

# **CSSP** Manual

URCap Version: 1.01

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# CSSP - URCap

This manual explains the how to use the URCap to manage the CSSP gripper.

Wrist mechanical interface: EN ISO-9409-1-50-4-M6.

Wrist electrical interface: M8 | M8 8-pin (male).

Camozzi cable commercial code: CS-DL08MC-E020U.

For any information regarding the gripper performance and setup, please look at the manual of the gripper.

## 1.1 Cobot requirement

The cobot compatible which can be used with this application are:

- UR3e
- UR5e;
- UR10e;
- UR16e.

The minimum version of polyscope is: 5.14.6.123463 (Oct 12 2023). If an older version is used, there might be some problem or unwanted behaviour.

## 1.2 Install the URCap

To install the URCap, it is needed to download the file from the official website of Camozzi. Once the file has been downloaded, it is needed a flash drive to transfer the URCap to the robot, by plugging the flash drive into the USB port on the teaching pendant.

Then the following steps are needed to be performed:

- (1) Go into the menu;
- (2) Select setting.

#### 1.2 Install the URCap



Figure 1.1: Install the URCap - Step 1

Then:

- (1) Select system;
- (2) Select URCaps;
- (3) Select '+'.





Figure 1.2: Install the URCap - Step 2

Then:

- (1) Select the USB folder;
- (2) Navigate to the URCap file in the USB folder;
- (3) Select the CSSP-\*.urcap;
- (4) Open.



#### 1.2 Install the URCap

Program Installation Move I/O Log	PROGRAM <b><unnamed></unnamed></b> INSTALLATION <b>default</b> New	Open Save	<b>K</b> • ;; Ξ
	Select URCap to install		
			re E
New Cut Copy Paste Delete Rename			Backup
programs			
CSSP-2.8.urcap			
_			
Filename:	Filter:		
Filename: CSSP-2.8. urcap	Filter: URCap Files		<b>_</b>
Filename: CSSP-2.8.urcap	Filter: URCap Files		▼ Open Cancel
Filename: <b>CSSP-2.8. urcap</b>	Filter: URCap Files		▼ Open Cancel
Filename: CSSP-2.8.urcap	Filter: URCap Files		4 Open Cancel

Figure 1.3: Install the URCap - Step 3

Then the following view will appear and it needed to restart the robot (1).

		Settings	
> Preferences	Active URCaps	Inactive URCaps	
Password	Ö CSSP	😑 Remote TCP & Toolpath	
<ul> <li>System</li> </ul>			
System Backup			
Robot Registration			
URCaps	LIBCap Information	1	
Remote Control	URCap name: CSSP Version: 2.8.0		1
Constrained Freedrive	Developer: Camozzi Automation Contact Info: Via Eritrea 20/I Description: Gripper CSSP		
Network	Copyright: Copyright notice (C)		
Update	License:		
> Security	*Insert your own licenses here * * An example is shown below * ***********************************	****************	
Exit	+ –		Restart

Figure 1.4: Install the URCap - Step 4

### 1.3 Uninstall the URCap

In the same panel as the previous chapter, to Unistall the CSSP URCap:

- (1) Select CSSP;
- (2) Select '-';
- (3) Restart the robot.

	Setting	gs	
> Preferences	Active URCaps	Inactive URCaps	
> Password	CSSP 1	😑 Remote TCP & Toolpath	
✓ ✓ System	•		
System Backup			
Licenses			
URCaps			
Remote Control	URCap Information URCap name: CSSP		^
Constrained Freedrive	Version: 1.0.0 Developer: Camozzi Automation Contact Info: Via Eritrea 20/I		
Network Description: Gripper CSSP Copyright: Copyright notice (C)			
Update	License Type: Sample license License:		
> Security	Copyright (c) 2024, Camozzi Automation S.p.A. All rights reserved.		~
Exit	+ - 2		3 Restart

Figure 1.5: Uninstall the URCap - Step 1

## 1.4 Use the URCap

This section is dedicated to explain how to use the various section of the CSSP URCap.

#### 1.4.1 Installation Tab

The installation setup must be done just once to select the CSSP as default tool.

- To set the TCP (tool center pointer) go to:
  - (1) Installation tab;
  - (2) General;
  - (3) TCP;
  - (4) Select CSSP\_1.



#### 1.4 Use the URCap

	Hove 9		PROGRAM <b><un< b="">r INSTALLATION <b>defa</b></un<></b>	named> <b>[]</b> ult <sub>New</sub>	Open Save	R	?? <b>=</b>
✔ General	Tool Cent	ter Point		TCP Visualiza	ation		
тср 2		CSSP 1					
Payload	-						
Mounting	Position	l					Ī
I/O Setup	Х	0.0 mm	110				
Tool I/O	Y	0.0 mm	🎢 Measure				1
Variables	2	130.0 mm					
Startup							
Smooth	Oriental	tion					
Transition	Units	Rotation Vector [rad]	•				—
Home	RX	0.0000					
Conveyor Tracking	RY	0.0000	🎢 Measure				
Screwdriving	RZ	0.0000		Tool Flange			
> Safety					¢Ÿ	<b>≜</b> ¥	
> Features							
> Fieldbus					X	z	
<b>&gt;</b> URCaps							
	_						
	٩			100%		C O Simul	ation
			Speed	100%			

Figure 1.6: Installation tab - TCP setup

To set the Payload go to:

- (1) Installation tab;
- (2) General;
- (3) Payload;
- (4) Select CSSP.



#### 1.4 Use the URCap

	Hove			PROGRAM <un INSTALLATION defa</un 	named>* 🔒 ult* New	Open Save	R+ ??	
✓ General	Payload				Payload Vis	ualization		
ТСР		CSSP	ß	H + m			Г	
Payload 2		<u> </u>		Set Now			[-	
Mounting	Payload			↓ Set Now				
I/O Setup	Mass		0.625 kg					
Tool I/O	Center of	Gravity	0.00	**2 M = = = = = = = =			_	
Variables	CX		0.00 mm	Measure				
Startup	CZ		0.00 mm					
Smooth Transition	02						[-	
Home								-
Conveyor	Inertia (	kg m²)						
Tracking	🔲 Use d	ustom Inertia I	Matrix					_
Screwdriving		Х	Y	Z	Tool Flange			
> Safety	Х	0.000703	0.00000	000000.0		Ť	<b>1</b> <sup>×</sup>	
> Features	Y	0.000000	0.00070	0.00000				
> Fieldbus	Z	0.000000	0.00000	0.000703			X Z	
> URCaps	lnertia tool flar	given with origin nge axes.	in the CoG and ti	he axes aligned with the				
	3			Speed	100%	C		

Figure 1.7: Installation tab - Payload setup

To set the tool wrist I/O, go to:

- (1) Installation tab;
- (2) General;
- (3) TOOL I/O;
- (4) Select CSSP.

#### 1.4 Use the URCap

Run Program		PROGRAM INSTALLATION	<unnamed>* 📮 🗖 default* New Open Sav</unnamed>	<b>ℝ</b> • <b></b>	
✓ General	I/O Interface Control				
ТСР	Select how the Tool I/O in	terface is controlled. If a URCap	controls the interface, user define	d options will be overridden.	
Payload	I				
Mountii	ng Controlled by	CSSP			
I/O Set		nication Interface	Digital Output Mode		
Tool I/C	2		Tasl Disited Octave tasada	in the firm of the second second second second	
Variable	Analog Inputs		Tool Digital Output mode	is defined based on the tool attached	
Startup	analog_in[2]	Voltage	Tool Output Voltage	24	
Smooth	analog_in[5]	Voltage	Sotting the tool voltage	in to 24V may damage attached on inment	
Home			if it is only configured to 12V		
Convey Trackin	or The Tool Communica g with the tool without	tion Interface allows communica external wiring	ation O Dual Pin Power		
Screwd	riving Baud Rate	115200			
> Safety	Parity	None	Standard Output		
> Features	Stop Bits	One	Digital Output 0	Sourcing (PNP)	
> Fieldbus	RX Idle Chars	1.5	Digital Output 1	Sourcing (PNP)	
> URCaps	TX Idle Chars	3.5			
	ROLLER	Si	Deed 100%	Simulation	

Figure 1.8: Installation tab - I/O Setup

#### 1.4.2 Program Tab

When the robot is in program tab, in the section URCap there will be available the URCap program node for CSSP gripper. This node manages all the functions of the gripper:

- Actuation open / close;
- Sensing wait until the jaws are fully open / close;
- Set the payload;
- Test the action during programming.
- To access the program line, go to:
  - (1) Program tab;
  - (2) Click on URCaps and on Camozzi CSSP;
  - (3) Set the action type;
  - (4) Set if it is needed to wait until the gripper has performed the action (optional);
  - (5) Check object presence (optional);
  - (6) Set the object weight (optional);
  - (7) Test the operation, if the robot is running (optional).



Figure 1.9: Program tab

The "None" option does not activate either "Wait for execution - gripper \*\*" nor "Check object presence". It means that the program does not check the end stroke sensors in anyway; thus there is any timeout. The operation "Wait for execution - gripper \*\*" is important because if the jaws are not reaching the end-stroke position, the robot should wait it before doing anything else. There is a timeout of is set to 10 seconds, then if the end-stroke sensor has not been excited, a pop-up error is shown and the program is paused until a choice by an operator is done.

The operation "Check object presence" wait for the time out, while checking the related position sensor. If the position sensor turns on, it means that the object, it was supposed to grab, is not present. Once the time out has expired, the program carries on.

In every tab, the user can access to the UR+, which access to an interface to open or close the gripper whenever the robot is running (Fig.1.10).



Figure 1.10: UR+ tab



### 1.5 Error Codes

Code	Description	Gravity	Solution
#C1	Object weight error: OBJECT WEIGHT MUST BE LOWER THAN THE ROBOT PAY- LOAD CAPABILITY!	Fault	Insert an object weight compatible with the robot payload.
#C2	Opening object Warning: Open condi- tion has been detected with no object present.	Warning	Don't use the "Check object presence" option if the gripper need to reach the end-stroke position in the open state without an object (release of an ob- ject).
#C3	Closing object Warning: Close condi- tion has been detected with no object present.	Warning	Don't use the "Check object presence" option if the gripper need to reach the end-stroke position in the close state without an object.
#C4	Open Warning: After 10 seconds the DIO is not active.	Warning	Check if the gripper is properly con- nected to the compressed air. Or check if the gripper is correctly installed (Sec- tion 1.4.1).
#C5	Close Warning: After 10 seconds the DI1 is not active.	Warning	Check if the gripper is properly con- nected to the compressed air. Or check if the gripper is correctly installed (Sec- tion 1.4.1).

# Contacts

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