HITBOT

# Product Brochure

## The most affordable or nothing.

Main category: Industrial robot arm /Collaborative robot arm / Electric gripper/Intelligent actuator/Automation solutions


Huiling-tech Robotic Co.,Ltd.

# Z-EFG-FS

## Electric 2-Fingers Parallel Gripper

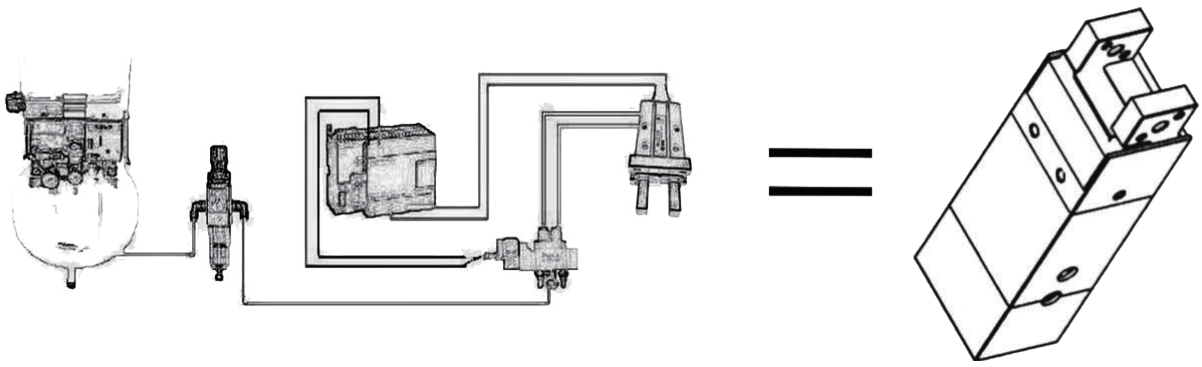
### Product Features

- with servo motor
- The end can be replaced to adapt to various needs
- Pick up fragile and deformable objects such as eggs, test tubes, rings, etc.
- Apply for scenes without air source（e.g. labora tory, hospital）

Promoting a revolution in the replacement of pneumatic grippers by electric grippers

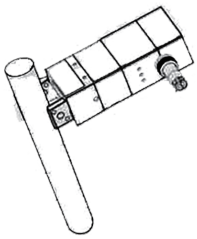
First electric gripper with integrated servo system in China

### Highly Integrated

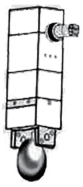


- Perfect replacement for air compressor + filter + solenoid valve + throttle valve + pneumatic gripper
- Multiple cycles service life, consistent with the traditional Japanese cylinder

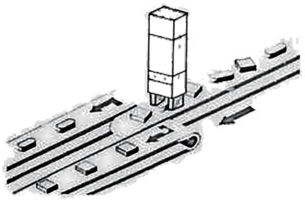
## Application Scenes



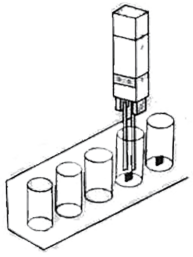
Fragile scene (e.g. test tube)



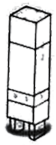
Fragile scene (e.g. eggs)



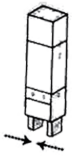
Sorting out things that are arranged in a mess



Gripping in narrow scene



Deformable scene (e.g. rings)



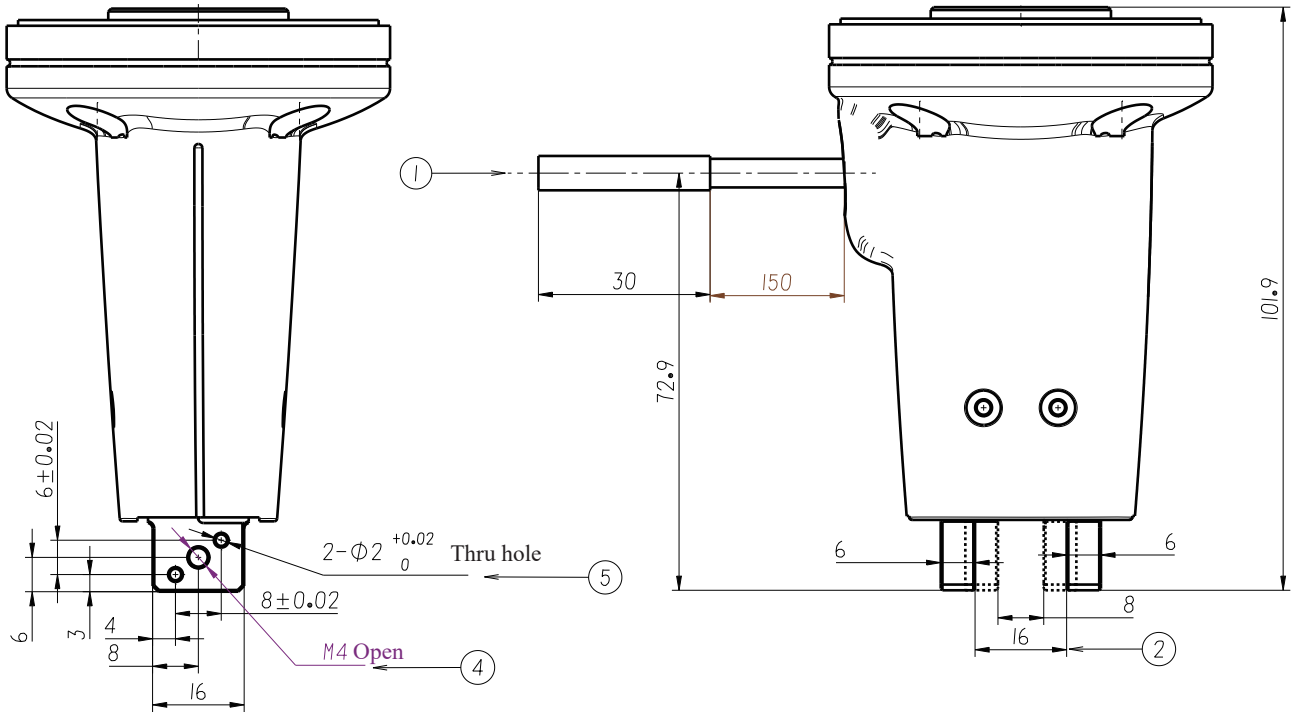
Gripping fragile items at high frequency

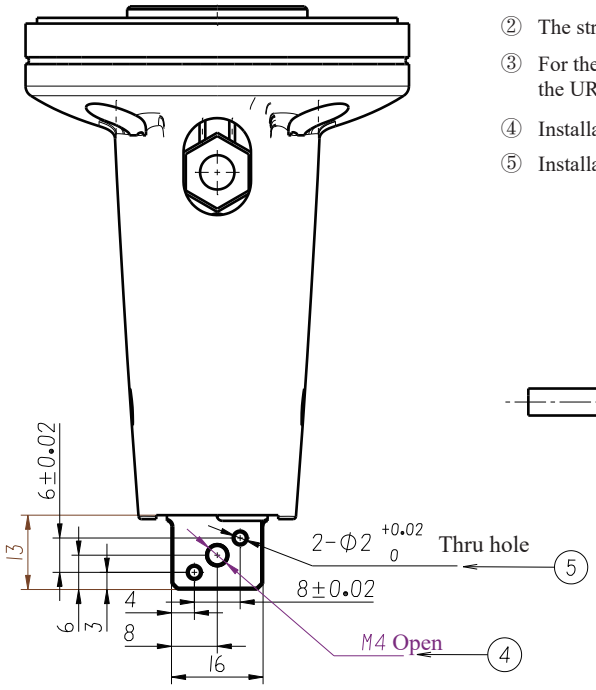

Apply for scenes without air source（e.g. laboratory, hospital)

## Specification Parameters

| Model No. Z-EFG-FS | Parameter |
|---|---|
| Total stroke | 8mm |
| Gripping force | 8-20N（Adjustable） |
| Motion mode | Two fingers move horizontally |
| Recommended gripping weight | 0.3kg |
| Transmission mode | Gear rack + Cross roller guide |
| Grease replenishment of moving components | Every six months or 1 million movements / time |
| One-way stroke motion time | 0.1s |
| Weight | 0.35kg |
| Dimensions | 67*67*101.9mm |
| Operating voltage | 24V±10% |
| Power | 3.6W |
| Protection class | IP20 |
| Motor type | Servo motor |
| Operating temperature range | 5-55℃ |
| Operating humidity range | RH35-80（No frost） |
| Stroke control | Non-adjustable |
| Controller placement | Built-in |
| Rated Voltage | 24 V |
| Peak current | 0.6A |
| Adaptable six-axis robot arm | UR，Aubo |

# Dimension Installation Diagram



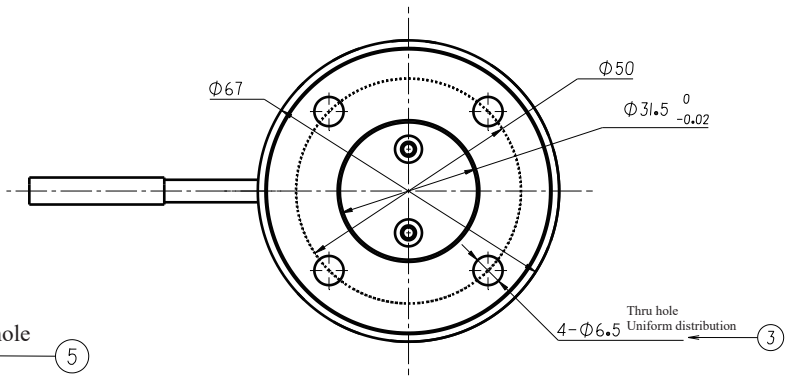

① RKMV8-354

② The stroke of the electric gripper is 8mm

③ For the installation position, use four M6 screws to connect with the flange at the end of the UR robot arm.

④ Installation position, gripper installation position （M4 Screws）

⑤ Installation position, gripper installation position（ϕ2 Cylinder pin hole）



## Wire Sequence Description（NPN）

| Black Wire | Six-axis robot arm | Function | Description | Remarks |
|---|---|---|---|---|
| Pink | 24V | 24V | Power supply | Connected required |
| Grey | GND | GND | Power supply | Connected required |
| Orange | OUT1 | Control signal (control clamping or loosening) | · If the logic level of the controller is 24V, it can be connected directly to the I/O port. The internal is an optocoupler in series to pull up a 2.2K resistor to the internal 24V.<br>· If the output is NPN type I/O, it can be directly connected to I/O<br>· If the controller output is PNP type, please choose PNP type gripper | Connected required |
| Yellow | / | Signal output | · Selective connection, read-only and display the status of LED<br>· Output 0V when in motion, output open-drain when motion ends | Selective connection |

* Notes

1. The potentiometer is located next to the indicator light on the side of the gripper.
2. The factory default potentiometer is 3 gears.

## Wire Sequence Description（PNP）

| Grey Wire | Black Wire | Function | Description | Remarks |
|---|---|---|---|---|
| Red | Pink | +24V | Power supply | Connected required |
| Black | Grey | GND | Power supply | Connected required |
| Green | Orange | Control signal (control clamping or loosening) | · If the logic level of the controller is 24V, it can be connected directly to the I/O port. The internal is an optocoupler in series with a 2.2K resistor<br>· If the logic level of the controller is 24V PNP, it can be directly connected to the I/O port<br>· If the controller output is NPN type, please choose NPN type gripper | Connected required |
| Yellow | Yellow | Signal output | · Selective connection, read-only and display the status of LED<br>· Output 24V when in motion, output open-drain when motion ends | Selective connection |

* Notes

1. The potentiometer is located next to the indicator light on the side of the gripper.
2. The factory default potentiometer is 3 gears.

## Caution

Among the wires that must be connected are, +24V, GND, control signal (control direction, clamping or loosening).

## Working Process

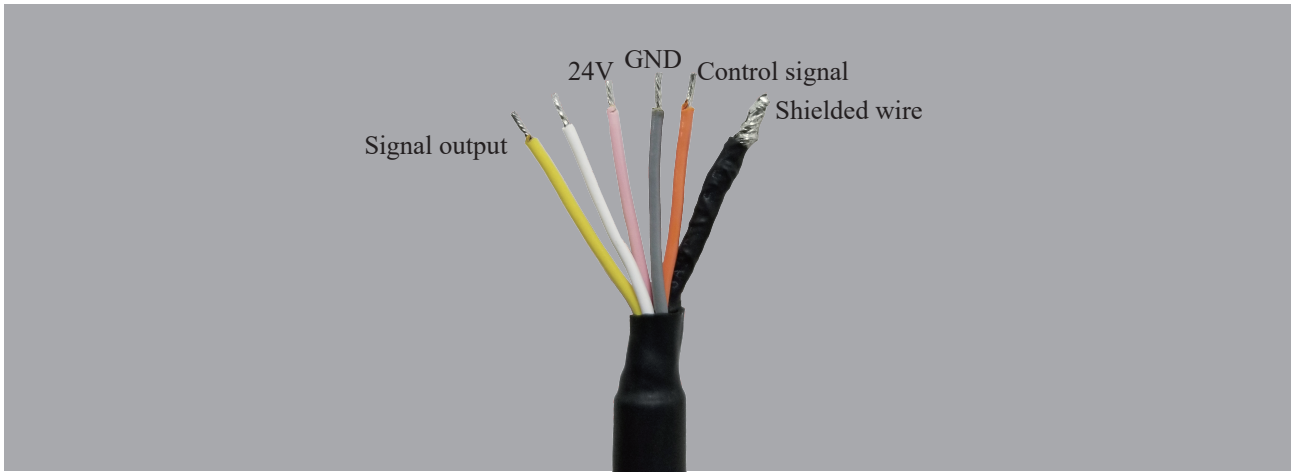
1. Adjust the clamping force: adjust the knob according to the required force.
2. Connect the power wire and signal wire, and power on the gripper, at this time, the indicator light is on , the gripper is in a forceless state.
3. Input a valid signal to the gripper control signal（orange wire） （NPN and PNP levels are different）, the gripper is opened, when there is no signal or the signal is invalid the gripper is closed.

## Indicator Knob Diagram

| Gear | Color | Clamping force |
|---|---|---|
| 4 | Yellow | 20N |
| 3 | Green | 16N |
| 2 | Blue | 12N |
| 1 | Light blue | 8N |
| Invalid area | Red | Invalid |

When the light is off, it indicates that the signal output wire（yellow wire）outputs an invalid state, and the light is on to indicate that the movement is completed, and the signal output wire（yellow wire）outputs a valid state.

## Z-EFG-FS Output Wire Physical Diagram



# FAQ

**1. There is a requirement for the concentricity of rotation, so when the two sides of the gripper are close, does it stop at the middle position each time?**

Answer: Yes, there is a symmetry error of <0.1mm, and the repeatability is±0.02mm.

**2. Does the gripper include the fixture part?**

Answer: No. Users need to design their own fixture part according to the actual clamped items. In addition, Hitbot provides a few fixture libraries, please contact our staff for more details.

**3. Where is the drive controller and do I need to pay extra money for it?**

Answer: It is built-in, no extra charge, the amount of the gripper already includes the cost of controller.

**4. Is it possible to have a single finger movement?**

Answer: No, single finger movement grippers are still under development, please contact our staff for more details.

**5. What is the operating speed of Z-EFG-FS?**

Answer: Z-EFG-FS takes 0.1s for a full stroke in one direction and 0.2s for a round trip.

**6. What is the gripping force of Z-EFG-FS and how to adjust it?**

Answer: 8-20N, adjustable by knob.

**7. How to adjust the stroke of Z-EFG-FS?**

Answer: Z-EFG-FS does not support adjusting stroke.

**8. Is the electric gripper waterproof ?**

Answer: IP protection class 20.

**9. What kind of motor is used in Z-EFG-FS?**

Answer: Servo motor.

**10. Is it possible to use Z-EFG-FS or Z-EFG-20S grippers for gripping items larger than 20mm?**

Answer: Yes, 8mm and 20mm refer to the effective stroke, not the size of the object to be clamped. Z-EFG-FS can be used to clamp objects with the maximum to minimum size difference within 8mm. The Z-EFG-20S can be used for clamping objects with the maximum to minimum size difference within 20mm.

**11. If keeps working, will the motor of the electric gripper overheat?**

Answer: After professional testing, the surface temperature of Z-EFG-FS will not exceed 60 degrees when clamping continuously at a temperature of about 30 degrees.