CF AUTO 錡鋒技研
AUTOMATION ACCESSORIES SYSTEM
CHI FENG TECHNOLOGY

SMART ELECTRIC SUCKER

Smart Electric Vacuum Suction Cup

● User-Friendly

The overall system structure is streamlined and requires no external air supply, ensuring direct and responsive operation.

● High Adaptability

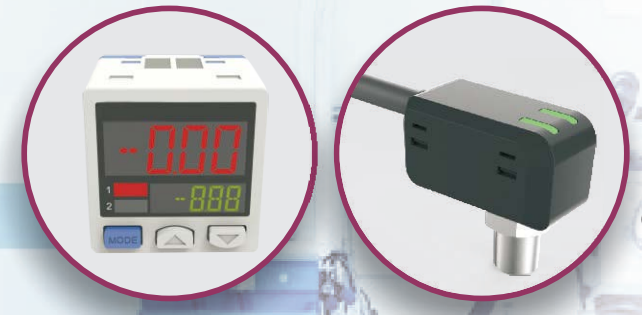
Capable of handling objects of various shapes and sizes. Since it is independent of air sources, it can be deployed wider range of environments and applications.

● Enhanced Safety

Equipped with flexible suction nozzles to ensure soft contact and prevent any damage to the surface of the handled objects

● Switchable NPN/PNP Output

When paired with our specialized pressure sensors, the output type (NPN or PNP) can be toggled freely to meet your system requirements.



Accessory: Pressure Sensor

Must be used in conjunction with a pressure sensor for optimized convenience.

（For detailed specifications on pressure gauges, please refer to our Pressure Gauge Selection Guide or contact our sales representatives.）

Product Overview

As a highly efficient, automated, and adaptable robotic gripping tool, the Electric Vacuum Suction Cup plays an increasingly vital role in modern industrial and smart manufacturing sectors.

The system primarily consists of a suction cup, an electric pump, and a mounting flange. It offers significant advantages, including high levels of automation and precision, strong adaptability, and flexible contact gripping.

How it works: By utilizing an integrated vacuum pump to generate negative pressure, it creates an airtight suction force between the cup and the object. This ensures stable gripping and transport, ultimately boosting production efficiency, enhancing quality, and reducing labor costs—making it a key contributor to modern industrial advancement.

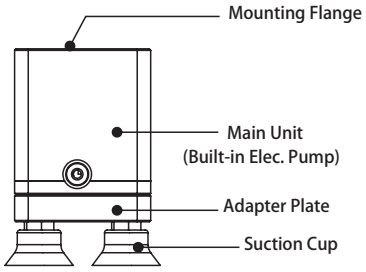
Key Features

- User-Friendly: Streamlined system architecture that requires no external air source, ensuring direct and responsive operation.
- High Adaptability: Easily adjusts to various shapes and sizes without the need to change heads or manually recalibrate positions.
- Enhanced Safety: The flexible contact of the suction cup prevents any potential damage or marking on the object's surface.

Product Components

The Electric Vacuum Suction Cup is comprised of the following core elements:

1. Electric Pump: The power core of the system; it generates the negative pressure required to maintain a firm grip on the product surface.
2. Suction Nozzle: A circular disc crafted from elastic materials that conforms to diverse shapes and sizes.
3. Mounting Flange: A secure interface that allows the unit to be easily mounted onto various workbenches or the end-of-arm tooling (EOAT) of robotic arms.
4. Protective Housing: Featuring a signature "Royal Purple" casing designed to protect and enclose the internal components.



Working Principle

The operation is based on negative pressure generation. When the electric vacuum pump is activated, it extracts air from within the suction nozzle to create a vacuum. This pressure differential generates a powerful suction force between the cup and the target object, enabling stable, secure gripping and seamless material handling.

AIS Series

Integrated

Smart Electric Vacuum Suction Cup

Model Selection

Standard Unit Selection **AIS □□ - □□ - □ - □ - □**

Product Series
AIS: Integrated Series

Flange Size
50: 52x52mm
65: 65x72mm
70: 70x72mm

Maximum Load
02: Max.2kg
04: Max.4kg
08: Max.6kg

Voltage
24V：DC 24V

Mounting Surface
Blank: Top Mounting
S: Side Mounting

Number of Suction Nozzles
Blank: 1 pc
S2: 2 pcs
S3: 3 pcs
S4: 4 pcs

*[Note]
- Suction Nozzles are not included with the main unit body. They must be selected separately and ordered as accessories.
- S4 (4 nozzles) is the standard configuration. If other quantities are required, please consult our sales representative before placing an order.

This product is compatible with G1/8 interface nozzles from all major brands.

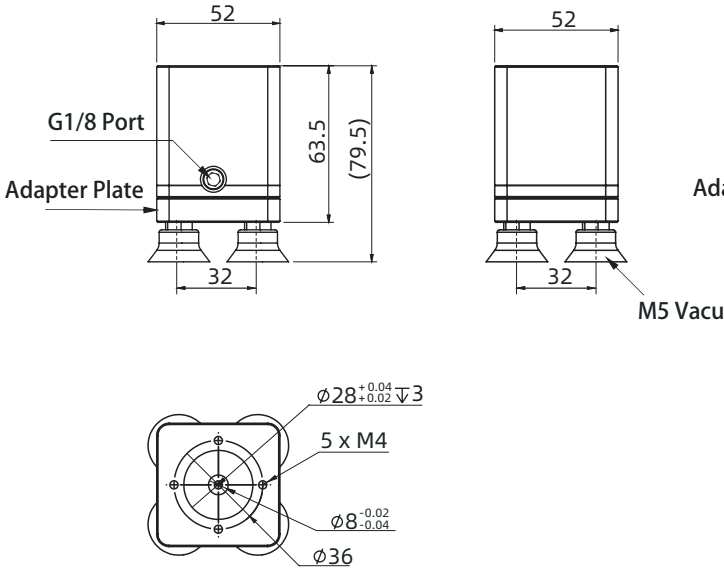
Technical Specifications

Description (Example: 4-nozzle configuration)			
Model Name	AIS50-02-24V-□-S□	AIS65-04-24V-□-S□	AIS70-08-24V-□-S□
Flow Rate	≥1 .2L/min	≥2 .5L/min	≥5 L/min
Negative Pressure	≥- 50kPa	≥- 50kPa	≥- 50kPa
Power	≤2 W	≤5 W	≤5 W
Load Capacity	Max.2kg (Depends on nozzle area and surface finish.)	Max.4kg (Depends on nozzle area and surface finish.)	Max.6kg (Depends on nozzle area and surface finish.)
Noise	≤55dB	≤6 5dB	≤6 5dB
Pick & Place Speed	≥ 0 .1s (Depends on load weight and conditions.)		
Control Method	I/O		
Output	RS485+1NPN (80mA/24VDC Max)		
Rated Pressure Range(kPa)	-100~0		
Accuracy(25° C)	±2%F.S.		
Repetitive Accuracy	±0.2%F.S.		
Rated Voltage	DC24V		
Product Lifespan	≥6 000h		
Operating Environment	Temperature Range: 0° C ~ 50° C；Relative Humidity: < 80% (Non-condensing)		
Motor	Brushless DC Motor (Vacuum Pump)		
Dimensions (mm)	52 x 52 x 63.5 mm (Excluding suction nozzles)	72x65x66.5mm(Excluding suction nozzles)	72x70x72.5mm(Excluding suction nozzles)

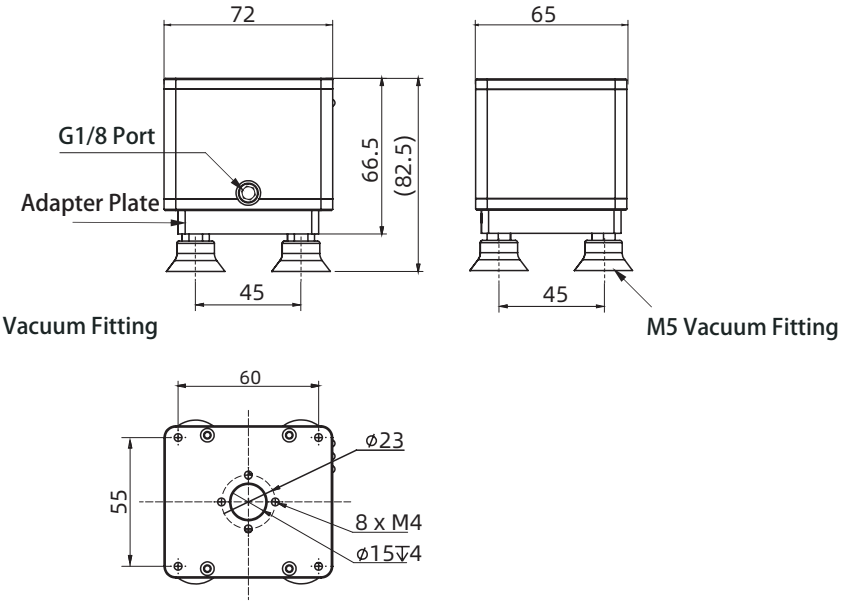
Notes
1. Test Conditions: Tested at 25° C, standard pressure, with air medium and zero pump load.
2. Performance Variations: Actual results may vary based on environment (temp/pressure), medium (density/viscosity), and load conditions. Data is for reference only.

Outline Dimensions (Unit: mm)

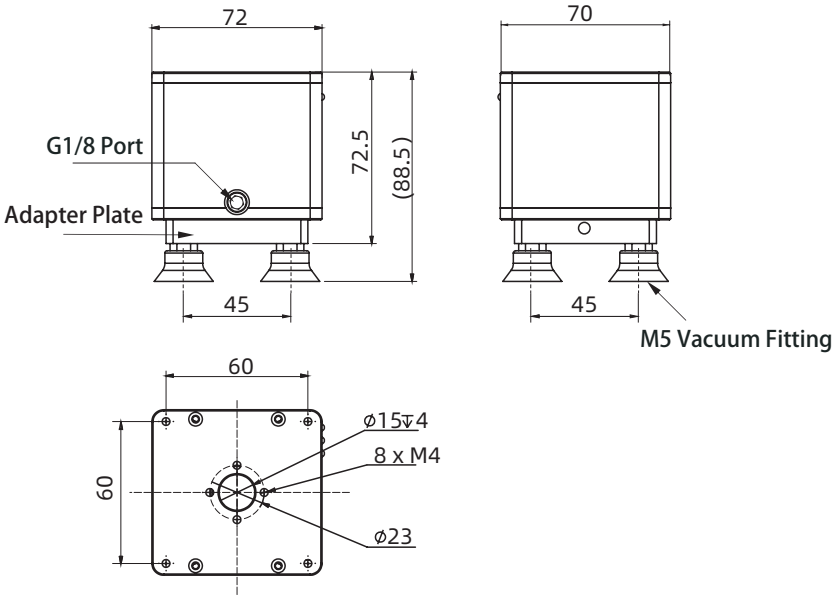
AIS50-02-24V-S4



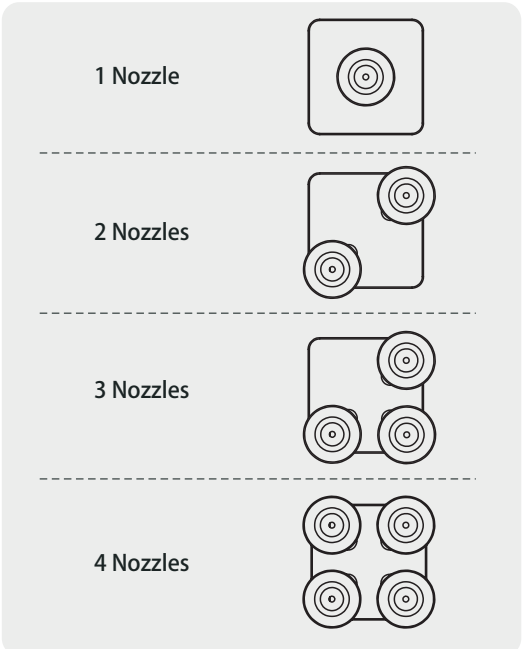
AIS65-04-24V-S4



AIS70-08-24V-S4

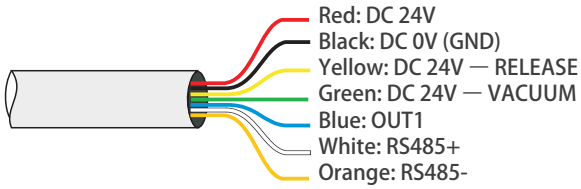


Adjust nozzle count via adapter plate.



Mounting Plate

Wiring Instructions



Wire Color	Description	Notes
Red	DC24V	
Black	DC0V	
Yellow	DC24V	Release
Green	DC24V	Vacuum
Blue	OUT1	
White	RS485+	
Orange	RS485-	

⚠ Red/Yellow/Green: Do not power DC24V simultaneously.

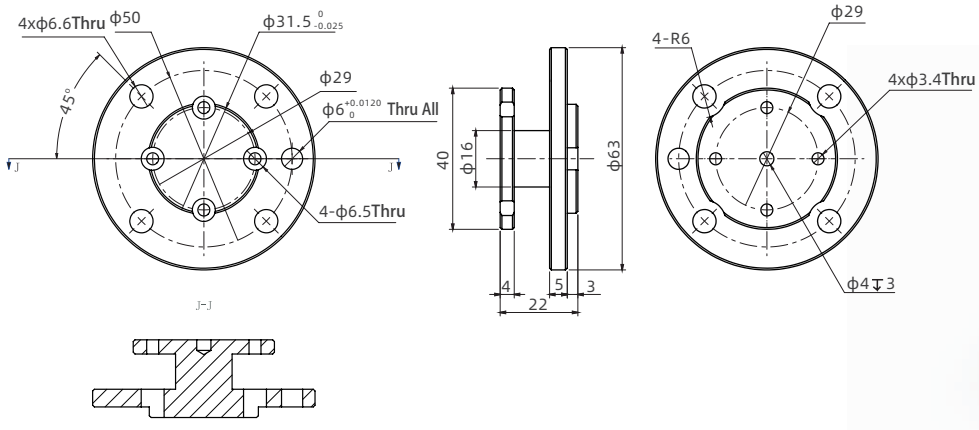
Mounting Plate Selection

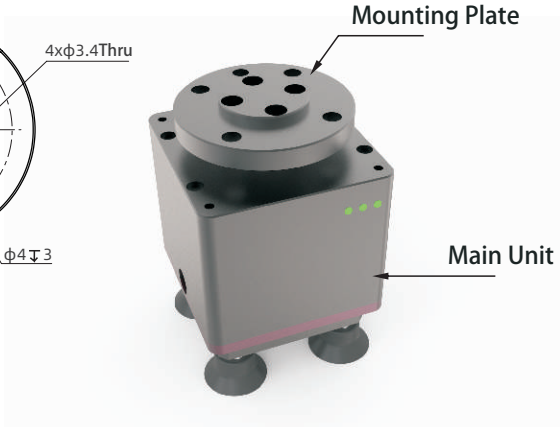
Standard Selection **MP - □ □ - □□ - □□**

Compatibility	Robot Mounting PCD	Suction Cup Mounting PCD	Plate Height
A: Collaborative Robots	50: ϕ50 mm	ϕ29: ϕ29mm	H22: 22mm

Ex: MP-A50-ϕ29-H22

Plate Dimensions (Unit: mm)





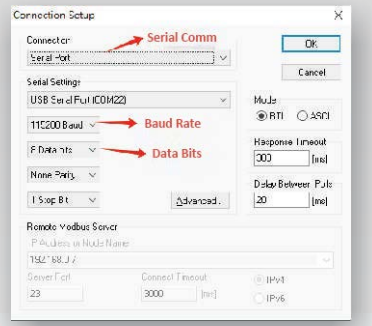
HMI (Human-Machine Interface)

User-Friendly Software *Modbus Poll*

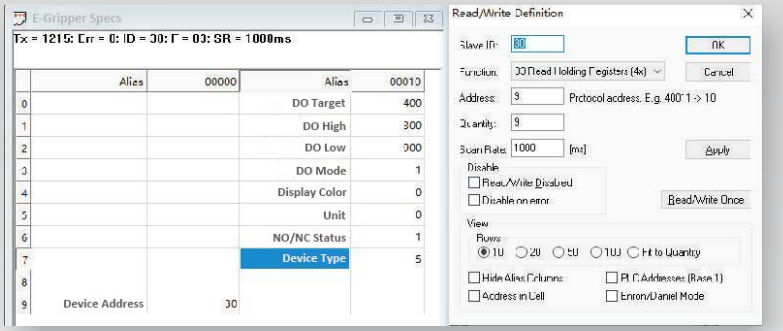
The AIS series E-Gripper features a built-in pressure sensor and RS485 Modbus communication, enabling simple monitoring and configuration via PC or external devices.

Data Read-Modbus Poll

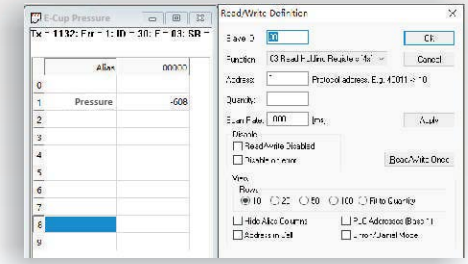
Read and write data easily using software like Modbus Poll or serial port debuggers.



Serial Setup



Parameters can be configured individually



Pressure Display

For protocol details, see the pressure gauge brochure.

For the full software manual, contact sales.

AES Series

Standard

Smart Electric Vacuum Suction Cup

Model Selection

For gauge selection, please refer to our catalog!

Standard Unit Selection **AES □□ - □□ - □ - □ - □**

Product Series
AES: Series

Flange Size
40: 40x40mm
45: 45x30mm
55: 55x35mm
60: 60x35mm

Maximum Load
02：Max.2kg
04：Max.4kg
08：Max.6kg

Voltage
24V：DC 24V

Mounting Surface
Blank: Top Mounting
S: Side Mounting

Number of Suction Nozzles
Blank: 1 pc
S2: 2 pcs
S3: 3 pcs
S4: 4 pcs

[*Note 1] AES40 series cannot be side-mounted.

[*Note 2]
- Pad body excludes suction cups; select cups separately as acc. (accessories).
- Std. product includes 1 cup. For other qty, contact sales before ordering.
- Compatible with major brands' G1/8 cups.

Technical Specifications

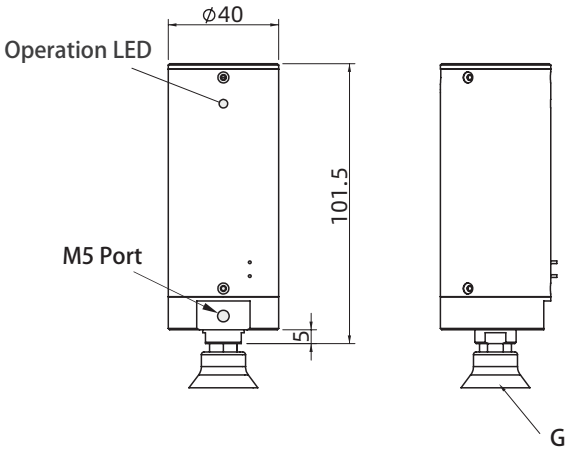
Description (Example: 1-nozzle configuration)				
Model Name	AES40-02-24V-□-□	AES45-02-24V-□-□	AES55-04-24V-□-□	AES60-08-24V-□-□
Flow Rate	≥1.1L/min	≥1.2L/min	≥2.5L/min	≥5L/min
Negative Pressure	≥-53kPa	≥-50kPa	≥-50kPa	≥-50kPa
Power	≤5W	≤2W	≤5W	≤5W
Load Capacity	Max.2kg (Depends on cup area & surface smoothness)	Max.2kg (Depends on cup area & surface smoothness)	Max.4kg (Depends on cup area & surface smoothness)	Max.6kg (Depends on cup area & surface smoothness)
Noise	≤50dB	≤55dB	≤65dB	≤65dB
Pick & Place Speed	≥0.1s(Depends on load weight and conditions.)			
Control Method	I/O			
Rated Voltage	DC24V			
Product Lifespan	≥3000h	≥6000h	≥6000h	≥6000h
Operating	Temperature Range: 0° C ~ 50° C；Relative Humidity: < 80% (Non-condensing)			
Motor	Brushless DC Motor (Vacuum Pump)			
Dimensions (mm)	ϕ40 x 101.5	30x45x82.5	35x55x108	35x60x108
weight	210g	210g	330g	365g

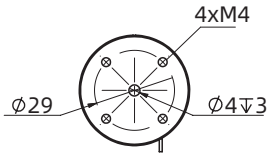
Notes

1. Test Conditions: Tested at 25° C, standard pressure, with air medium and zero pump load.
2. Performance Variations: Actual results may vary based on environment (temp/pressure), medium (density/viscosity), and load conditions. Data is for reference only.

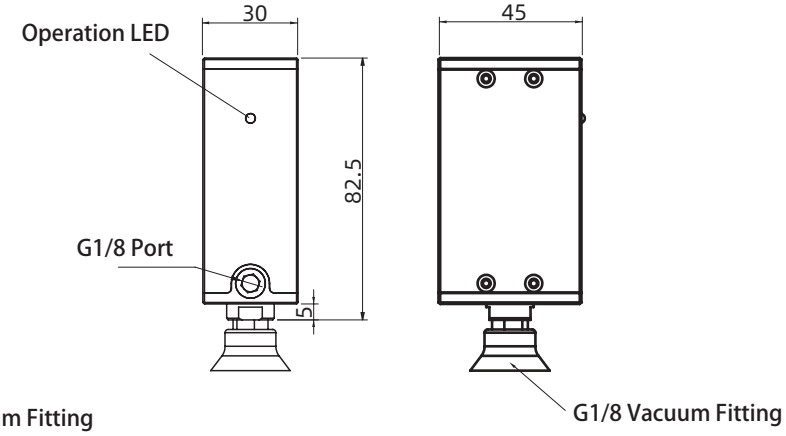
Outline Dimensions (Unit: mm)

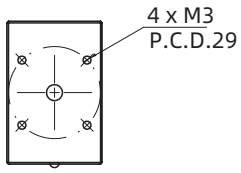
AES40-02-24V



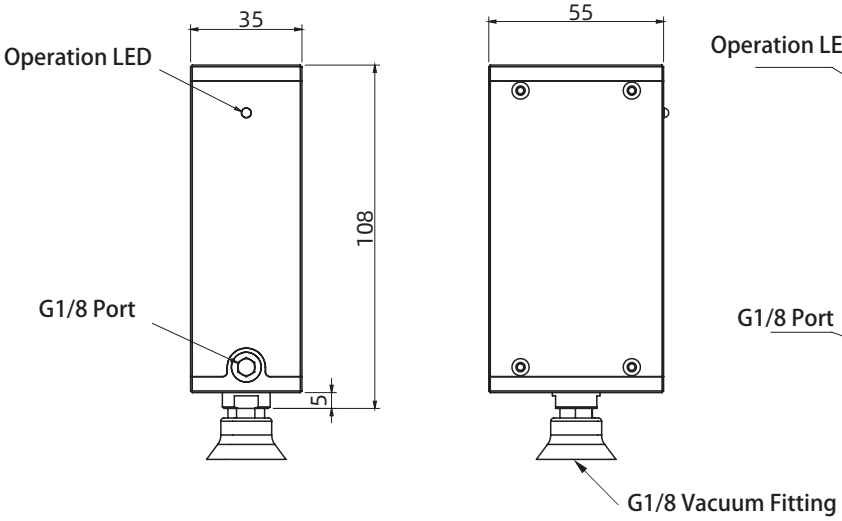


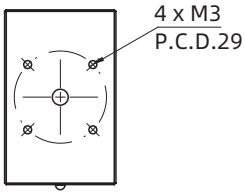
AES45-02-24V



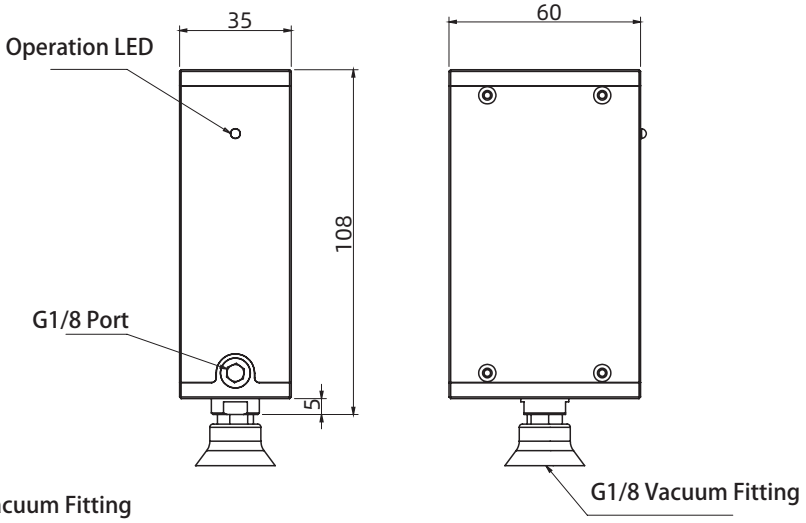


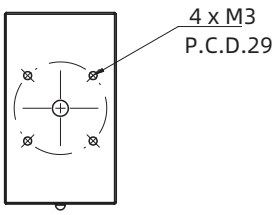
AES55-04-24V





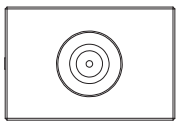
AES60-08-24V



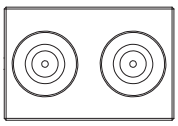


Cup Replacement

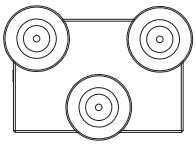
Change adapter plate to vary cup qty.



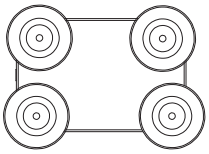
1 Nozzle



2 Nozzles



3 Nozzles



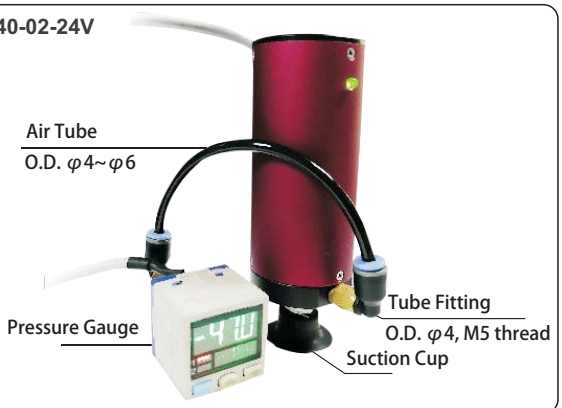
4 Nozzles

Sys. Composition

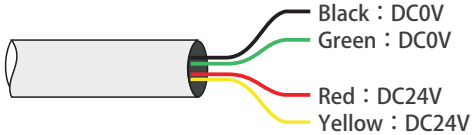
AES60-08-24V

*Note: AES40-02-24V N/A.

AES40-02-24V



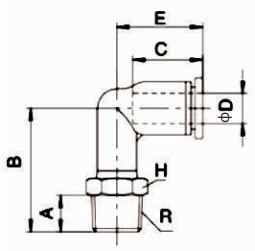
Wiring Instructions



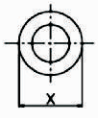
Wire Color	Description	Notes
Black、Green	0V	
Red	24V	Vacuum
Yellow	24V	Release

⚠ Red/Yellow: Do not power DC24V simultaneously.

Fitting Spec. (Unit: mm)



* Note: For AES40-02-24V only.



Model Name	ϕD	R	A	B	E	H	X	C
AEPL4-M5	4	M5	4	17.5	17.5	8	10	14.9

Acc. (Pressure Gauge)

Positive/compound pressure optional; premium quality & cost-effective.

Boost efficiency & smart pressure control!

⚠ For gauge selection, please refer to our catalog!

Cup Type Selection

Cup Selection **SK - □ - □□ - □ - □**

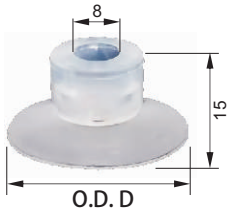
Cup Interface
G01：G1/8

Cup O.D.
06： 6mm
10： 10mm
20： 20mm
30： 30mm
.....

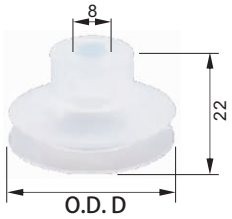
Bellows
1: 1-layer
2: 2-layer
3: 3-layer

ESD Protection
None: Non-ESD
A: ESD safe

Cup Spec. (Unit: mm)



SK-G01-□-1



SK-G01-□□-2

SK-G01-□-3

SK-G01-□-1-A

SK-G01-□-2-A

SK-G01-□-3-A

Note: Ref. table below for O.D. D dimensions in the fig.

Model Name	Interface Size	Cup O.D. D (mm)	ESD Function	Color	Material
SK-G01-□□-1	G1/8	6、10、20、30、40、50 optional	None	White	Silicone
SK-G01-□□-2	G1/8	6、10、20、30、40、50 optional	None	White	Silicone
SK-G01-□□-3	G1/8	6、10、20、30 optional	None	White	Silicone
SK-G01-□□-1-A	G1/8	6、10、20、30、40、50 optional	Yes	Black	Silicone
SK-G01-□□-2-A	G1/8	6、10、20、30、40、50 optional	Yes	Black	Silicone
SK-G01-□□-3-A	G1/8	6、10、20 optional	Yes	Black	Silicone

Elec. vs Pneumatic Gripper

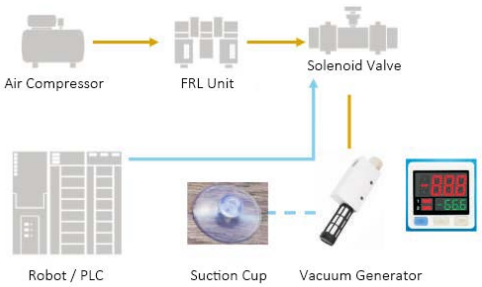
Elec. Gripper (AES Series)

- Higher unit cost
- Easy operation
- Simple system & low cost
- Space-saving system
- No air source available

PK

Pneumatic Gripper

- Lower unit cost
- Requires air source, FRL, solenoid valves, etc.
- Complex system & higher total cost
- Bulky system / Bulky footprint



Elec. Gripper (AIS Series)

Built-in gauge for a simpler structure!

Applications

Manufacturing

Gripping , handling & assembly on lines to boost efficiency & quality.

Logistics

Sorting & handling in automated warehouses to boost throughput.

Medical

Moving devices, medicine & patients to boost care quality & efficiency.

R&D / Lab

Handling lab equipment & instruments to boost exp. (experimental) efficiency.

Agriculture

Harvesting fruits & veggies to boost crop yield & efficiency.