



EFG-F NPN

Product manual



Huilong-tech Robotic Co., Ltd



Electric 2-Fingers Parallel Gripper EFG-F

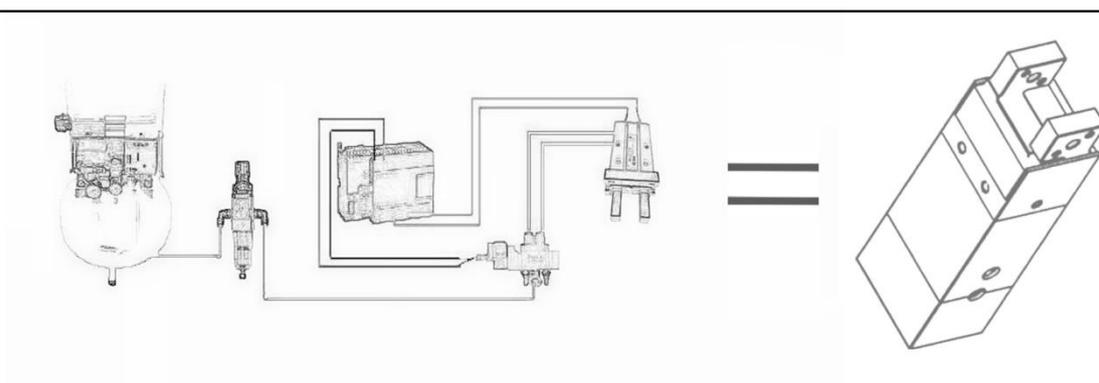
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- ✓ Brush-Less DC motor
- ✓ Replaceable terminal can suit various demands
- ✓ Can clamp fragile objects, i.e. eggs, test tubes, and circular rings.
- ✓ Applicable to non-air source environments, i.e. laboratories and hospitals

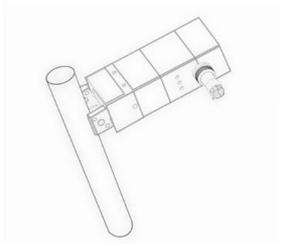
Promote a Revolution in Replacing

Pneumatics Products with Motor-Driven Ones

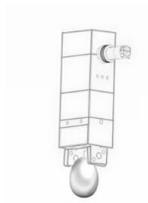


- The EFG series of motor-driven grippers which can be replaced the air compressor, filter, solenoid valve, throttle valve, and pneumatic gripper perfectly.
- With more than 7 million service life, it is in consistent with Japanese traditional cylinder.

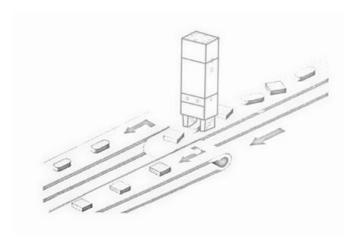
Application scenario



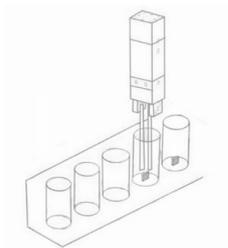
Fragile scenario 1(such as test tube)



Fragile scenario 2(such as egg)



Disorder layout, spare parts arrangement and selection



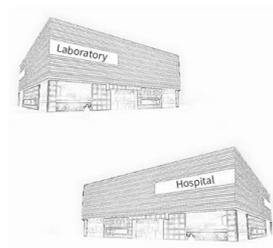
Clamping in narrow scenario



Easy to deform scenario (such as ring)



Soft contact high frequency scenario

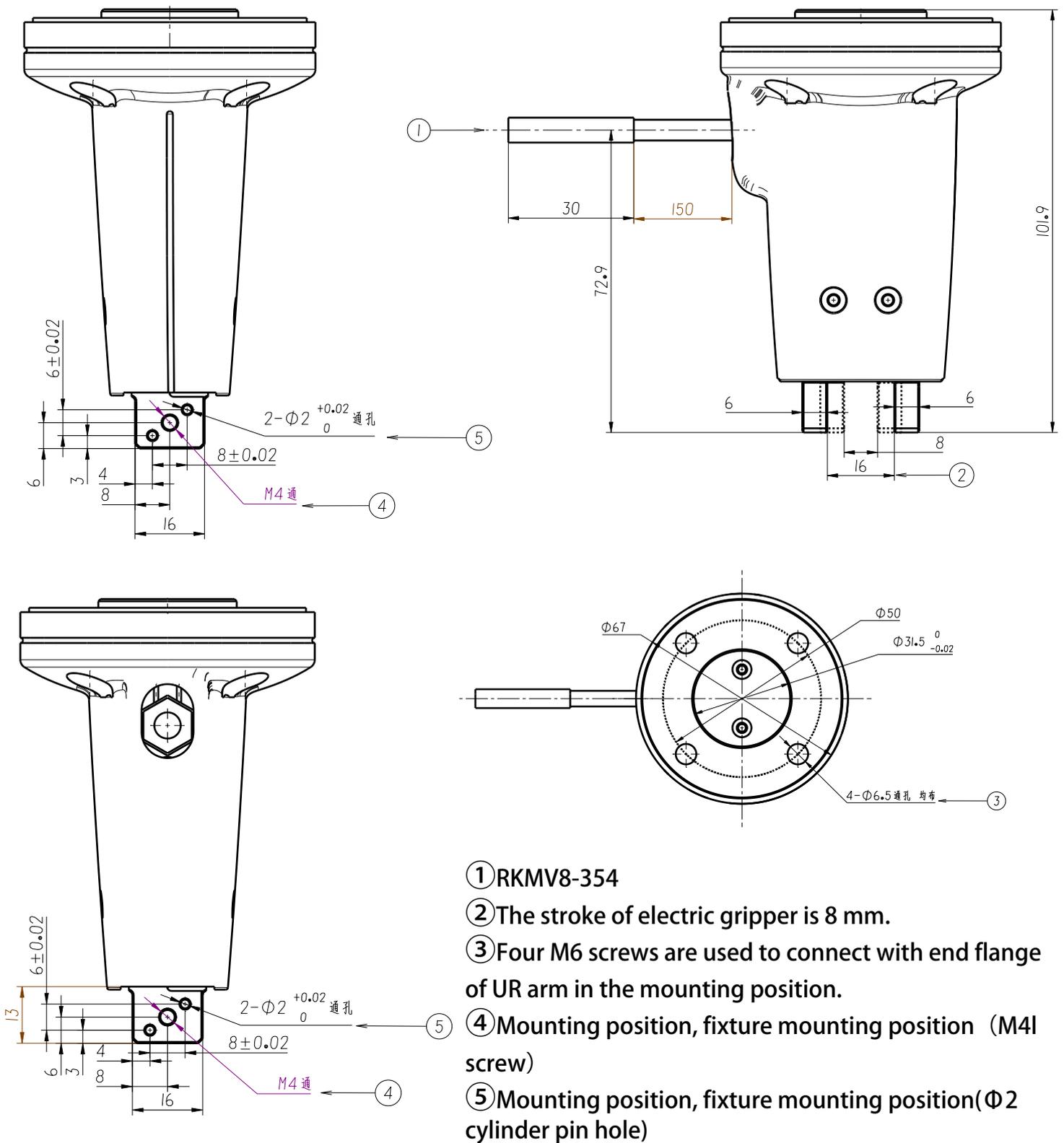


Laboratory, medical treatment and other air free scenario

Detailed parameter table

Item	EFG-F
Total stroke	8 mm
Clamping force	5-30 N
Max clamping weight	≤300 g
Repeated positioning accuracy	/
Driving device	Cross-Roller Guide+pinion and rack
Grease supply of device	every six months or a million times
Impact/Vibration resistance	98 m/s ²
Operating temperature range	5~55 °C
Operating humidity range	RH35-80(No frosting)
Movement	2-finger-parallel
Adjustable stroke	Not adjustable
Adjustable Gripping force	adjustable
Weight	0.235 kg
Dimensions (L*W*H)	30*24*94 mm
Controller location type	built-in
Power	3.6 W
Motor type	BLDC
Motor size	17 mm
Power supply	24V
Standby current	≤0.02A

Dimension installation diagram



Description of line sequence

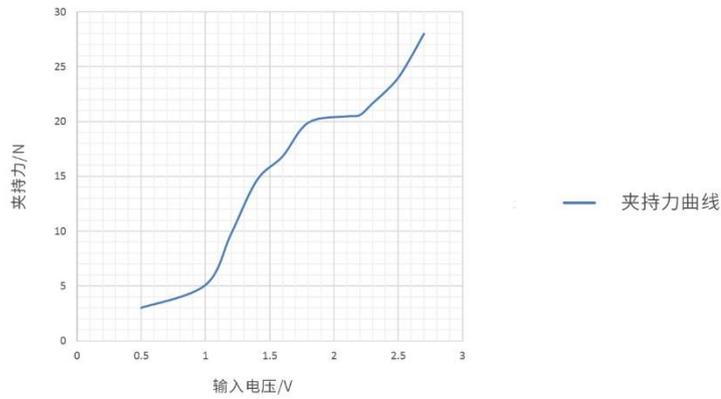
Type of line	Function	Description	Remarks
Red line	24V	Power supply	It must be connected.
Shielded line	GND	Power supply	It must be connected.
Green line	Control signal (control clamp or loose)	<p>Interface should be connected if the logic level of the controller is 3.3V or 5V.</p> <ul style="list-style-type: none"> ◆ Electric gripper opens to the outside if the input is 0V-0.7V(low level). ◆ Electric gripper clamps inside if the input is 2.7V-5V(high level). <p>Open Drain output can be used if the logic level of the controller is higher than 5V.</p> <ul style="list-style-type: none"> ◆ Electric gripper clamps to the inside if the Open Drain input is invalid. ◆ Electric gripper opens to the outside if the input is 0V-0.7V(valid). <p>The second method cannot be used if logic level of the controller is higher than 5V.(One electric resistance can be connected in series $R_x \leq 8.2K$)</p> <ul style="list-style-type: none"> ◆ Electric gripper clamps to the inside if the input is higher than 2.7V(high level). ◆ Electric gripper opens to the outside if the input is 0-VLow*(low level). 	It must be connected.
White line	Clamping force analog signal input	<ul style="list-style-type: none"> ◆ It does not need to be connected. * ◆ It is used to continuously adjust the clamping force in connection with input 0.5 ~2.7V. Corresponding clamping force output is 0-30N. The higher the input value, the greater the clamping force. 	Selective connection
Yellow line	Signal output	<ul style="list-style-type: none"> ◆ It does not need to be connected. The read signal displays the LED status. ◆ Output in motion is 0V and output in the end of motion is 3.3V. 	Selective connection

* Explanation

1. The clamping force is controlled by potentiometer when the white line is not connected while the clamping force is controlled by white signal in white line connection.
2. The potentiometer is located above the side connection of electric gripper.
3. 出 Potentiometer default before leaving the factory is in vertical status. The clamping force is 20N if the white line is not connected. The clamping force cannot be adjusted to larger in clockwise and smaller in anticlockwise.(It is 0° in vertical, negative in anticlockwise and positive in clockwise.)
4. It is 30N in +60° and 0N in -60°.
5. Do not rotate the potentiometer to the maximum or minimum ($\pm 62.7^\circ$). The electric gripper is in protection status(static) when the potentiometer is at the maximum and minimum position.
6. $V_{Low} \leq 0.7 - 2.6 * R_x / 50K$

Electric gripper EFG-F clamping force curve

Different voltage inputs output different clamping forces through the white line.

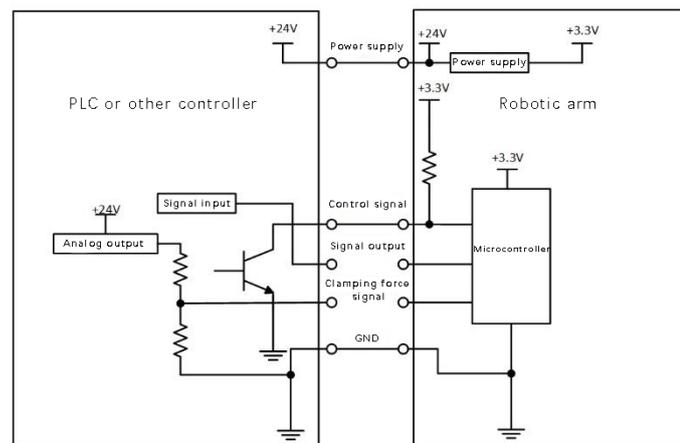


▲ Notes

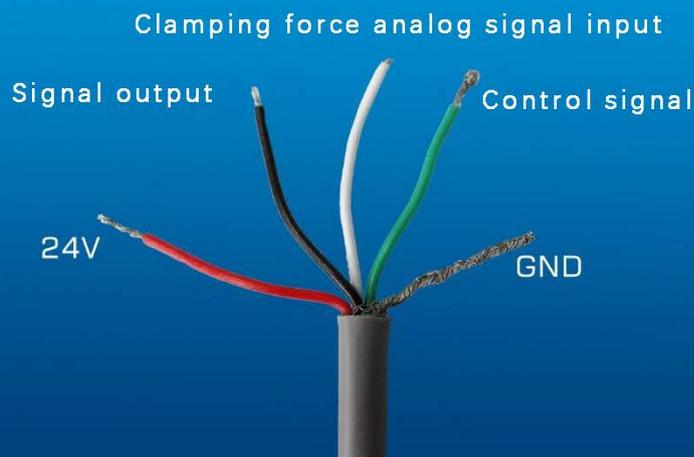
The +24V, GND, control signal(control direction, clamp or loose) must be connected.

Electrical parameters

- Rated voltage $24 \pm 10\%$
- Peak current 0.5A



Electric gripper EFG-F physical picture



FAQ of electric gripper EFG-F

1.The rotation has a concentricity requirement, so both sides are close to each other.

Does it stop at the middle position every time?

A : Yes, there is a symmetry error that smaller than 0.1mm, and the repeated accuracy is $\pm 0.02\text{mm}$.

2.Does the product include a front-end clamping part?

A : No. Users need to design this part themselves based on the objects they need to clamp.

In addition, Hui Ling will also provide a small library of clamps. Please contact sales personnel for assistance.

3.Where is the controller? Does it need the extra pay?

A : Built-in. No extra pay. It is covered in the cost of clamp.

4.Can it support one-finger movement?

A : No, such product is still under development. Please contact the sales personnel for details.

5.What is the operating speed of EFG-F?

A : EFG-F goes one way in one direction, with 0.3s, and back and forth in 0.6s

6.What is the clamping force of EFG-F? How to adjust?

A : The clamping force of the EFG-F is 5-30N. The EFG-F can be manually adjusted with the actuator on the side of the electric gripper or by software adjustment via the wiring in analog mode.

7.How to adjust the clamping stroke of EFG-F?

A : EFG-F does not can't adjust the stroke.

8.How to determine that the gripper clamp objects?

A : For the EFG-F, the gripper will stops if clamps objects. When the gripper stops, the signal output line (black line) will output 3.3V and the LED will light up. The gripper with force feedback to determine if the object is successfully clamped is under development. Please contact sales personnel for the development progress.

9.Is this electric gripper water proofing?

A : The protection level of IP is 65.

10.What is the motor of EFG-F?

A : Brushless motor.

11.Is it possible to use EFG-F grippers to clamp objects larger than 8mm?

A : Yes, 8mm refers to the effective stroke, not the size of the object that will be clamped.

The maximum to minimum size difference of the gripped object is within 8mm. All of them can be gripped by EFG-F.

12.If the machine keeps working, will the motor of the gripper be overheated?

A : Through our professional test, if EFG-F keeps working under around 30C°,the temperature of its surface will not be over 40C°.



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