
- Setting up the appropriate safety settings in the robot software
- Ensuring that the user will not modify any safety measures
- Validating that the total robot system is designed and installed correctly
- Specifying instructions for use
- Marking the robot installation with relevant signs and contact information of the integrator
- Collecting all documentation in a technical file; including the risk assessment and this manual

2.1. Intended Use

OnRobot tools and accessories are intended to be used on collaborative robots and light industrial robots with different payloads depending on the end-of-arm tooling specifications. OnRobot tools and accessories are normally used in pick-and-place, palletizing, machine tending, assembly, quality testing and inspection and surface finishing applications.

The end-of-arm tooling and the accessories should only operate under conditions noted in **6.1. Technical Sheets** section.

Any use or application deviating from intended use is deemed to be impermissible misuse. This includes, but is not limited to:

- Use in potentially explosive atmospheres
- Use in medical and life critical applications
- Use before performing a risk assessment
- Use outside the permissible operational conditions and specifications
- Use close to a human's head, face and eye area
- Use as a climbing aid

2.2. General Safety Instructions

Generally, all national regulations, legislations and laws in the country of installation must be observed. Integration and use of the product must be done in compliance with precautions in this manual. Particular attention must be paid to the following warnings:

DANGER:

You must read, understand, and follow all safety information in this manual, and the robot manual and all associated equipment before initiating robot motion. Failure to comply with safety information could result in death or serious injury.

The information in this manual does not cover designing, installing, and operating a complete robot application, nor does it cover other peripheral equipment that can influence the safety of the complete system. The complete system must be designed and installed in accordance with the safety requirements set forth in the standards and regulations of the country where the robot is installed.

Any safety information provided in this manual must not be construed as a warranty, by OnRobot A/S, that the robot application will not cause injury or damage, even if robot application complies with all safety instructions.

OnRobot A/S disclaims any and all liability if any of OnRobot tools tooling are damaged, changed or modified in any way. OnRobot A/S cannot be held responsible for any damages caused to any of OnRobot tools tooling, the robot, or any other equipment due to programming errors or malfunctioning of any of OnRobot tools.

WARNING:

OnRobot tools are not allowed to be exposed to condensing conditions when power is on or when connected to a robot. If condensing conditions appear during transport or storage, the product must be placed between 20 and 40 Celsius degrees for 24 hours before power is applied or before connected to a robot.

It is recommended that OnRobot tools are integrated in compliance with the following guides and standards:

- ISO 10218-2
- ISO 12100
- ISO/TR 20218-1
- ISO/TS 15066

WARNING:

- The tools have to be properly secured before operating the robot.
- Keep fingers, clothes and hair away from the tool while the power is on.
- Always use protective glasses when working with sharp objects.
- Always ensure complete shutdown of the robot when working on the system for maintenance or inspection.
- Do not use the tools on people or animals.
- Do not perform any modification to the tooling.
- If the robot supports a bounded workspace/ speed/ force limit, make sure to use those features.
- Select robot trajectories that minimize risks of internal clamping between robot joints and tooling.

2.3. Risk Assessment

The robot integrator must perform a risk assessment on the complete robot application. OnRobot tools are partly completed machinery. The integrator must consider safety aspects of the completed machine so it can be operated in a safe way. OnRobot tools are designed with relatively smooth and round design with a limited amount of sharp edges and pinch points

In collaborative applications, the trajectory of the robot can play a significant safety role. The integrator must consider the angle of contact with a human body, e.g. orientate OnRobot tools and workpieces so that the contact surface in the direction of movement is as large as possible. It is recommended that the tool connectors are pointed in the direction opposite to the movement.

OnRobot A/S have identified the potential hazards listed below as significant hazards that must be considered by the integrator:

- Objects flying from OnRobot tools due to loss of grip
- Objects falling down from OnRobot tools due to loss of grip
- Injuries due to collisions between humans and workpieces, OnRobot tools tooling, robot or other obstacles
- Consequences due to loosened bolts
- Consequences if OnRobot tools cable gets stuck to something
- Hazards created by the workpiece itself

2.4. Environmental Safety

OnRobot A/S products must be disposed of in accordance with the applicable national laws, regulations, and standards.

The product is produced with restricted use of hazardous substances to protect the environment, as defined by the EU RoHS Directive 2011/65/EU, as amended by 2015/863/EU and 2017/2102/EU. These substances include mercury, cadmium, lead, chromium VI, polybrominated biphenyls, polybrominated diphenyl ethers, Bis(2-ethylhexyl) phthalate, Butyl benzyl phthalate, Dibutyl phthalate and Diisobutyl phthalate.

Observe national **registration** requirements for importers according to the EU WEEE Directive 2012/19/EU, which governs the disposal and recycling of electrical and electronic equipment.

Declaration on substances of very high concern (SVHC) in accordance with regulation (EC) No 1907/2006 (REACH Regulation)

In accordance with the duty to communicate information pursuant to Article 33 of the REACH Regulation we hereby declare the required information on SVHC's in OnRobot A/S products.

The European Chemicals Agency (ECHA) has published on its website a list of substances of very high concern (SVHC) which meet the criteria listed in Article 57 of the REACH Regulation and have been identified in accordance with Article 59 of the REACH Regulation (**Candidate List of substances of very high concern for Authorisation - ECHA (europa.eu)**).

We are required to inform customers of any products that contain SCHC's in a concentration above 0.1% w/w.

Our products are compliant with the requirements and restrictions of the REACH Regulations regarding the SVHC's.

3. HW Installation

3.1. Overview

For a successful installation the following steps will be required:

- Mount the components
- Setup the software

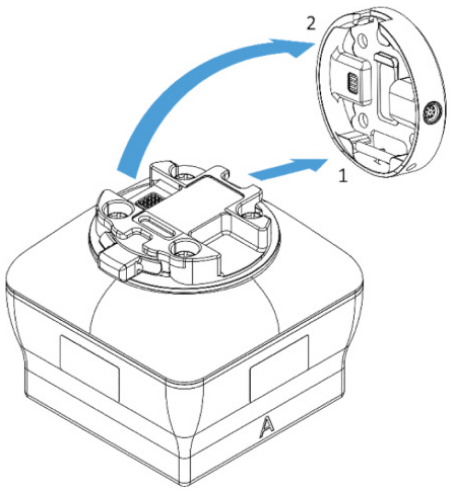
In the following sections, these installation steps will be described.

3.2. Robot Mount

1. Mount the robot-specific adapter (if applicable):
2. Mount any optional accessories
3. Mount the Quick Changer option
4. Mount the tools(s)

3.2.1. Tools

3.2.1.1. VGC10



Step 1:

Move the tool close to the Quick Changer as illustrated.

The hook mechanism (rod and hook tongue) will keep the lower part locked once mounted.

Step 2:

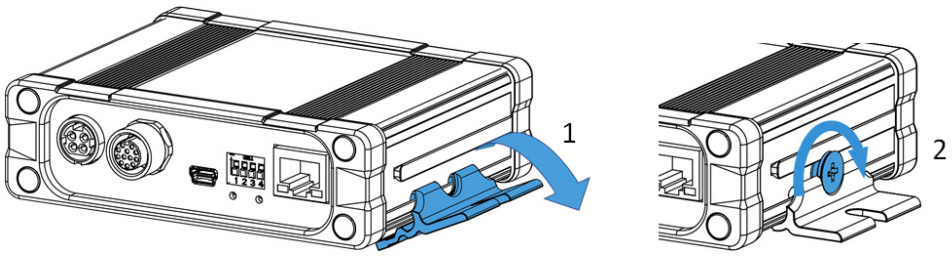
Flip the tool until it is fully mated, and you hear a clicking sound.

To unmount the tool, press the aluminum button on the Quick Changer and repeat the steps in the reverse order.

3.3. Compute Box Mount

3.3.1. Optional - Clip-on Bracket

Optionally, fix the Compute Box to a surface using the provided Clip-on Brackets (included only from 17th December 2020).



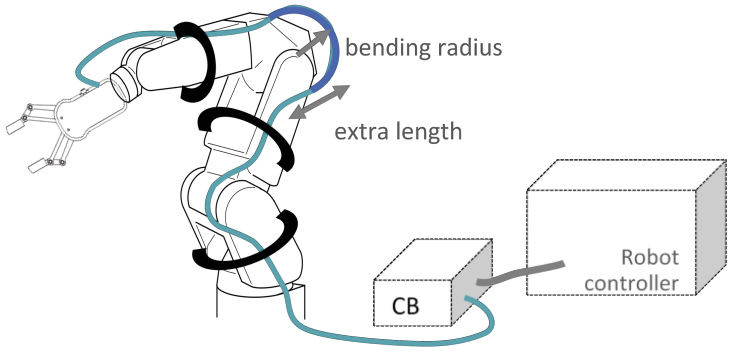
Do the following on both sides of the Compute Box:

1. Hook the Clip-on Bracket to the rail on the side of the Compute Box and then flip it down.
2. Fasten the Clip-on Bracket with the plastic srew.

3.4. Wiring

Four kind of cables must be connected to wire the system properly:

- Tool data cable between the tool(s) and the Compute Box
- The provided Digital I/O wires between the Computer Box and the robot controller
- Ethernet communication cable between the Compute Box and your computer
- Power supply of the Compute Box



3.4.1. Tool Data Cable

Connect the data cable to the tool(s) then route the cable (blue line) to the Compute Box (CB) and use the supplied Velcro tape (black) to fix it.

NOTE:

Leave some extra cable length around the joints so that the cable is not pulled when the robot moves.

Also make sure that the cable bending radius is minimum 40mm (for the HEX-E/H QC it is 70mm)

Then, connect the other end to the Compute Box's DEVICES connector.

CAUTION:

Use only original OnRobot tool data cables.

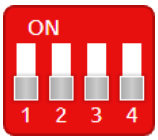
3.4.2. Digital I/O Wires

1. Connect the Compute Box to the robot controller.
2. Ensure the robot is powered off.
3. Check the controller power supply types and follow the robot manual to change it.
4. Verify the controller type (PNP or NPN) on the controller.

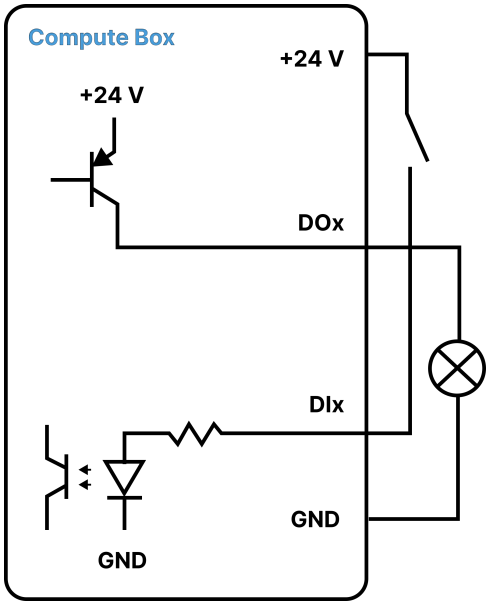
Based on the controller type, configure the Compute Box DIP switches (red) accordingly:

PNP or NPN settings: DIP switch 1 for digital inputs and DIP switch 2 is for digital outputs.

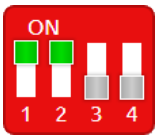
PNP – Common GND system



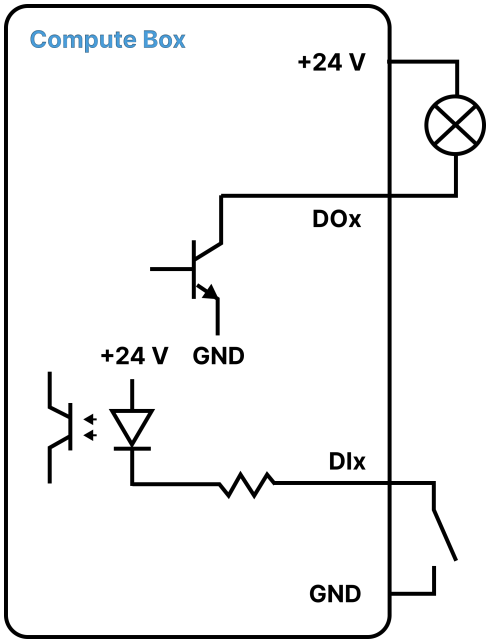
For **PNP** type set the 1. and 2. DIP switches to OFF position (down).



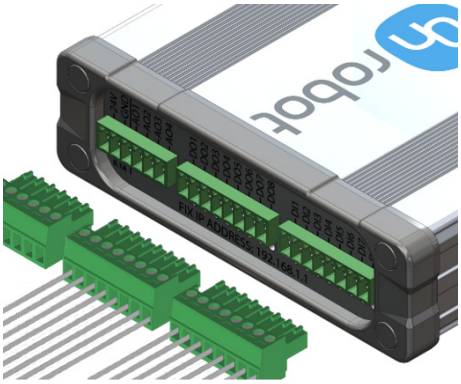
NPN – Common +24 V system



For **NPN** type set the 1. and 2. DIP switches to ON position (up).



Plug in the supplied green pluggable connectors.

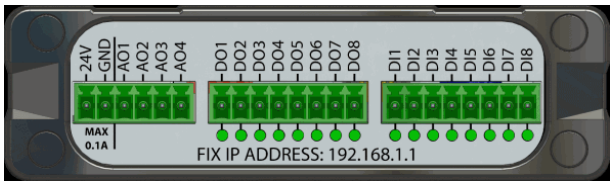


The supplied connector types are:

2 x Phoenix Contact MC 1,5/8-ST-3,5 Terminal Block

1 x Phoenix Contact MC 1,5/6-ST-3,5 Terminal Block

Wire the digital I/O wires from the Compute Box to the robot.



DO1-8: Digital outputs of the Compute Box (signals from the grippers/sensor to the robot)

DI1-8: Digital inputs of the Compute Box (signals from the robot to the grippers/sensor)

GND: To be used to have a common ground between the robot and the gripper/sensor

It is recommended to connect all 8 inputs and 8 outputs for simplicity.

CAUTION:

If some of the DO1-8 or DI1-8 wires will not be connected, make sure to unscrew it from the terminal block to avoid an accidental short circuit.

CAUTION:

The 24V and GND pins are only Reference Voltage Output. It cannot be used to power any equipment.

It is recommended to use the supplied wires only. If it is necessary to use different wire, use one that is shorter than 3 m.

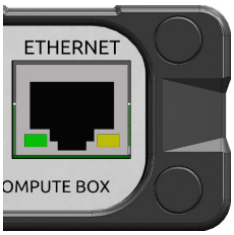
Connect the Compute Box inputs to the robot outputs and the Compute Box outputs to robot inputs.

For simplicity, it is recommended to map the pins in order:

DO1 to the robot's Digital input 1	DI1 to the robot's Digital output 1
DO2 to the robot's Digital input 2	DI2 to the robot's Digital output 2
...	...
DO8 to the robot's Digital input 8	DI8 to the robot's Digital output 8

After you connected the Compute Box to the robot controller through the provided Digital I/O wires, continue the wiring as described in **Ethernet Cable** section.

3.4.3. Ethernet Cable



Connect the provided Compute Box (ETHERNET connector) and your computer with the supplied Ethernet Cat 5e cable.

It is recommended to use Ethernet cables that are shorter than 3 m.

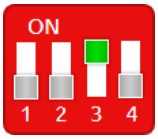
This connection is only needed for programming.

WARNING:

Check and make sure that the Compute Box enclosure (metal) and the robot controller enclosure (metal) are not connected (no galvanic connection between the two).

3.4.4. Compute Box DIP Switch Settings

Set the DIP switches of the Compute Box as follows:



Set the DIP switch 3 to ON and the DIP switch 4 to OFF position.

For more information about the Ethernet interface settings, see 4.2. Ethernet Interface Setup.

3.4.5. Recommended Grounding

WARNING:

Incorrect grounding can result in device damage. Please follow the recommendations below.

1. Connect all metal devices* to a central point. Use 4mm ground wires.
2. Connect the central point to the factory ground. Use a 6mm ground wire.
3. Check grounding by moving a Grounding Tester** throughout the setup. Confirm the device reads close to 0.

To learn more about grounding checking, watch the tutorial on **https://learn.onrobot.com/en/how-test-grounding**.

* We refer to metal devices as OnRobot devices, robot, fences, conveyor belts, machines, etc, that are in the application.

** Can be purchased at OnRobot with the Item Number #114040.

3.4.6. Power Supply: Compute Box

Connect the supplied power supply to the Compute Box 24V connector.

NOTE:

To disconnect the power connector, make sure to pull the connector housing (where the arrows are shown) and not the cable.

CAUTION:

Use only original OnRobot power supplies.

Finally, power up the power supply that will power the Compute Box and the connected Tool(s).

3.4.6.1. VGC10

Power Supply	
1.5 A	✓
5 A	✓
6.25 A	✓

4. Operation

NOTE:

It is assumed that the Installation has finished successfully. If not, first do the installation steps in the previous section.

4.1. Overview

OnRobot WebLogic™ requires to be programmed first with the help of a computer connected to the Compute box. Then it can run standalone without any Ethernet connection.

Steps to program it:

- Setup the Compute Box's Ethernet interface and connect to the Compute Box
- Open the Web Client on your computer to access the WebLogic™ menu
- Write your program in the WebLogic™ menu

The following subsections will guide you through these steps.

4.2. Ethernet Interface Setup

A proper IP address must be set for the Compute Box/Eye Box and the robot/computer to be able to use the Ethernet interface. The IP address can be configured using DIP switches 3 and 4.

WARNING:

Stop the robot program before you change any Ethernet interface settings.

NOTE:

Configuring DIP switch 3 will remove any previously set static IP address.

To change between modes, first change the DIP switches and then cycle the Compute Box/Eye Box power so the changes will take effect.

DIP 3 - sets the Compute Box / Eye Box IP address

- **ON**: Fixed IP (192.168.1.1)
- **OFF**: Dynamic or Static IP *(can be configured via the Web Client)*

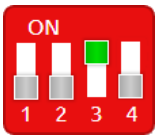
DIP 4 - sets whether the connected robot or laptop will receive IP address from the Compute Box / Eye Box

- **ON**: DHCP server is disabled
- **OFF**:DHCP server is enabled

We recommend to set the DIP switches according to either of the two options below:

- **Fix IP/Auto mode** - in simple installations (no external network and/or no PLC connected)
- **Advanced mode** - in more complex installations (external network and/or PLC are used)

Fix IP/Auto mode (factory default)

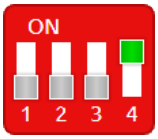


Set the DIP switch 3 to ON and the DIP switch 4 to OFF position and cycle the power so the changes will take effect.

IP Address of the Compute Box/Eye Box	IP Address of the Robot/Computer
The IP address of the Compute Box/Eye Box is fixed 192.168.1.1. This IP address cannot be changed.	The Compute Box/Eye Box will automatically assign an IP address to the connected robot/computer if it was configured to obtain an IP address automatically. **NOTE:** The assigned IP address range is 192.168.1.100-105 (with subnet mask 255.255.255.0). If the Compute Box/Eye Box is used in a company network where a DHCP server is already in use, it is recommended to use Advanced mode.

In this mode, the DHCP server of the Compute Box/Eye Box is enabled.

Advanced mode (any static or dynamic IP/subnet mask)



Set the DIP switch 3 to OFF and the DIP switch 4 to ON position and cycle the power so the changes will take effect.

IP Address of the Compute Box/Eye box	IP Address of the Robot/Computer
Case 1: Static IP address The IP address 192.168.1.1 is already in use in your network or a different subnet needs to be configured.	The Compute Box/Eye Box will not assign an IP address to the robot/computer. Set the IP address of the robot/computer manually. Make sure to have a matching IP setting to your robot/computer network for a proper communication. Use the same subnet but different IP address.
Case 2: Dynamic IP address *	The IP address of the robot/computer is set dynamically. An external DHCP server assigns the IP address to the robot/computer.

* By default, the IP address of the Compute Box/Eye Box is set to Dynamic IP.

The IP address of the Compute Box/Eye Box can be set to any value by using the Web Client. For more details, see section Web Client: Configuration Menu. Under **Network settings**, set the **Network mode** to either **Static IP** or **Dynamic IP**.

In this mode, the DHCP server of the Compute Box/Eye Box is disabled.

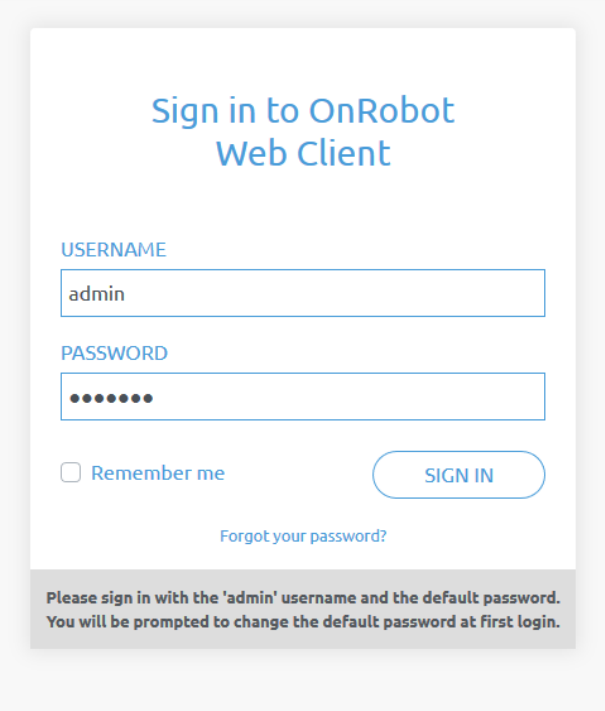
4.3. Web Client

To access the Web Client on your computer first the Ethernet interface needs to be set up to have a proper communication between your computer and the Compute Box. It is recommended to use the factory default DIP switch settings (DIP 3 On and DIP 4 Off) (for further details see section **4.2. Ethernet Interface Setup**).

Then do the following steps:

- Connect the Compute Box to your computer with the supplied UTP cable.
- Power the Compute Box with the supplied power supply
- Wait one minute for the Compute Box LED to turn from blue to green.
- Open a web browser on your computer and type in the IP address of the Compute Box (factory default is 192.168.1.1).

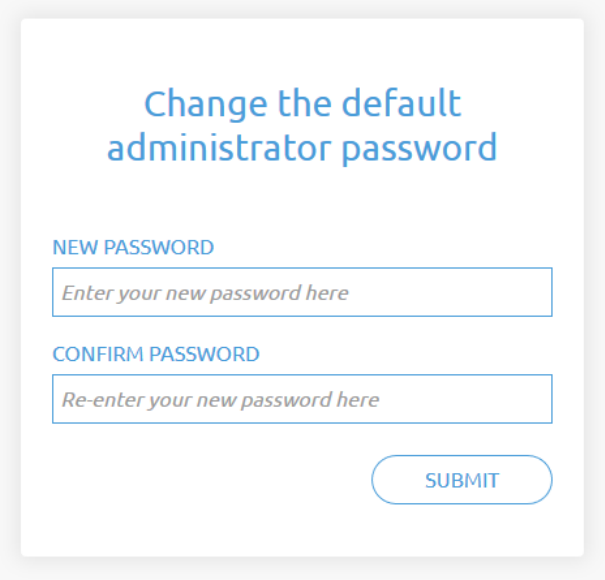
The Sign-in page opens:



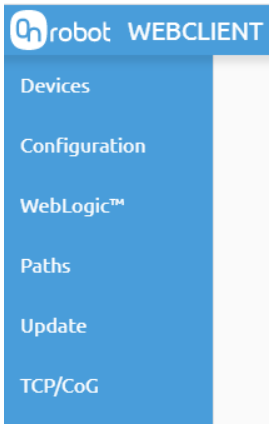
The factory default administrator login is:

Username: admin
Password: OnRobot

For the first login a new password needs to be entered: (password must be at least 8 characters long)



Once signed in the following menus will appear on the left side of the screen:



- **Devices** - Monitor and control the connected devices (e.g.: grippers)
- **Configuration** - Change the Compute Box's settings
- **WebLogic**™ - Program the Digital I/O interface through OnRobot WebLogic™
- **Paths** - Import/export the recorded Paths (not available to all robots)
- **Update** - Update the Compute Box and the devices
- **TCP/CoG** - Calculate the TCP (Tool Center Point) and CoG (Center of Gravity) values for your OnRobot product combination.

The following menus will appear in the top right corner of the screen:

-  Select the language of the Web Client
-  Account settings (e.g.: change password, add new user)

In the following, these menus will be described.

4.4. OnRobot WebLogic™ Menu

There are two tabs to choose from:

- **Browser** - manage (import/export, etc.) the WebLogic™ programs
- **Program Editor** - create/edit or run WebLogic™ programs

In the following these two will be described.

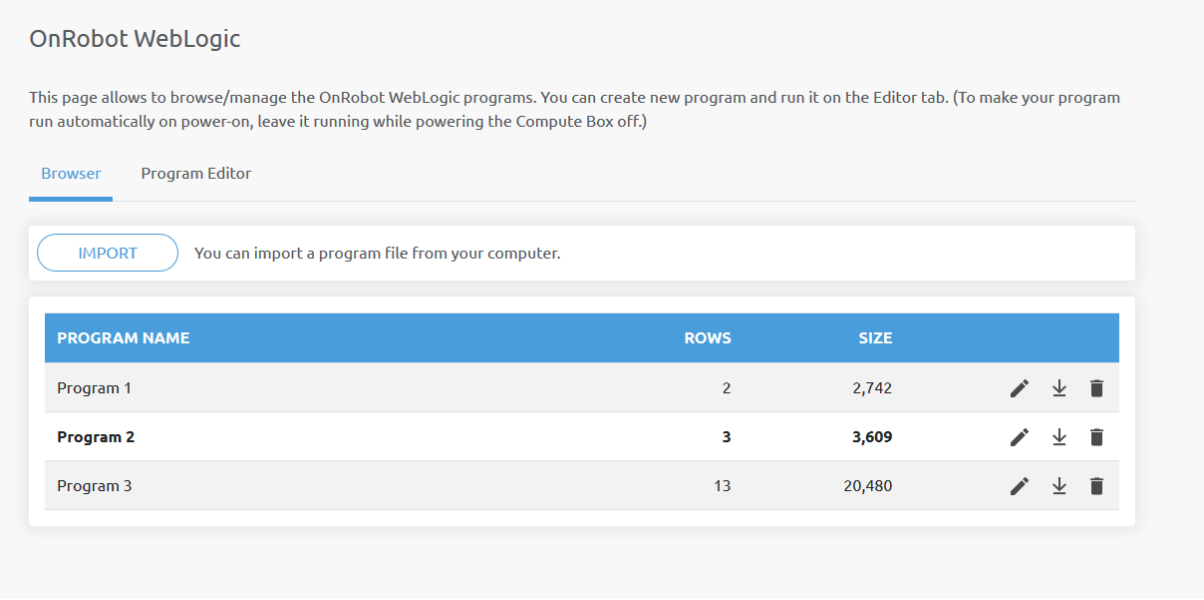
4.4.1. Browser

This tab lists the WebLogic™ programs that are stored on the Compute Box.

- To create a new program, go to the **Program Editor** tab.
- To edit a stored program, click on the pencil icon and it will be loaded in the **Program Editor**
- Any program can be deleted by clicking on the trash icon.
- Programs can be exported to your computer by clicking on the down arrow icon.
- Exported programs can be imported with the **Import** button.

NOTE:

The program name that are edited in the **Program Editor** is bolded.

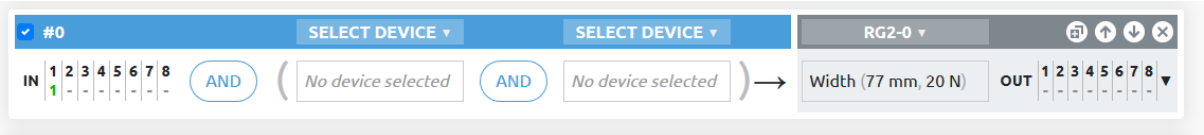


4.4.2. Program Editor

This tab shows the currently edited WebLogic™ program.

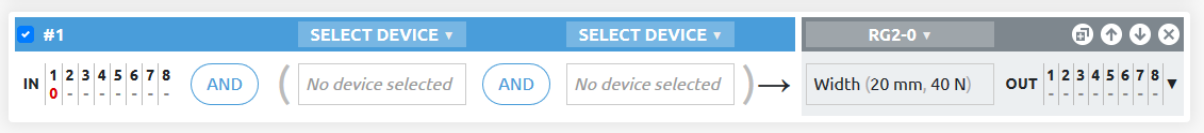
WebLogic™ programs contain 1 or more “rows”.

A row contains conditions (blue part) and commands (gray part) like this:
(**If**) DI1=1 (**Then**) (RG2-Width=77, force=20N)



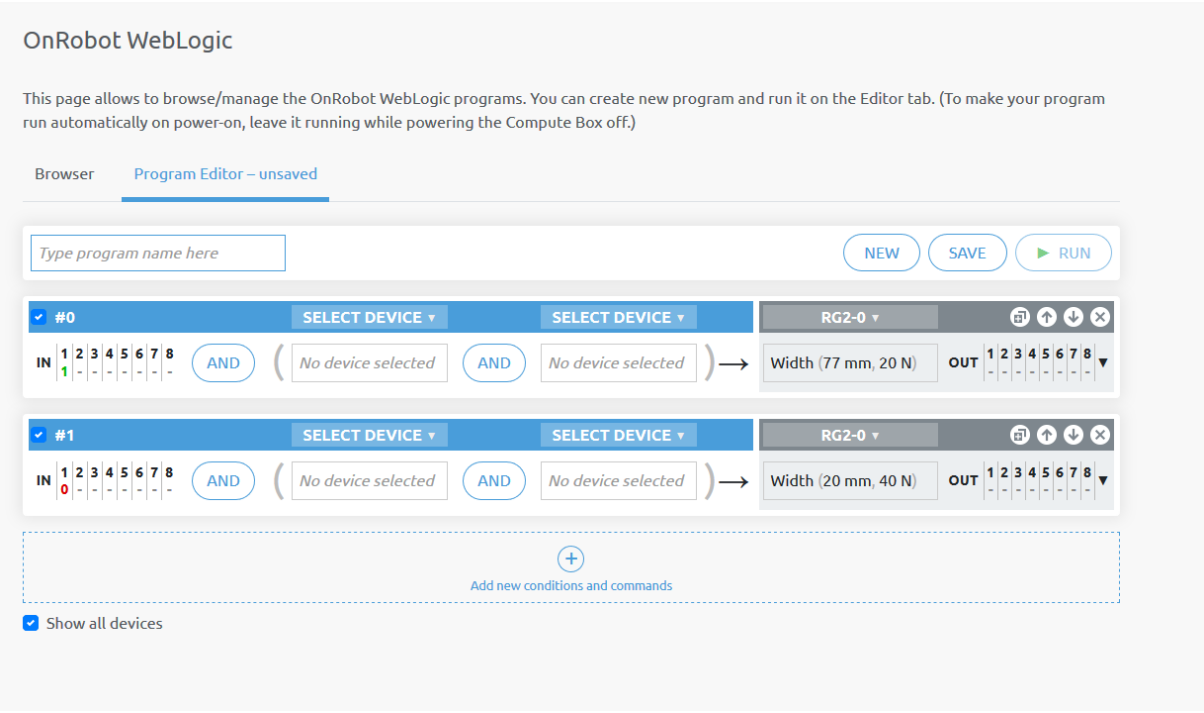
(If the robot sets the Digital Input 1 (DI1) of the Compute Box to high, **then** open the RG2 gripper to 77 mm.)

Another row in a program can be like this:
(**If**) DI1=0 (**Then**) (RG2-Width=20, force=40N)



(If the robot sets the Digital Input 1 (DI1) of the Compute Box to low, **then** close the RG2 gripper to 20 mm.)

With the above two rows in a program an RG2/6 gripper could be operated (opened and closed) with a single Digital output of a robot, while the opening and closing width and force can be programmed to any value.



To execute a WebLogic™ program first make sure to enter a program name and click on the **Save** button to store it and then click on the ▶ **Run** button.

NOTE:

To make a program run automatically when the Compute Box is powered on just leave the program running while you power the Compute Box off.

To start a new program, click on the **New** button.

- To add a new row, click on the **Add new conditions and commands**.
- To delete a row, click on the icon.
- To move the row up or down click on the icons.

NOTE:

Conditions and commands are executed from the top to the bottom. Same commands at the bottom can override the ones at the top.

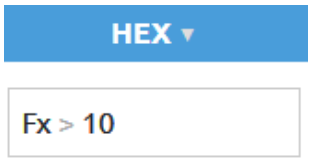
- To duplicate a row, click on the icon.
- To disable a row (not to be executed), uncheck the checkbox next to the row number.

The rows must have at least one condition and at least one command to be executed.

4.4.3. Program Editor: Conditions

Conditions are the input fields marked by blue.

Condition Types

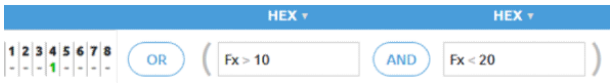
Digital Input type	Device specific value type
For example: DI4=1	For example: HEX Fx > 10N
	

Complex Conditions

To create more complex conditions, combine them using AND or OR logical operations.
The logical operations can be changed independently by clicking on the AND or OR buttons.

Example:

If (DI4=1) **OR** (HEX Fx > 10 N **AND** HEX Fx < 20N)



This condition is true if the Fx is between 10N and 20N or the robot has signaled high in Digital Input 4.

Digital Input States

Digital inputs (DI1-DI8) can have the following three states: (click to cycle through the states)

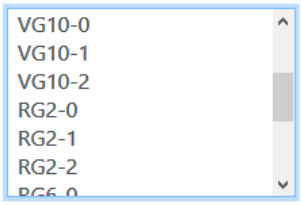
- - Don't care (this bit is masked and will give true result for the bit)
- 0 - give logic true if Input bit is low
- 1 - give logic true if Input bit is high

NOTE:

If no Digital Input type of condition is needed set DI1-DI8 to - don't care.

Device Specific Values

For Device specific values first set the Select device by clicking on the arrow icon.



NOTE:

The list contains only the connected devices. If you would like to select a device that is not currently connected check the **Show all devices** checkbox.

For 2FG7, 3FG15, RG2/6, MG10, Screwdriver, SG, VG10, VGC10, and VGP20 there are three numbers after the device name:

- **0** - If the device is mounted on a Quick Changer or a HEX-E/H QC
- **1** - If the device is mounted on the Primary side of a Dual Quick Changer
- **2** - If the device is mounted on the Secondary side of a Dual Quick Changer

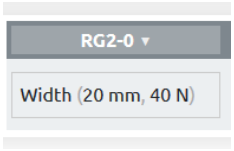
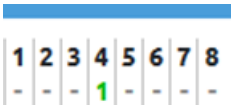
NOTE:

If a Device specific value type condition is not needed set it to **-- Not selected --** and it will give true result.

4.4.4. Program Editor: Commands

Commands are the input fields marked with gray.

Command Types

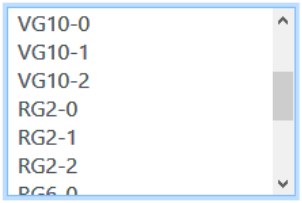
Device specific value type	Digital Output type
For example:  Sets RG2 width to 77 mm and with force = 20N.	For example: DO4=1  Sets Digital Output 4 to logic high.

NOTE:

Both types are always executed so make sure that the not relevant part is always set to - Don't change or **-- Not selected --**.

Device Specific Values

For Device specific value first set the Select device by clicking on the arrow icon.



NOTE:

The list contains only the connected devices. If you would like to select a device that is not currently connected check the **Show all devices** checkbox.

For 2FG7, 3FG15, RG2/6, MG10, Screwdriver, SG, VG10, VGC10, and VGP20 there are three numbers after the device name:

- **0** - If the device is mounted on a Quick Changer or a HEX-E/H QC
- **1** - If the device is mounted on the Primary side of a Dual Quick Changer
- **2** - If the device is mounted on the Secondary side of a Dual Quick Changer

Digital Output States

Digital outputs (DO1-DO8) can have the following three states: (click to cycle through the states)

- - - Don't change
- 0 - set the Output bit to logic low
- 1 - set the Output bit to logic high

NOTE:

OnRobot functions only accept input and returns output in metric units. If you have values to provide in US Standard units, use the following conversion rates.

US Standard unit	Metric unit	Convert US Standard unit into metric parameter input	Convert metric function output to US Standard unit
Linear measure (Length/Distance)			

US Standard unit	Metric unit	Convert US Standard unit into metric parameter input	Convert metric function output to US Standard unit
1 inch (in or ")	25.4 millimetres	Multiply the US Standard input by 25.4 to get the metric unit input.	Divide the metric output by 25.4 to get the US Standard unit output.
1 foot (ft or ')	0.304 metre	Multiply the US Standard input by 0.304 to get the metric unit input.	Divide the metric output by 0.304 to get the US Standard unit output.
Mass (Weight)			
1 pound (lb)	0.453 kilogram	Multiply the US Standard input by 0.453 to get the metric unit input.	Divide the metric output by 0.453 to get the US Standard unit output.
Torque			
1 lbft	1.355 Nm	Multiply the US Standard input by 1.355 to get the metric unit input.	Divide the metric output by 1.355 to get the US Standard unit output.

4.4.5. Program Editor: List of Device Specific Values

Each device has an **OnStart** condition that becomes True only once the device is connected or the program is started. It becomes False when the device is disconnected. This can be used to detect if a device is connected or set any initial value on program start.

An aggregated **Status** condition is available for all connected devices. The status is displayed as the condition of the General status device.

The status can be one of the following:

- Status == OK
  In this case all devices work properly.
- Status == Warning
  In this case minor issues occur for any of the devices.
- Status == Error
  In this case major issues occur for any of the devices.

4.4.5.1. VG10 / VGC10

Conditions	Description
Actual vacuum A **Actual vacuum B**	Actual vacuum level [0-80%] for channel A and channel B

Commands	Description
Current limit	Set the current limit (0-1000mA), default is 500mA

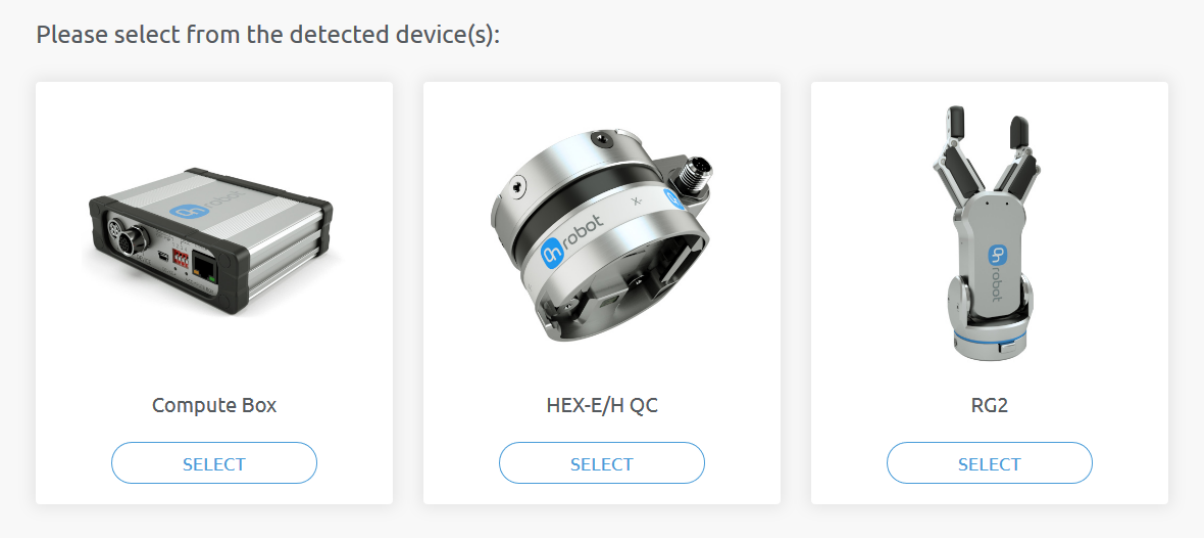
Commands	Description
Grip	Sets the vacuum level (0-80%) for channel A (param1) and channel B (param2)
Idle	Switch of the motor but keep the valve closed for channel A, B or A+B
Release	Opens the valve to quickly release the vacuum for channel A, B or A+B

5. Additional Software Options

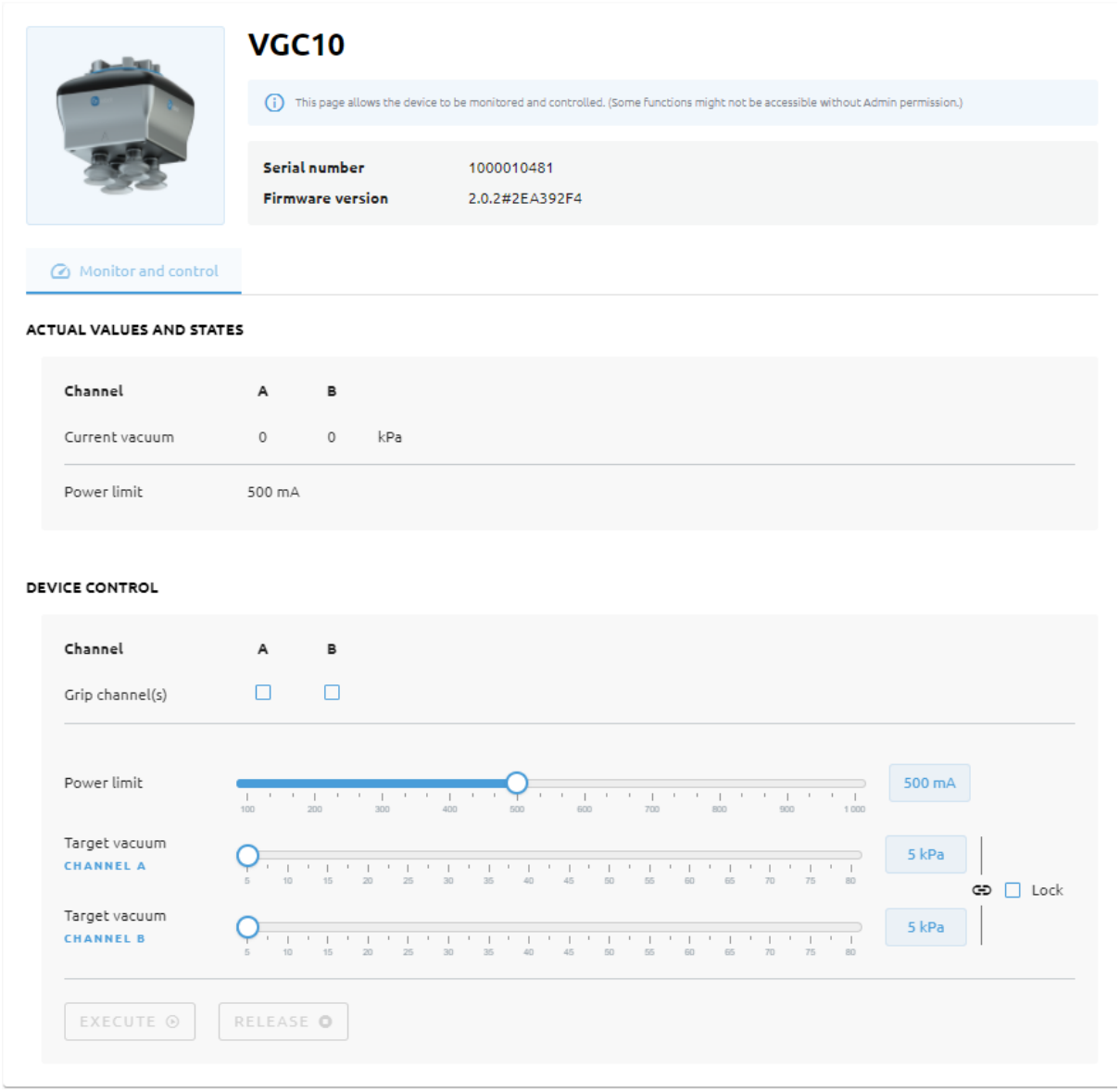
5.1. Compute Box/Eye Box

5.1.1. Web Client: Devices Menu

To control/monitor a device click on the **Select** button.



5.1.1.1. VG10 / VGC10



Monitor and control

Actual Values and States

The **Current vacuum** level for **Channel A** and **Channel B** can be seen in kPa (in the range of 0...80 kPa vacuum). The actual value of the **Power limit** is shown in mA.

Device control

Grip channel(s): Select which channel performs the action. It is possible to select channel A, B or both. To see which one is channel A and B, for VG10 see stickers under the arms and for VGC10 see the letters on the sides on the housing.

The **Power limit** can be adjusted in the range of 0...1000mA with the slider.

NOTE:

The power limit set in this page is not stored permanently and always restored to the default value on power reset.

Higher power limit value means the required vacuum level is reached faster (higher airflow), but if it is set too fast overshoot may occur.

Low power limit may not be enough for higher percentage of vacuum and the target vacuum level may not be reached.

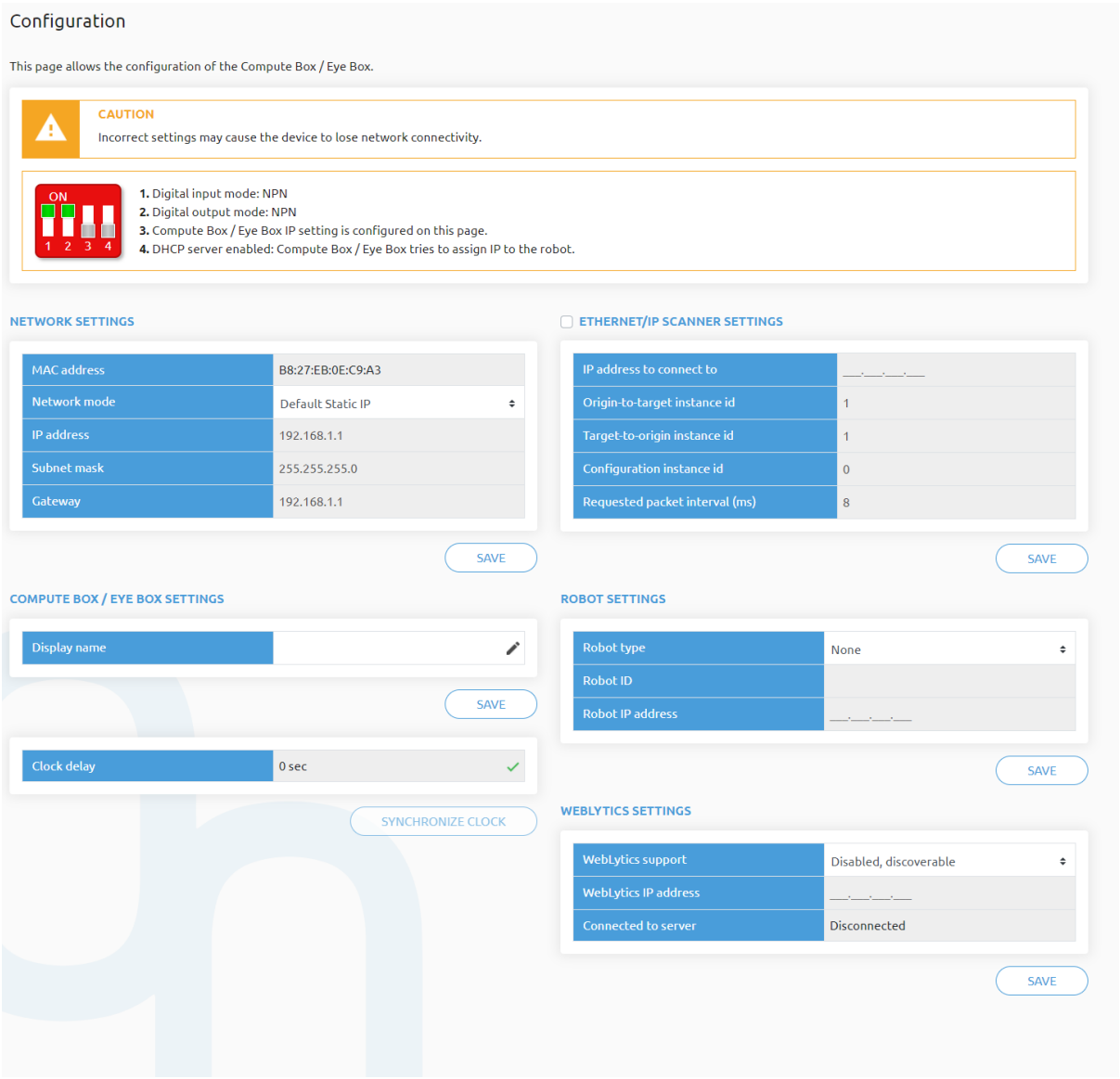
The **Channel A** and **Channel B** vacuum level can be set individually or in tandem by checking the **Lock** checkbox.

Make sure to set high enough vacuum before you grip and lift any object.

To execute the command, click on the **Execute** button.

To release the gripped object, click on the **Release** button.

5.1.2. Web Client: Configuration Menu



Network settings:

The **MAC address** is a world-wide unique identifier that is fixed for the device.

The **Network mode** drop-down menu can be used to decide if the Compute Box will have a static or a dynamic IP address:

- If it is set to **Dynamic IP**, the Compute Box expects an IP address from a DHCP server. If the network that the device is connected to has no DHCP server, the Compute Box will not obtain an IP address and its LED is lighting in blue.
- If it is set to **Static IP**, then a fixed IP address and subnet mask must be set.
- If it is set to **Default Static IP**, the fixed IP revert to the factory default and cannot be changed.

After all parameters are set, click on the **Save** button to store the new values permanently. Wait 1 minute and reconnect to the device using the new settings.

Compute Box / Eye Box settings:

In case, more than one Compute Box is used within the same network, for identification purpose any user specific name can be entered to the **Display name**.

If the **Clock delay** field shows a difference, click **Synchronize clock** to synchronize the Compute Box's time with your computer.

EtherNet/IP scanner settings:

NOTE:

This is a special option of the EtherNet/IP connection for some robots.

In case when the robot is the Adapter and the Compute Box needs to be the Scanner the following addition information is required for the communication:

- **IP address to connect to** - the robot IP address
- **Origin-to-target instance id** - refer to the robot's EtherNet/IP manual (Scanner mode)
- **Target-to-origin instance id** - refer to the robot's EtherNet/IP manual (Scanner mode)
- **Configuration instance id** - refer to the robot's EtherNet/IP manual (Scanner mode)
- **Requested packet interval (ms)** - RPI value in ms (minimum 4)

Check the checkbox and the Compute Box will try to automatically connect to the robot (via the given IP address).

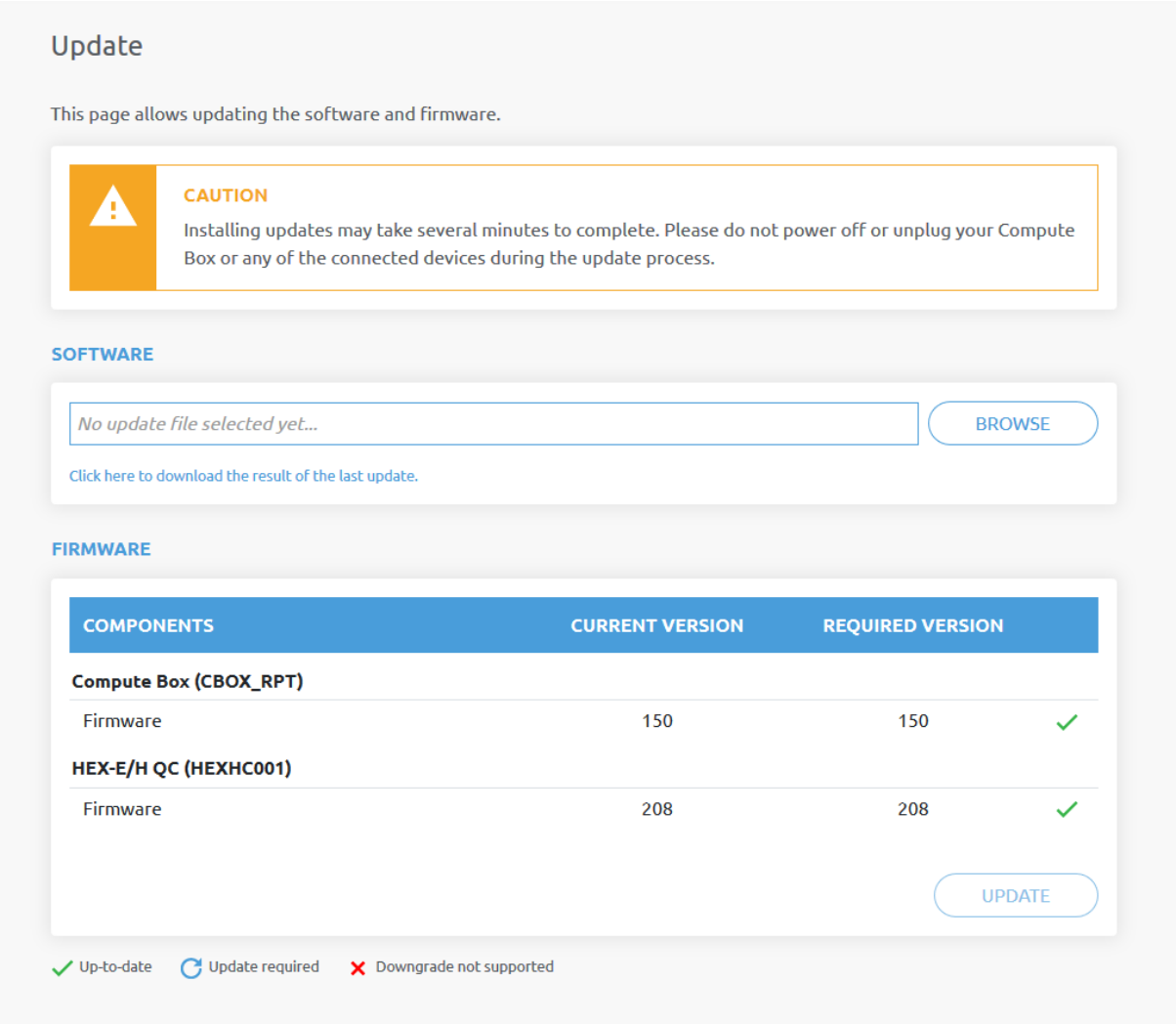
For information on the **Robot settings** and the **WebLytics settings**, see the WebLytics Manual.

5.1.3. Web Client: Weblogic Menu

For information about the WebLogic™ menu, see **4.4. OnRobot WebLogic™ Menu**.

5.1.4. Web Client: Update Menu

This page can be used to update the software on the Compute Box and the firmware on the devices.



CAUTION:

During the update process (takes about 5-10 minutes) DO NOT unplug any device or close the browser window. Otherwise the updated device could be damaged.

The loading screens during the update process are the same for the software and the firmware updates.

Software Update

Download the latest `.cbu` file from the **Downloads** menu on the website.

Click on **Browse** to search for the `.cbu` software update file. The **Browse** button will turn to **Update**.

Click on **Update** to start the software update process.

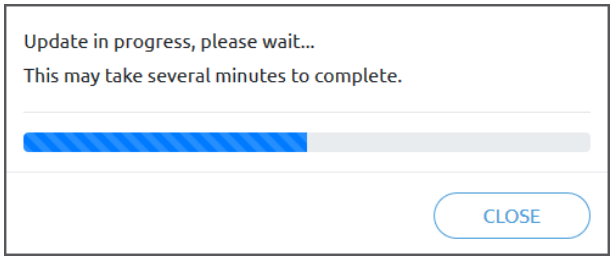
If the update is finished and was successful, the message below is shown.

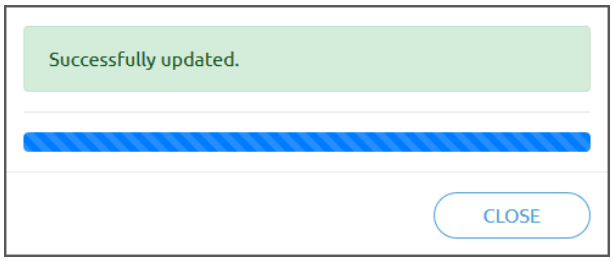
Firmware Update

Update required: A firmware update is required because one of the components is out of date.

Click on **Update** in the firmware section of the page to start the firmware update process.

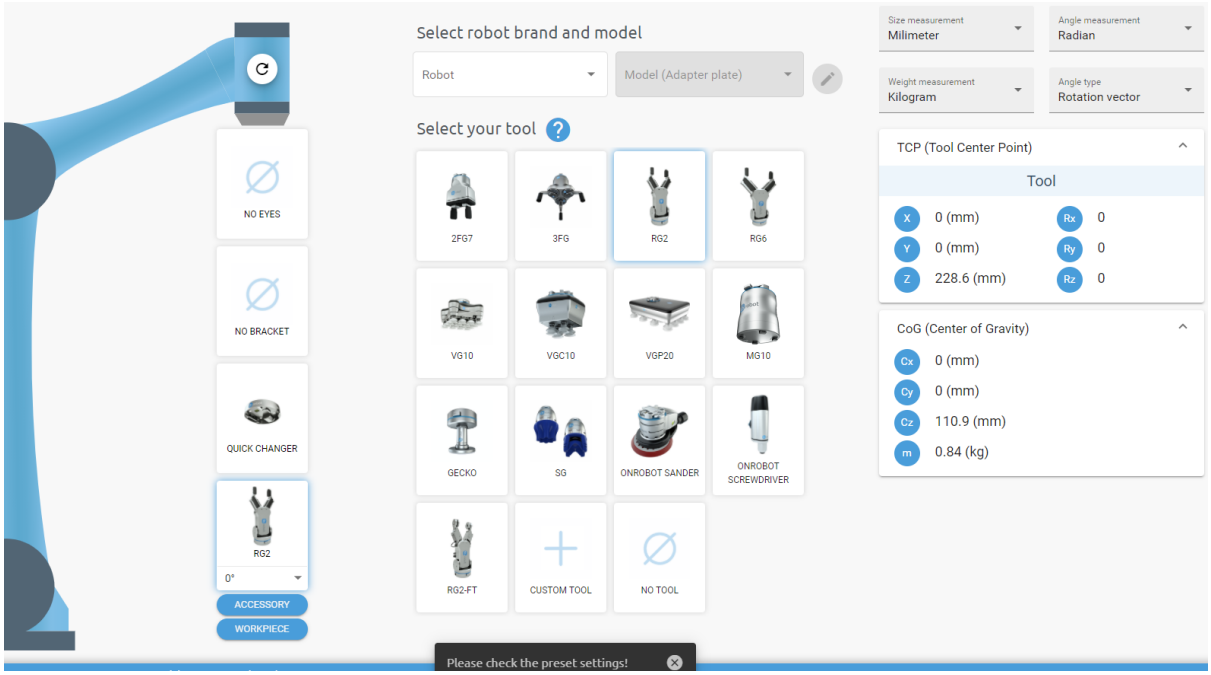
If the update is finished and was successful, the message below is shown.





5.1.5. Web Client: TCP/CoG

Use the TCP/CoG calculator to calculate the TCP (Tool Center Point) and CoG (Center of Gravity) values for your OnRobot product combination.



The TCP/CoG calculator will show the automatically detected settings.

NOTE:

Make sure to check the preset settings before calculating the TCP and CoG values.

1. Select the robot brand and the model you are using from the **Robot** and **Model (Adapter plate)** dropdown menus.

   Click on  to set custom Adapter plate settings.
2. Click on the **No eyes** card to modify the Eyes preset settings.
3. Click on the **No bracket** card to modify the Angle Bracket preset settings.
4. Select mounting type.
5. Select tool.

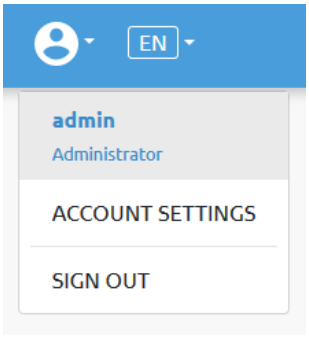
   Click on  to get help about how to enter the values.
6. Click on **Accessory** to select any OnRobot accessories.
7. Click on **Workpiece** to enter the workpiece weight. Then the calculator calculates the resulting payload mass considering the gripper, the mounting, and the workpiece mass.
8. Choose the unit of measure for the values you want to enter from the **Size measurement**, **Angle measurement**, **Weight measurement** and **Angle type** dropdown menus.

The calculator calculates the values which you can see in the **TCP (Tool Center Point)** and **CoG (Center of Gravity)** boxes. These values can be entered into the robot.

5.1.6. Web Client: Account Settings

This menu can be used to:

- See the currently sign-id user
- Go to **Account settings**
- Sign-out

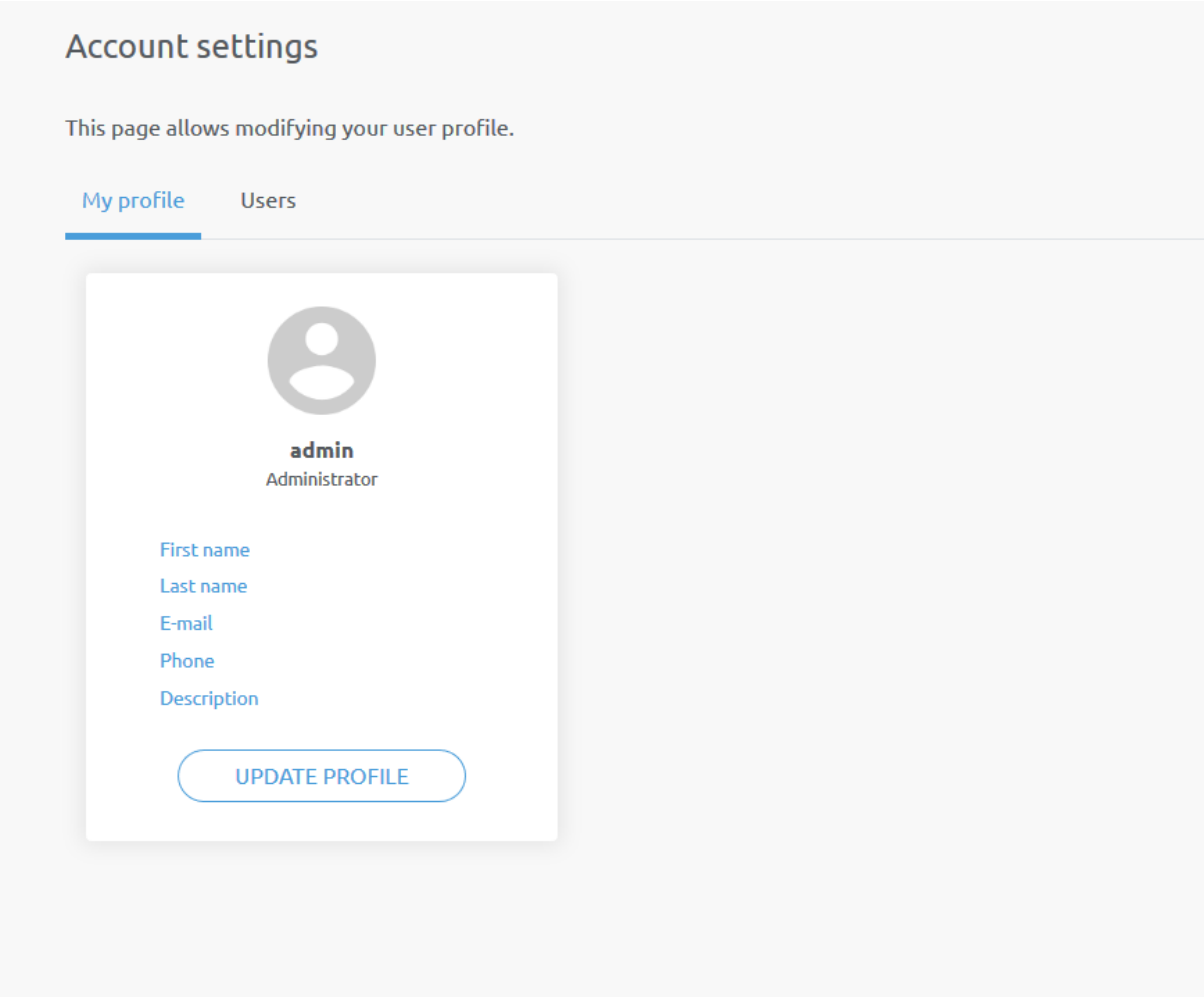


Account settings:

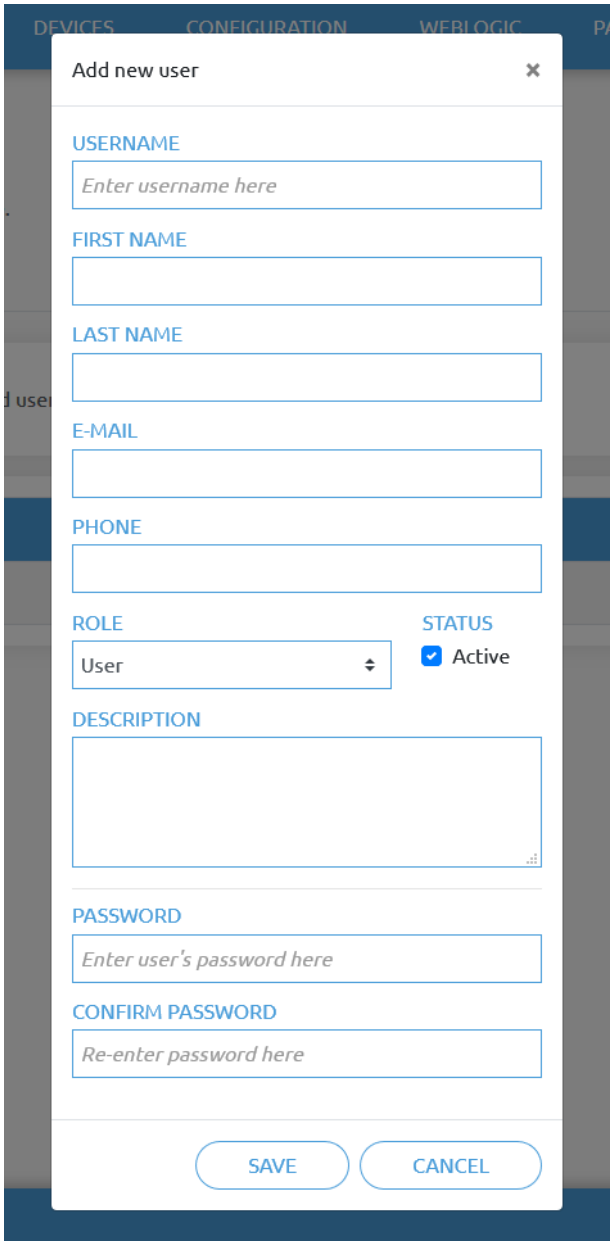
This page has two tabs:

- **My profile** - to see and update the currently logged in users' profile (e.g.: change password)
- **Users** - to manage users (e.g.: add/remove/edit)

On the **My profile** tab to change any profile data (e.g.: password) click on the **Update profile** button.



On the **Users** tab click on the **Add new user** button to add more users:

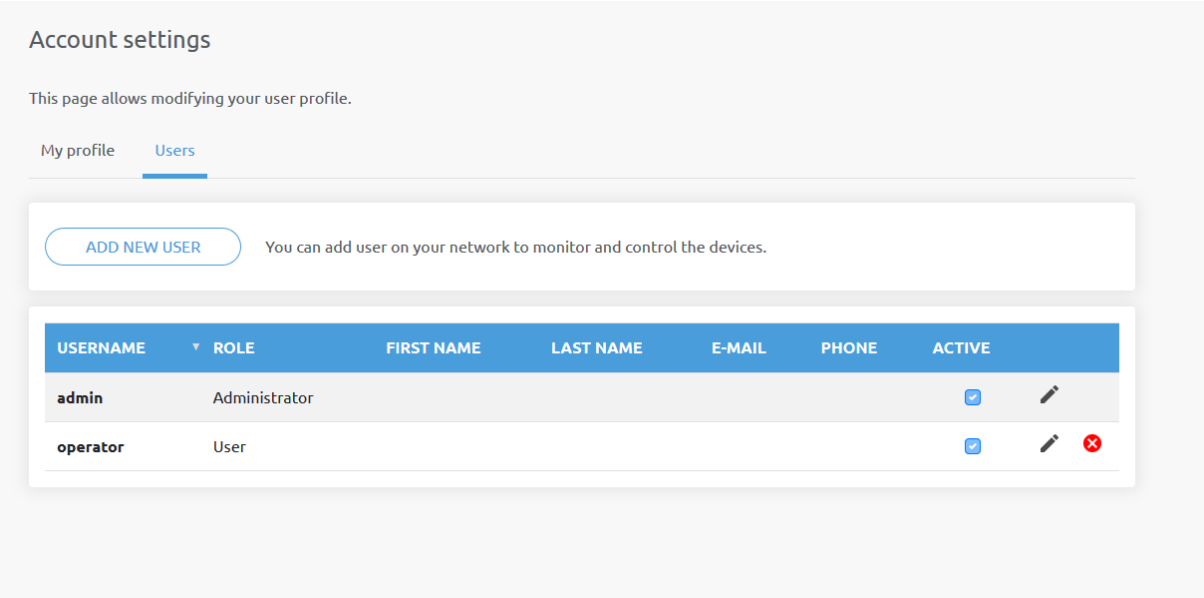


There are three user levels:

- Administrator
- Operator
- User

Fill in the user information and click **Save**.

Later on to change any user information just click on the edit icon.



To prevent a user to sign-in either could be:

- deactivated by changing its **Active** status in the edit mode
- or removed by clicking the delete icon.

6. Hardware Specification

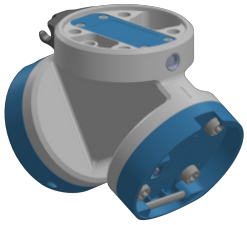
6.1. Technical Sheets

6.1.1. Quick Changers

Quick Changer

Name	Quick Changer I/O support – Robot Side	Quick Changer - Robot Side	Quick Changer - Robot Side 4.5A	Quick Changer - Robot Side
Item #	102326	102037	104277	109498
Version	QC-R – I/O	QC-R v2	QC-R v2-4.5	QC-R v3
Illustration				

Dual Quick Changer

Name	Dual Quick Changer	Dual Quick Changer 4.5A	Dual Quick Changer
Item #	101788	104293	109878
Version	Dual QC v2	Dual QC v2-4.5	Dual QC v3
Illustration			

If not specified, the data represent the combination of the different Quick Changer types/ sides.

Technical data	Min	Typical	Max	Units
Permissible force *	-	-	600*	[N]
Permissible torque *	-	-	40*	[Nm]
Rated payload *	- -	- -	20* 44	[kg] [lbs]
Repeatability	-	-	±0.02	[mm]
IP Classification	67			
Operating life (Tool change)	-	5.000	-	[cycles]

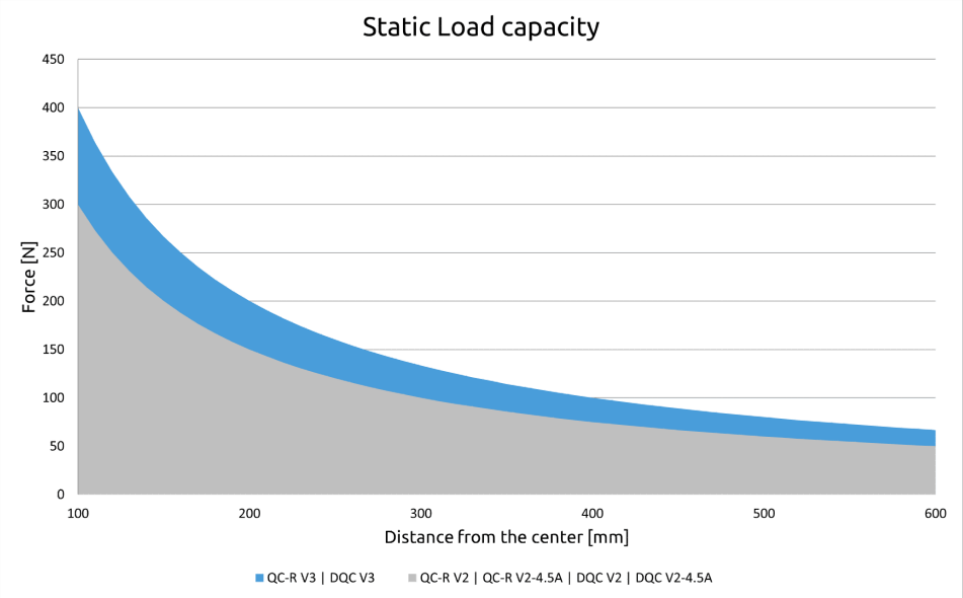
Technical data	Min	Typical	Max	Units
Operating temperature	5 41	- -	50 122	[°C] [°F]

* See static load capacity graph below.

	Quick Changer	Quick Changer for I/O	Dual Quick Changer	Quick Changer - Tool Side	Units
Weight	0.06 0.13	0.093 0.21	0.41 0.9	0.14 0.31	[kg] [lb]
Dimensions	See Mechanical dimension section				

QC-R V3 | DQC V3 and the QC-R V2 | QC-R V2-4.5A | DQC V2 | DQC V2-4.5A

The following graph shows the load capacity that the QC-R V3 | DQC V3 and the QC-R V2 | QC-R V2-4.5A | DQC V2 | DQC V2-4.5A can handle in a static situation. The values for a situation with an acceleration of 2g are half of the static values.



6.1.2. VGC10

General Properties	Minimum	Typical	Maximum	Unit
Vacuum	5 % -0.05 1.5	- - -	80 % -0.810 24	[Vacuum] [Bar] [inHg]
Air flow	0	-	12	[L/min]

General Properties		Minimum	Typical	Maximum	Unit
Payload	With default attachments	- -	- -	6 * 13.2 *	[kg] [lb]
	With customized attachments	- -	10 20	15 33.1	[kg] [lb]
Vacuum cups		1	-	7	[pcs.]
Gripping time		-	0.35	-	[s]
Releasing time		-	0.20	-	[s]
Vacuum pump		Integrated, electric BLDC			
Dust filters		Integrated 50µm, field replaceable			
IP Classification		IP54**			
Dimensions		101 x 100 x 100 3.97 x 3.94 x 3.94			[mm] [inch]
Weight		0.814 1.79			[kg] [lb]

* By using three 40mm cups. More info in the table **Number of Cups needed for non-porous materials depending on payload and vacuum**.

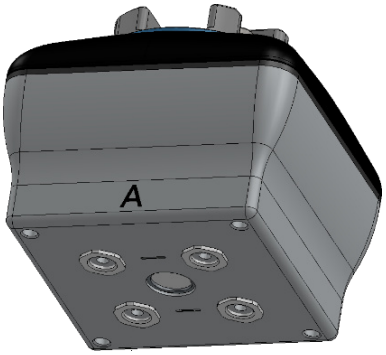
** Do not use vacuum grippers in wet or damp conditions, particularly in CNC applications with moisture or cutting fluids. It can damage the gripper.

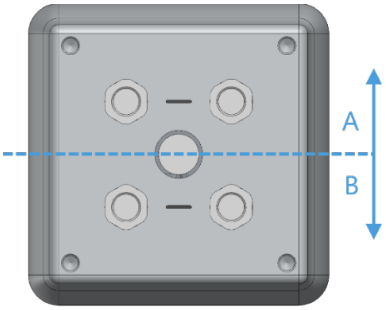
Operating Conditions	Minimum	Typical	Maximum	Unit
Power supply	20.4	24	28.8	[V]
Current consumption	50	600	1500	[mA]
Operating temperature (gripper and vacuum cups)	0 32	- -	50 122	[°C] [°F]
Relative humidity (non-condensing)	0	-	95	[%]

Warranty: *3 years or 3,000,000 cycles, whichever comes first, in accordance with the official warranty terms outlined in the Partner Agreement.*

2 Channels

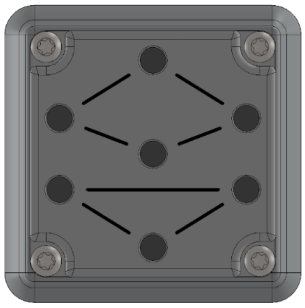
The VGC10 has 4 holes to use fittings with vacuum cups or blinding screws as needed. It also has lines which show the holes that are communicated together. This is useful when using channels A and B independently for vacuum.



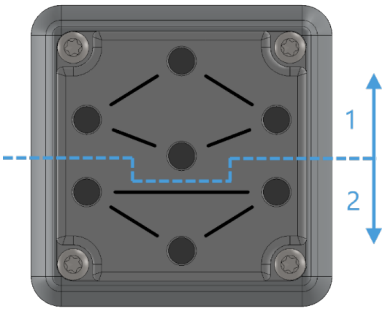


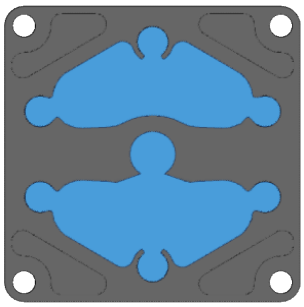
Adaptor Plate

The VGC10 comes with an Adaptor Plate which provides extra flexibility to locate the vacuum cups in different configurations.

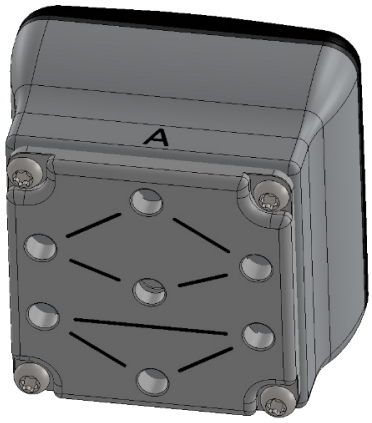


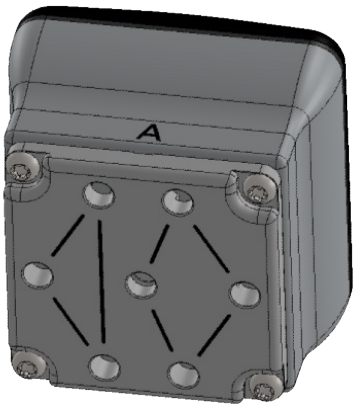
The Adaptor Plate has 7 holes to use fittings with vacuum cups or blinding screws as needed. It also has lines which show the holes that are communicated together. This is useful when using channel A and B independently for vacuum.



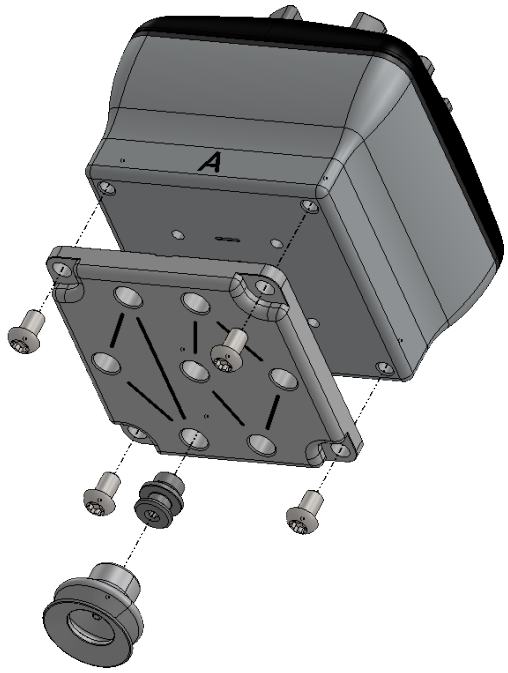


The Adaptor Plate can be placed in different positions by rotating it 90º. Having as reference the letters A and B written on the gripper housing, the Adaptor Plate can be placed to separate both channels or to communicate them. If the Adaptor Plate is placed as in picture below on the left, both channels will be separated, and they can be used independently or combined. If the Adaptor Plate is placed as in picture below on the right, both channels will be communicated and a higher air flow can be achieved, although both channels will have to be used combined.





To mount the Adaptor Plate simply remove the 4 fittings or blinding screws from the gripper, place the Adaptor Plate by choosing the right angle according to the desired configuration, and tighten the 4 screws with 4 Nm tighten torque.



NOTE:

Please, note that the O-Ring in the Adaptor Plate is not glued therefore it can be pulled out. If that happens simply put it back in place and the gripper will work as before.

Extension Pipe

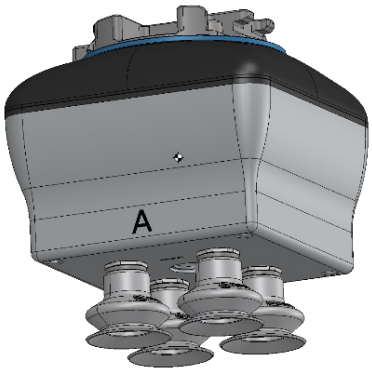
The Extension Pipe provides an extra length of 50 mm to reach narrow spaces.

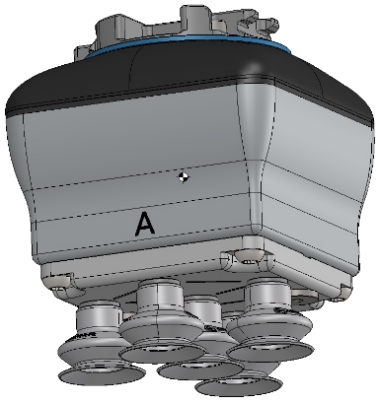
NOTE:

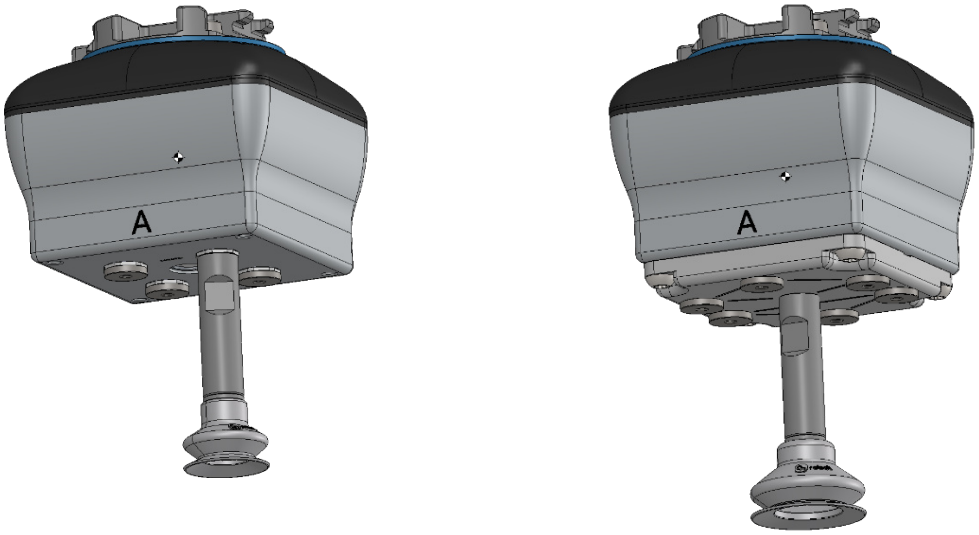
Remember to use the Adaptor Plate rotated to achieve a higher air flow when using both channels together.

The Extension Pipe can be mounted in any of the holes by simply screwing it in and adding a fitting on top as shown in the image below.

Below different mounting configurations with the provided attachments are shown.

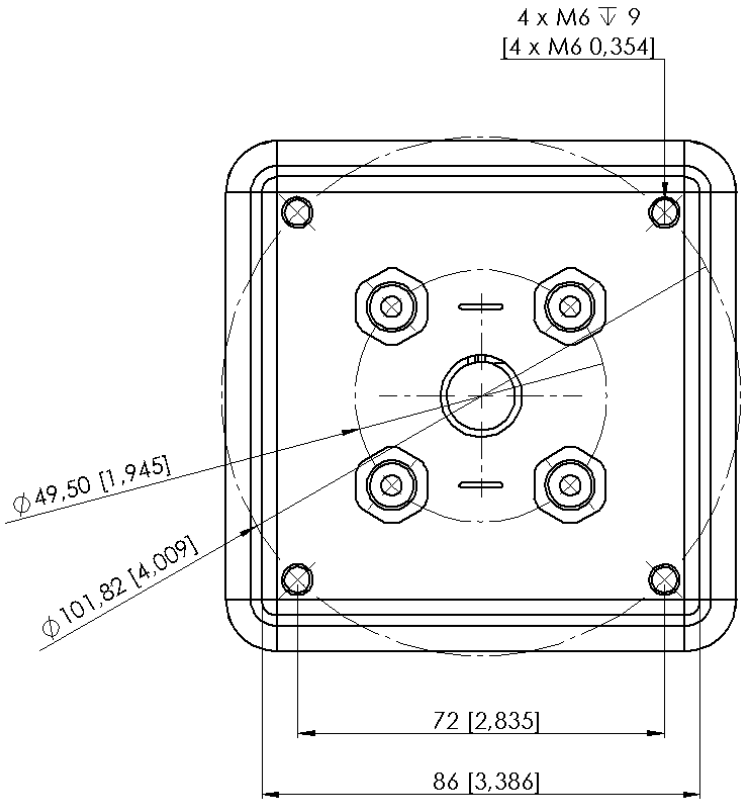




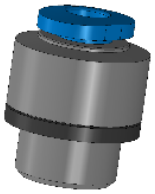


Customized Adaptor Plates and Push-in Fittings

The design of the VGC10 is meant to facilitate the users to make their own adaptor plates to create different kinds of configurations. The dimensions needed to create a customized adaptor plate are shown in the image below.

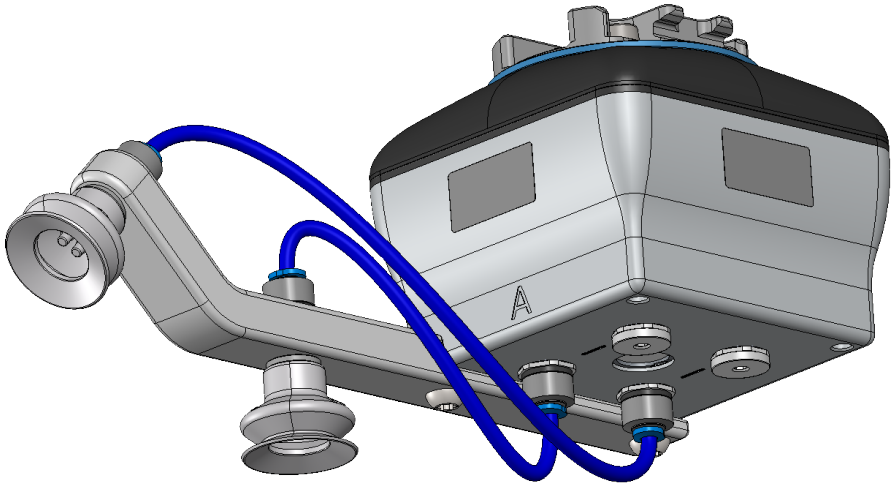


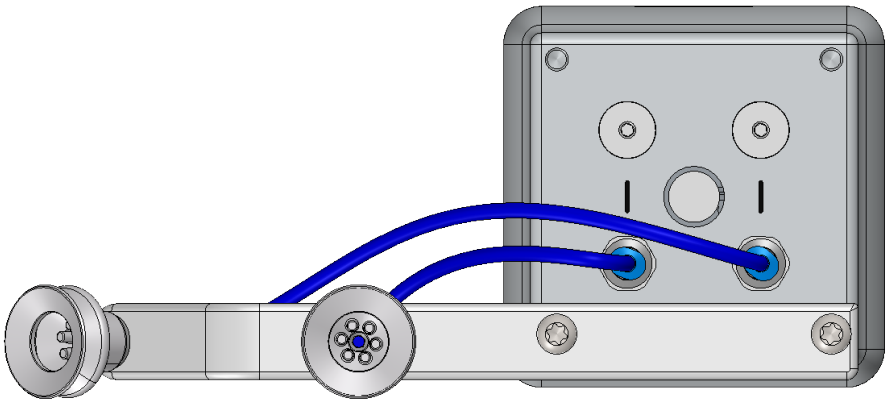
The Push-in Fittings are used to attach 4 mm vacuum tubes to create customized configuration that required remote vacuum. In most cases, this size is enough for generating the needed vacuum from the pump in the gripper.



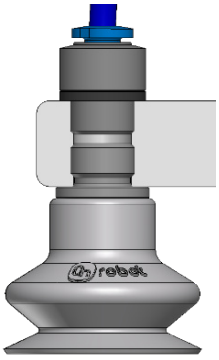
The commercial name of the Push-in Fittings is Fitting QSM-G1/8-4-I-R in case some more units need to be purchased.

An example of a customized configuration with a homemade adaptor plate and remote vacuum is shown below.





The image below shows how the push-in fittings and the normal fittings are communicated.



Payload

The lifting capacity of the VG grippers depends primarily on the following parameters:

- Vacuum cups
- Vacuum
- Air flow

Vacuum Cups

Choosing the right vacuum cups for your application is essential. The VG grippers come with common 15, 30 and 40 mm silicone vacuum cups (see table below) which are good for hard and flat surfaces, but not good for uneven surfaces and it might leave microscopic traces of silicone on the workpiece which can cause issues with some types of painting processes afterwards.

Image	External Diameter [mm]	Internal Diameter [mm]	Gripping Area [mm2]
	15	6	29
	30	16	200
	40	24	450

For non-porous materials, the OnRobot suction cups are highly recommended. Some of the most common non-porous materials are listed below:

- Composites
- Glass
- High density cardboard
- High density paper
- Metals
- Plastic
- Porous materials with a sealed surface
- Varnished wood

In an ideal case, working with non-porous material workpieces where there are no air flow going through the workpiece, the table below shows the number of cups and the cup size needed depending on the payload (workpiece mass) and the vacuum used.

Number of Cups needed for non-porous materials depending on payload and vacuum :

	 15 mm				 30 mm				 40 mm			
Payload (kg)	**Vacuum (kPa)**				**Vacuum (kPa)**				**Vacuum (kPa)**			
	20	**40**	**60**	**75**	**20**	**40**	**60**	**75**	**20**	**40**	**60**	**75**
0.1	3	2	1	1	1	1	1	1	1	1	1	1
0.5	13	7	5	4	2	1	1	1	1	1	1	1
1	-	13	9	7	4	2	2	1	2	1	1	1
2	-	-	-	14	8	4	3	2	4	2	2	1
3	-	-	-	-	12	6	4	3	5	3	2	2
4	-	-	-	-	15	8	5	4	7	4	3	2
5	-	-	-	-	-	10	7	5	9	5	3	3
6	-	-	-	-	-	12	8	6	10	5	4	3
7	-	-	-	-	-	13	9	7	12	6	4	4
8	-	-	-	-	-	15	10	8	14	7	5	4
9	-	-	-	-	-	-	12	9	15	8	5	4
10	-	-	-	-	-	-	13	10	-	9	6	5
11	-	-	-	-	-	-	14	11	-	9	6	5
12	-	-	-	-	-	-	15	12	-	10	7	6
13	-	-	-	-	-	-	16	13	-	11	8	6
14	-	-	-	-	-	-	-	14	-	12	8	7
15	-	-	-	-	-	-	-	15	-	13	9	7

NOTE:

To use more than 7 (15mm), 4 (30mm) or 3 (40mm) vacuum cups with the VGC10 a customized adaptor plate is needed.

The table above is created with the following formula that equalizes the lifting force with the payload considering 1.5G of acceleration.

$$Amount_{Cups} * Area_{Cup}[mm] = 14700 \frac{Payload\ [kg]}{Vacuum\ [kPa]}$$

It is often a good idea to use more vacuum cups than needed, to accommodate for vibrations, leaks and other unexpected conditions. However, the more vacuum cups, the more air leakage (air flow) is expected and the more air is moved in a grip resulting in longer gripping times.

When using porous materials, the vacuum that can be achieve by using the OnRobot suction cups will depend on the material itself and will be between the range stated in the specifications. Some of the most common non-porous materials are listed below:

- Fabrics
- Foam
- Foam with open cells
- Low density cardboard
- Low density paper
- Perforated materials
- Untreated wood

See the table below with general recommendations, in case other suction cups are needed for specific materials.

Workpiece surface	Vacuum cup shape	Vacuum cup material
Hard and flat	Normal or dual lip	Silicone or NBR
Soft plastic or plastic bag	Special plastic bag type	Special plastic bag type
Hard but curved or uneven	Thin dual lip	Silicone or soft NBR
To be painted afterwards	Any type	NBR only
Varying heights	1.5 or more bevels	Any type

NOTE:

It is recommended to consult a vacuum cup specialist to find the optimal vacuum cup where the standard types are insufficient.

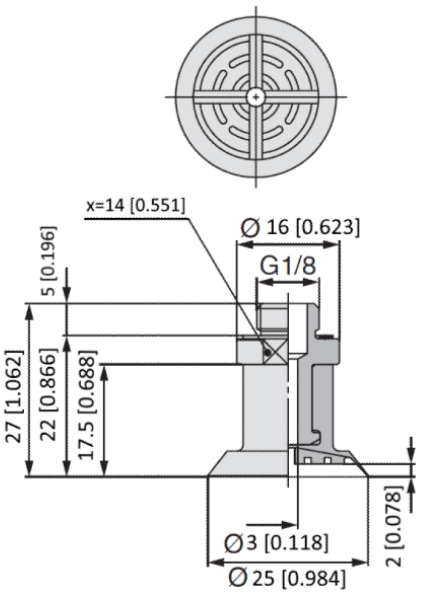
Suction Cups for Foil and Bags Ø25

This suction cup improves the vacuum gripper's ability to pick and place workpieces with surface of foil, thin paper, and plastic bags during irregular and angular arm movement.

	 25 mm			
Number of Cups	**1**	**2**	**3**	**4**
Surface	**kg**			
Foil	0.83	1.07	1.43	1.57
Thin paper	1.08	1.71	2.23	3.21
Foil - round shape	1.28	2.32	3.32	4.25
Plastic bag	0.32	0.54	0.63	0.74

The vacuum cup is silicone rubber compliant with the USA Food and Drug Administration (FDA).

Using this vacuum cup reduces the wrinkles made on thin workpieces (film, vinyl, and so on) during absorption:  .



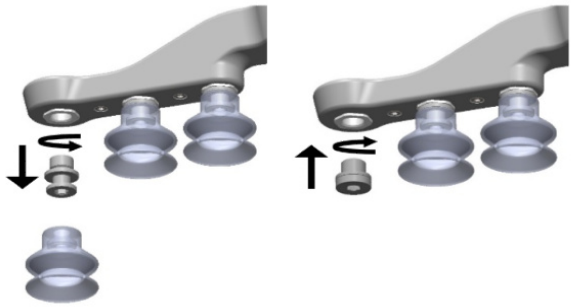
This vacuum cup is an accessory and need to be purchased separately. To purchase the vacuum cup, contact the vendor from where the VGx gripper has been purchased.

- Suction Cups for foil and bags Ø25 - PN 106964

Fittings and Blind Screws

It is possible to change suction cups simply by pulling them off the fittings. It might be a bit challenging to remove the 15 mm Diameter vacuum cups. As suggestion try to stretch the silicon to one of the sides and then pull it out.

Unused holes can be blinded using a blind screw, and each fitting can be changed to a different type to match the desired suction cup. The fittings and the blinding screws are mounted or dismounted by screwing (2Nm tightening torque) or unscrewing them with the provided 3 mm Allen key.



The thread size is the commonly used G1/8”; allowing for standard fittings, blinders and extenders to be fitted directly to the VG grippers.

Vacuum

Vacuum is defined as the percentage of absolute vacuum achieved relative to atmospheric pressure, i.e.:

% vacuum	Bar	kPa	inHg	Typically used for
0%	0.00rel. 1.01 abs.	0.00rel. 101.3 abs.	0.0rel. 29.9 abs.	No vacuum / No lifting capacity
20%	0.20rel. 0.81 abs.	20.3rel. 81.1 abs.	6.0rel. 23.9 abs.	Cardboard and thin plastics
40%	0.41rel. 0.61 abs.	40.5rel. 60.8 abs.	12.0rel. 18.0 abs.	Light workpieces and long suction cup life span
60%	0.61rel. 0.41 abs.	60.8rel. 40.5 abs.	18.0rel. 12.0 abs.	Heavy workpieces and strongly secured grips
80%	0.81rel. 0.20 abs.	81.1rel. 20.3 abs.	23.9rel. 6.0 abs.	Max. vacuum. Not recommended

The vacuum in kPa setting is the target vacuum. The pump will run at full speed until the target vacuum is achieved, and then run at a lower speed necessary to maintain the target vacuum.

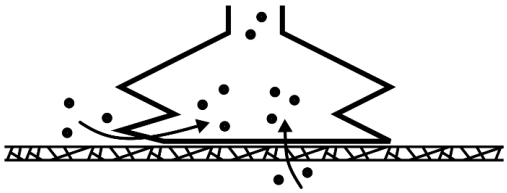
The pressure in the atmosphere varies with weather, temperature and altitude. The VG grippers automatically compensate for altitudes up to 2km, where the pressure is about 80% of sea level.

Air Flow

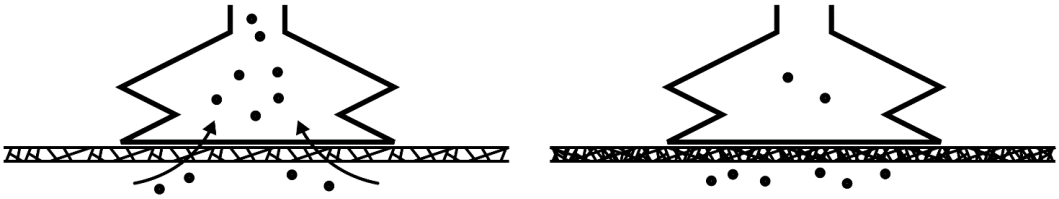
Air flow is the amount of air that must be pumped to maintain the target vacuum. A completely tight system will not have any air flow, whereas real life applications have some smaller air leakages from two different sources:

- Leaking vacuum cup lips
- Leaking workpieces

The smallest leak under a vacuum cup can be hard to find (see picture below).



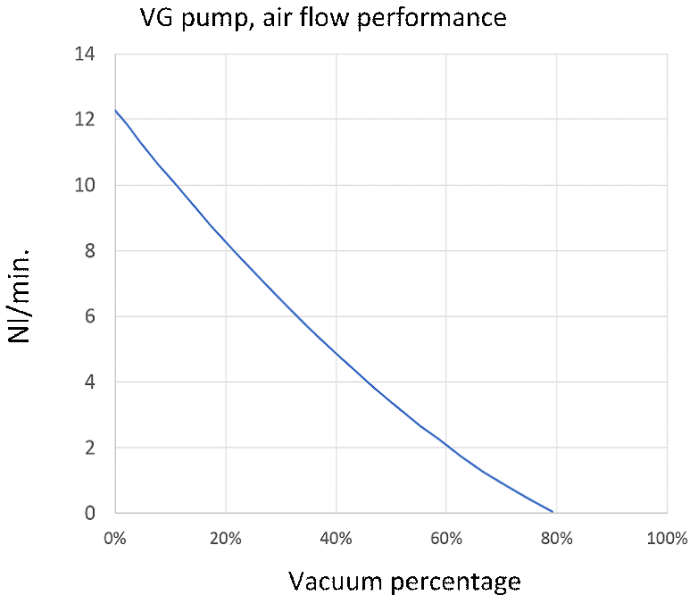
Leaking workpieces can be even harder to identify. Things that look completely tight might not be tight at all. A typical example is coarse cardboard boxes. The thin outer layer is often requiring a lot of air flow to create a pressure difference over it (see figure below).



Therefore, the users must be aware of the following:

- VG grippers are not suitable for most uncoated, coarse cardboard boxes.
- Extra attention must be paid to leakages, e.g. vacuum cup shape and surface roughness

The air flow capability of a VG grippers is shown in the graph below:



NOTE:

The easiest way to check if a cardboard box is sufficiently tight is simply to test it using the VG grippers.

A high vacuum percentage setting does not give a higher lifting capacity on corrugated cardboard. In fact, a lower setting is recommended, e.g. 20%.

A low vacuum setting results in less air flow and less friction below the vacuum cups. This means VG gripper filters and vacuum cups will last longer.

6.1.3. Compute Box

6.1.3.1. With 1.5A Wall Adapter (36W)

Supplied Wall Adapter	Minimum	Typical	Maximum	Unit
Input voltage (AC)	100	-	240	[V]
Input current	-	-	1	[A]
Output voltage	-	24	-	[V]
Output current	-	1.5	-	[A]

Compute Box Power input (24V connector)	Minimum	Typical	Maximum	Unit
Supply voltage	-	24	25	[V]
Supply current	-	1.5	-	[A]

Compute Box Power output (Device connector)	Minimum	Typical	Maximum	Unit
Output voltage	-	24	25	[V]
Output current	-	1.5	-	[A]

6.1.3.2. With 6.25A Wall Adapter (150W)

Supplied Wall Adapter	Minimum	Typical	Maximum	Unit
Input voltage (AC)	100	-	240	[V]
Input current	-	-	2.0	[A]
Output voltage	-	24	-	[V]
Output current	-	6.25	-	[A]

Compute Box Power input (24V connector)	Minimum	Typical	Maximum	Unit
Supply voltage	-	24	25	[V]
Supply current	-	6.25	-	[A]

Compute Box Power output (Device connector)	Minimum	Typical	Maximum	Unit
Output voltage	-	24	25	[V]
Output current	-	4.5	4.5*	[A]

* Peak currents

6.1.3.3. Compute Box I/O interface

Power Reference (24V, GND)	Minimum	Typical	Maximum	Unit
Reference output voltage	-	24	25	[V]
Reference output current	-	-	100	[mA]

Output (DO1-DO8)	Minimum	Typical	Maximum	Unit
Output current - altogether	-	-	100	[mA]
Output resistance (active state)	-	24	-	[Ω]

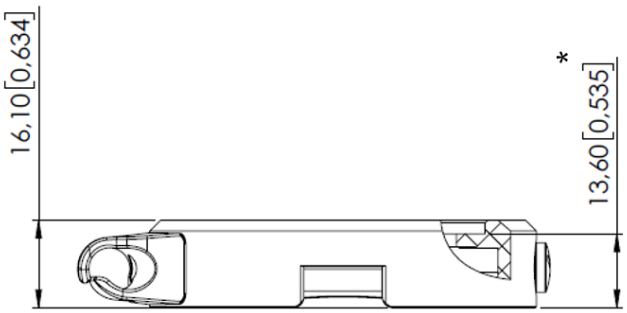
Input (DI1-DI8) as PNP	Minimum	Typical	Maximum	Unit
Voltage level - TRUE	18	24	30	[V]
Voltage level - FALSE	-0.5	0	2.5	[V]
Input current	-	-	6	[mA]
Input resistance	-	5	-	[kΩ]

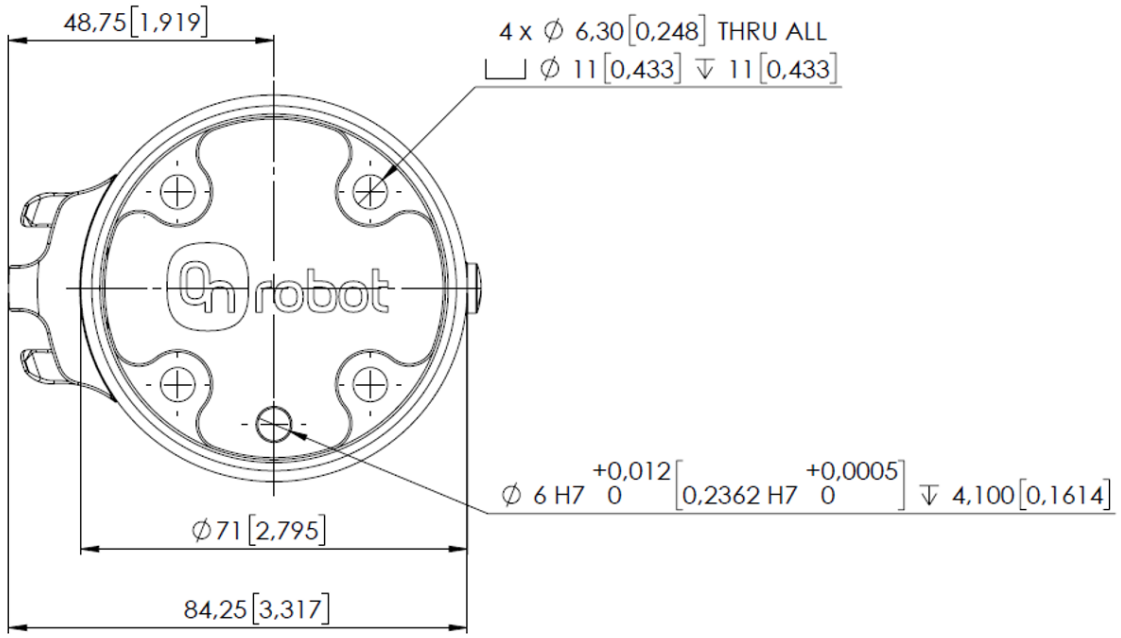
Input (DI1-DI8) as NPN	Minimum	Typical	Maximum	Unit
Voltage level - TRUE	-0.5	0	5	[V]
Voltage level - FALSE	18	24	30	[V]
Input current	-	-	6	[mA]
Input resistance	-	5	-	[kΩ]

6.2. Mechanical Drawings

6.2.1. Mountings

6.2.1.1. Quick Changer - Robot Side





* Distance from Robot flange interface to OnRobot tool.

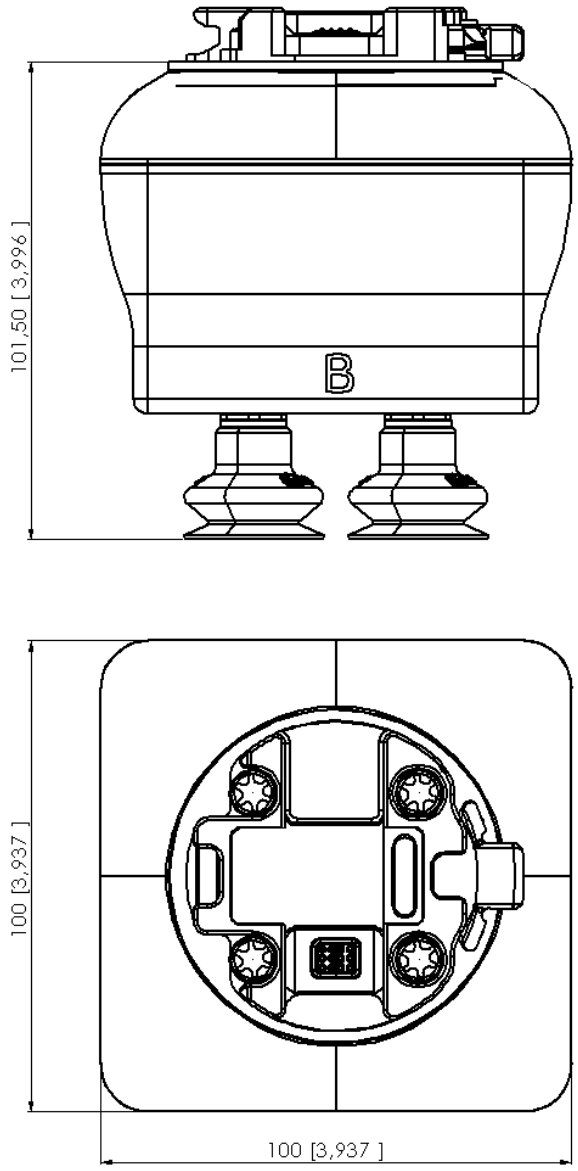
All dimensions are in mm and [inches].

NOTE:

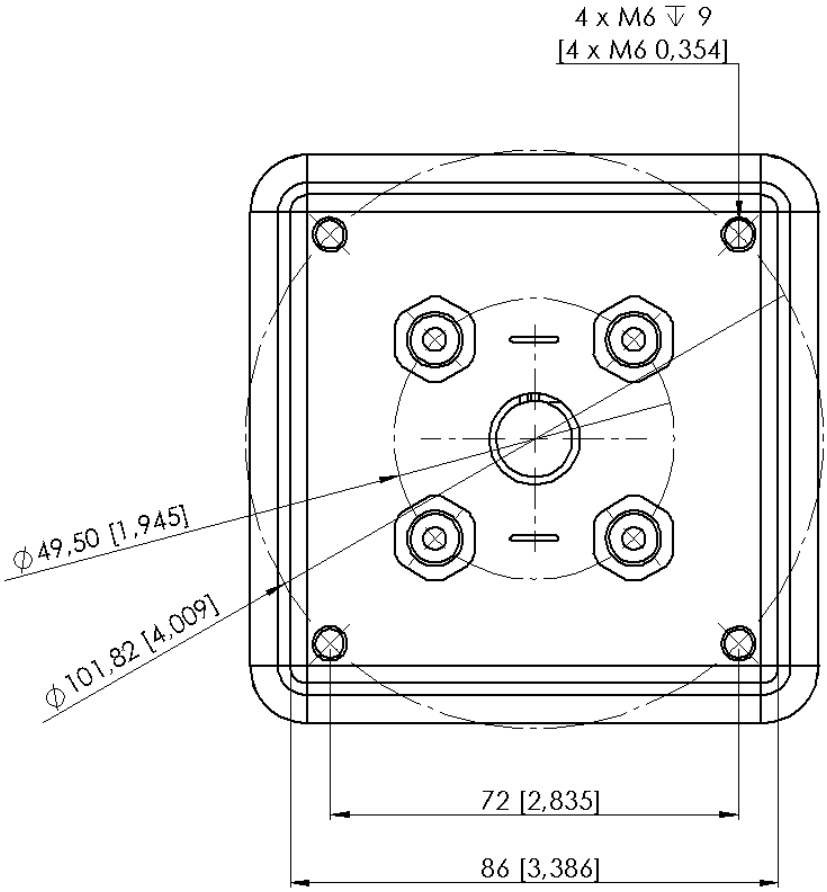
The cable holder (on the left side) is only required with the long (5 meter) cable.

6.2.2. Tools

6.2.2.1. VGC10



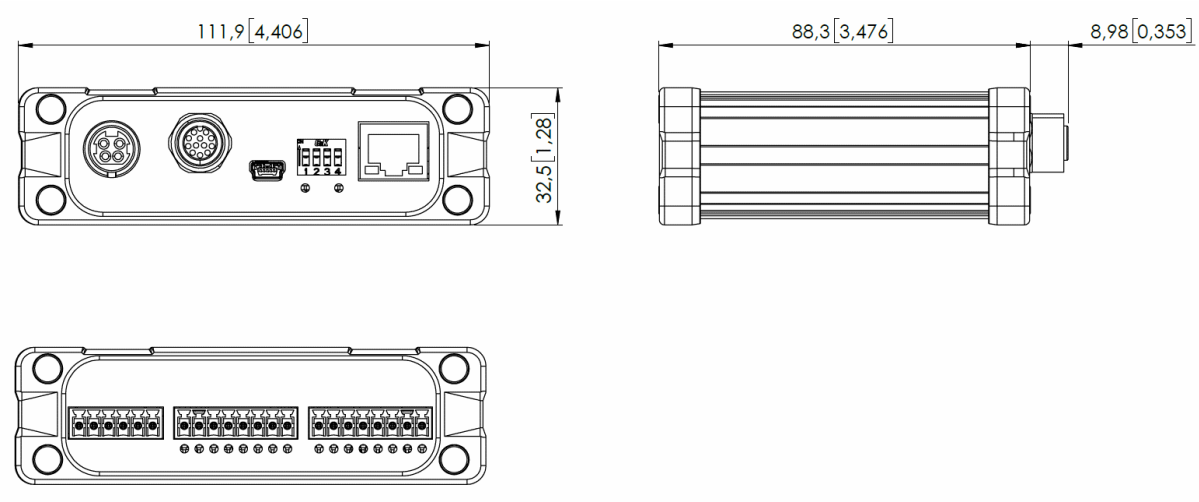
All dimensions are in mm and [inches].



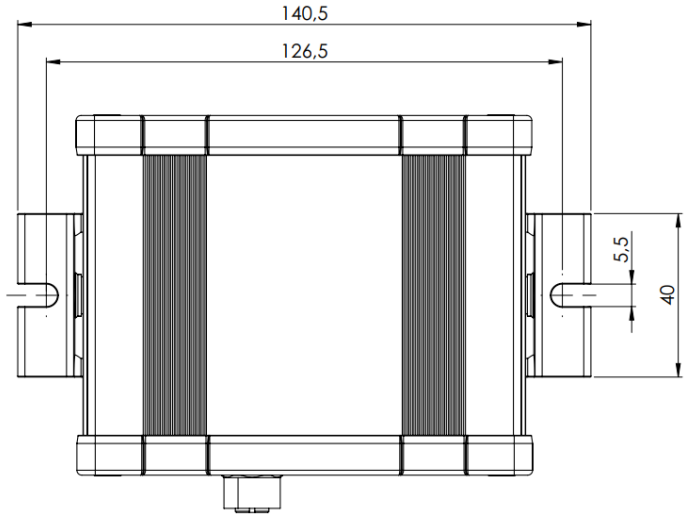
All dimensions are in mm and [inches].

6.2.2.2. Compute Box

Compute Box



Clip-on Bracket (optional)



All dimensions are in mm and [inches].

6.3. TCP, CoG

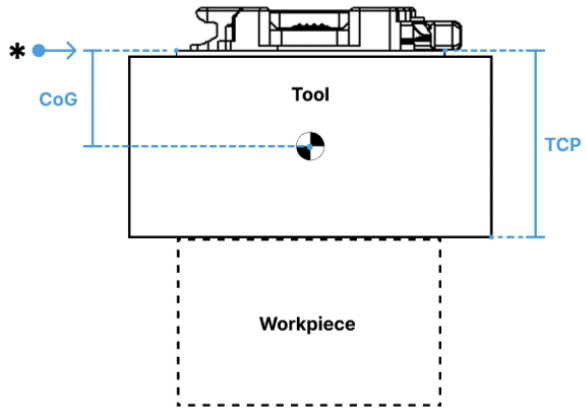
Use the TCP/CoG calculator to calculate the TCP and CoG values for your OnRobot product combination.

The TCP/CoG calculator can be downloaded from **www.onrobot.com/downloads**.

NOTE:

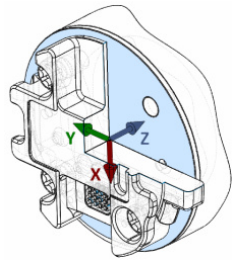
For more information, see the **5.1.5. Web Client: TCP, CoG** section.

TCP, CoG, and weight parameters of the single devices (without any mounting/adapter and/or workpiece):



* The TCP in Z is measured from the tool's base point to the start of the workpiece, as shown in the image. Similarly, the CoG is measured from the same base point to the center of gravity, as indicated.

6.3.1. VGC10

Coordinate system	TCP [mm]	Center of Gravity [mm]	Weight
	X=0 Y=0 Z=75	cX=-1 cY=-1 cZ=37	0.814 kg 1.79 lb

* With no attachments

7. Maintenance

WARNING:

An overall inspection of OnRobot's end-of-arm tooling and accessories must be performed regularly and at least once every 6 months. This inspection must include but is not limited to check for defective material and clean gripping surfaces.

Use original spare parts, and original service instructions for OnRobot's end-of-arm tooling, accessories and the robot. Failure to comply with this precaution can cause unexpected risks, resulting in severe injury.

If you have questions regarding spare parts and repair, please visit our website **www.onrobot.com** to contact us.

7.1. VG10/VGC10

The VG grippers are equipped with one filter for each suction cup socket, and one filter for the exhaust. How often the filters need to be changed depends on the nature of the work piece and the working environment. The VG grippers automatically de-dust the filters every time a grip is released. However, particles can eventually get stuck and build up inside the filter, lowering the VG grippers performance.

A filter service kit is available, which include both new filters and tools needed.

- Filter service kit for VG10, PN 100064

Neither use nor power on the VG grippers without filters. Dust, hair and larger particles can get stuck in pump membranes and valve seats, causing permanent damage to the VG grippers.

DANGER:

Identify how often the filters need service and schedule maintenance with a fixed period short enough to ensure a firm grip at all times.

An overall inspection of the VG grippers must be performed regularly and at least once every 6 months.

Never power the VG grippers without filters or with filters mounted incorrectly. Failure to comply with this precaution can cause irreversible failure of pump or valves.

8. Troubleshooting

9. Warranties

9.1. Patents

Products of OnRobot A/S are protected by several patents; some still in global publication process (Patents pending). All manufacturers of copies and similar products violating any patent claims will be prosecuted.

9.2. Product Warranty

Without prejudice to any claim the user (customer) may have in relation to the dealer or retailer, the customer shall be granted a manufacturer's warranty under the conditions set out below. In the case of:

- Following new grippers - namely VG10, VGC10, VGP20, VGP30, RG2, RG6, 2FG7, 2FG14, 2FGP20, 3FG15, 3FG25, SG Base Part, MG10 and Gecko Gripper - exhibiting defects resulting from manufacturing and/or material faults within 3 years or 3.000.000 operating cycles, whichever comes first.
- Non-Gripper products exhibiting defects resulting from manufacturing and/or material faults within 15 months.

from shipment, OnRobot A/S shall provide the necessary spare parts or repair, while the customer (user) shall provide working hours to replace the spare parts in the field.

This warranty does not apply to wearable or consumable parts as listed in the Spare Parts list, including but not limited to fingers, fingertips, bellows, vacuum cups, silicone parts, gecko pads, or other components that are expected to wear down during normal operation. This warranty shall be invalid if the device defect is attributable to improper treatment and/or failure to comply with information contained in the user guides. This warranty shall not apply to or extend to services performed by the authorized dealer or the customer themselves (e.g. installation, configuration, software downloads). The purchase receipt, together with the date of purchase, shall be required as evidence for invoking the warranty. Claims under the warranty must be submitted within two months of the warranty default becoming evident. Ownership of devices or components replaced by and returned to OnRobot A/S shall vest in OnRobot A/S. Any other claims resulting out of or in connection with the device shall be excluded from this warranty. Nothing in this warranty shall attempt to limit or exclude a customer's statutory rights nor the manufacturer's liability for death or personal injury resulting from its negligence. The duration of the warranty shall not be extended by services rendered under the terms of the warranty. Insofar as no warranty default exists, OnRobot A/S reserves the right to charge the customer for replacement or repair. The above provisions do not imply a change in the burden of proof to the detriment of the customer. In case of a device exhibiting defects, OnRobot A/S shall not be liable for any indirect, incidental, special or consequential damages, including but not limited to, lost profits, loss of use, loss of production or damage to other production equipment.

In case of a device exhibiting defects, OnRobot A/S shall not cover any consequential damage or loss, such as loss of production or damage to other production equipment.

9.3. Disclaimer

OnRobot A/S continues to improve reliability and performance of its products, and therefore reserves the right to upgrade the product without prior warning. OnRobot A/S ensures that

the content of this manual is precise and correct but takes no responsibility for any errors or missing information.

10. Certifications

intertek
Total Quality. Assured.

CERTIFICATE OF REGISTRATION

This is to certify that the management system of:

OnRobot A/S

Main Site: Teglværksvej 47 H, 5220 Odense SØ, Denmark
Chamber of Commerce: 36492449

See appendix for additional sites and additional site scopes

has been registered by Intertek as conforming to the requirements of:

ISO 9001:2015

The management system is applicable to:

Development, manufacturing and sale of end-of-arm tooling, software, and complete application solutions for collaborative robotic applications.

Certificate Number:
0096721

Initial Certification Date:
26 November 2019

Date of Certification Decision:
10 November 2025

Issuing Date:
11 November 2025

Valid Until:
25 November 2028

Accred. no. 1639
Certification of management systems
ISO/IEC 17021-1

Angelique Björklund
MD, Business Assurance Nordics

Intertek Certification AB,
P.O. Box 1103,
SE-164 22 Kista, Sweden

In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with Intertek's requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone. The certificate remains the property of Intertek, to whom it must be returned upon request.

Page 1 of 2

10.1. Manufacturer Test Certificate

All OnRobot products are tested according to OnRobot test specification for the individual product that follows the ISO 9001 standard procedure. OnRobot testing procedure undergoes continuous review and improvement.

10.2. EMC

Attestation of Conformity no. 122-28268-A2

FORCE Technology has performed compliance testing on electrical products since 1967. FORCE Technology is an accredited test house according to EN17025 and participates in international standardization with organizations such as CEN/CENELEC, IEC/CISPR and ETSI. This attestation of conformity with the below mentioned standards and/or normative documents is based on accredited tests and/or technical assessments carried out at FORCE Technology.

Attestation holder
OnRobot A/S, Teglværksvej 47H, 5220 Odense SØ, Denmark

Product identification - Name (Part no.)
Power Supplies: PSU (104788), VER36U240-JA, VES120PS24, VES150PS24 (106034).
Controllers: OR:BASE (113073), OR:COM (113088), OR:MACHINE (113090), UR Kit with Compute Box (102344), Doosan Robot kit (102345), Techman/OMRON TM Robot Kit (102359), KUKA-A Robot kit (102360), KUKA-B Robot kit (102361), FANUC Robot kit (102362), Kawasaki-B Robot kit (102363), Kawasaki-C Robot kit (102364), Kawasaki-D Robot kit (102365), Kawasaki-E Robot kit (102366), Yaskawa-F Robot kit (102367), Yaskawa-G Robot kit (102368), Yaskawa-H Robot kit (102369), NACHI-I Robot kit (102370), NACHI-J Robot kit (102371), Hanwha Robot Kit (103208), Eye Box (103707).
Mountings: Dual Quick Changer (101788), Dual Quick Changer 4,5A (104293), Dual Quick Changer v2 4,5A (109878), HEX-E QC (102111), HEX-H QC (102376), Quick Changer I/O (102326), Quick Changer Kit (102277), Quick Changer Kit 4,5A (104388), Quick Changer Robot side (102037), Quick Changer Robot side 4,5A (104277).
Tools: 2FG7 (106376), 3FG15 (103666), 2FGP20 (108585), Eyes Lighting Kit (107080), Gecko Gripper (104086/104087/104088), Lift100 (108800), Lift100V2 (109000), MG10 (105202), Eyes (103903), Pallet Station (109401), RG2 (102012), RG2-FT (102075), RG6 (102021), Sander (104876), Screwdriver (103961), SG (103546), VG10 (101661), VGC10 (102844), VGP20 (107242).

Manufacturer
OnRobot A/S

Technical documentation
FORCE Technology Assessment no. 122-28268-A1 and 122-28268-A2.

Standards/Normative documents

IEC 61000-3-2:2018	EN 61000-3-3:2013
IEC 61000-3-3:2013	EN 61000-3-3:2013/A1:2019
IEC 61000-3-3:2013/AMD1:2017	EN 61000-6-2:2005
IEC 61000-6-2:2016	EN 61000-6-2:2005/AC:2005
IEC 61000-6-4:2018	EN IEC 61000-6-2:2019
EMC Directive 2014/30/EU, Article 6	EN 61000-6-4:2007
EN 61000-3-2:2014	EN 61000-6-4:2007/A1:2011
EN IEC 61000-3-2:2019	EN IEC 61000-6-4:2019

Additionally, for RG2 (102012), RG6 (102021), Lift100 (108800) and Lift100V2 (109000):

IEC 61326-3-1:2017, Industry locations, SIL 2	EN 61326-3-1:2017, Industry locations, SIL 2

The product identified above has been assessed and complies with the specified standards/normative documents. The attestation does not include any market surveillance. It is the responsibility of the manufacturer that mass-produced apparatus have the same properties and quality. This attestation does not contain any statements pertaining to the requirements pursuant to other standards, directives or laws other than the above mentioned.

Signature Knud A. Baltsen

Digitally signed by Knud A. Baltsen
Date: 2023.11.17 09:43:00 +01'00'

Signed by: Knud A. Baltsen, Senior Specialist, Product Compliance

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10.3. Declaration of Incorporation

10.3.1. VGC10

CE/EU Declaration of Incorporation (Original)

According to European Machinery Directive 2006/42/EC annex II 1.B.

The manufacturer:

OnRobot A/S
Teglværskvej 47H
DK-5220, Odense SØ
DENMARK

declares that the product:

Type:	Industrial Robot Gripper
Model:	VGC10
Generation:	V1
Serial:	1000000000-1009999999

may not be put into service before the machinery in which it will be incorporated is declared in conformity with the provisions of Directive 2006/42/EC, including amendments, and with the regulations transposing it into national law.

The product is prepared for compliance with all essential requirements of Directive 2006/42/EC under the correct incorporation conditions, see instructions and guidance in this manual. The following essential requirements of Directive 2006/42/EC are fulfilled: 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4, 1.5.1, 1.5.2, 1.5.4, 1.5.5, 1.5.10, 1.5.11, 1.5.12, 1.6.1. Compliance with all essential requirements of Directive 2006/42/EC relies on the specific robot installation and the final risk assessment.

Technical documentation is compiled according to Directive 2006/42/EC annex VII part B and available in electronic form to national authorities upon legitimate request. Undersigned is based on the manufacturer address and authorized to compile this documentation.

Additionally, the product declares in conformity with the following directives, according to which the product is CE marked:

2014/30/EU — Electromagnetic Compatibility Directive (EMC)
2011/65/EU — Restriction of the use of certain hazardous substances (RoHS)

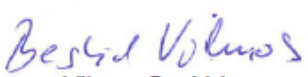
Relevant essential health and safety requirements of the following EU directives are also applied:

2014/35/EU — Low Voltage Directive (LVD)
2012/19/EU — Waste of Electrical and Electronic Equipment (WEEE)

A list of applied harmonized standards, including associated specifications, is provided in this manual.

Budapest, November 11th, 2020

Group Management



Vilmos Beskid
CTO