

QUICK INSTALLATION GUIDE

For your new SoftGripper

Hardware Installation and URCap Handling

This guide includes every step needed to install and use all versions of SoftGrippers with your UR Robot. Version 1.2.1 | 2020-06-08







Introduction

Start your adventure by connecting your new SoftGripper to the Universal Robots hardware. To make the Installation a breeze, we are certified by the UR+ Program, meaning that the package you have got on hand has all the components needed for a swift start. From the SoftGripper itself, over the control-box and the URCap Software package to addon to the UR Graphical Programming Environment: In this step by step guide, you will get to know how make all parts work in your setup.

If you need further information or help, go to soft-gripping.com, soft-gripping.shop or write an email to info@soft-gripping.com.

Installation

We have prepared two product lines: SoftGripper and SoftGripper - Developer Edition. Here we present the Developer Edition, as it is more modular and therefore requires more assembly steps. Nevertheless, both versions can be controlled by the same URCap. Make sure you have all parts ready before assembling and begin with the base and the adapter. A step by step video guide is also available to lead you through the process.



Start by mounting your SoftGripper on the connector that corresponds to your robot (e.g. ISO 9409-1-40-4-M6).





The base and connector are then attached to the robot and fixed with screws.





If you use angle adapters, connect them to the fingers using the bayonet lock.

The fingers are then attached to the base using a bayonet lock as well. To do this, the finger is inserted into the appropriate opening and turned until it clicks into place.





Finally, the connections for pressure and vacuum are attached to the SoftGripper.



If you have followed the procedure so far, this is how your assembled SoftGripper should look like. Now you can start with the Software and programming.





Installing the Control Box



All SoftGrippers require pneumatics. You can use your own controller and pneumatics with our SoftGrippers, but if you need a Control Box, we have one prepared for your needs. On the front side the current pressure settings can be seen and adjusted via the knob. In the back, you can find the Inputs, Outputs as well as the power and communication connector.

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Control Box - Front View

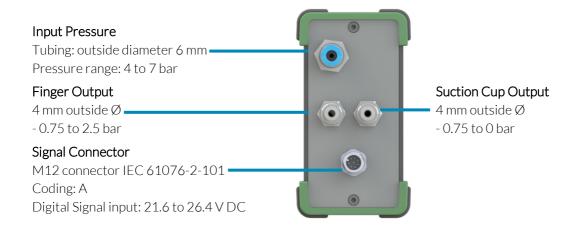


Pressure Indicator

Pressure Regulator



Control Box - Back View



The top connector is reserved for the input from the compressor, be sure to use a maximum of 7 bar of pressure to avoid damaging the device. In the second row you will find the pressure output to the Suction Cup and Fingers. Finally, the M12 connector IEC 61076-2-101 supplies the equipment with power as well as the signal to set the Finger's and Suction Cup's position. Mind the operating voltage of 21.6 to 26.4 V DC. You can find the exact pinout in the box below:

Table 1: Pinout of the M12 connector.

Pin	Function	Color
1	Finger Release	White
2	GND	Brown
3	Finger Grip	Green
4	NC	Yellow
5	Suction Cup Active	Grey
6	NC	Pink
7	NC	Blue
8	NC	Red

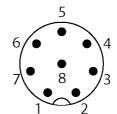


Figure 1: M12 connector male pinout.

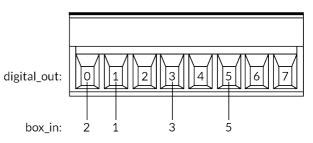


Figure 2: Phoenix connector to box standard configuration pinout.



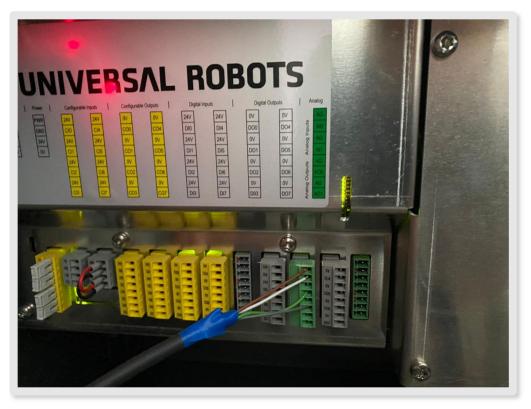


Figure 3: The correct installation and wiring to the Universal Robot.

Using the URCaps

You can find the URCaps required for the operation on a flash drive attached. Plug it into your machine and deploy the addon in the Settings menu. Remember that the minimum system requirements for your robot are 3.11.0.82155 or 5.5.1.82186 respectively.





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The URCap importing tool can be found under in the System > URCap submenu.

		e
Han Cut Copy Parts Dalate Hanama		Ead
new folder / new folder		
finger-2.3.urcap		
succoncup-2.3.0rcap		
Ffename:	Fiter:	
Flanume:	Fiter: URCop Fies	

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System Backup

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Active URCaps Soft Gripping I Soft Gripping I

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natic Finger Control Natic Suction Cup Con

Select finger.urcap	or	suctioncup.urcap	and	tap	the
Open button to inc	ud	e the module.			

After activating URCaps for the Finger and Suction
Cup modules, restart the robot and return to the
Program.

		Settings		
> Preferences Active URCaps		Active URCaps	Inactive URCaps	
	Password	Soft Gripping Pneumatic Suction Cup Control Soft Gripping Pneumatic Finger Control	Remote TCP	
	System Backup			
	URCaps			
	Robot Registration			_
	Remote	URCap Information		
	Network	URCap name: Soft Gripping Pneumatic Finger Control Version: 2.3.0		^
	Update	Developer: Wogard GmbH Contact Info Kirchenheide 10, 22095 Hamburg, Germany		
	Opdate	Description: Control of the 3ct Ortpiping Pinger Module Copyright Copyright (C) 2004 Wegerd CmbH. All rights reserved. License: Copyright (C) 2010. Wegerd GmbH All rights reserved.		
		Redistribution and use in source and binary forms, with or without	The changes require a restart to take effect.	~
	Exit	+ -	Resta	rt



First, make sure to select the right Digital Output Pins for the SoftGripper's pressure control. To edit the default settings, go to the Installation tab. You will find the Pin configuration in the URCaps menu. Of course, you can edit the Pins for Fingers and Suction Cups separately.

General	Soft Gripping Finger
Safety	This node can interact with a any Soft-Gripping Fingers.
Features	Make sure you set the digital_out pins according
Fieldbus	to your layout in the installation section. Choose your Finger Release dicital output pin:
✓ URCaps	
Soft Gripping FL	Choose your Finger Grip digital output pin:
Soft Gripping Su	After d'assing your PhOLe, you can use the Organ Cartrol.
Power off	Speed

After the initial setup, you are ready to program a workflow. The SoftGripper nodes can now be used like any other familiar node and are found under Program > URCaps. You can choose between 3 states: Grip, Release and Relax.

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Advanced Advanced Templates VinCess Soft Cripping Finger Con. Soft Cripping Soft Criping Soft Cripping Soft Crippin	1 7 Robot Program 2 * 1 (molecular 3 * 1		Make sure you s to your layout in Crp Release Relax	eract with any S	oft-Gripping Fingers.	SoftGripping
Power off	Spe	50 0		0	00	Simulation



Grip



Release



Relax



Additionally, you can set the waiting time in the automatically created subnode. You should recognize the subnode from the Standard Wait node. It can be used as usual, setting a timer, a wait function or to continue upon an external influence. Have fun experimenting with the SoftGripper toolkit and as usual: contact us, if you need further help!

Basic		Q Command Graphics Variables
Advanced	1 Robot Program	Wait
 Templates URCaps 	2 • Suction Cup: Grip 3 2 Wait: 1.0	Please select what should trigger the robot's next action;
Soft-Gripping Finger Con		O No Wat
Soft-Gripping Suction Cu		Wait 1.0 seconds
		Wait for Digital Input CDLInput> Low *
		Wait for f(x)
	♠♣为♂₭ॕ₿₿	

Basic		Q	Command G	A	+
Advanced	1 V Robot Program			ONLY COUR OF FARE OF	AX below, to test the gripper:
Templates	2 • Suction Cup: Grip 3 Xwat: 1.0		Soft-Grippin	GRIP RELEASE	
✓ URCaps	4 9 7 Enger: Grip		This node can interac	GRIP RELEASE	RELAX
Soft-Gripping Finger Con	5 Z Walt: 1.0 6 • Suction Cup: Release		Make sure you set th to your layout in the	Gripper position: Re	alax
Soft-Gripping Suction Cu	7 E Wait: 1.0 8 • Finger: Release		O Grip		
	9 X Walt: 1.0		ORelease		
	11 ≌ Wat-10 12 • • • Pinger: Relax 13 ■ ≌ Wat: 10	a	Belax		
Power off	1 日	î 🚍	9 100%	000	Simulation

You can also test your setup on the fly using the build in toolbar. No need to set up an extra program!

Program Installation	Move / I/O / Log					
🔚 <unnamed> 🥤</unnamed>	Command Graphics Structure Variables					
Robot Program Finger: Grip Wait: 1.0	Soft-Gripping Finger Control					
	This node can interact with any Soft-Gripping Fingers.					
	Make sure you set the digital_out pins according to your layout in the installation section.	oftGripping				
	S Grip					
	Release					
	Relax					
	Live Control					
	Click GRIP, RELEASE or RELAX below, to test the gripper:					
	GRIP RELEASE RELAX					
	Gripper position: Relax					
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The URCap is supported by both versions of the Universal Robots software: Version 5 and the older Version 3.



Miscellaneous

To change the fingers, turn off the pressure control and disconnect the finger turning the integrated bayonet catch counterclockwise. The new finger has to be turned into the grippers base until you hear the click of a latch. It is now safe to operate the robot again.



If you need to remove the URCap, you can do it in the familiar Settings > System > URCaps, by selecting "–" and restarting your Robot afterwards for the changes to take place.

	Settings		
> Preferences	Active URCeps	Inactive URCaps	
> Password	Soft Gripping Pneumatic Finger Control Soft Gripping Pneumatic Suction Cup Control	- Remote TCP	
System Backup			
URCaps			
Robot Registration			
Remote	URCap Information		
	URCap name: Soft Gripping Pneumatic Finger Control Version: 2.3.0		^
Network	Developer: Wegard GmbH Contact Infox Kirchenheide 18, 22395 Hamburg, Germany		
Update	Description: Control of the Sdd Gripping Finger Module Copyright Copyright (C) 2010 Wegned GmbH. All rights reserved. License Type: Property License License Copyright (C) 2019. Wegned GmbH All rights reserved.		
	Redistribution and use in source and binary forms, with or without		~
Exit	+ -		Restart



Congratulations

You are now familiar with the whole setup process! Thank you for using our SoftGripper. We hope that you will enjoy using it as much as we enjoy creating them. If you need further support, do not hesitate to contact us via email, telephone or online!



soft-gripping.com soft-gripping.shop info@soft-gripping.com

by



Wegard GmbH Kirchenheide 18 22395 Hamburg

info@soft-gripping.com www.soft-gripping.com | www.soft-gripping.shop