RG6 Gripper Datasheet

Version 1.6

The RG6 gripper is a flexible electric gripper specially designed for robots from Universal Robots. The long stroke allows the gripper to handle a variety of object sizes. Adjusting the gripping force allows the gripper to handle both delicate and heavy object. The standard fingers can be used with many different objects, it is also possible to fit custom fingers.

The installation complexity is minimal as the cable attaches directly onto any robot from Universal Robots.
All configurations of the gripper are controlled from the Universal Robots software.

Features

- **Simple installation**
  Runs directly from the robot.
- **Integrated control board**
  No need for wiring or external programming.
- **Flexible**
  Allows handling of multiple sized objects.
- **Supports dual grippers**
  Two grippers can be operated without any extra wiring.
- **Adjustable force**
  Is set in the URcap.
- **Quick finger change**
  Replace the standard fingertips by loosening two screws.
- **Plug n' produce**
  Mount, connect, - Automate.
- **Failsafe operation**
  In case of power loss the gripping force is maintained.
- **Force and Width detection**
  Uses I/O's to give feedback on reached force and width.
- **Analog width feedback**
  One of the analog inputs on the robot is always corresponding to the present finger position.
- **Tool output extension**
  The robot tool connecter is extended to the gripper connector.

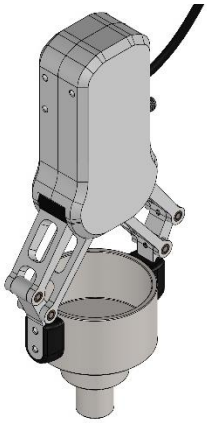
Technical specifications

Technical data	*Min*	*Typical*	*Max*	*Units*
Total stroke (adjustable)	0	-	160	[mm]
Finger position resolution	-	0,15	-	[mm]
Repetition accuracy	-	0,15	0,3	[mm]
Reversing backlash	0,4	0,7	1	[mm]
Gripping force (adjustable)	25	-	120	[N]
Gripping force accuracy	±2	±5	±10	[N]
Operating voltage*	10	24	26	[V DC]
Power consumption	1,9	-	14,4	[W]
Maximum Current	25	-	600	[mA]
Ambient operating temperature	5	-	50	[°C]
Storage temperature	0	-	60	[°C]
Product weight	-	1	-	[kg]

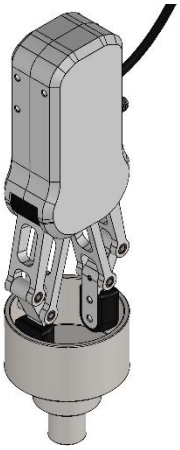
*At 12V the gripper runs at approximately half the normal speed

Gripper work range

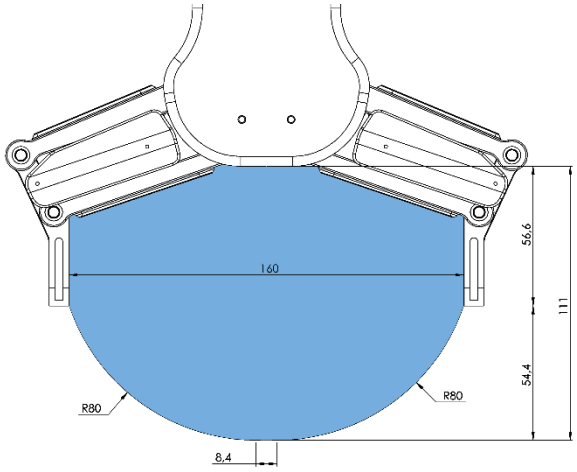
External Grip



Internal Grip



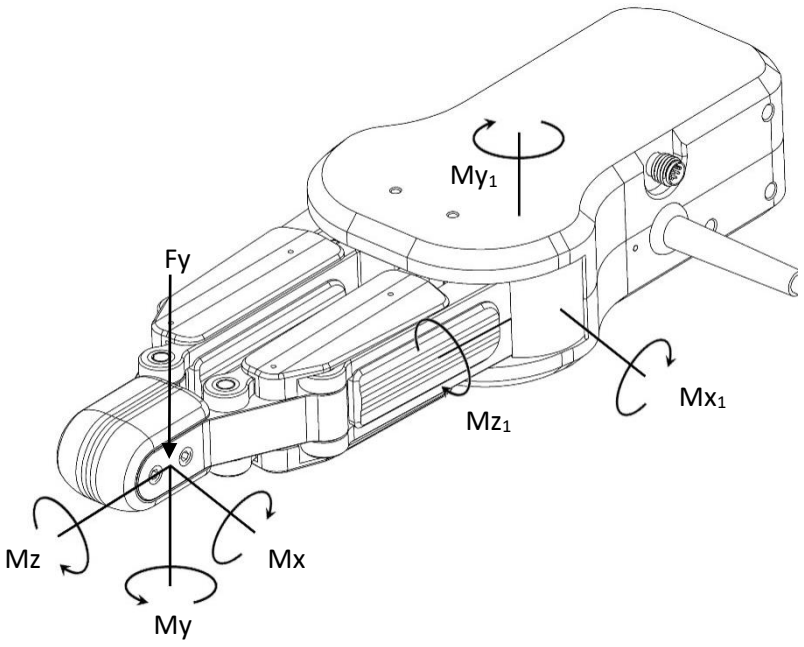
Fingers are rotated.



Load capacity

Parameter	*Static*	*Unit*
Fy	**1890**	[N]
Mx	**38**	[Nm]
My	**20**	[Nm]
Mz	**35**	[Nm]
Mx_1	**120**	[Nm]
My_1	**56**	[Nm]
Mz_1	**120**	[Nm]

The parameters in the fingertips are calculated at the shown closed position and will change in relation to the finger positions.

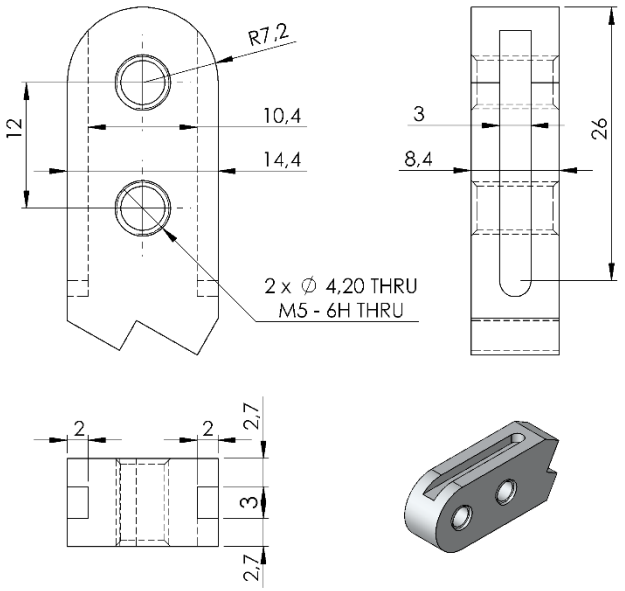


Fingers

The standard fingers can be used for many different workpieces. If custom fingers are required, they can be made to fit the gripper finger tips.

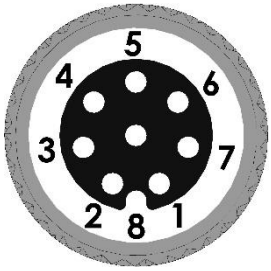
Standard fingers

For a variety of workpieces



Dimensions of the gripper aluminum finger tips.

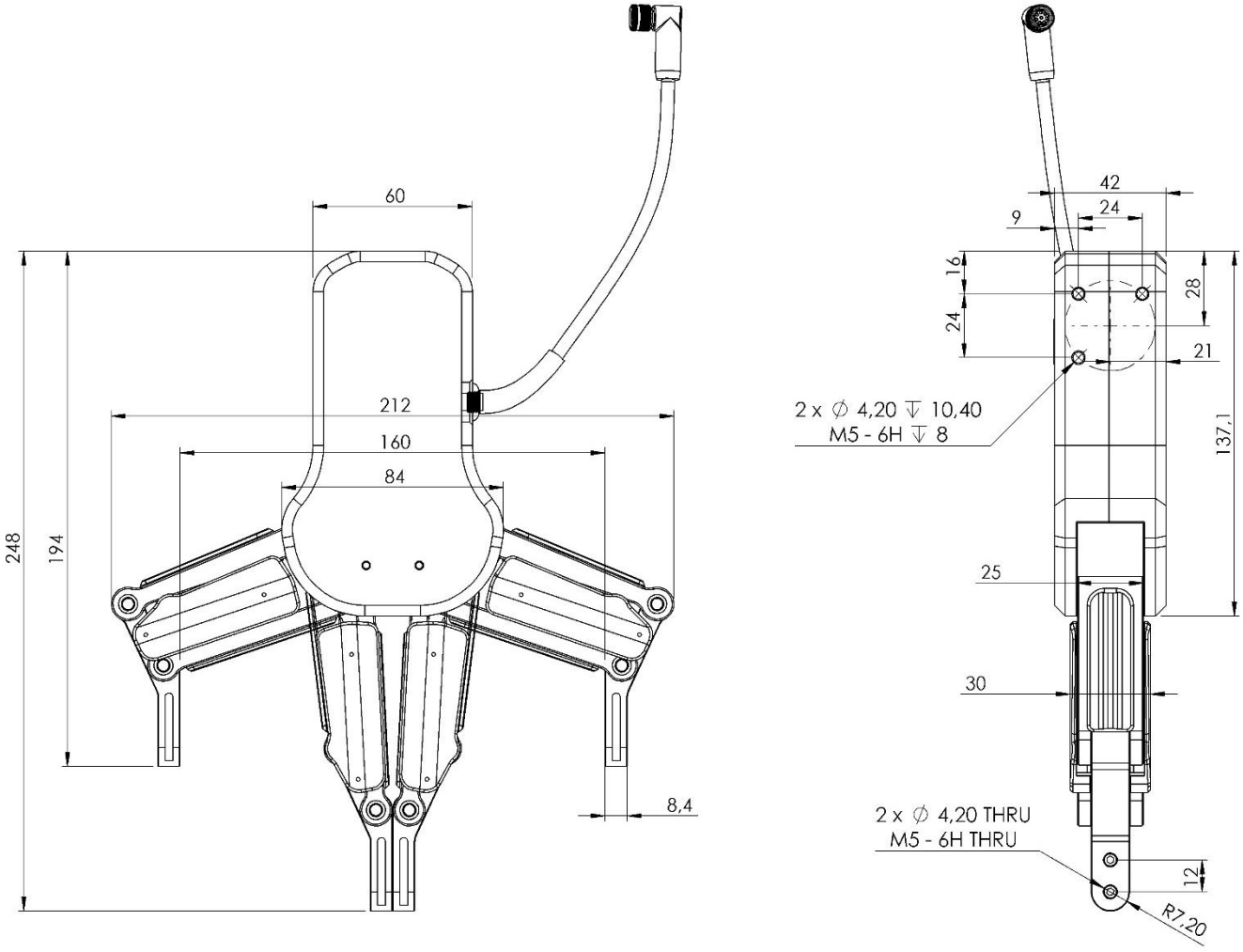
Tool connector pinout



Cable SAC-8P-PUR - 1404191

pin	*wire*	*UR I/O*	*UR I/O V3*
1	White	AI2	Tool analog input 2
2	Brown	AI3	Tool analog input 3
3	Green	DI9	Tool input 1
4	Yellow	DI8	Tool input 0
5	Gray	Power	24V DC
6	Pink	DO9	Tool output 1
7	Blue	DO8	Tool output 0
8	Red	GND	0V DC

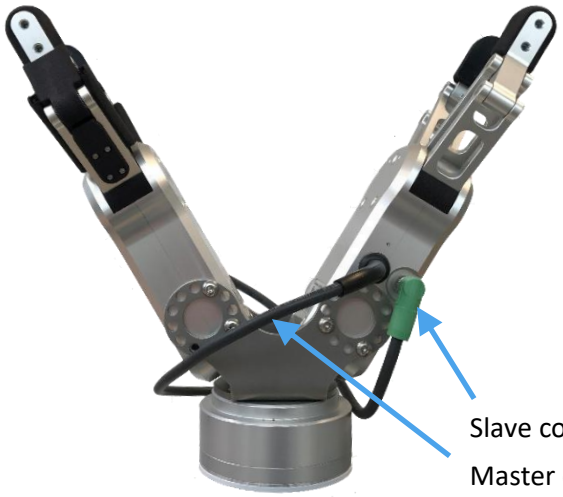
Mechanical dimensions



Gripper output connector

Slave

Master



When one gripper is connected to another via the gripper output connector, the first gripper in the chain (from the robot) becomes master and the second slave.

This makes it possible to use both grippers individually, using only to digital outputs from the robot.

I/O Feedback

The gripper uses DI8, DI9 and AI3 to give feedback on its status and finger position.

Use DI8 to detect if the gripper grabbed a workpiece or stopped at a given position.

DI9 will go LO (Busy) when the gripper is programmed, moving or changing force.

Digital status Feedback	***Tool Inputs***	
UR Version 3	**0**	**1**
UR Version 1 & 2	**DI8**	**DI9**
Position Reached	LO	-
Force Reached	HI	-
Gripper Busy	-	LO
Gripper Ready	-	HI

Analog feedback

AI2 outputs a voltage corresponding to the gripper width.

Analog Feedback

	UR Input	Voltage	Width
Actual Width @ 0V:5V	AI2	0…3.7V*	0…160mm
Actual Width @ 0V:10V	AI2	0…3.0V*	0…160mm

* Due to the grippers analog output resistance (10kΩ), the analog feedback voltage will be affected by the robot input resistance. For the robots from Universal Robots, the input resistance is 29kΩ @ 0V:5V and 15kΩ @ 0V:10V, that results in a maximum input voltage of $5\text{V} \cdot \frac{29\text{k}\Omega}{10\text{k}\Omega+29\text{k}\Omega} = 3.7\text{V}$ @ $0\text{V}: 5\text{V}$ and $5\text{V} \cdot \frac{15\text{k}\Omega}{10\text{k}\Omega+15\text{k}\Omega} = 3.0\text{V}$ @ $0\text{V}: 10\text{V}$ which correspond to the maximum width of 160mm.

The actual width can be calculated by $\frac{\text{voltage}}{\text{maximum input voltage}} \cdot 160\text{mm}$.