

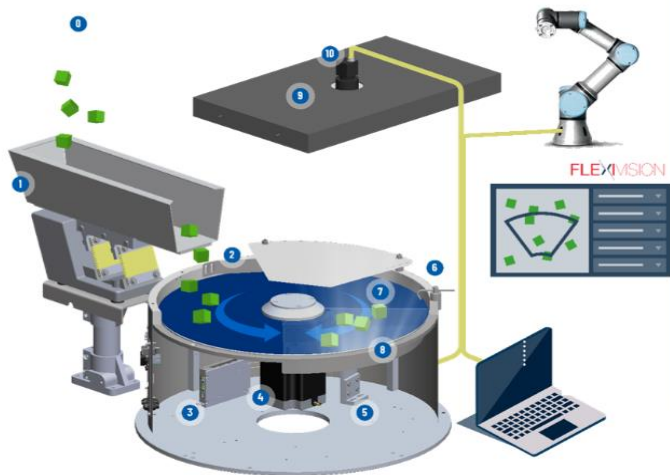
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1) INTRODUCTION



FlexiBowl Parameters is a URCap developed to integrate FlexiBowl® with UniversalRobot so as to make the system configuration as simple as possible. By allowing you to control every movement of the FlexiBowl® you only use the robot's TeachPendant.

FlexiBowl®: How it works



FLEXIBOWL®

- 0 Motorised Hopper - Large parts storage capacity
- 1 Vibrating Bulk Feeder - Drops parts accurately
- 2 Wiper - Diverts parts from outer wall, back under picking area
- 3 Servo Driver - ethernet/UDP or digital I/O communication
- 4 Direct Drive Motor
- 5 Flip unit - turns and spreads parts
- 6 Blow Unit, Diverts tiniest parts from outer wall
- 7 Quick-change disc, Different colours, textures and coatings
- 8 Backlight, Red, White and Infrared colours
- 9 Toplight, Red, White and Infrared colours
- 10 FlexiVision, fully integrated vision system

- Vision system controls FlexiBowl® movements, parts flow from the bulk feeder and sends coordinates to the robot
- Parts are sorted by combined actuation of servomotor and flip unit
- Acceleration, speed, flipping frequency and power parameters are set according to part geometry, material and dimension

! before proceeding with the URCap installation phase, make sure that you have read and correctly performed all the steps described in the FlexiBowl® user manual !

! This URCap will use port 60000 for the XMLRPC communication !

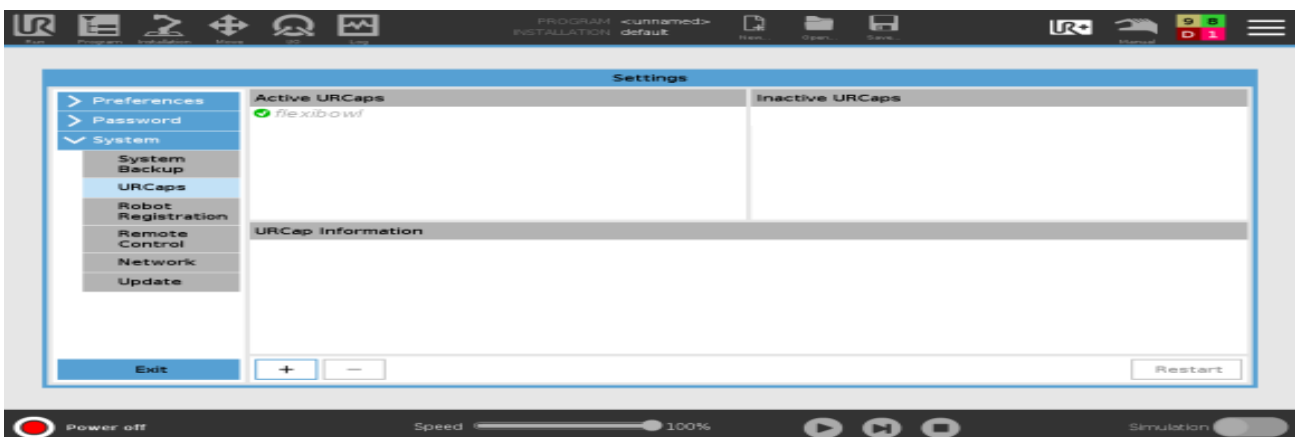
2) INSTALLATION




- 1) Copy the "Flexibowl-1.0.urcap" file to a USB flash drive
- 2) Insert the USB device in the robot's TeachPendant
- 3) Press "Settings" in the top right menu, then "System" → URCaps and click on the installation button (+)



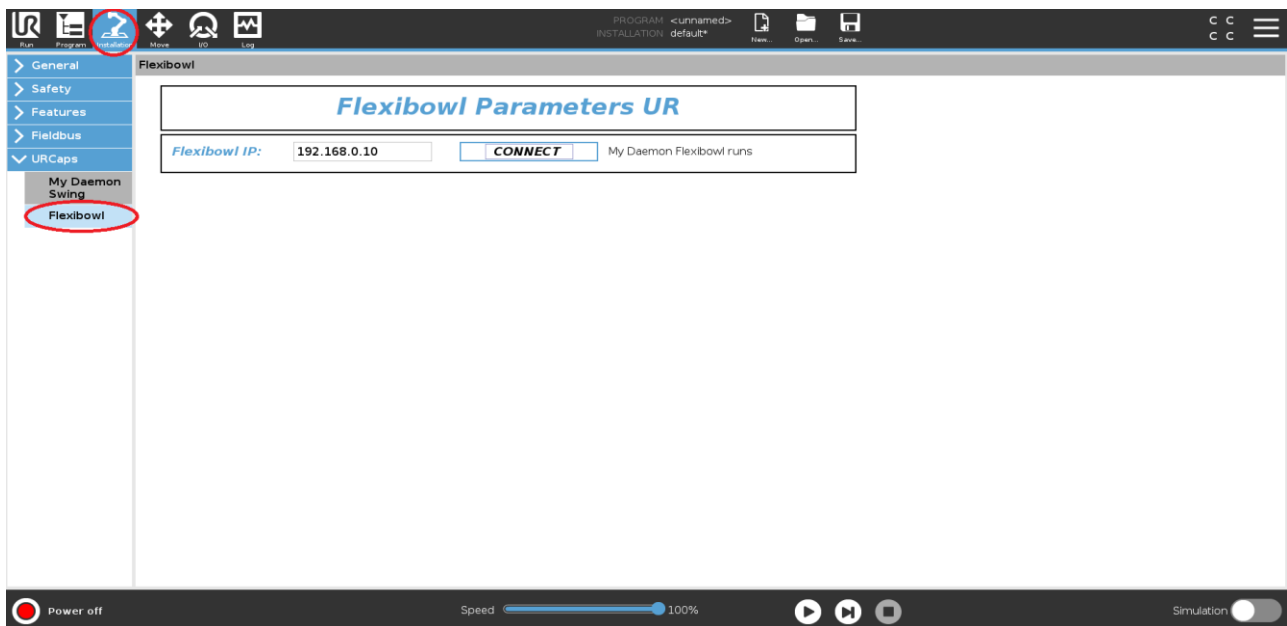
- 4) Select the URCap from the files of the USB device
- 5) Press "Open"
- 6) Press "Restart" to proceed with the installation.



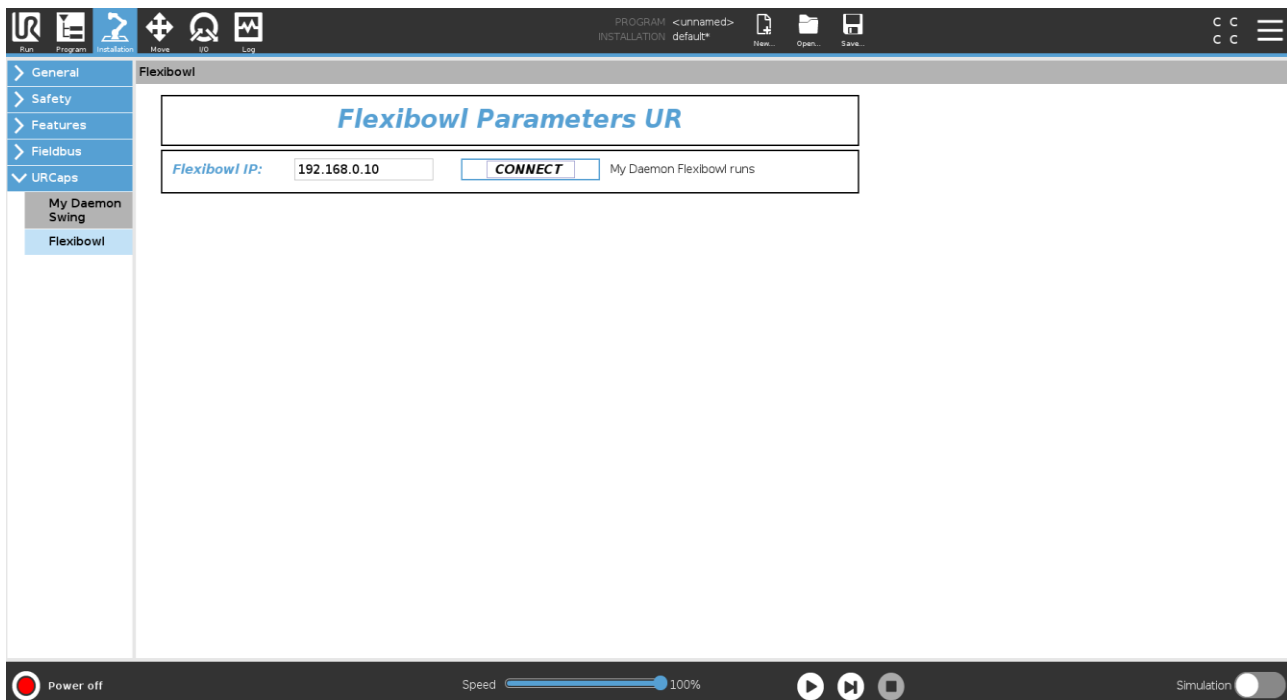
- 7) Once restarted, if the installation was successful, a green check mark  will appear next to your URCap.

3) CONNECTION

To complete your installation, you just have to connect to the FlexiBowl®.

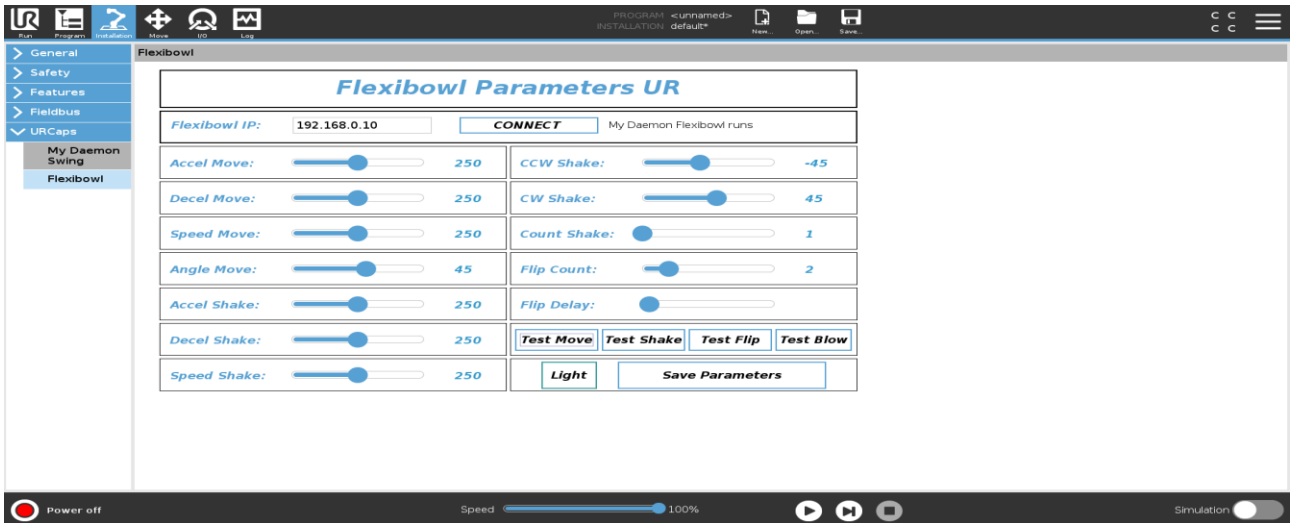


Press “Installation” and select the correct URCap.



You must enter the IP of your FlexiBowl® in the appropriate field. If the procedure was successful and you press “Connect”, the list of parameters will appear.

4) SETUP

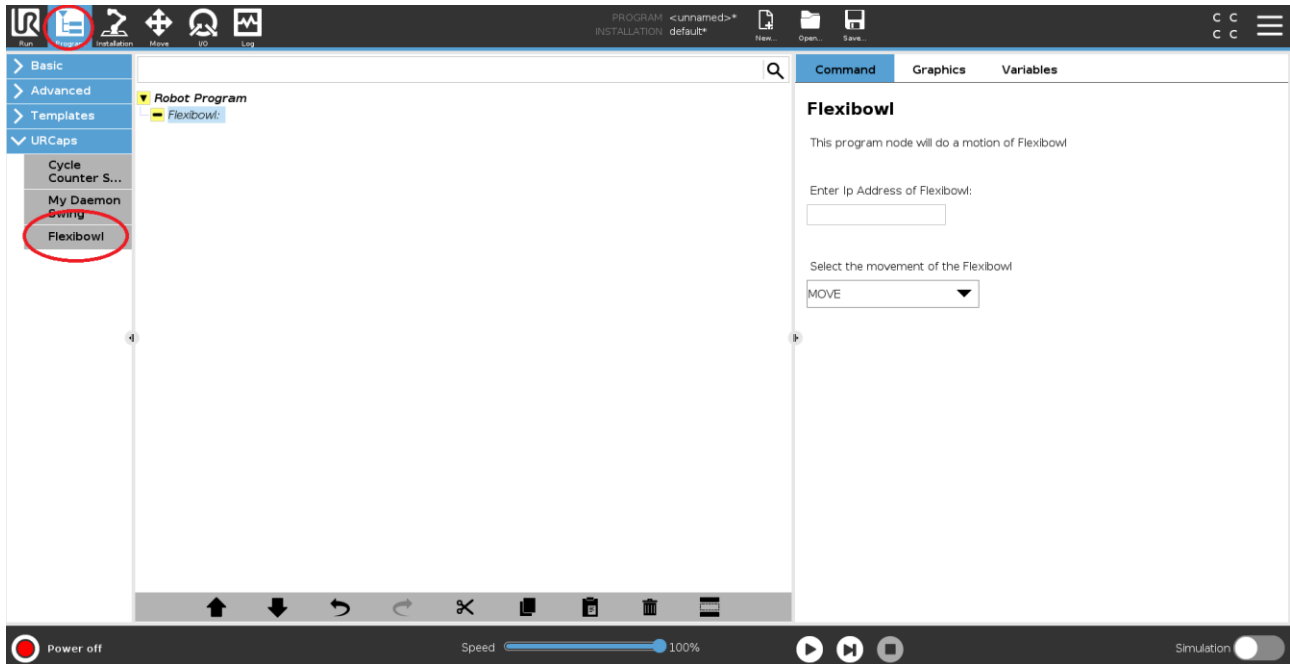


Once connected to the FlexiBowl® you can modify all the parameters and test their movements manually.

Element	Description
Move	Used to perform a single movement with clockwise or counterclockwise rotation with the parameters defined in the interface. Note: to execute the movement command, press the Test Move button.
Shake	Used to perform a combined clockwise and counterclockwise movement with the parameters below. Note: the first movement is counterclockwise and the number of movements is given in the "Count" parameter. The clockwise angle is "CW Angle" and the counterclockwise one is "CCW Angle". Note: to execute the movement command, press the Test Shake button.
Flip	Used to overturn the parts on the FlexiBowl® by means of a pneumatic pulse Note: to execute the movement command, press the Test Flip button.
Blow	Used to move the parts on the FlexiBowl by activating a blow of air. Note: to execute the movement command, press the Test Blow button.
Accel Move	Acceleration used with every Move instruction.
Decel Move	Deceleration used with every Move instruction.
Speed Move	Speed, used to move the FlexiBowl®. Used in the Move instruction.
Angle Move	Angle with which the FlexiBowl® moves. Used in the Move instruction.

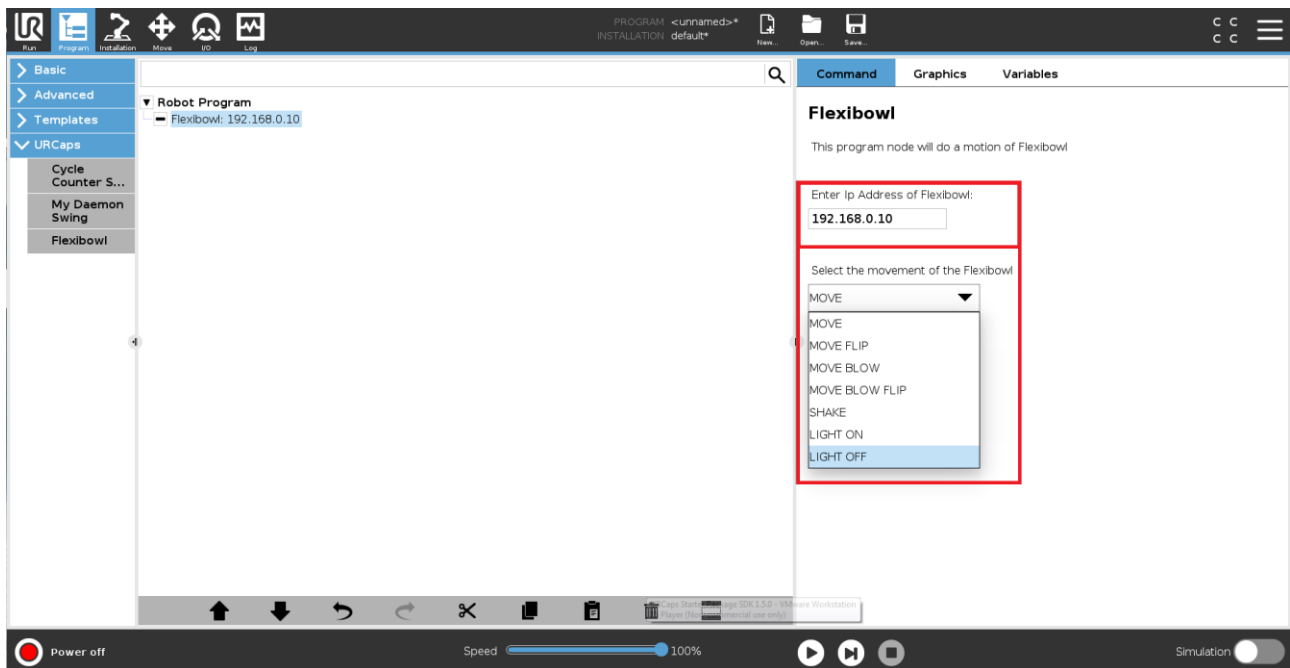
Element	Description
Accel Shake	Acceleration used with every Shake instruction.
Decel Shake	Deceleration used with every Shake instruction.
Speed Shake	Speed, in RPM, used to shake the FlexiBowl [®] . Used in the Shake instruction.
CCW-Angle Shake	Counterclockwise angle that the FlexiBowl [®] moves at with every Shake instruction.
CW-Angle Shake	Clockwise angle that the FlexiBowl [®] moves at with every Shake instruction.
Count Shake	Number of movements, in alternate directions, that are made with every Shake instruction. Example: sh_count=3 means that the FlexiBowl [®] will move counterclockwise at an angle equal to ccw_angle, clockwise at an angle equal to cw_angle, and will return at an angle equal to ccw_angle.
Flip Count	Number of times the Flip will be turned on. It must be positive.
Flip Delay	Time, in milliseconds, between the Flip turning on and off. It must be positive.
Light	Turns the backlight on/off.
Save Parameters	Used to save all of the movement parameters in the FlexiBowl [®] .

5) PROGRAMMING



Press “program” → URCaps.

You will then have access to the list of your URCaps; select the one related to FlexiBowl® control. A function block for device control will be automatically inserted into the program.



You will have to write the IP of your FlexiBowl® in the relevant field and select the movement you want to perform.

Multiple function blocks can also be used to perform combinations of movements.

6) PROGRAMMING CYCLOGRAM

