



Integrated Electric Gripper

User Manual



Multi Axis Robot

- Pick-and-place / Assembly / Array and packaging / Semiconductor / Electro-Optical industry / Automotive industry / Food industry
- Articulated Robot
 - Delta Robot
 - SCARA Robot
 - Wafer Robot
 - Electric Gripper
 - Integrated Electric Gripper
 - Rotary Joint



Single Axis Robot

- Precision / Semiconductor / Medical / FPD
- KK, SK
 - KS, KA
 - KU, KE, KC



Direct Drive Rotary Table

- Aerospace / Medical / Automotive industry / Machine tools / Machinery industry
- RAB Series
 - RAS Series
 - RCV Series
 - RCH Series



Ballscrew

- Precision Ground / Rolled
- Super S series
 - Super T series
 - Mini Roller
 - Ecological & Economical Lubrication Module E2
 - Rotating Nut (R1)
 - Energy-Saving & Thermal-Controlling (C1)
 - Heavy Load Series (RD)
 - Ball Spline



Linear Guideway

- Automation / Semiconductor / Medical
- Ball Type--HG, EG, WE, MG, CG
 - Quiet Type--QH, QE, QW, QR
 - Other--RG, E2, PG, SE, RC



Medical Equipment

- Hospital / Rehabilitation centers / Nursing homes
- Robotic Gait Training System
 - Hygiene System
 - Robotic Endoscope Holder



Bearing

- Machine tools / Robot
- Crossed Roller Bearings
 - Ball Screw Bearings
 - Linear Bearing
 - Support Unit



AC Servo Motor & Drive

- Semiconductor / Packaging machine / SMT / Food industry / LCD
- Drives-D1, D1-N, D2
 - Motors-50W-2000W



Driven Tool Holders

- All kinds of turret
- VDI Systems
 - Radial Series, Axial Series, MT
 - BMT Systems
 - DS, NM, GW, FO, MT, OM, MS



Linear Motor

- Automated transport / AOI application / Precision / Semiconductor
- Iron-core Linear Motor
 - Coreless Linear Motor
 - Linear Turbo Motor LMT
 - Planar Servo Motor
 - Air Bearing Platform
 - X-Y Stage
 - Gantry Systems



Torque Motor (Direct Drive Motor)




- Inspection / Testing equipment / Machine tools / Robot
- Rotary Tables-TMS,TMY,TMN
 - TMRW Series
 - TMRI Series

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1. Precautions (be sure to read before use)

1.1 Safety regulations

 Danger :	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 Warning :	Indicates a potentially hazardous situation which could result in death or serious injury, if the equipment is operated incorrectly.
 Caution :	Indicates a potentially hazardous situation which may result in injury and machine damage, if the equipment is operated incorrectly.

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Danger,” “Warning” , or “Caution.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)[Note 1], Japanese Industrial Standards (JIS)[Note 2]and other safety regulations[Note 3].

[Note 1] ISO 10218: Robots and robotics devices - Safety requirement for industrial robots

IEC 60204-1: Safety of machinery – Electrical equipment of machine (Part1: General requirement)

[Note 2] JIS B 9960-1: Safety of machinery – Electrical equipment of machine (Part1: General requirement)

JIS B 8433 : Manipulating industrial robots - Safety

[Note 3] Labor Safety and Health Actetc.

- ⊙ This product is designed and manufactured as a component for using in general industrial machinery.
- ⊙ Please make sure to acquire the product specifications from the system designer or someone who has sufficient knowledge and experience. In addition, please read the details of the “Technical Manual” and “Software Operating Manual” carefully and take the educational training for related safety prior to operating this product.
- ⊙ If the gripper is integrated in a system (machine, robot, etc.), the system needs to meet the regulations and standards for safety measures. Check if the system satisfies the regulations and standards first. If so, properly handle the product in accordance with the regulations and standards.
- ⊙ All situations are not covered by the “Danger” , “Warning” , and “Caution” safety signs. For more details, be sure to read the instruction manuals thoroughly before operation.

Danger

- ⊙ Do not use the product outside specifications. It may cause the product to fail, stop functioning or sustain damage. It may also significantly reduce the service life of the product.
- ⊙ If the machine will stop in the event of system problem such as emergency stop or power failure, design a safety circuit or other device to prevent equipment damage or injury.
- ⊙ Do not use this product in a place exposed to ignitable, inflammable or explosive substances.
- It may explode or ignite, resulting in product damage or injury. Hot swapping is forbidden.
- ⊙ Please follow the instruction manual when wiring the product. For plug in/plug out of the wire, connect to the terminal quickly and reliably.
- ⊙ Please do not use the product with water and oil to avoid electric shock or fire.
- ⊙ Before supplying power and operating the product, always check the operation area of the

equipment to ensure safety. When operating or adjusting the gripper, be sure to observe safety measures for the system.

⊙ Please do not disassemble, or modify the product to avoid personal accident, electric shock, fire or damage.

Warning

- ⊙ Do not expose the product to radiant heat generated from a heat source, and use the product within the ambient temperature range of +5°C to +45°C .
- ⊙ Please use product under ambient humidity < 85% without condensation.
- ⊙ Do not use product under corrosive gas or corrosive chemical solution locations, to avoid rust and other deterioration situation occurring.
- ⊙ Do not use product in dust or iron powder environments.
- ⊙ Do not use products where violent collision and vibration is possible.
- ⊙ Do not use products near strong electromagnetic interference to avoid abnormal product movements.
- ⊙ Install products and fixtures with appropriate screw locking torque.
- ⊙ Do touch product when product in motion, to avoid hand injury.
- ⊙ When a person is accidentally caught, please immediately turn off power or implement external safety circuit emergency stop button. and to ensure Check power state, and manually adjust gripper switch or remove fixture afterwards.
- ⊙ When power failure occurs during operation, turn off power immediately to avoid sudden movement after the resumption of power, which may cause resulting in mechanical damage or personal injury.
- ⊙ If abnormal heat, smoke, odor or persistent noise occurs, please immediately turn off power to avoid product damage or fire.
- ⊙ When product is holding workpiece and cannot be activated, please immediately turn off power. Manually adjust gripper switch or remove fixture to remove workpiece. Wait for abnormal state to be resolved before turning on power supply.
- ⊙ Do not use product grip live or dangerous objects.
- ⊙ When gripping workpiece, avoid load on a single gripper.
- ⊙ When product moves, avoid external force to the gripper.

Caution

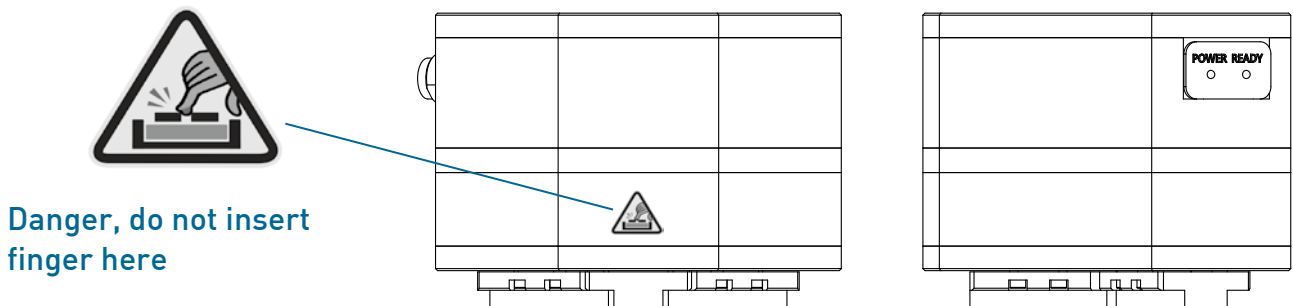
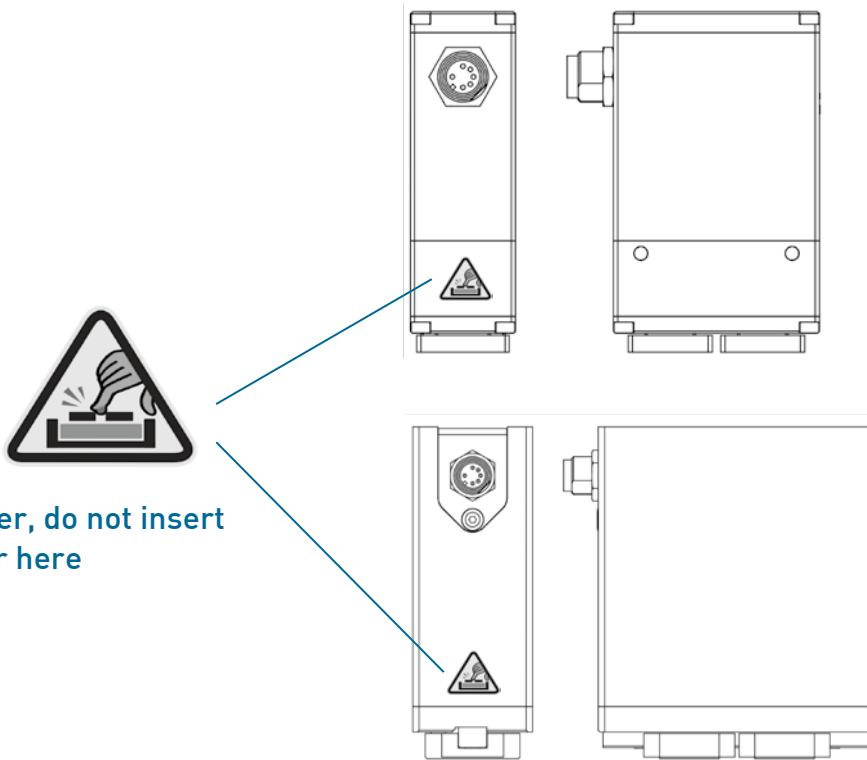
- ⊙ When installing product, please do not handle action parts or wires, so as to avoid product damage.
- ⊙ Do not put fingers or foreign matter into openings of the product, to avoid electric shock, personal injury, fire and other undesirable circumstances.
- ⊙ The motor in operation will heat up, increasing surface temperature of product . Please avoid adversely affecting surrounding workpieces.
- ⊙ The bending radius of the wire in the actuator cable is within specified range. ($R_b \geq 38 \text{ mm}$)
- ⊙ Cables of product cannot be damaged and should be checked regularly. Damage to cable, excessive bending, pulling, curling can lead to abnormal function, cause fire or other undesirable circumstances.
- ⊙ When product is discarded, it should be disposed in accordance to local waste disposal regulations.
- ⊙ When using the product, please wear safety shoes and other appropriate protective equipment.
- ⊙ Product body and gripper end are provided with positioning holes.

- ◎ Fixture should be designed to be light and short.
- ◎ Fixture material, shape, clamping area and other

design characteristics will affect the maximum workpiece weight.

1.2 Warning label location and description

The product will be labeled as shown below to ensure correct and safe operation.



1.3 Warranty Coverage

Warranty period of this product is 12 months. The warranty does not cover any of following causes of failure:

- ⊙ Operating mode, operating environment and storage beyond product manual definition.
- ⊙ If after installation by professional staff, the product is damaged due to installation or delivery to another location, or a change is made to the use environment.
- ⊙ Product damage caused by human operation or improper installation.

Following conditions are not covered by warranty:

- ⊙ Product number or production date (month and year) of product cannot be verified.
- ⊙ Gripper body and controller components are not HIWIN original products.
- ⊙ Any element that is added or removed from gripper or controller.
- ⊙ Any modification of wiring or cable between gripper body and controller.
- ⊙ Any modification of gripper and controller appearance and any removal of gripper and controller components, such as: dismantling shell, drilling or cutting on product.
- ⊙ Any damage caused by natural disasters, such as fire, earthquakes, tsunamis, lightning, winds and floods. In the event of product damage, HIWIN does not provide warranty or compensation unless user's analysis confirms that product is defective. For more information on warranty terms, please contact dealer or technician.

2. Product characteristics

2.1 Integrated electric gripper features

- **Integrated control**

- Controller is embedded inside gripper eliminating the need for additional mounting and can be used directly with I/O control.
- Parameters can be set without computer, eliminating the need to edit program.
- LED lights for Power and Ready, clearly show gripper status.
- Compact design; small size, light weight.

- **Easy operation**

- Only need one set of I/O signals to control gripper on/off.
- Built-in Busy signal for immediate feedback gripper status.

- **Function**

- SEG-24 has function buttons that allow user to quickly adjust gripper travel and store clamping point.

- **High speed clamping**

- SEG-04 open/close cycle time is 0.26 seconds, suitable for 3C industry high-speed pick and place operations.
- SEG-24 Clamp has smart pick and place function, set to function keys that store clamping point. It can move to clamping point at high-speed and automatically convert to slow clamping, effectively reduce cycle time and increase efficiency.
- STG-16 is suitable for round object pick and place operations.



SEG-04



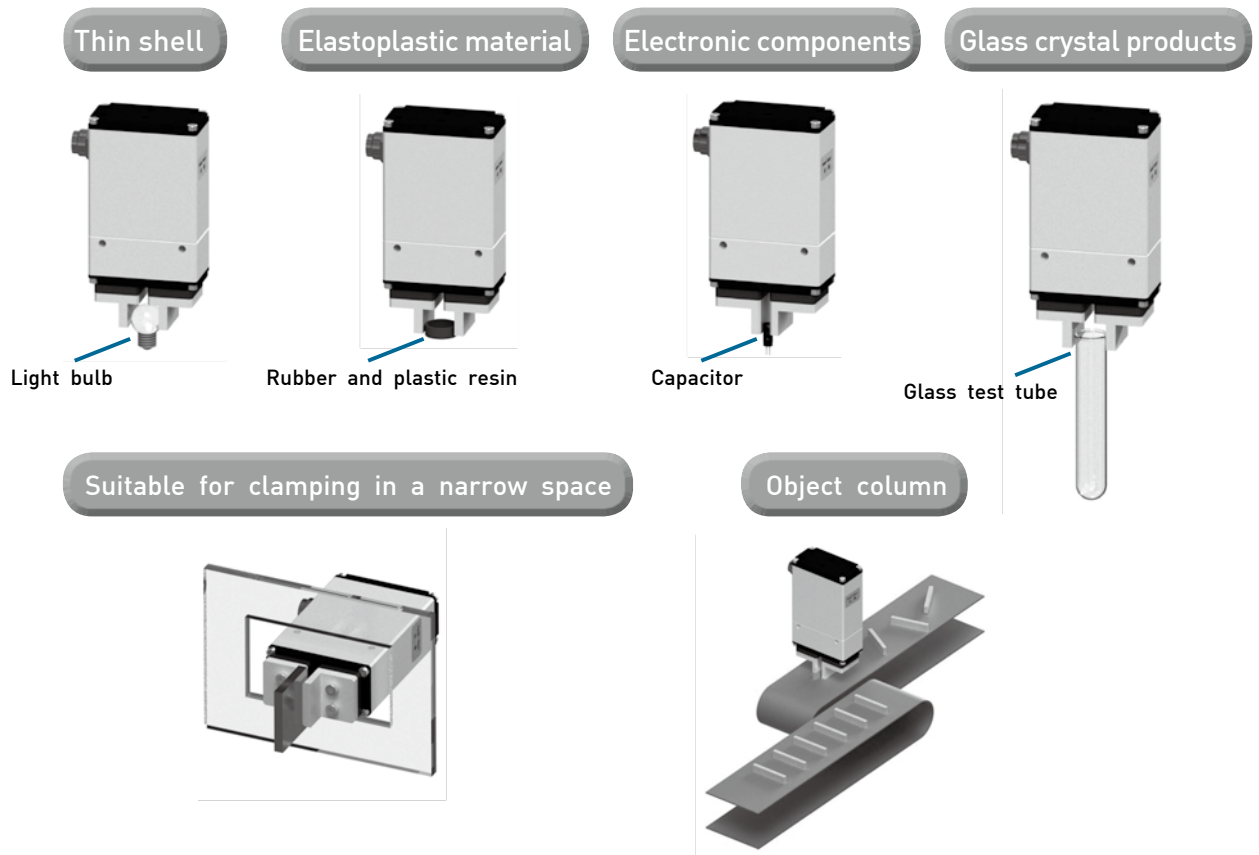
SEG-24



STG-16

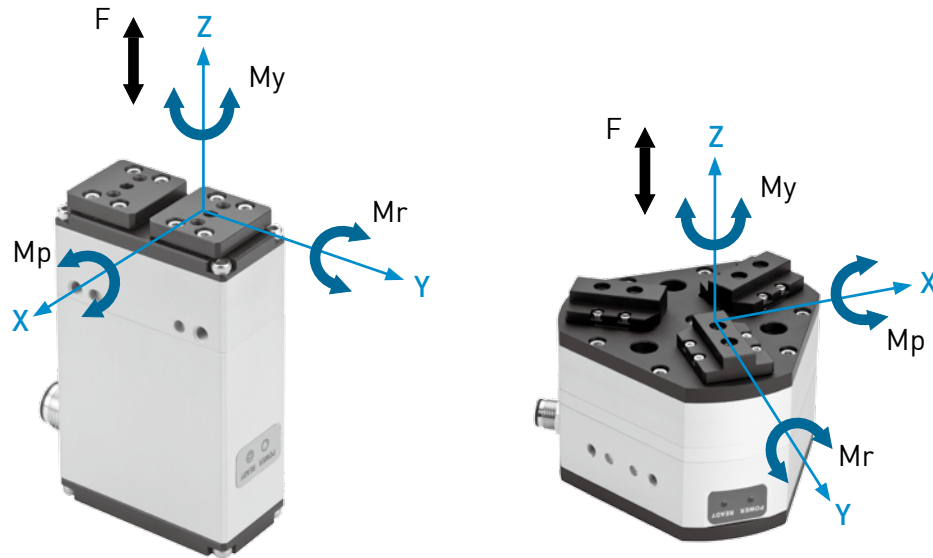
2.2 Application examples

- Gripper can be used for workpiece parts that are easily deformed, broken, or susceptible to surface damage.



2.3 Specification

Model			SEG-04	SEG-24	STG-16
Category	Item	Unit	Value		
Motion specifications	Stroke per side	mm	2	12	8
	Gripping force	N	8 [Note1]	35 [Note2]	30 [Note1]
	Gripping speed	mm/s	45	15[60] [Note3]	30
	Repeatability	mm	±0.1	±0.1	±0.1
Power specifications	Operation voltage	V	24±10%	24±10%	24±10%
	Operation current	A	Max 1	Max 1	Max 1
Load	Load torque Mr	N-m	2.6	11.76	7
	Load torque Mp	N-m	2.3	7.35	4.5
	Load torque My	N-m	2.3	7.35	4.5
	Load strength F	N	108.9	254.8	196
Hardware Specifications	Weight	kg	0.2	0.7	0.7
	IP class	-	IP40	IP20	IP20
	Operation temperature	°C	5-45	5-45	5-45
	Operation humidity	%RH	< 85	< 85	< 85
	Storage temperature	°C	0-60	0-60	0-60
	Total length	mm	49	105.5	72.3
	Total height	mm	25	88	100
Total thickness	mm	81	38	100	



[Note 1] Gripping force tolerance is $\pm 25\%$.

[Note 2] Gripping force tolerance is $\pm 30\%$.

[Note 3] Moving velocity is 60mm/s.

[Description 1] Gripping force is recommended to be 10 to 20 times the weight of gripped object.

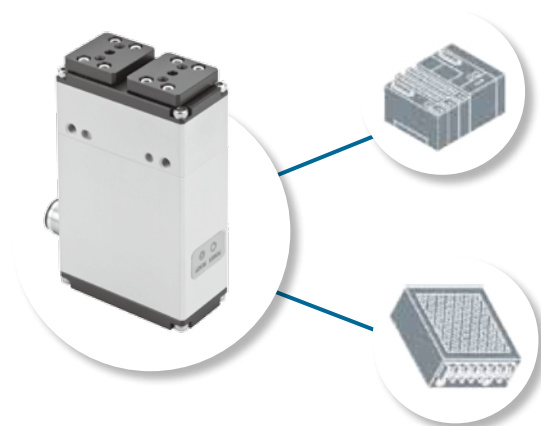
[Description 2] High-speed movement or rotation after gripping requires the weight of object to be reduced.

[Description 3] Material, shape, grip area, etc. of gripping workpiece will affect the maximum weight of gripped object.

[Description 4] SEG-04 is light gripping force model, it is recommended to use elastic material for gripping part, such as rubber, gifted glue, etc., to increase gripping friction, and avoid gripping objects from falling.

[Description 5] SEG-04 can only inside grip inside and the backlash is 0.5mm per side. Don't grip at the backlash area.

2.4 System architecture diagram



Upper controller

For example:

programmable logic controller PLC
robot controller RC

24V DC power supply

• Plug and play

- Connect Integrated electric gripperdrive wires to power supply and host controller, to begin using.

2.5 Specification illustration

The model number of integrated electric eripper series contains the type,size,other kinds of cable length or special order,etc..

SEG-04 - 10 - 0 P

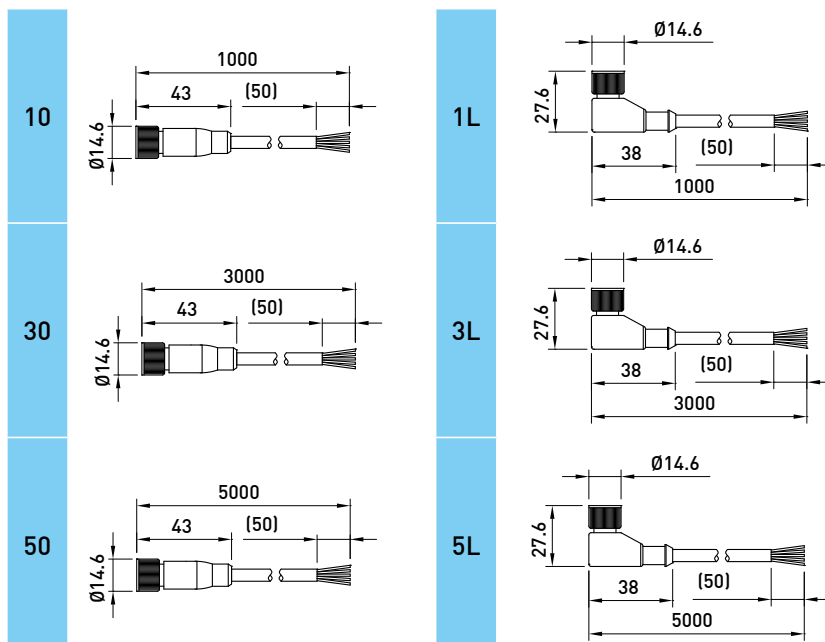
A B C D

Code	Item	Description
A	Type	SEG-04 : total stroke is 4mm and two grippers type
		SEG-24 : total stroke is 24mm and two grippers type
		STG-16 : total stroke is 16mm and three grippers type
B	Actuator cable length and connector type	10 : 1 M - straight connector (standard)
		1L : 1 M - L type connector
		30 : 3 M - straight connector
		3L : 3 M - L type connector
		50 : 5 M - straight connector
		5L : 5 M - L type connector
C	Sensor	None : none
		O : 2M-Normal Open (Note 1)
		C : 2M-Normal Close (Note 1)
D	Note	None : NPN Type(standard)
		P : PNP Type (Note2)
		S : specified
		TM : TM Plug & Play Version (Note 3)

[Note 1] The sensor is an optional equipment. It doesn't affect the function of gripper if the sensor is not installed. According to the output mode (NPN, PNP type) of the gripper, the sensor with corresponding output mode is provided.

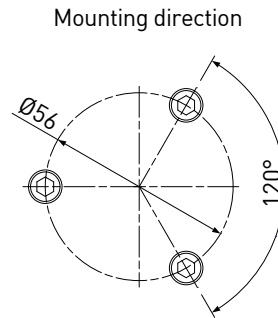
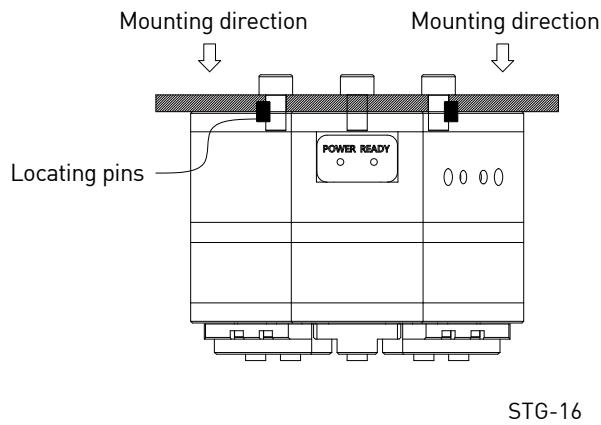
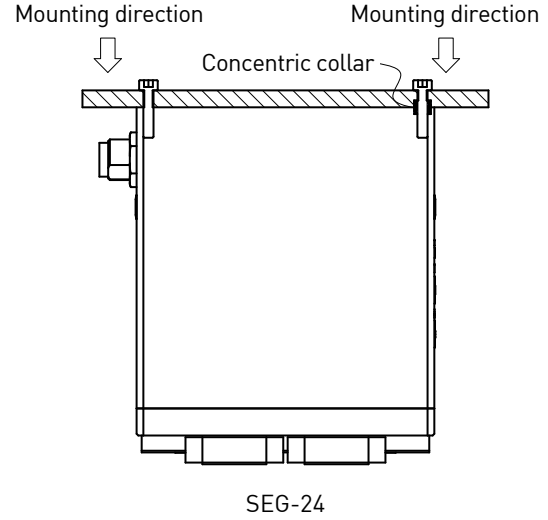
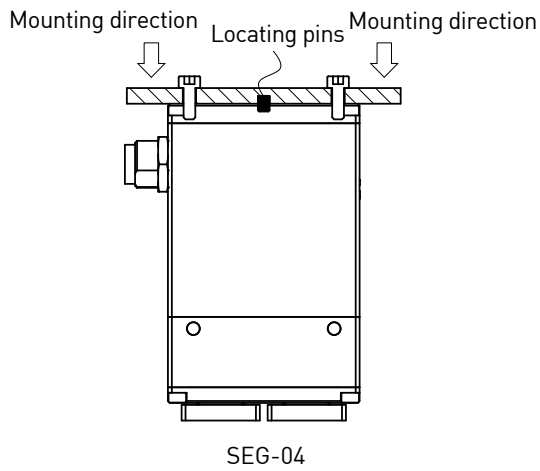
[Note 2] For SEG-24 and STG-16.

[Note 3] The actuator cable length is recommended for three meters or more.



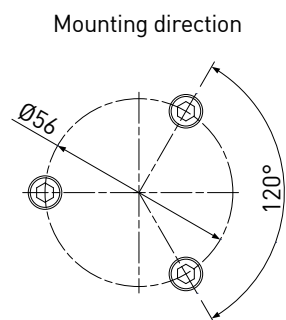
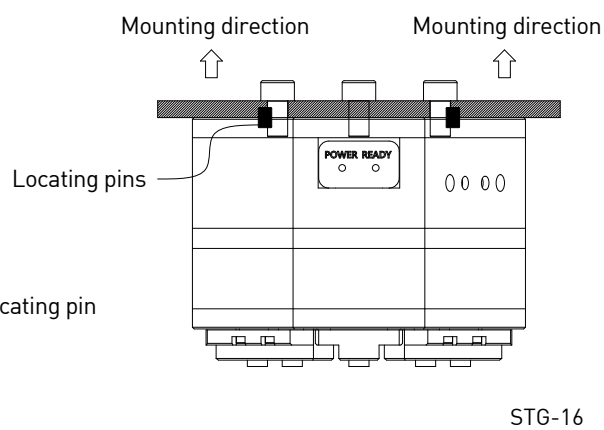
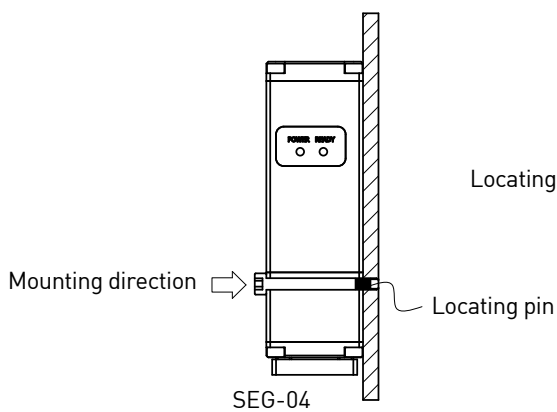
2.6 Electric gripper mounting methods

A. When using the screw holes on underside of gripper body



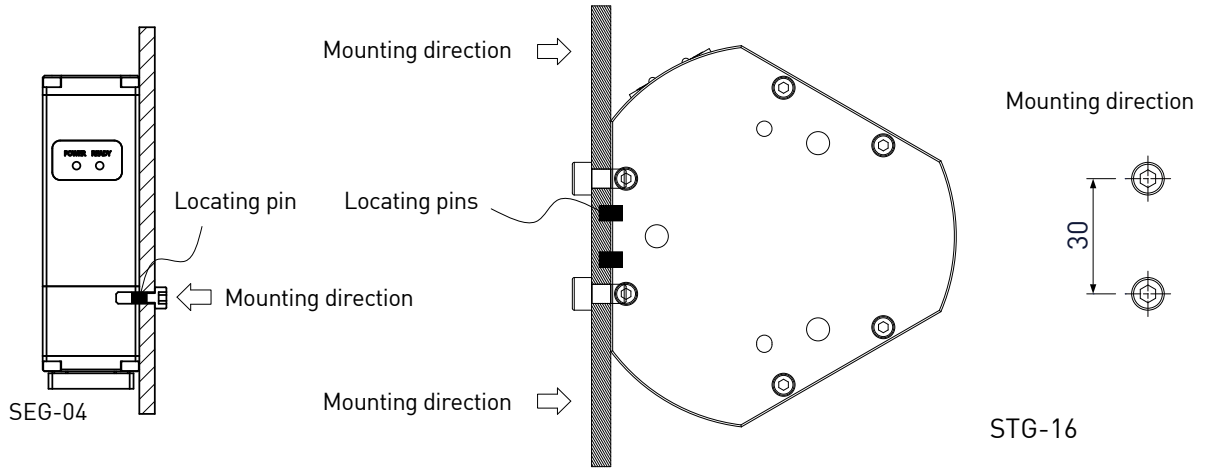
Type	Screw M	Recommended locking torque (N*m)	Maximum locking depth SL (mm)
SEG-04	M3x0.5P	0.6~0.8	3
SEG-24	M3x0.5P	0.6~0.8	8
STG-16	M6x1P	4.6~5.2	6

B. When using front through holes of gripper body



Type	Screw M	Recommended locking torque T (N*m)
SEG-04	M3x0.5P	0.6~0.8
STG-16	M5x0.8P	2.8~3.4

C. When using screw holes on the back of gripper body



Type	Screw M	Recommended locking torque T (N*m)	Maximum locking depth SL (mm)
SEG-04	M4x0.7P	1.2~1.6	6
STG-16	M5x0.8P	2.8~3.4	5

3. Control method

3.1 Input/output definitions and functional descriptions

- SEG-04, STG-16 I/O control:2IN/1OUT

Signal input		
IN1	IN2	Function
OFF	OFF	None
ON	OFF	Open
ON	ON	Close

Signal output	
Pin	Function
OUT1	Busy

- SEG-24 I/O control:2IN/2OUT

Signal input		
IN1	IN2	Function
OFF	OFF	None
ON	OFF	Open
ON	ON	Close

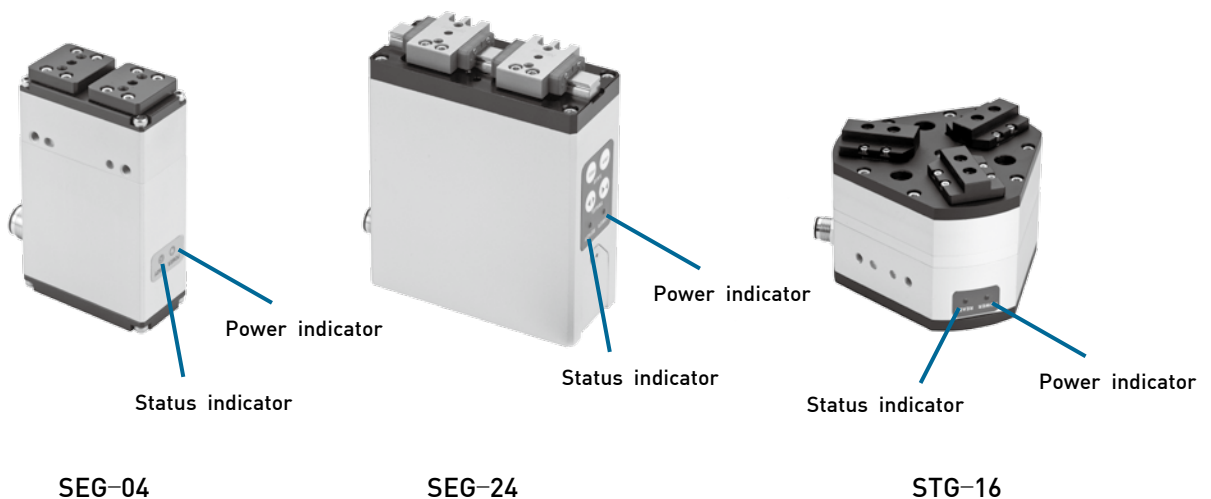
Signal output	
Pin	Function
OUT1	Busy
OUT2	Alarm

[Description 1] when IN1(Ready)=ON of SEG-24, electric gripper will perform a reset action to confirm origin and then open to outside.

[Description 2] The OUT1(busy) signal is ON when electric gripper action is executed. The OUT1(busy) signal is OFF after the action is completed.

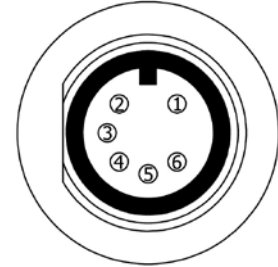
3.2 Indicator functions

Color	Function	Description
Green	Power indicator	On when power is connected
Blue	Status indicator	On when IN1(Ready)=ON

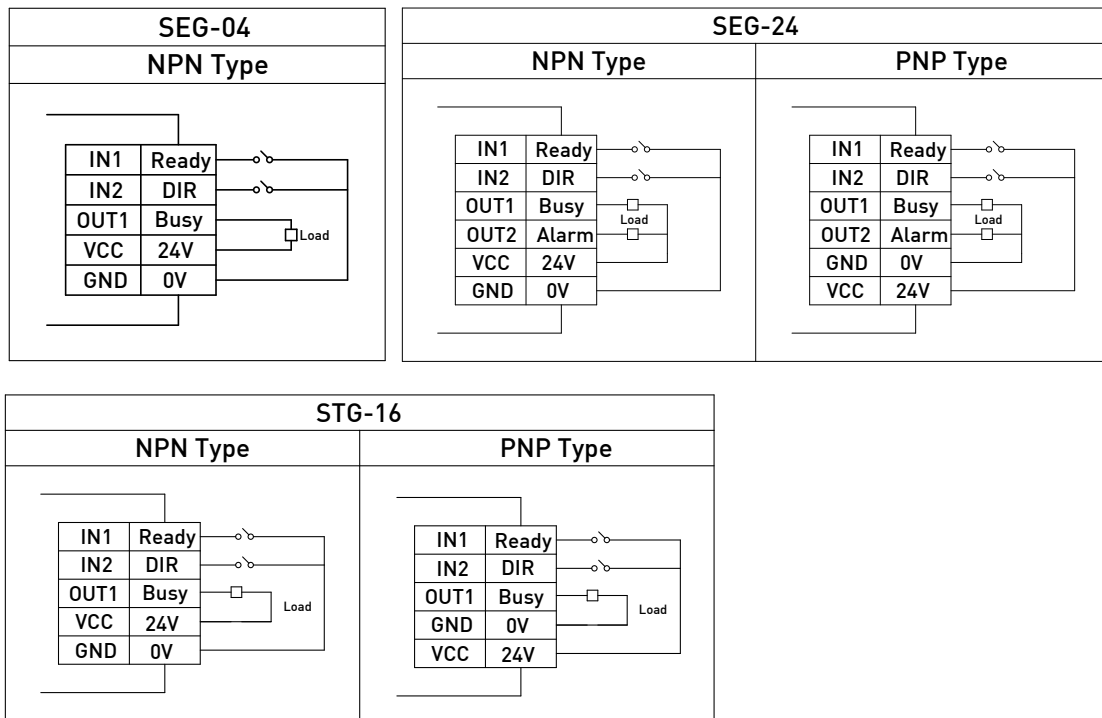


3.3 External wiring instructions

Pin definition			
Pin	Color	I/O	Function
1	White	IN1	Ready
2	Brown	IN2	DIR (O/C)
3	Green	OUT1	Busy
4	Yellow	VCC	24V/1A
5	Blue	GND	0V
6	Red	OUT2	Alarm [Note 1]
7	Black	---	Shielding

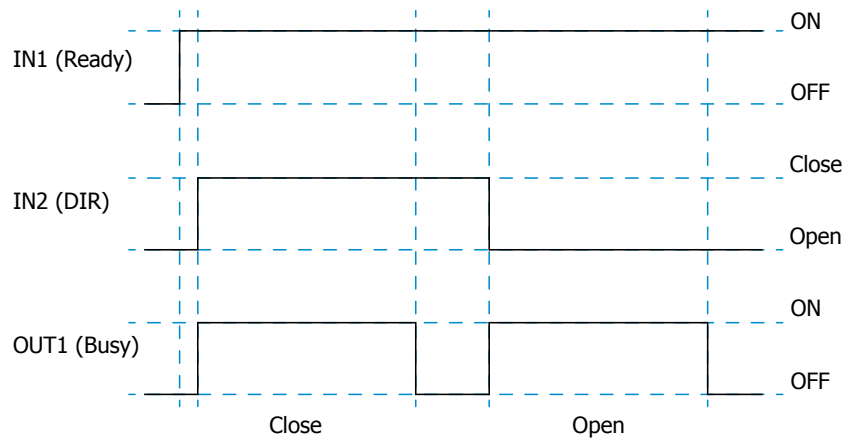


[Note 1] For SEG-24 and STG-16.

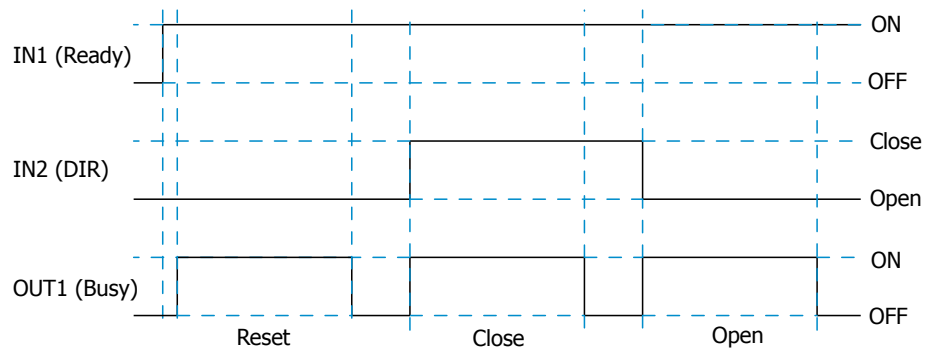


3.4 Operation timing diagram

• SEG-04, STG-16



• SEG-24

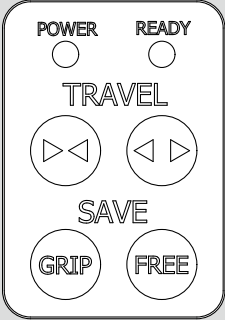






3.5 Error status descriptions (SEG-24 only)

After the GRIP point and the FREE point are set completely and Ready=ON, please refer to the table below:

Mode	Situation	Alarm
Move	Not stop at the FREE point	●
Grip	Not stop in the tolerance band (n)	●
	Stop at second tolerance point(\bar{M})	●

3.6 Function button descriptions (SEG-24 only)

Panel	Press button	Mode	Short press	Long press
		Jog button (inward)	Move inward 1 mm	Move inward continuously
		Jog button (outward)	Move outward 1 mm	Move outward continuously
		Memory button	Gripping center point (G)	Tolerance (G+n or G-n)
		Memory button	Release point (F)	Clear all storage points

[Description 1] This function button can be used only when gripper Ready = OFF.

[Description 2] After re-connected to power, reset must be executed first (press GRIP and FREE at the same time). Then, the function button can be used to move the gripper. Or the Ready light would sparkle 5 times rapidly to warn the user.

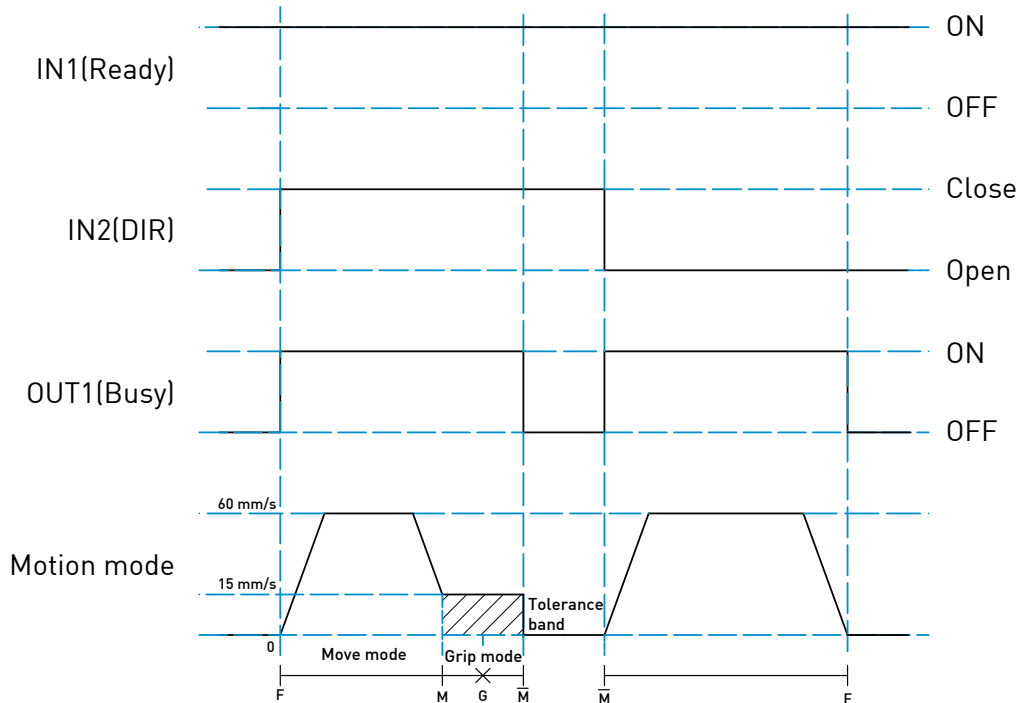
[Description 3] The distance between gripping center point and release point shall not be less than 1mm.

[Description 4] To set tolerance point (M), user simply sets one of the points, system will automatically produce the center point.(G) as mirror point and find the second tolerance point(M).

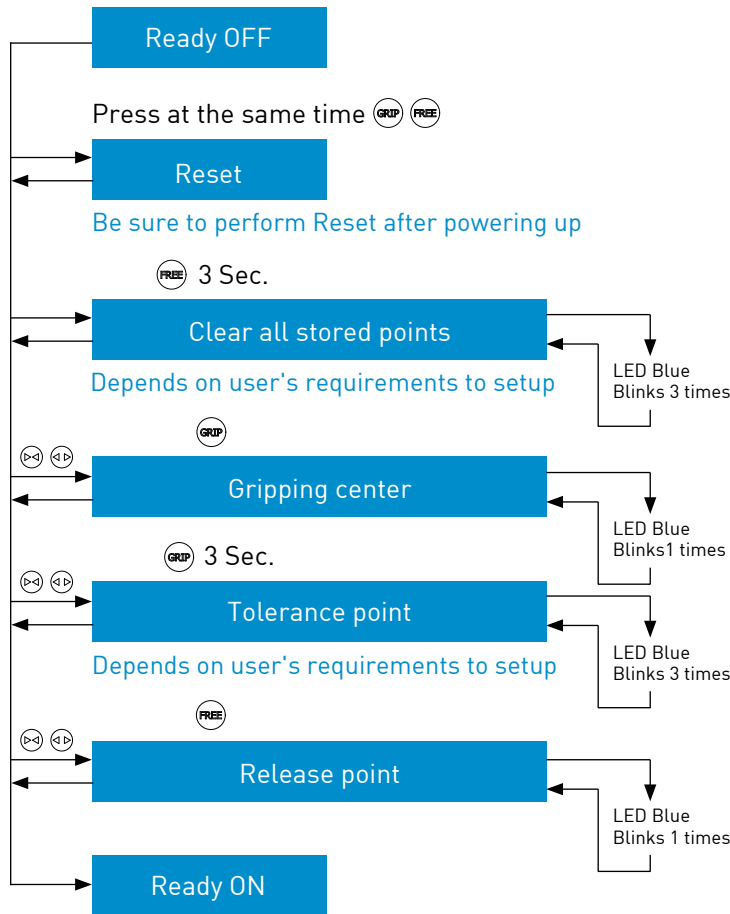
[Description 5] The distance between tolerance point and second tolerance point is called "tolerance band (n)".

[Description 6] If user does not set tolerance point, the system default tolerance point is $G \pm 0.5\text{mm}$.

[Description 7] Taking grip gripper inward, fast outward movement as an example, the timing chart is as follows:



• Setup process



• Setup steps

1. Press **GRIP** and **FREE** at the same time to execute Reset.
2. Press **FREE** for 3 sec. to clear all stored points (depends on user's requirements to setup).
3. Use jog buttons **▷◁** or **◁▷** to move gripper to gripping center point and press **GRIP** to save button. Ready indicator blinks 1 times when saved successfully.
4. Use jog buttons **▷◁** or **◁▷** to adjust gripping travel range, press **GRIP** 3 sec. to save tolerance point. Ready indicator blinks 3 times when saved successfully (depends on user's requirements to setup).
5. Use jog buttons **▷◁** or **◁▷** to move gripper to release point and press **FREE** to save. Ready indicator blinks 1 times when saved successfully.

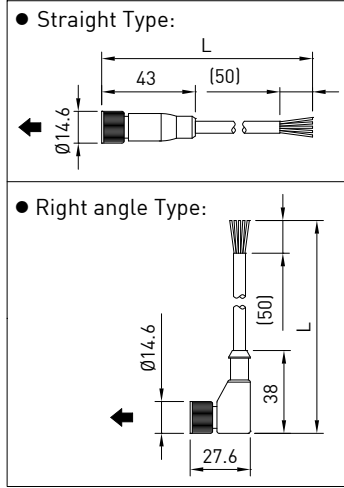
[Explanation 1] Be sure to perform Reset during the period of setting and power restarting.

[Explanation 2] When gripping center point and release point are not set or setting is not complete, full travel is gripped.

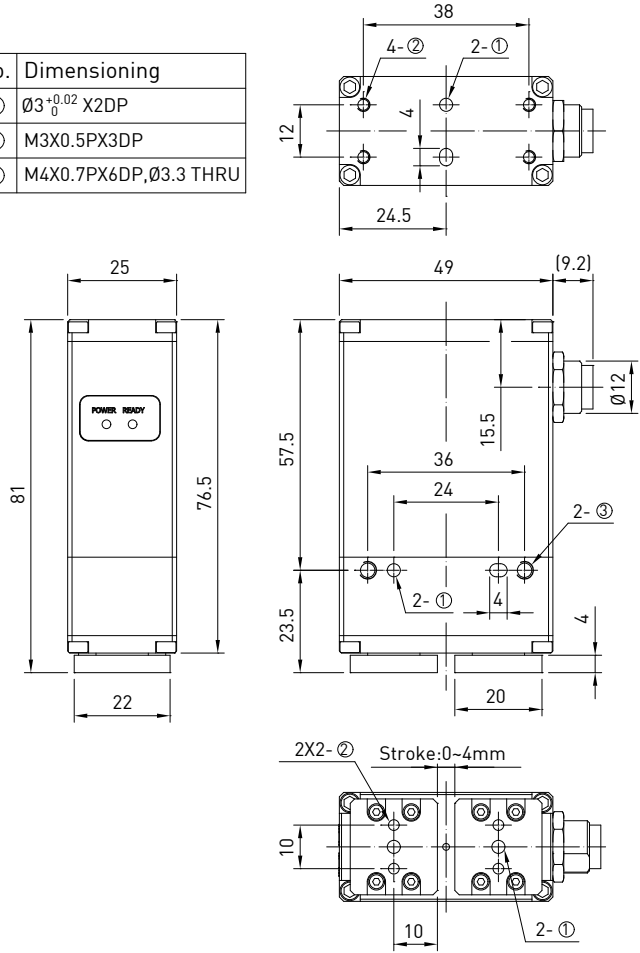
4. Dimensions

4.1 SEG-04 outline drawing

Connector Cable:

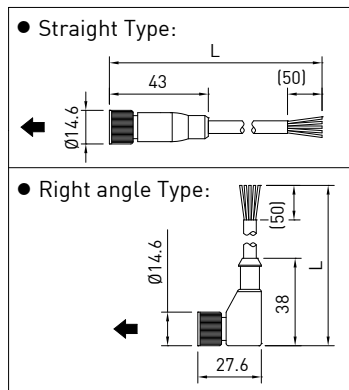


No.	Dimensioning
①	$\varnothing 3^{+0.02}_0$ X2DP
②	M3X0.5PX3DP
③	M4X0.7PX6DP, $\varnothing 3.3$ THRU

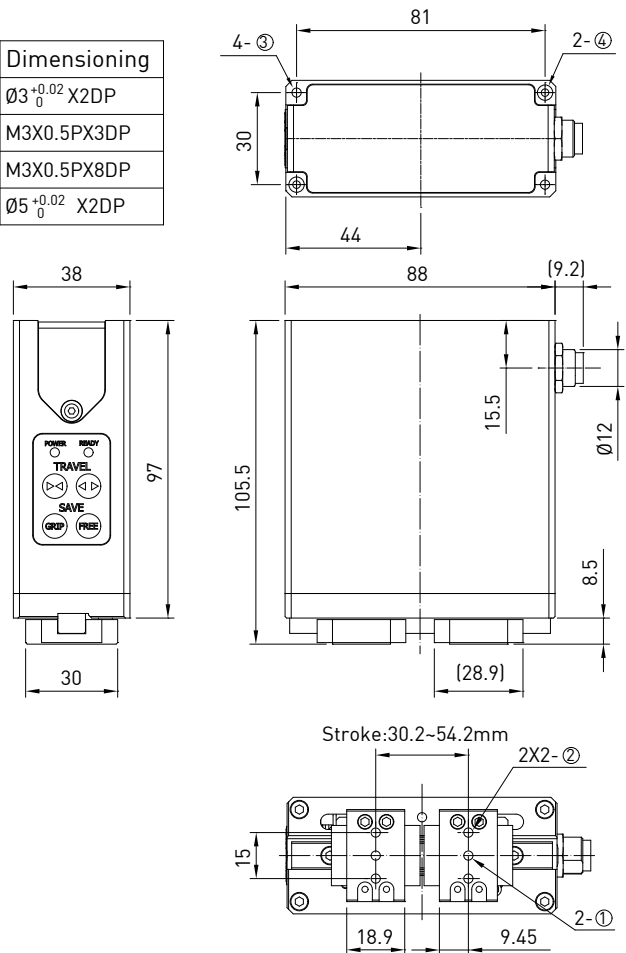


4.2 SEG-24 outline drawing

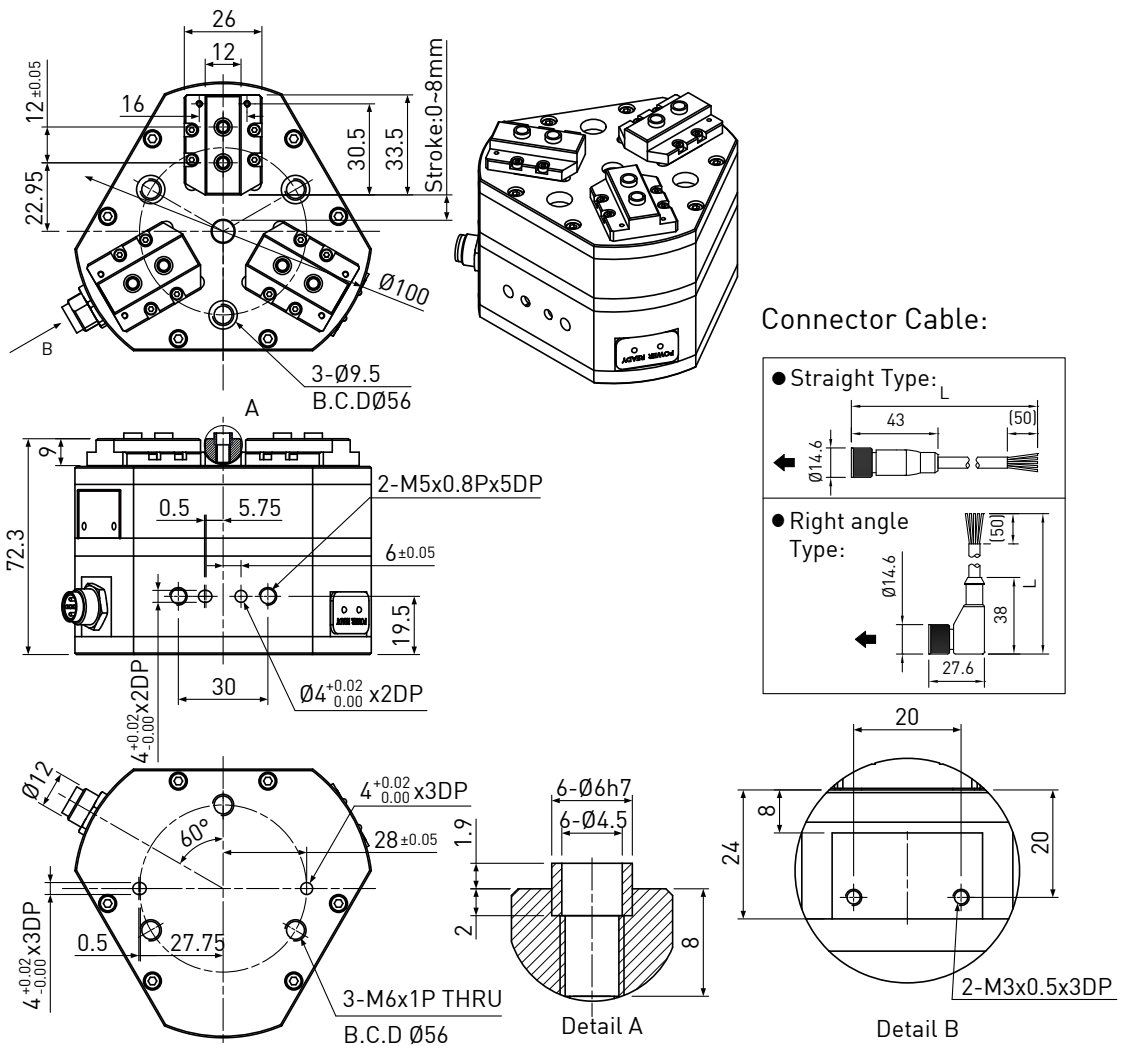
Connector Cable:



No.	Dimensioning
①	$\varnothing 3^{+0.02}_0$ X2DP
②	M3X0.5PX3DP
③	M3X0.5PX8DP
④	$\varnothing 5^{+0.02}_0$ X2DP



4.3 STG-16 outline drawing



5.2 Certificate of Conformity for Directive 2011/65/EU (RoHS)

• SEG-04



For Question
Please Contact with SGS
www.sgs.com.tw

Test Report

Report No: CX2017/20236

Date: 2017/03/31

HIWIN TECHNOLOGIES CORP.
NO. 7 JINGKE RD, TAICHUNG PRECISION MACHINERY PARK, TAICHUNG 40852, TAIWAN

The following sample(s) was/were submitted and identified by/on behalf of the applicant as :

Sample Submitted By : HIWIN TECHNOLOGIES CORP.
Sample Description : INTEGRATED ELECTRIC GRIPPER
Style/Item No. : SEG-04
Sample Receiving Date : 2017/02/20 and 2017/03/16
Testing Period : 2017/02/20 to 2017/03/08 and 2017/03/16 to 2017/03/21

Test Result(s) : Please refer to next page(s).

Conclusion : Based upon the performed tests on submitted samples, the test results comply with the limits of RoHS Directive 2011/65/EU with the exempted materials below according to the declaration from applicant:

1. SILVERY METALLIC NUT (No.1.16) in Table 1: Lead (Pb)
2. GOLDEN METALLIC PIN (No.1.25) in Table 1: Lead (Pb)
3. SILVERY METALLIC TUBE (No.1.26) in Table 1: Lead (Pb)
("6(c), Copper alloy containing up to 4 % lead by weight" in Directive 2011/65/EU)
4. ELECTRONIC COMPONENT (No.2.4) in Table 1: Lead (Pb)
("7(a), Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)" in Directive 2011/65/EU)

Wendy Wei
Supervisor
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

1/14

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• SEG-24



For Question
Please Contact with SGS
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Test Report

Report No: CX2017/20237

Date: 2017/03/31

HIWIN TECHNOLOGIES CORP.
NO. 7 JINGKE RD, TAICHUNG PRECISION MACHINERY PARK, TAICHUNG 40852, TAIWAN

The following sample(s) was/were submitted and identified by/on behalf of the applicant as :

Sample Submitted By : HIWIN TECHNOLOGIES CORP.
Sample Description : INTEGRATED ELECTRIC GRIPPER
Style/Item No. : SEG-24
Sample Receiving Date : 2017/02/20
Testing Period : 2017/02/20 to 2017/03/08

Test Result(s) : Please refer to next page(s).

Conclusion : Based upon the performed tests on submitted samples, the test results comply with the limits of RoHS Directive 2011/65/EU II with the exempted materials below according to the declaration from applicant:

1. SILVERY METALLIC NUT (No.1.2) in Table 1: Lead (Pb)
2. GOLDEN METALLIC TUBE (No.2.2) in Table 1: Lead (Pb)
("6(c), Copper alloy containing up to 4 % lead by weight" in Directive 2011/65/EU)

Wendy Wei
Supervisor
Signed for and on behalf of
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Chemical Laboratory - Taipei

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5.3 Shipping items



- Standard shipping items:

1. Electric gripper
2. Actuator cable
3. Accessory kit
 - Pin
 - Centering Sleeve (SEG-24 、 STG-16)

- Product label:



5.4 Robot arm language example

Most end effectors are assembled with robot arm. This section provides the basic functions of a robot language example for reference.

Robot Arm Model: HIWIN RA605

Robot arm control program: HRSS 2.1

Gripper type: SEG-24 corresponds to Robot I/O as shown below

- | | |
|---------------------------|--|
| ● Robot Output (RO): | ● Digital Output(DO): |
| ■ RO [1] : IN1(READY) ; | ■ DO[1]:External alarm indicator(suggested) ; |
| ■ RO [2] : IN2(DIR) ; | ● Digital Input(DI): |
| ● Robot Input (RI): | ■ DI[1]:External alarm clear button(suggested) ; |
| ■ RI [1] : OUT1(BUSY) ; | |
| ■ RI[2]:OUT2(Alarm); | |

If gripper wants to execute following actions

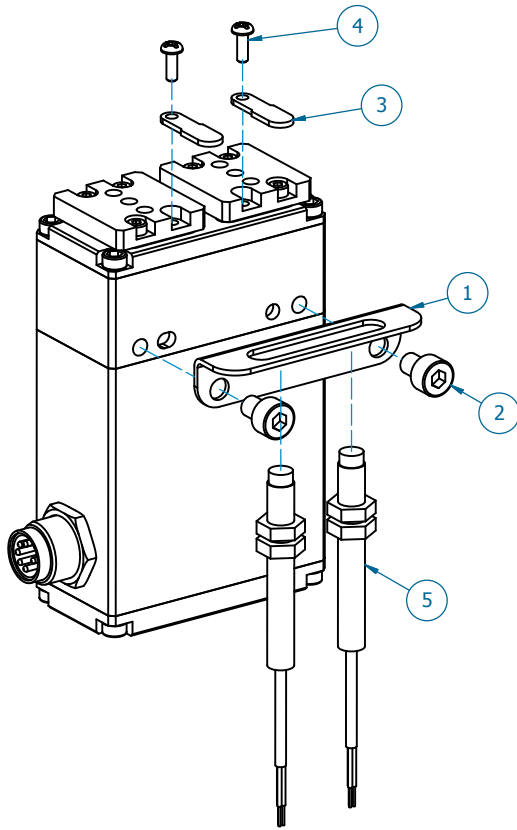
- ▼ Gripper "RESET"
- ▼ Robot arm "Move to point P1"
- ▼ Gripper "Grip" (Grip item)
- ▼ Robot arm "Move to P2"
- ▼ Gripper "Release" (release item)

User can refer to the bottom of the robot language

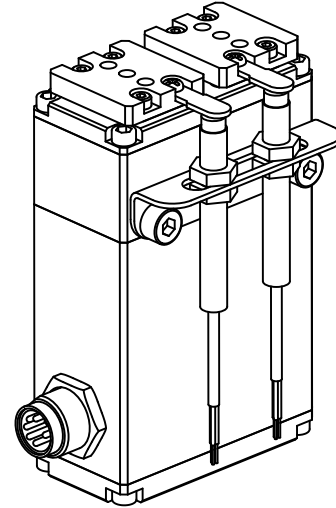
- | | |
|--|-------------------------------------|
| 1. \$RO[1] = FALSE | : Initial I/O |
| 2. \$RO[2] = FALSE | : Initial I/O |
| 3. WAIT SEC 0.03 | : Wait for signal is received |
| 4. \$RO[1] = TRUE | : Select the ready and reset action |
| 5. WAIT FOR \$RI[1] == TRUE | : Wait for action is starting |
| 6. WAIT FOR \$RI[1] == FALSE | : Wait for action is completion |
| 7. IF \$RI[2] == TRUE | : Alarm occurs |
| 8. \$DO[1] = TRUE | : External alarm indicator |
| 9. WAIT FOR \$ DI[1] == TRUE | ; Clear external alarm |
| 10. ENDIF | |
| 11. PTP P1 CONT Vel=100% Acc=50% TOOL[0] BASE[0] | : Robot moving |
| 12. \$DO[2] = TRUE | : Send close signal |
| 13. WAIT FOR \$RI[1] == TRUE | : Wait for action is starting |
| 14. WAIT FOR \$RI[1] == FALSE | : Wait for action is completion |
| 15. IF \$RI[2] == TRUE | : Alarm occurs |
| 16. \$DO[1] = TRUE | : External alarm indicator |
| 17. WAIT FOR \$ DI[1] == TRUE | ; Clear external alarm |
| 18. ENDIF | |
| 19. PTP P2 CONT Vel=100% Acc=50% TOOL[0] BASE[0] | : Robot moving |
| 20. \$DO[2] = FALSE | : Send open signal |
| 21. WAIT FOR \$RI[1] == TRUE | : Wait for action is starting |
| 22. WAIT FOR \$RI[1] == FALSE | : Wait for action is completion |
| 23. IF \$RI[2] == TRUE | : Alarm occurs |
| 24. \$DO[1] = TRUE | : External alarm indicator |
| 25. WAIT FOR \$ DI[1] == TRUE | ; Clear external alarm |
| 26. ENDIF | |

5.5 Accessory installation methods

• SEG-04 sensor installation



SEG-04
Sensor – assembly exploded diagram



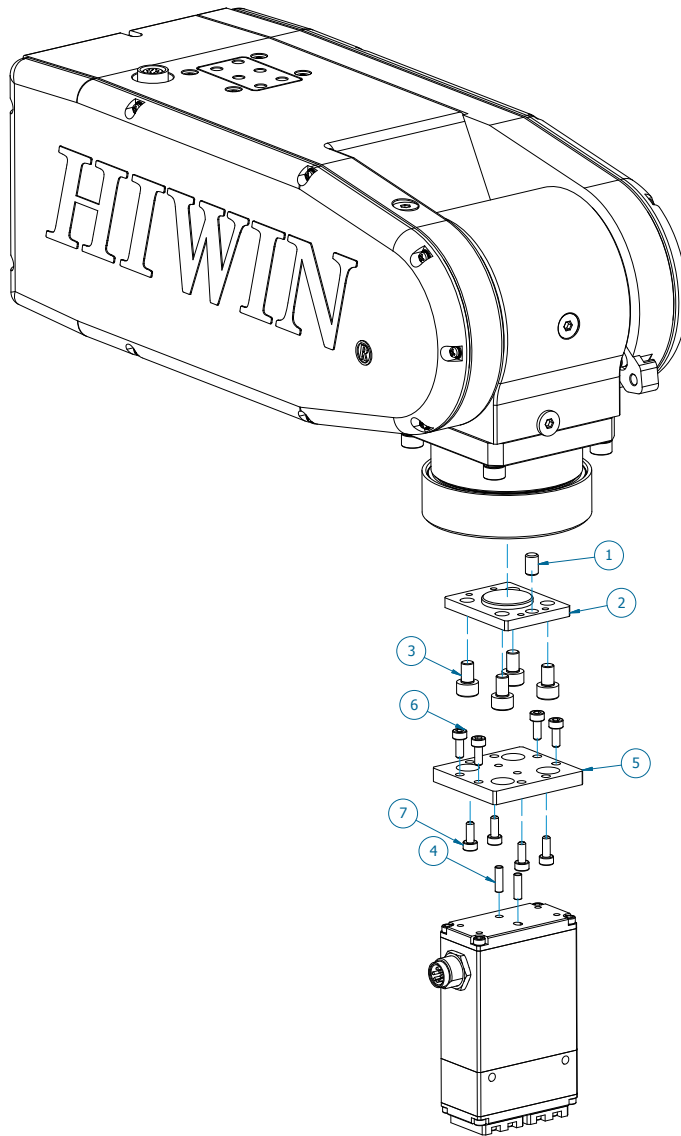
SEG-04
Sensor – assembled product diagram

SEG-04 sensor accessory kit		
Item	Name	Amount
1	S4 sensor rack	1
2	Bolt (M4X0.7PX6L SUS)	2
3	S4 sensor plate	2
4	Bolt (M2X0.4PX6L SUS)	2
5	Proximity switch [Note 1]	2

[Note 1] Refer to table below for proximity switch specifications.

Specifications	Output state	Output method	Sensing distance	Response frequency	Operating voltage
PM05-02N	NO	NPN	1.5 mm	2.5 KHz	10~30 VDC
PM05-02NB	NC				
XL-F05P1.2E1	NO	PNP	1.2 mm	2 KHz	10~30 VDC
XL-F05P1.2E2	NC				

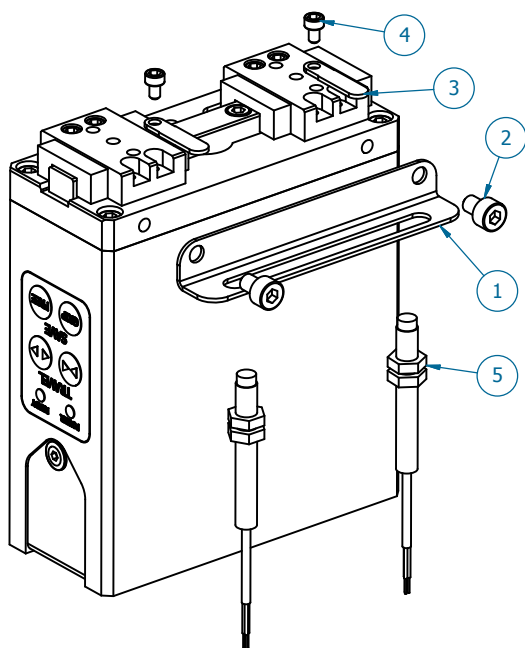
• SEG-04 with RA605 robot manipulator



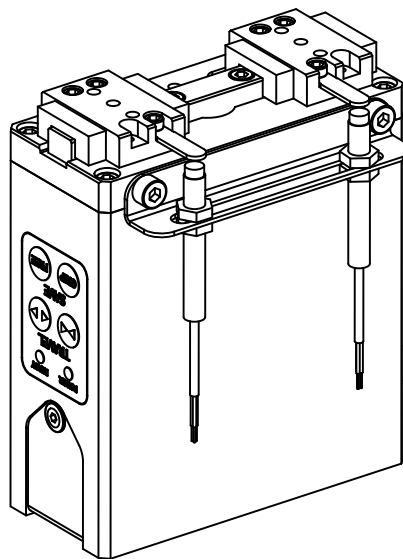
SEG-04 & RA605 – Assembly explosion diagram

SEG-04-RA605 accessory kit		
Item	Name	Amount
1	Positioning pin (Ø5X8L)	1
2	S4-605 Robot manipulator adapter	1
3	Inner hexagon head screws (M5X0.8PX8L SUS)	4
4	Positioning pin (Ø3X10L)	2
5	S4-605 Gripper adapter	2
6	Bolt (M3X0.5PX8L SUS)	4
7	Bolt (M3X0.5PX8L SUS)	4

• SEG-24 sensor installation



SEG-24
Sensor – assembly exploded diagram



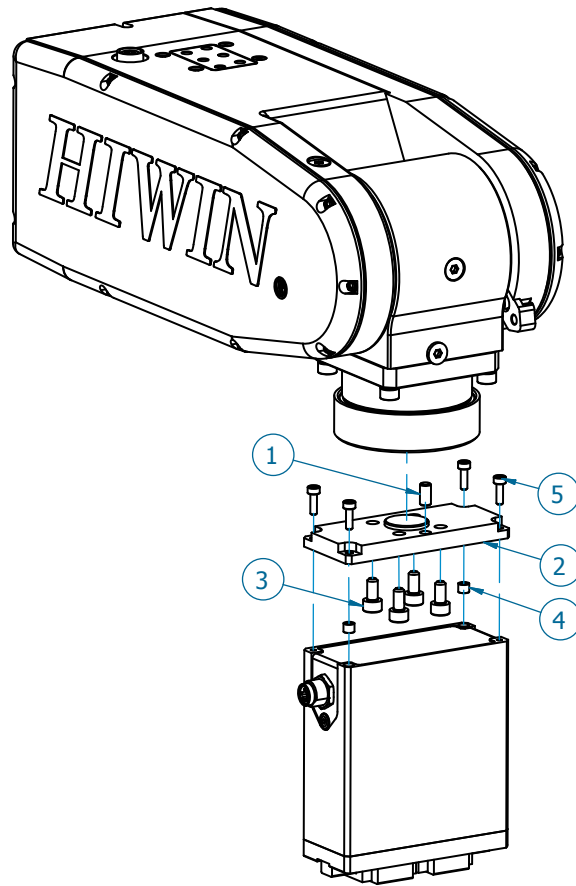
SEG-24
Sensor – assembled product diagram

SEG-24 sensor accessory kit		
Item	Name	Amount
1	S24 sensor rack	1
2	Bolt (M4X0.7PX6L SUS)	2
3	S24 sensor plate	2
4	Bolt (M2.5X0.45PX4L SUS)	2
5	Proximity switch [Note 1]	2

[Note 1] Refer to table below for proximity switch specifications.

Specifications	Output state	Output method	Sensing distance	Response frequency	Operating voltage
PM05-02N	NO	NPN	1.5 mm	2.5 KHz	10~30 VDC
PM05-02NB	NC				

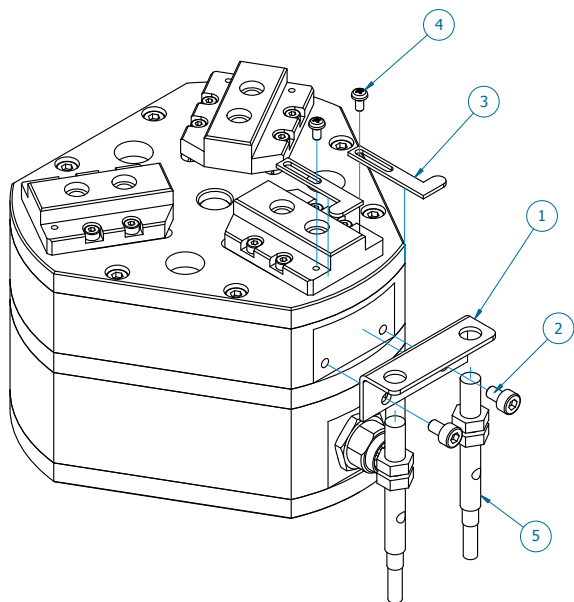
• SEG-24 with RA605 robot manipulator



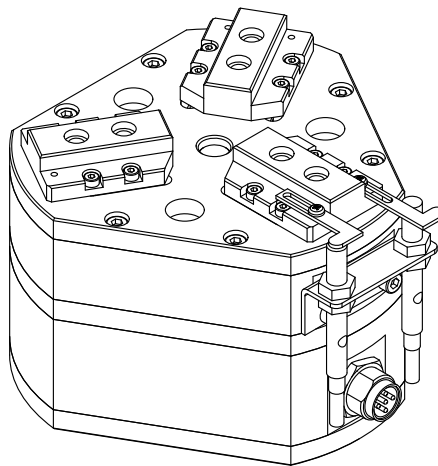
SEG-24 & RA605 – Assembly explosion diagram

SEG-24-RA605 accessory kit		
Item	Name	Amount
1	Positioning pin (Ø5X8L)	1
2	S24-605 Robot manipulator adapter	1
3	Bolt (M5X0.8PX8L SUS)	4
4	Gripper adapter	2
5	Bolt (M3X0.5PX10L SUS)	4

• STG-16 sensor installation



STG-16
Sensor – assembly exploded diagram



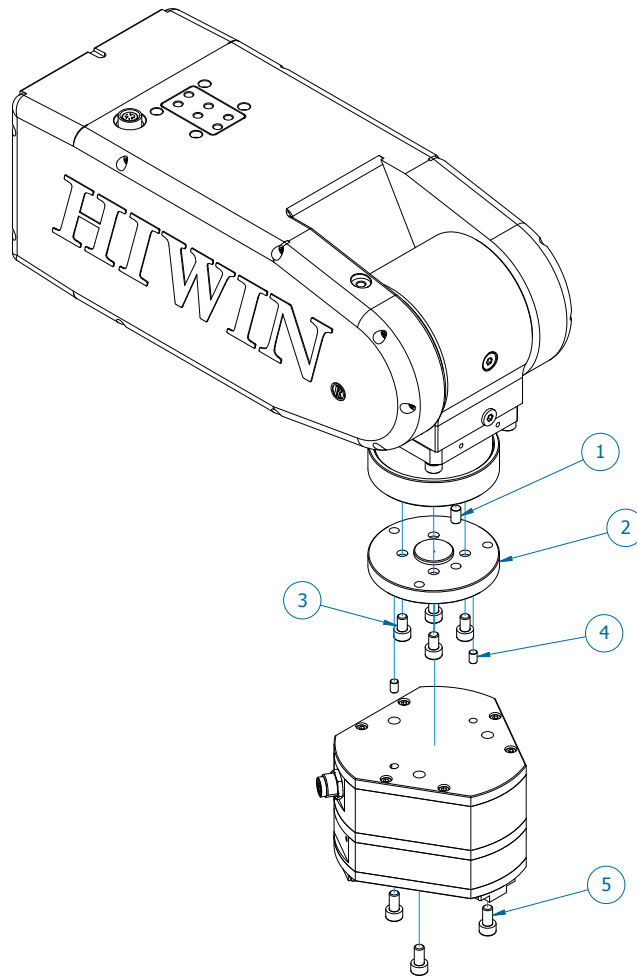
STG-16
Sensor – assembled product diagram

STG-16 sensor accessory kit		
Item	Name	Amount
1	T16 sensor rack	1
2	Bolt (M3X0.5PX4L SUS)	2
3	T16 sensor plate	2
4	Bolt (M2X0.4PX4L SUS)	2
5	Proximity switch [Note 1]	2

[Note 1] Refer to table below for proximity switch specifications.

Specifications	Output state	Output method	Sensing distance	Response frequency	Operating voltage
PM05-02N	NO	NPN	1.5 mm	2.5 KHz	10~30 VDC
PM05-02NB	NC				
XL-F05P1.2E1	NO	PNP	1.2 mm	2 KHz	10~30 VDC
XL-F05P1.2E2	NC				

• STG-16 with RA605 robot manipulator



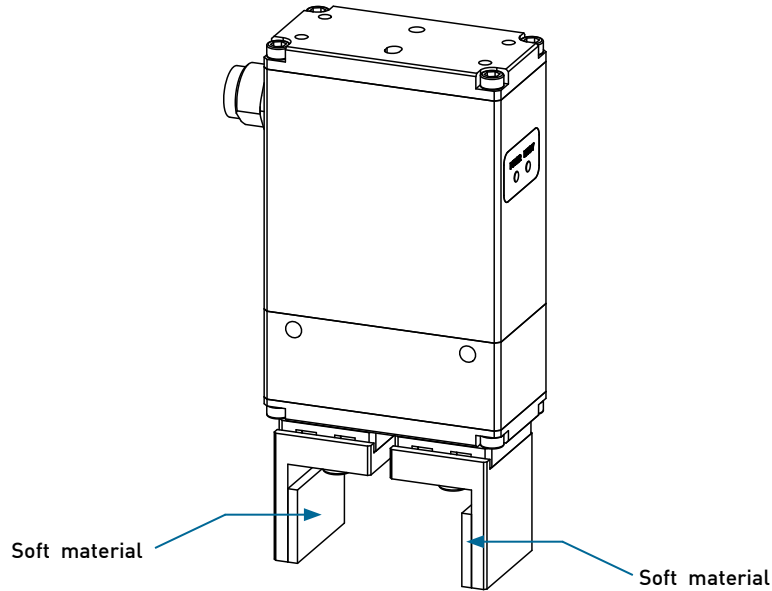
STG-16 & RA605 – Assembly explosion diagram

STG-16-RA605 accessory kit		
Item	Name	Amount
1	Positioning pin (Ø5X8L)	1
2	T16-605 Robot manipulator adapter	1
3	Bolt (M5X0.8PX10L SUS)	4
4	Positioning pin (Ø4X6L)	2
5	Bolt (M5X0.8PX10L SUS)	3

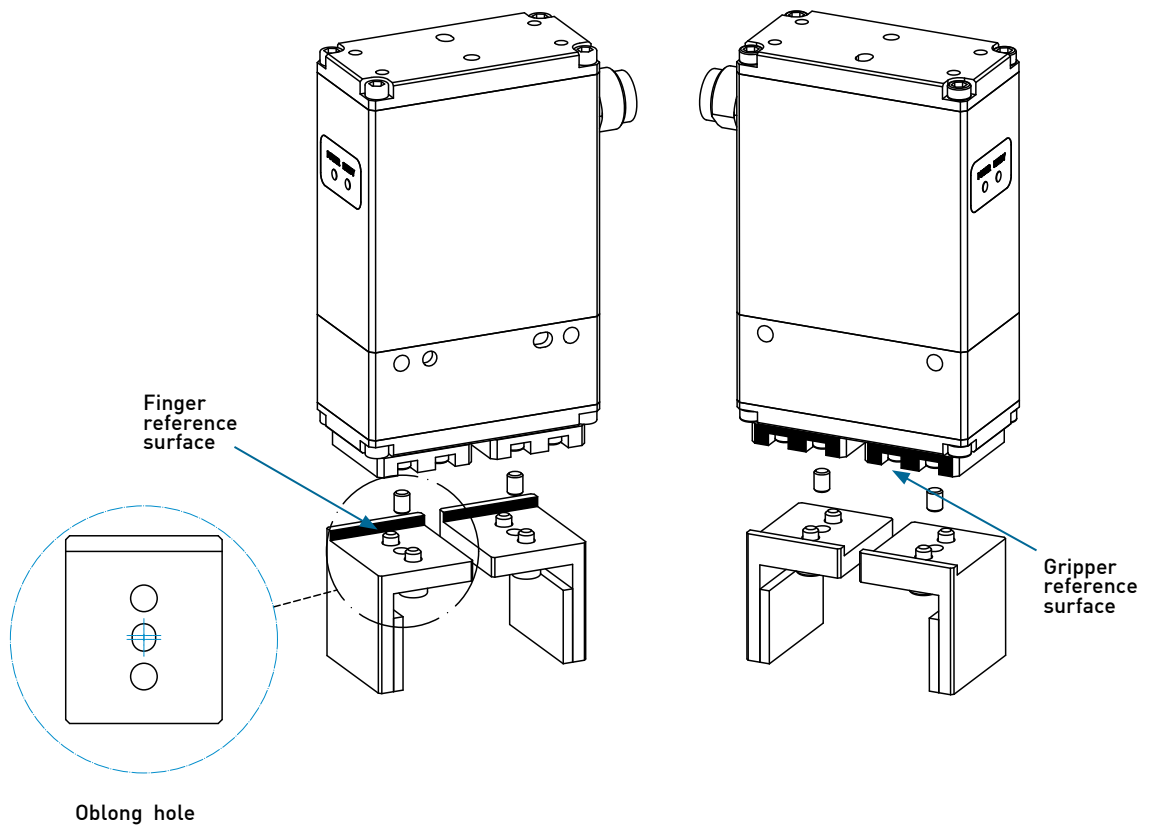
5.6 Finger design guide

SEG-04 is a light gripping force grepper. If the finger is made of metal material, such as steel and aluminum etc., the finger could be pasted with soft material to increase the friction, such as rubber and Polyurethane etc. Please refer to the following figure for pasting position.

- **SEG-04**



The user is suggested to design an oblong hole and a reference surface at the finger to locate the slide block on the oblong hole with positioning pin. Then align the reference surface of the finger and the slide block to make sure the finger is in position. Please refer to the following figure as an example.



5.7 Electric gripper option selection requirements table

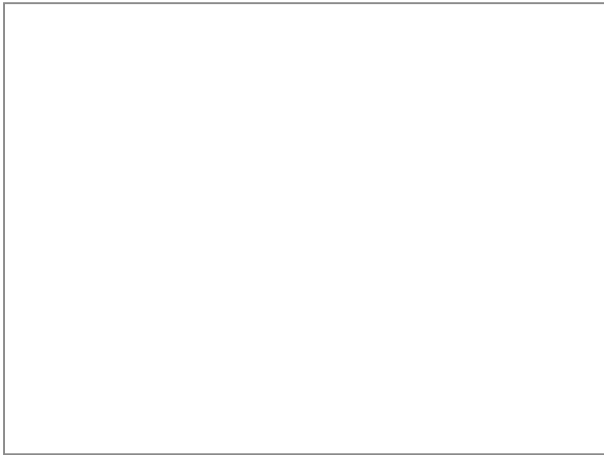
Company name		Contact person		Date	
Telephone		Address			
Fax.		E-Mail			
Pre-selected gripper spec.		Effective stroke (mm)			
Gripping force (N)		Repeatability (mm)			
Gripping speed (mm/s)		Material			
Weight (kg)		Size (mm)			
Station type		Load (kg)			
Stage speed (mm/s)		Duty cycle (s)			
Special application environment	<input type="checkbox"/> Clean room <input type="checkbox"/> Dust <input type="checkbox"/> High temperature____°C <input type="checkbox"/> Low temperature____°C <input type="checkbox"/> Vibration <input type="checkbox"/> Oil <input type="checkbox"/> Water <input type="checkbox"/> Wet <input type="checkbox"/> Chemical corrosion <input type="checkbox"/> Other_____				
Cable length required	Drive terminal cable length : <input type="checkbox"/> 1M <input type="checkbox"/> 3M <input type="checkbox"/> 5M <input type="checkbox"/> RA605 cable				
Use method and gripping method	<input type="checkbox"/> Horizontal two grippers <input type="checkbox"/> Horizontal three grippers <input type="checkbox"/> Open angle two grippers <input type="checkbox"/> Open angle three grippers <input type="checkbox"/> Grip inward <input type="checkbox"/> Grip outward <input type="checkbox"/> Positioning <input type="checkbox"/> Detection				
Special application requirements					
Remarks					

Integrated Electric Gripper User Manual

Publication Date : December 2017, first edition

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