



Integrated Electric Gripper

User Manual

Original Instruction





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



Torque Motor

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 (Cool Type)
 - 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



Bearing

- Machine Tools / Robot
- Crossed Roller Bearing
 - Ballscrew Bearing
 - Linear Bearing
 - Support Unit



DATORKER® Robot Reducer

- Robot / Automation Equipment / Semiconductor Equipment / Machine Tools
- WUT-PO Type
 - WUI-CO Type
 - WTI-PH Type
 - WTI-AH Type



AC Servo Motor & Drive

- Semiconductor / Packaging Machine / SMT / Food Industry / LCD
- Drives--D1, D1-N, D2T/D2T-LM
 - Motors--50W-2000W



Medical Equipment

- Hospital / Rehabilitation Centers / Nursing Homes
- Robotic Gait Training System
 - Hygiene System
 - Robotic Endoscope Holder



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

- Machine Tools
- Torque Motor--TMRW, TMRI Series
- Inspection / Testing Equipment / Robot
- Direct Drive Motor--TMS, TMY, TMN 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

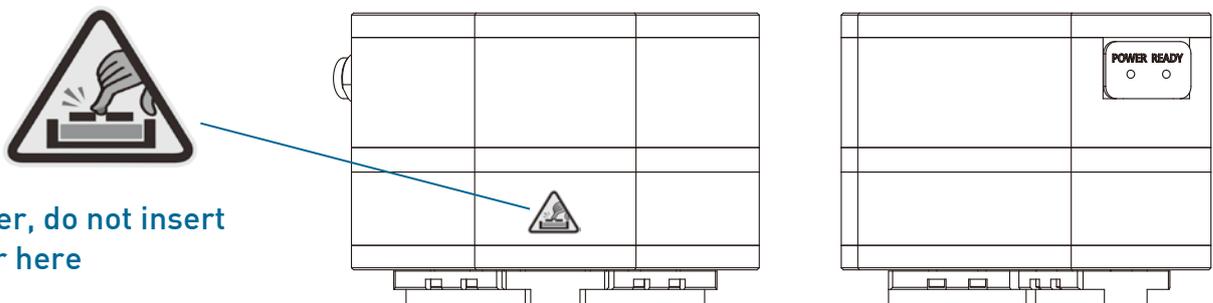
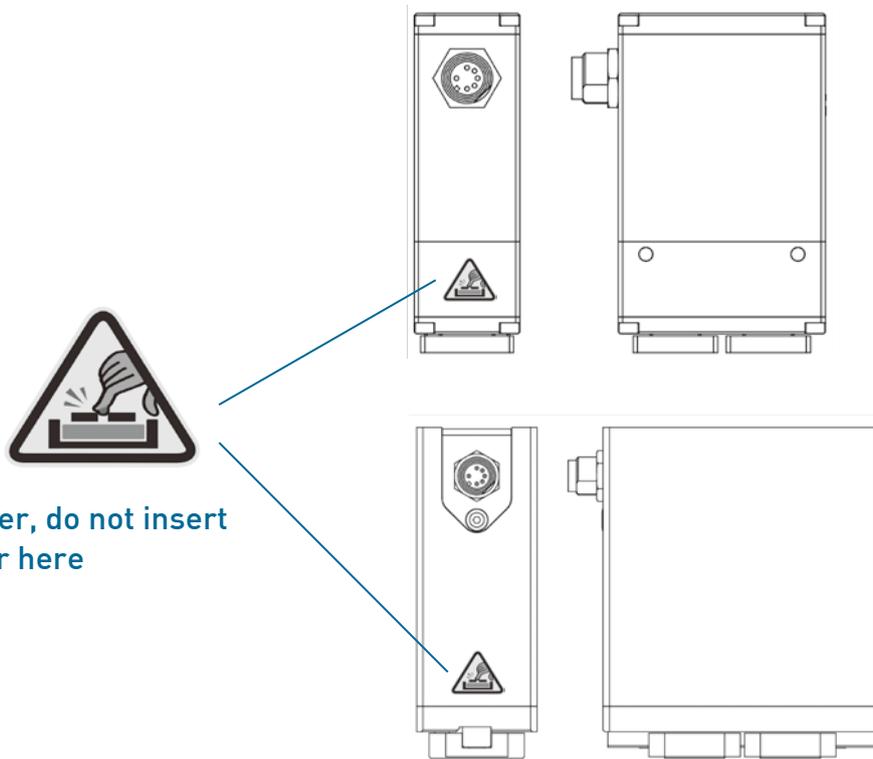
- ⊙ When installing product, please do not handle action parts or wires, so as to avoid product damage.
- ⊙ Do not put fingers or foreign matter into openings of the product, to avoid electric shock, personal injury, fire and other undesirable circumstances.
- ⊙ The motor in operation will heat up, increasing 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

The warranty period for the product is 12 months or 5 million operations (whichever comes first), but it does not include any of the following causes of failure:

- ⊙ Beyond the operation method, operating environment and storage specifications defined in the product manual.
- ⊙ The damage caused by installation place movement, change of working environment, or improper transfer after being installed by a professional installer.
- ⊙ Product damaged due to collision or accident caused by improper operation or installation.

The following conditions are not covered by the warranty.

- ⊙ Product serial number or date of production(month and year) can not be verified.
- ⊙ Gripper body and control components using non-Hiwin original products.
- ⊙ Adding or removing any element into/out the gripper or the controller.
- ⊙ Modifying the wire or the cables between the gripper body and the controller.
- ⊙ Any modification of the appearance of the gripper or controller; removal of the components inside the gripper or the controller. e.g., demolition of the outer covering,product drilling or cutting.
- ⊙ Damage caused by any natural disaster. i.e., fire, earthquake, tsunami, lightning, windstorms, floods etc.

HIWIN does not provide any warranty or compensation to all the damage caused by above-mentioned circumstances unless the user can prove that the product is defective.

For more information towards warranty terms and conditions, please contact the technician or the dealer who you purchased with.

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



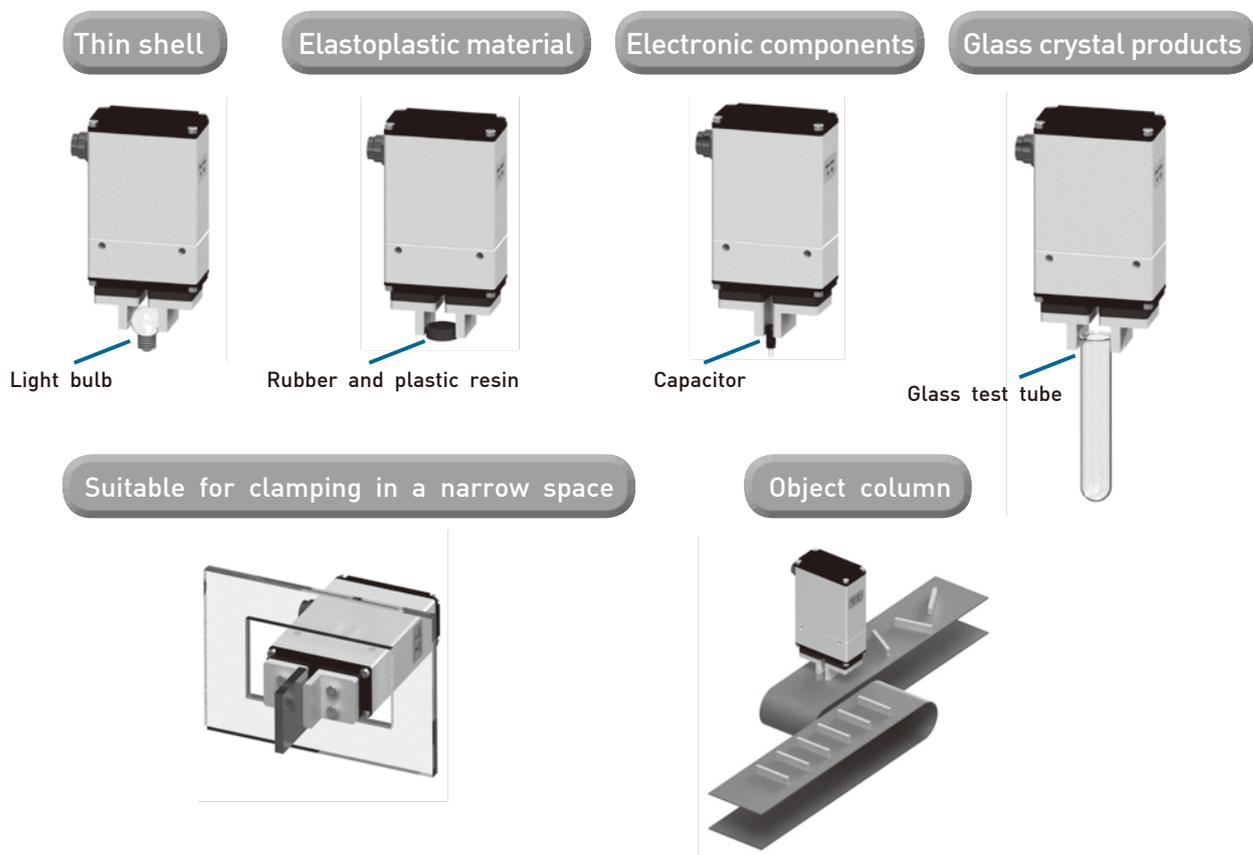
SEG-24



STG-16

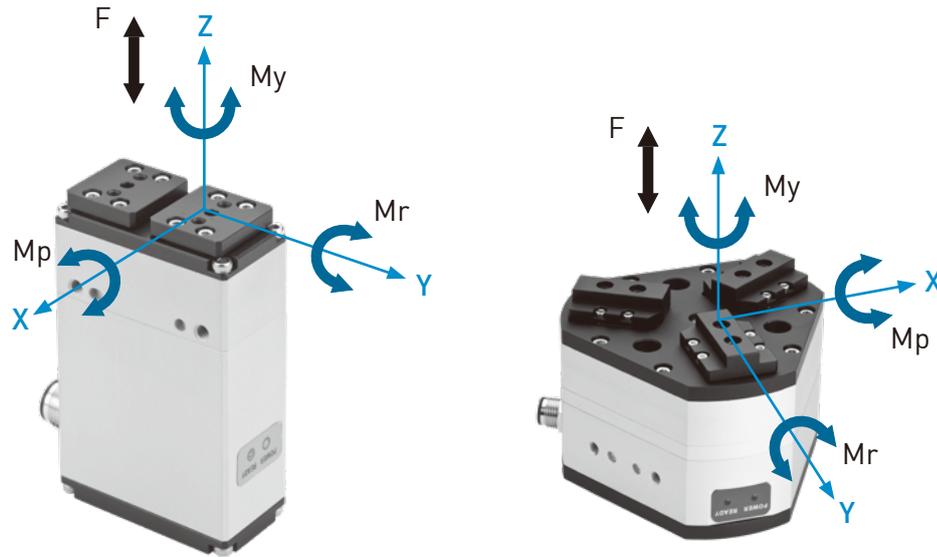
2.2 Application examples

- 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]	40 [Note1]
	Gripping speed	mm/s	45	15(45) [Note3]	30
	Repeatability	mm	±0.1	±0.1	±0.1
Power specifications	Operation voltage	V	24±10%	24±10%	24±10%
	Operation current	A	0.5	0.5	0.5
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	IP40
	Cleanroom class	-	ISO Class 4 (Class 10)	-	-
	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] This gripping force is measured at a gripping point (L) of 20mm with a gripping force accuracy of $\pm 25\%$.

[Note 2] This gripping force is measured at a gripping point (L) of 20mm with a gripping force accuracy of $\pm 30\%$.

[Note 3] Moving velocity is 45mm/s.

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

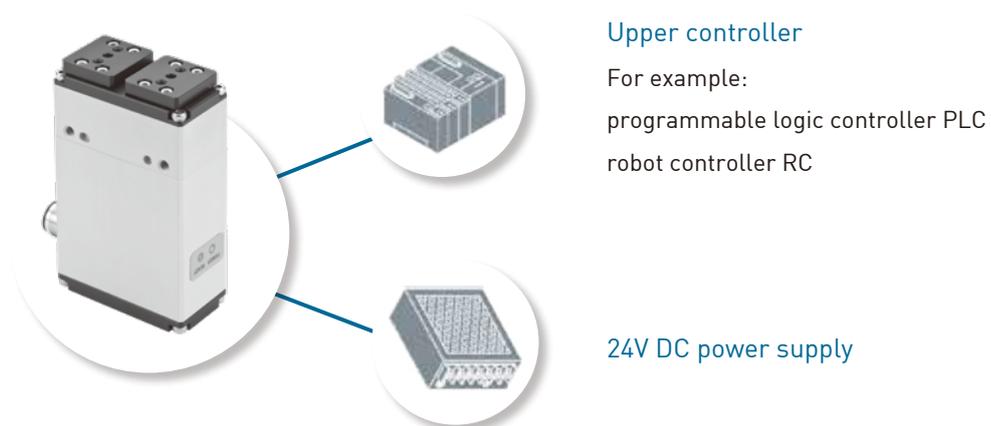
[Description 2] High-speed movement or rotation after gripping requires the weight of object to be reduced.

[Description 3] Material, shape, grip area, etc. of gripping part will affect the maximum weight of gripped object, and the gripping part required to be installed before gripping.

[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. For more details, please refer to ch6.4 design guide of gripping section.

[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



• Plug and play

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

2.5 Specification illustration

The model number of integrated electric gripper 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 : Customized order
		TM : TM Plug & Play Version (Note 3)
		UR : UR+ Solutions (Note 4)

[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.

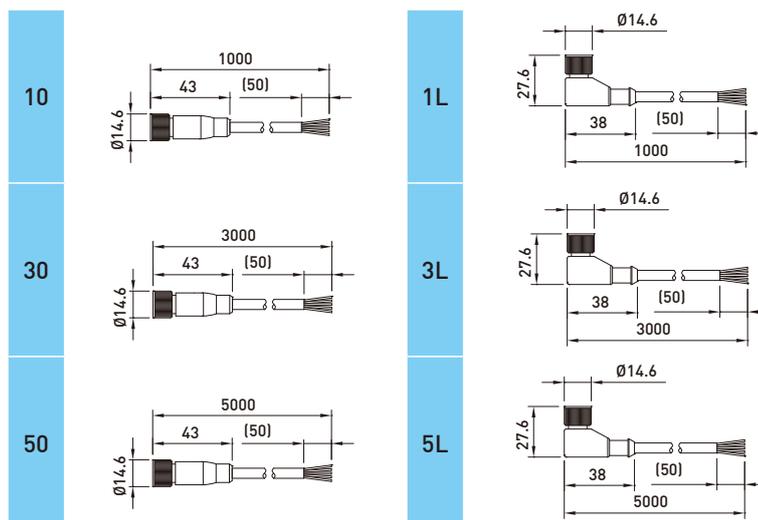
[Note 2] For SEG-24 and STG-16.

[Note 3] Please refer to HIWIN official website "TM quick installation guide".

https://www.hiwin.tw/download/tech_doc/ee/TM_Plug&Play_Version.pdf

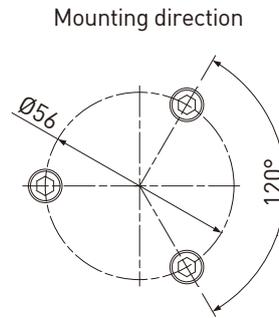
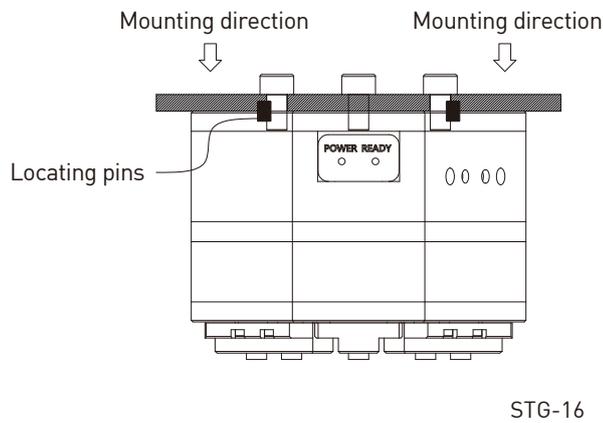
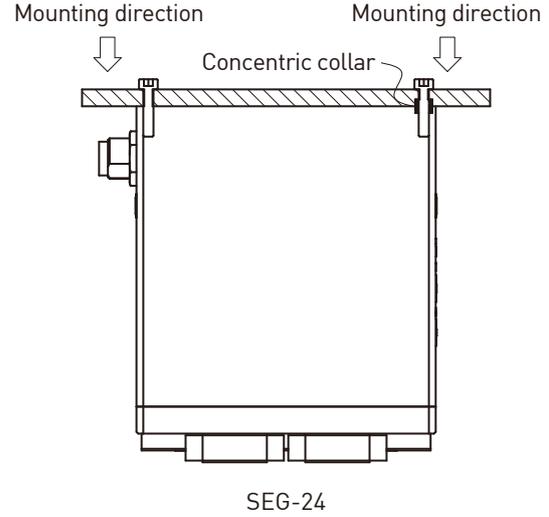
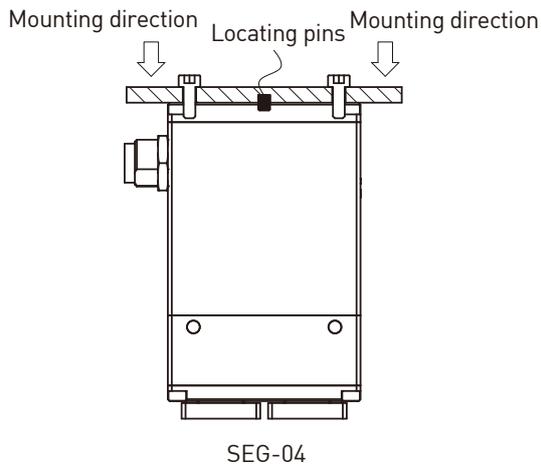
[Note 4] Please refer to HIWIN official website "UR+ Technical Manual Guide".

https://www.hiwin.tw/download/tech_doc/ee/UR_Plus_Technical_Manual_Guide.pdf



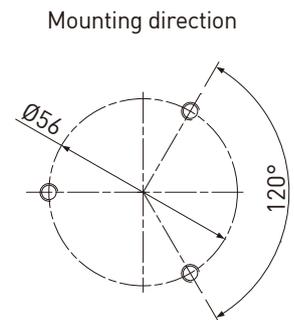
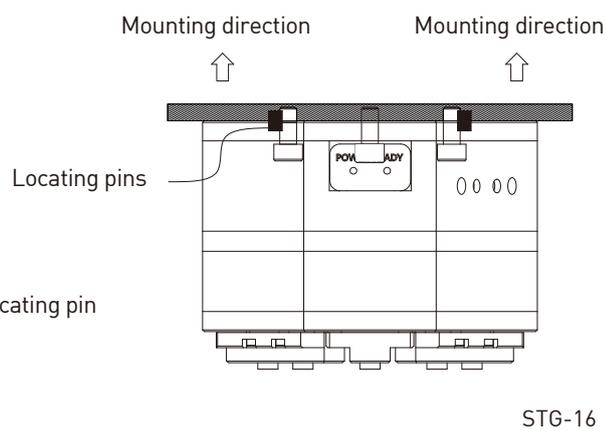
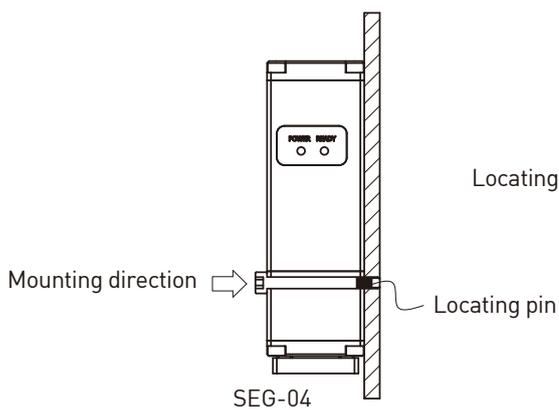
2.6 Electric gripper mounting methods

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



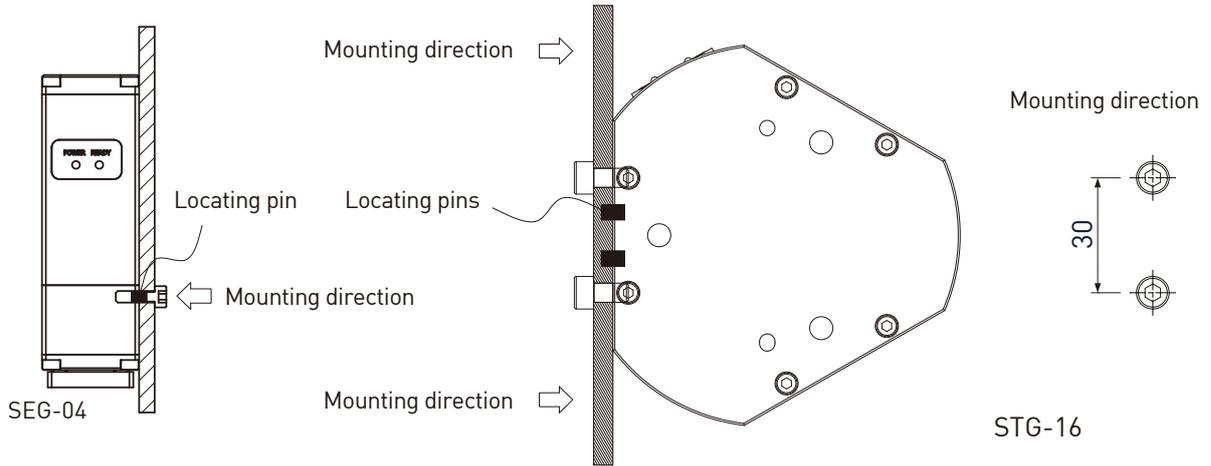
Type	Screw M	Recommended locking torque (N*m)	Maximum locking depth SL (mm)
SEG-04	M3x0.5P	0.6~0.8	3
SEG-24	M3x0.5P	0.6~0.8	8
STG-16	M6x1P	4.6~5.2	6

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

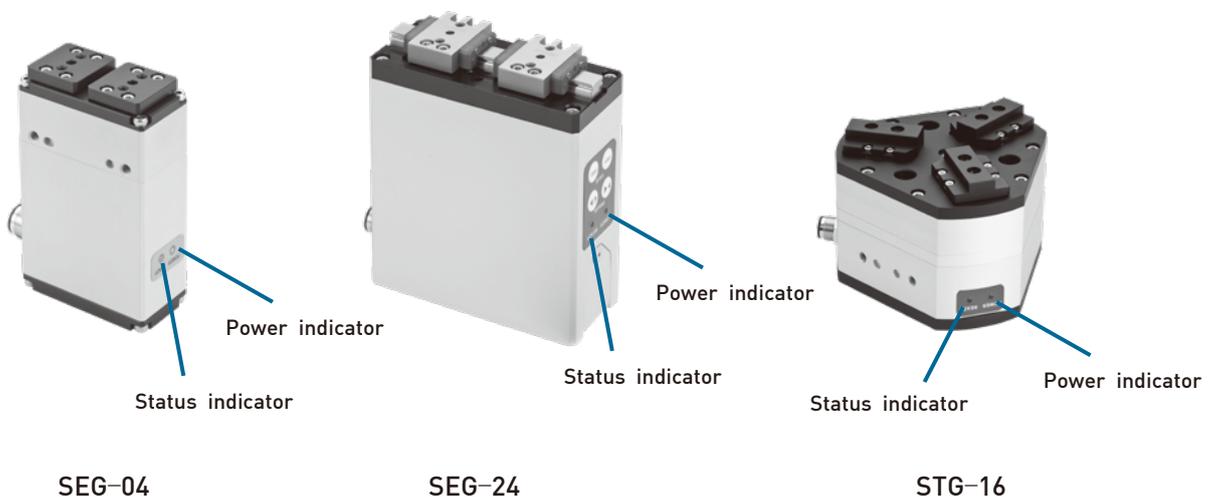
Signal output	
Pin	Function
OUT1	Busy
OUT2	Alarm

[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.

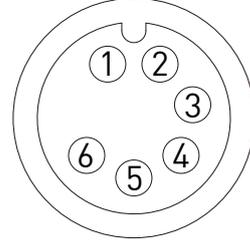
3.2 Indicator functions

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

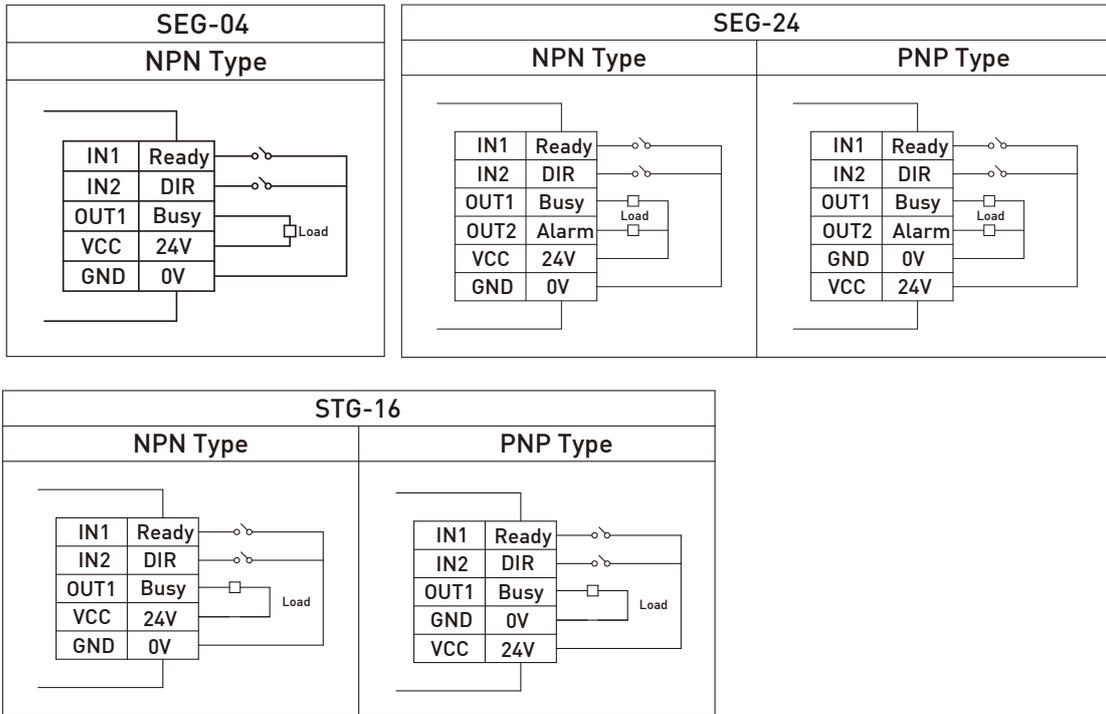


3.3 External wiring instructions

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/0.5A
5	Blue	GND	0V
6	Red	OUT2	Alarm [Note 1]
7	Black	---	Shielding

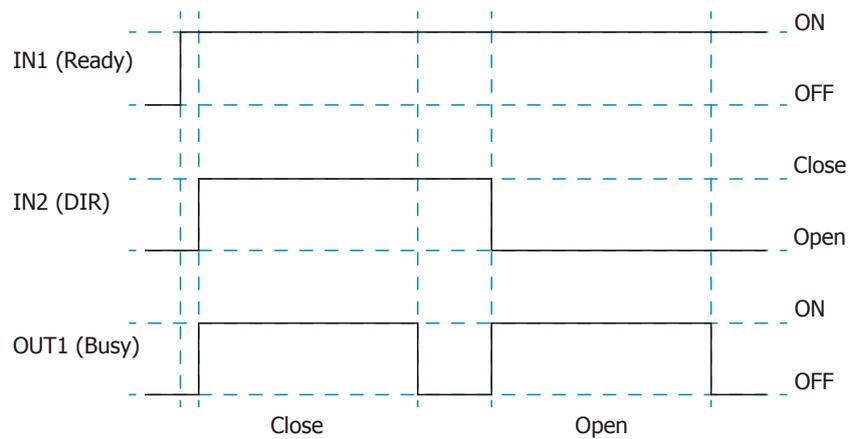


[Note 1] SEG-24 only.

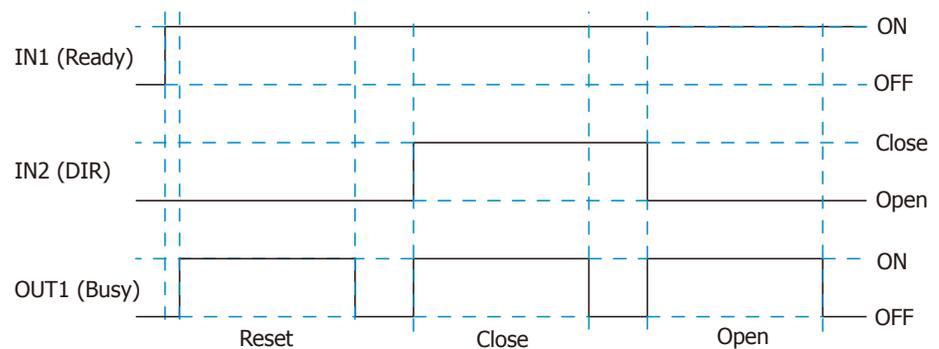


3.4 Operation timing diagram

• SEG-04, STG-16



• SEG-24

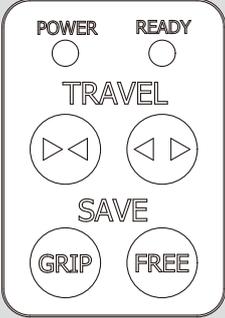


3.5 Error status descriptions (SEG-24 only)

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

Mode	Abnormal / Gripping Judgment (Incident occurred)	Exclude Abnormal / Gripping Judgment (Recommended)
RESET	An alarm occurs after the RESET operation is completed. (RESET must be executed first)	Please confirm whether the design of the gripper's finger exceeds origin of the slider. If not, please check for foreign object within the range of route of the gripper.
Move	An alarm occurs after the movement towards the free point.	Please check for foreign object within the range of route the gripper.
Grip	[Abnormal] Execute the grip motion and the stop position is not within the range of tolerance band (n).	Please check for foreign object outside the range of the gripper's tolerance band route.
	[Grip confirmation] Execute the grip motion and the stop position is at second tolerance point (\bar{M}) .	Provide the user to determine whether the target object is indeed gripped within the range of tolerance.

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.

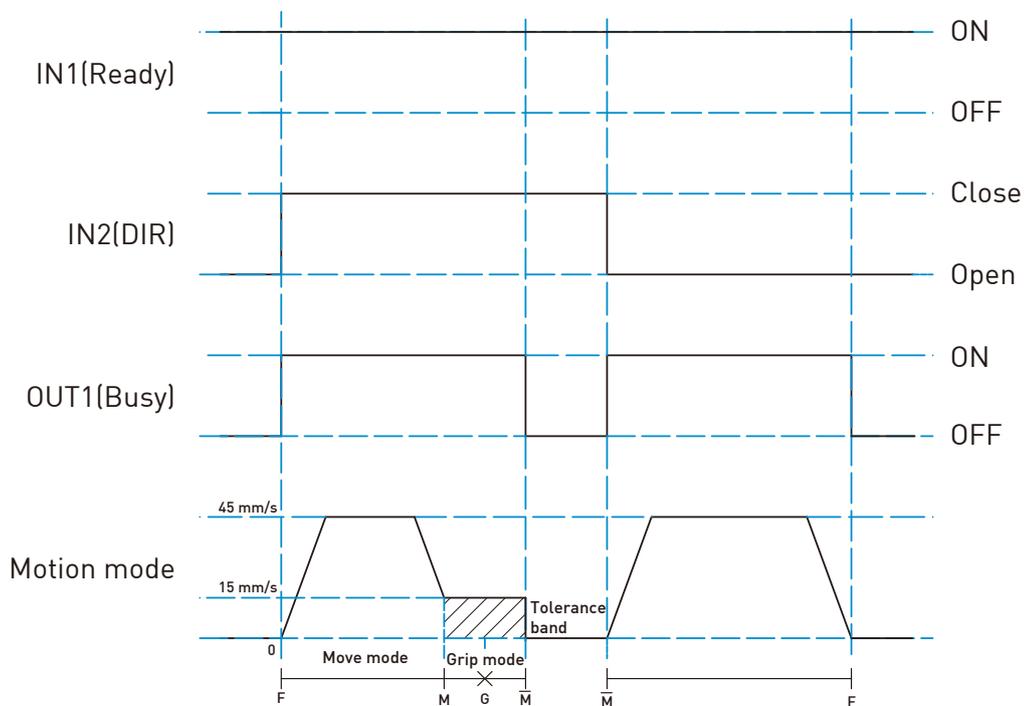
[Description 3] The distance between gripping center point and release point shall not be less than 1mm.

[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).

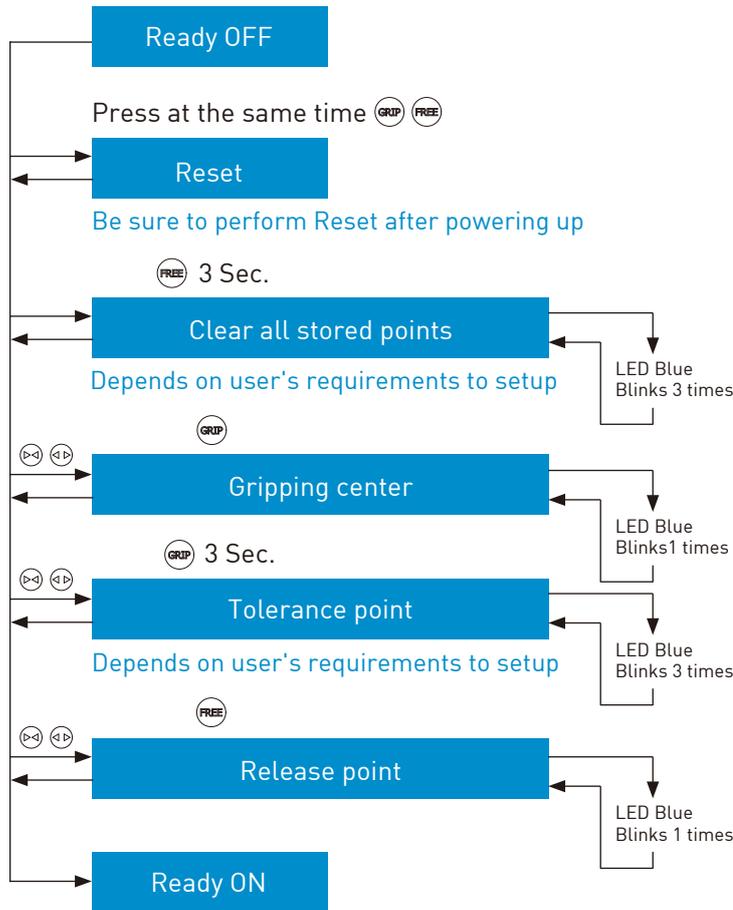
[Description 5] The distance between tolerance point and second tolerance point is called "tolerance band (n)".

[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.

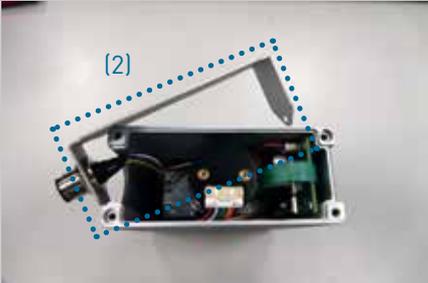
[Explanation 1] Be sure to perform Reset during the period of setting and power restarting.

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

3.7 NPN/PNP Mode Adjustment Teaching

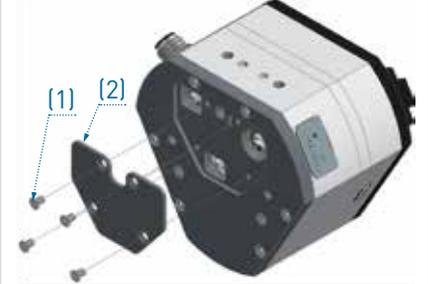
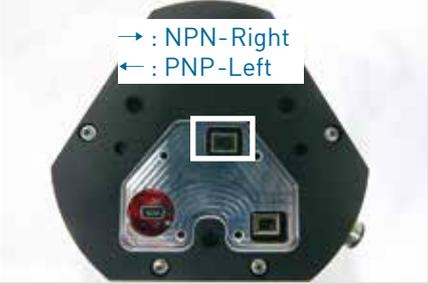
• **SEG-24**

SEG-24 electric gripper is set default to NPN mode at the factory. If user required PNP mode, please follow the steps below to adjust them.

Step	Image	Description
1		Please unscrew the two hexalobular screw (1) at the side of the electric gripper.
2		Flip open the electric gripper rear cover (2).
3		Electric gripper is preset to NPN mode (switch down).
4		User can adjust the electric gripper to PNP mode (switch up) according to the requirement.

• STG-16

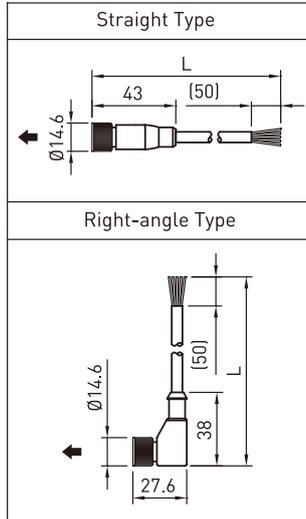
STG-16 electric gripper is set default to NPN mode at the factory. If user required PNP mode, please follow the steps below to adjust them.

Step	Image	Description
1		<p>Please unscrew the four Phillips screws (1) at the end of the electric gripper, and flip open the electric gripper rear cover (2).</p>
2	 <p>→ : NPN-Right ← : PNP-Left</p>	<p>Electric gripper is preset to NPN mode (switch right).</p>
3	 <p>→ : NPN-Right ← : PNP-Left</p>	<p>User can adjust the electric gripper to PNP mode (switch left) according to the requirement.</p>

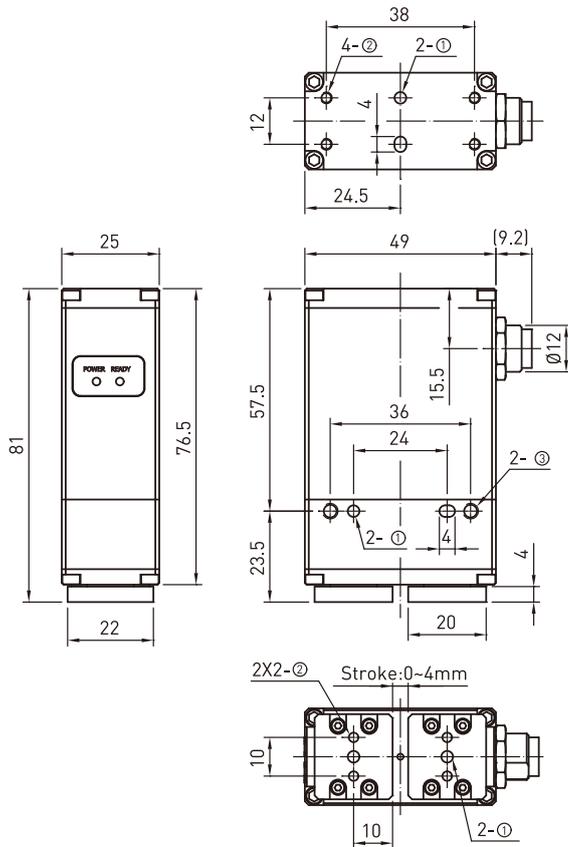
4. Dimensions

4.1 SEG-04 outline drawing

Connector Cable:

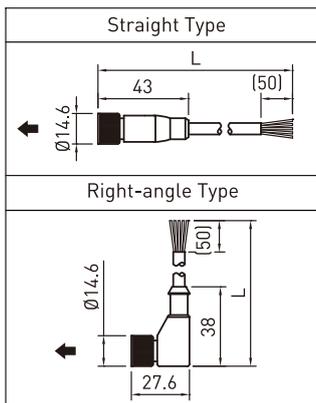


No.	Dimensioning
①	$\varnothing 3^{+0.02}_0$ x2DP
②	M3x0.5Px3DP
③	M4x0.7Px6DP, $\varnothing 3.3$ THRU

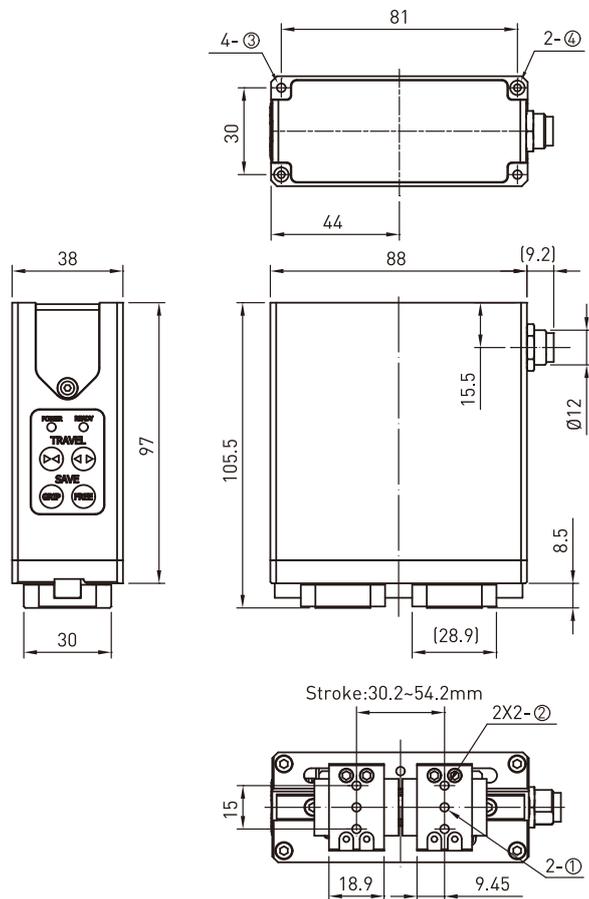


4.2 SEG-24 outline drawing

Connector Cable:

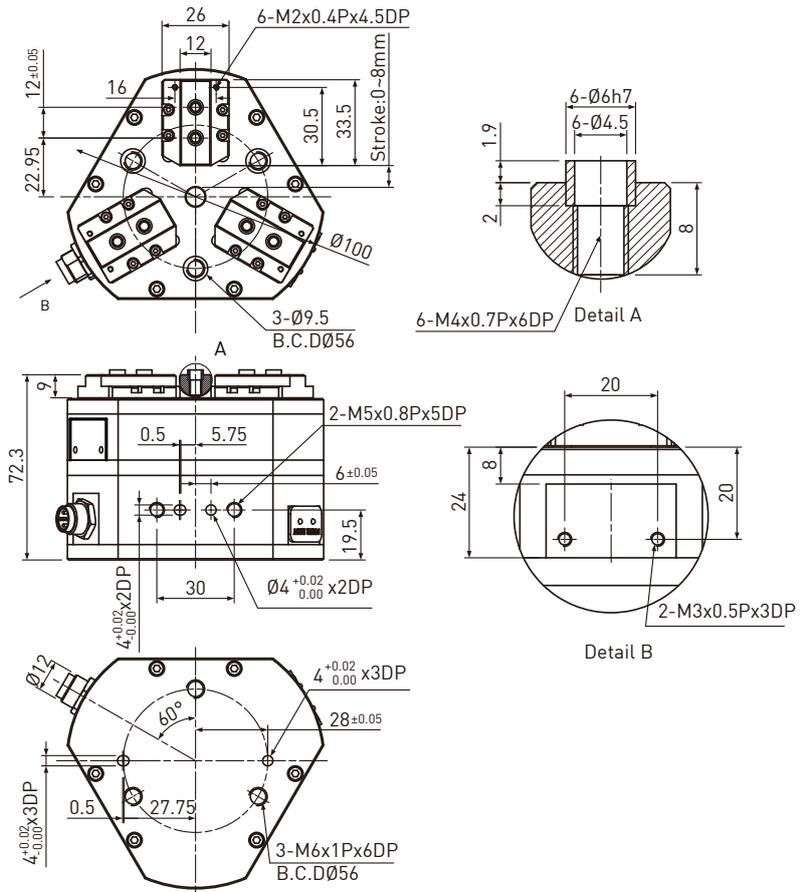
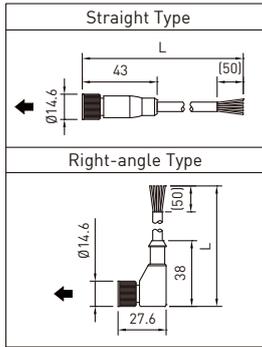


No.	Dimensioning
①	$\varnothing 3^{+0.02}_0$ X2DP
②	M3X0.5PX3DP
③	M3X0.5PX8DP
④	$\varnothing 5^{+0.02}_0$ X2DP



4.3 STG-16 outline drawing

Connector Cable:



5. Safety Certification

CE Compliance	
Machinery Directives	2006/42/EC
Low Voltage Directives (LVD)	2014/35/EU
Safety of Machinery	EN ISO 12100:2010
	EN 60204-1:2006+AC:2010
Electromagnetic Compatibility Directives (EMC)	EN 61000-6-2:2005
	EN 61000-6-4:2007+A1:2011
Hazardous Substances Restriction Directives (RoHS)	2011/65/EU

6. Appendix

6.1 Shipping items



- Standard shipping items:

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

- Product label:



6.2 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):
 - RO [1] : IN1(READY) ;
 - RO [2] : IN2(DIR) ;
- Robot Input (RI):
 - RI [1] : OUT1(BUSY) ;
 - RI [2] : OUT2(Alarm);
- Digital Output (DO):
 - DO [1] : External alarm indicator(suggested) ;
- Digital Input (DI):
 - DI [1] : External alarm clear button(suggested) ;

If gripper wants to execute following actions

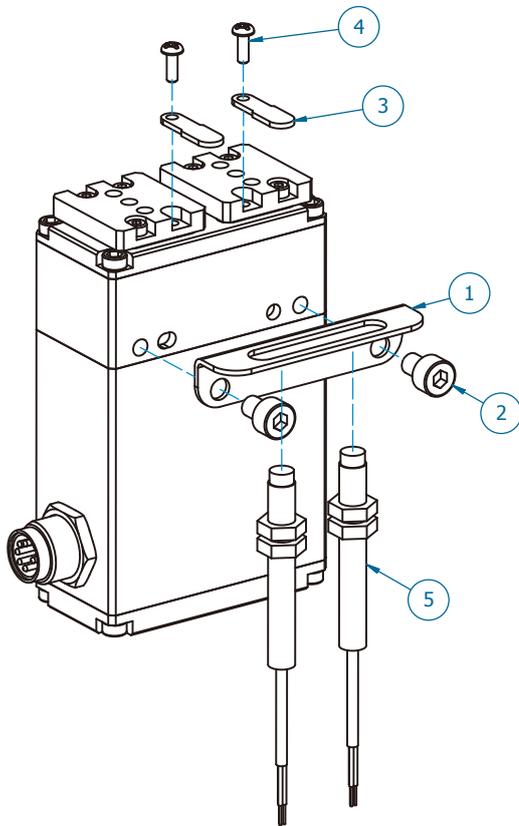
- ▼ Gripper "RESET"
- ▼ Robot arm "Move to point P1"
- ▼ Gripper "Grip" (Grip item)
- ▼ Robot arm "Move to P2"
- ▼ Gripper "Release" (release item)

User can refer to the bottom of the robot language

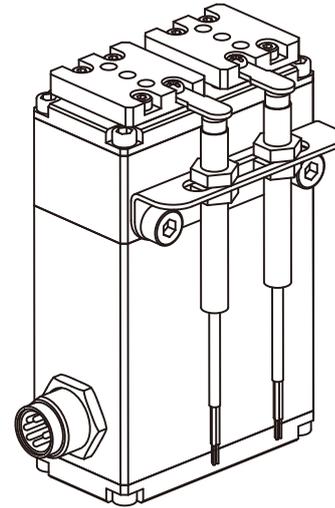
1. \$RO[1] = FALSE ; Initial I/O
2. \$RO[2] = FALSE ; Initial I/O
3. WAIT SEC 0.03 ; Wait for signal is received
4. \$RO[1] = TRUE ; Select the ready and reset action
5. WAIT SEC 4 ; Wait for reset
6. IF \$RI[2] == TRUE ; Alarm occurs
7. \$DO[1] = TRUE ; External alarm indicator
8. WAIT FOR \$ DI[1] == TRUE ; Clear external alarm
9. ENDIF
10. WHILE 1 ; Programming loop
11. PTP P1 CONT Vel=100% Acc=50% TOOL[0] BASE[0] ; Robot moving
12. \$RO[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. \$RO[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
27. ENDWHILE

6.3 Accessory installation methods

- SEG-04 sensor installation



SEG-04
Sensor – assembly exploded diagram

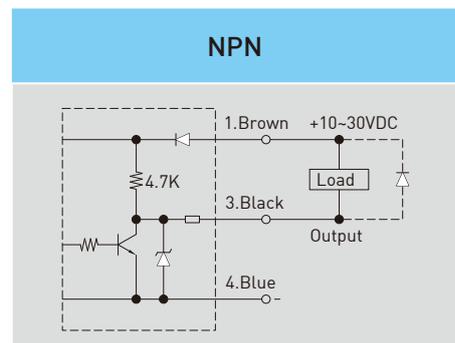


SEG-04
Sensor – assembled product diagram

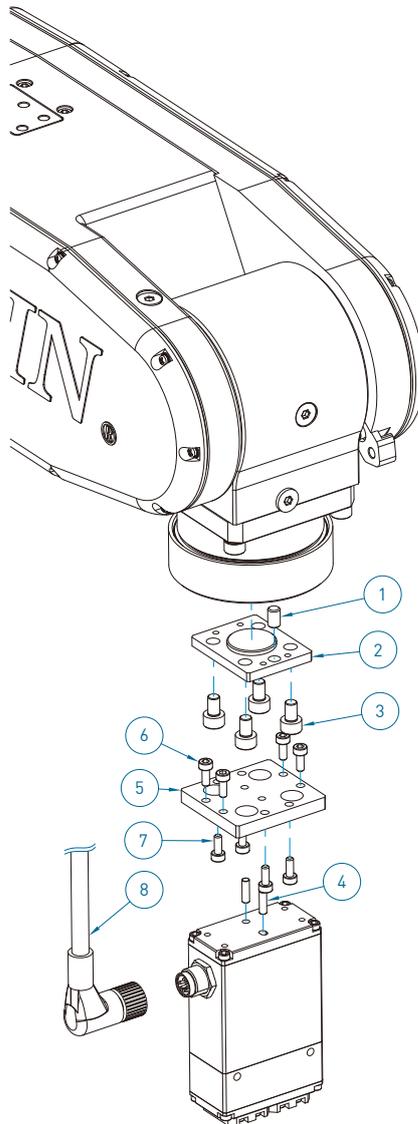
SEG-04 sensor accessory kit		
Item	Name	Amount
1	S4 sensor rack	1
2	Bolt (M4X0.7PX6L SUS)	2
3	S4 sensor plate	2
4	Bolt (M2X0.4PX6L SUS)	2
5	Proximity switch [Note 1]	2

[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				



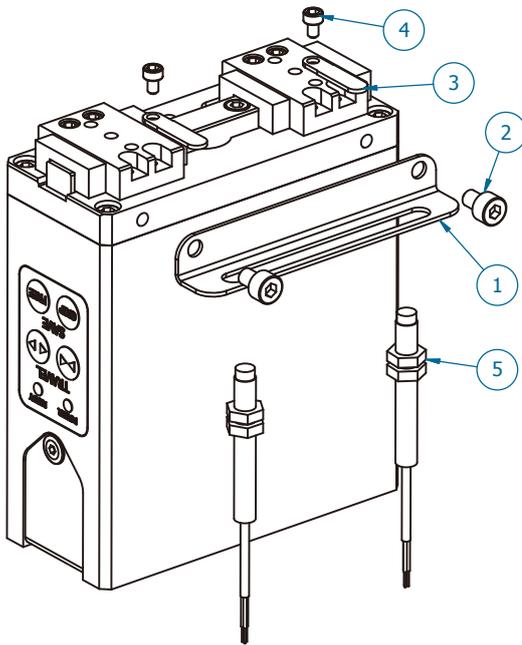
• SEG-04 with RA605 robot manipulator



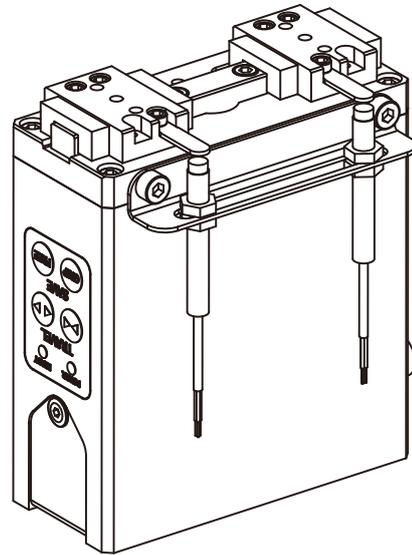
SEG-04 & RA605 – Assembly explosion diagram

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	1
6	Bolt (M3X0.5PX8L SUS)	4
7	Bolt (M3X0.5PX8L SUS)	4
8	S-605HRS cable	1

• SEG-24 sensor installation



SEG-24
Sensor – assembly exploded diagram

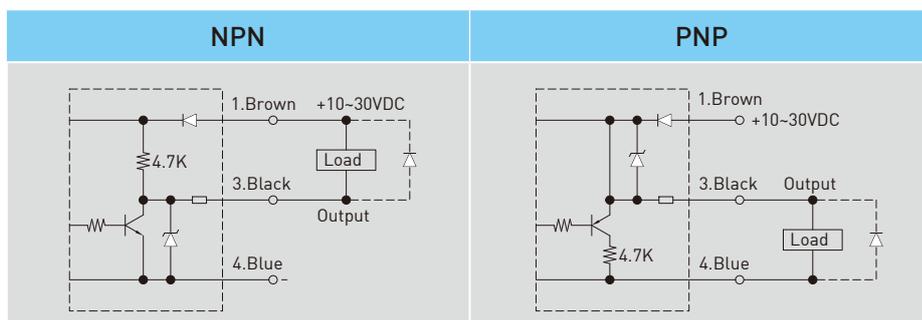


SEG-24
Sensor – assembled product diagram

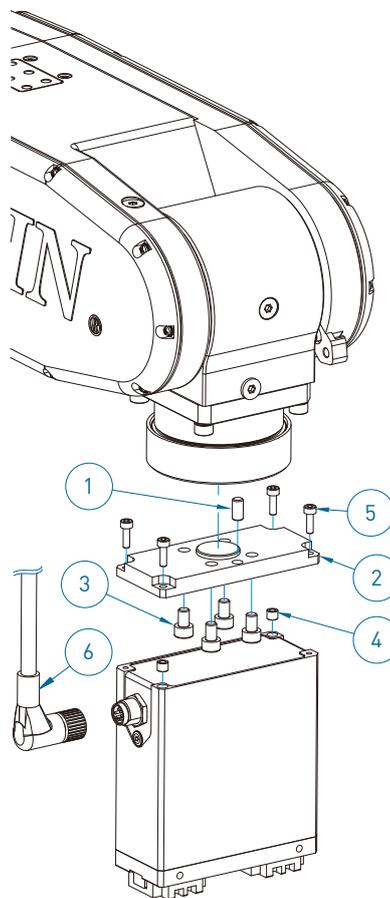
SEG-24 sensor accessory kit		
Item	Name	Amount
1	S24 sensor rack	1
2	Bolt (M4X0.7PX6L SUS)	2
3	S24 sensor plate	2
4	Bolt (M2.5X0.45PX4L SUS)	2
5	Proximity switch [Note 1]	2

[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				



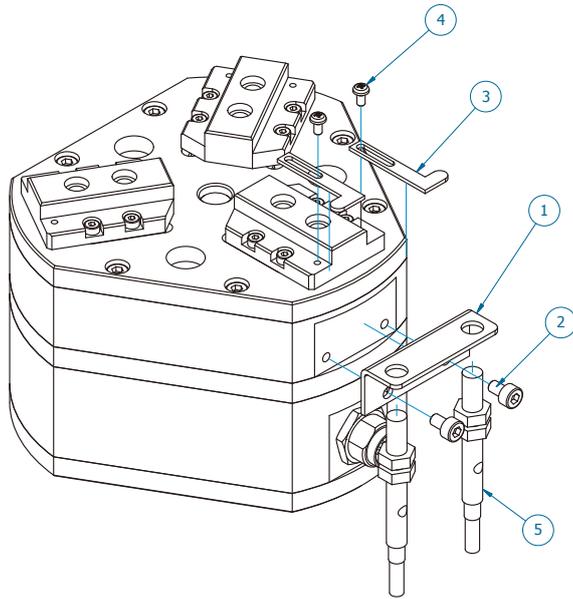
• SEG-24 with RA605 robot manipulator



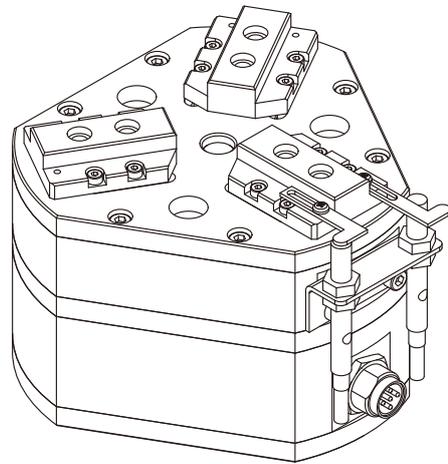
SEG-24 & RA605 – Assembly explosion diagram

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
6	S-605HRS cable	1

• STG-16 sensor installation



STG-16
Sensor – assembly exploded diagram

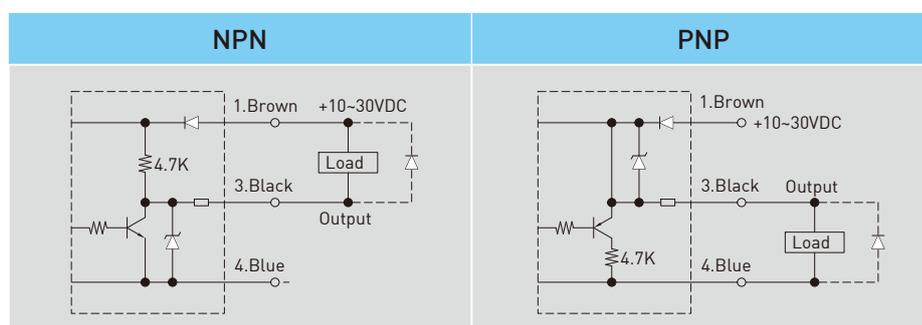


STG-16
Sensor – assembled product diagram

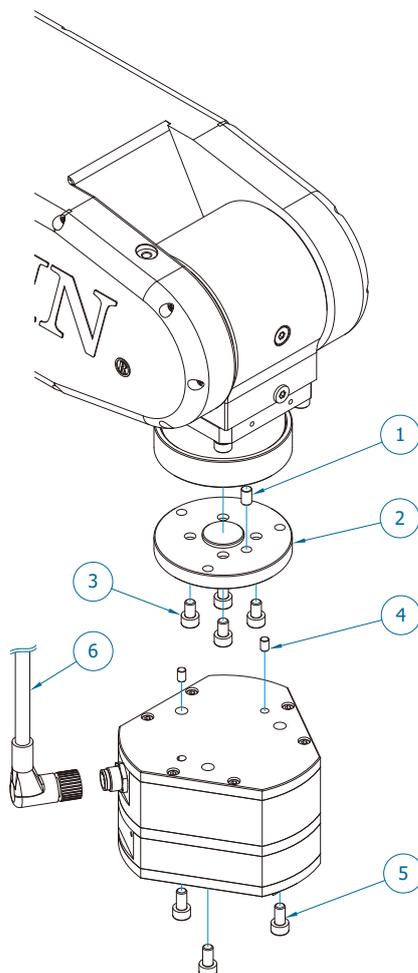
STG-16 sensor accessory kit		
Item	Name	Amount
1	T16 sensor rack	1
2	Bolt (M3X0.5PX4L SUS)	2
3	T16 sensor plate	2
4	Bolt (M2X0.4PX4L SUS)	2
5	Proximity switch [Note 1]	2

[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

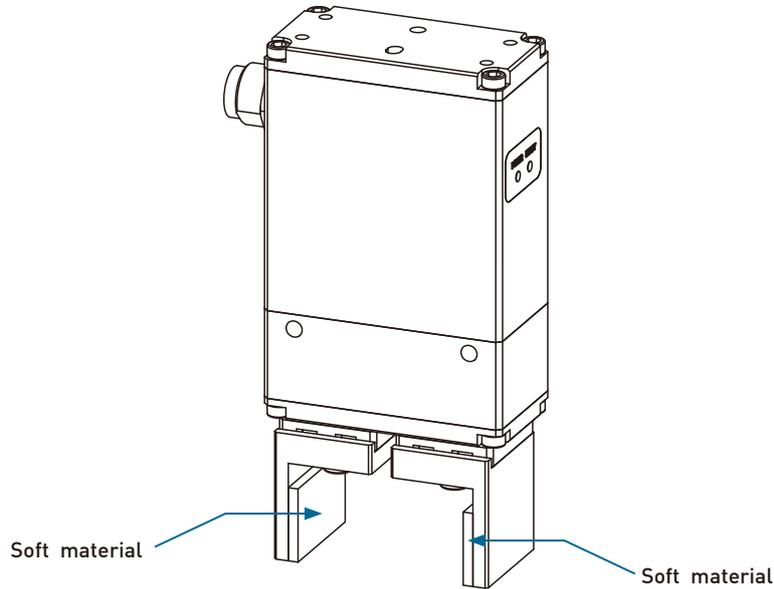


STG-16 & RA605 – Assembly explosion diagram

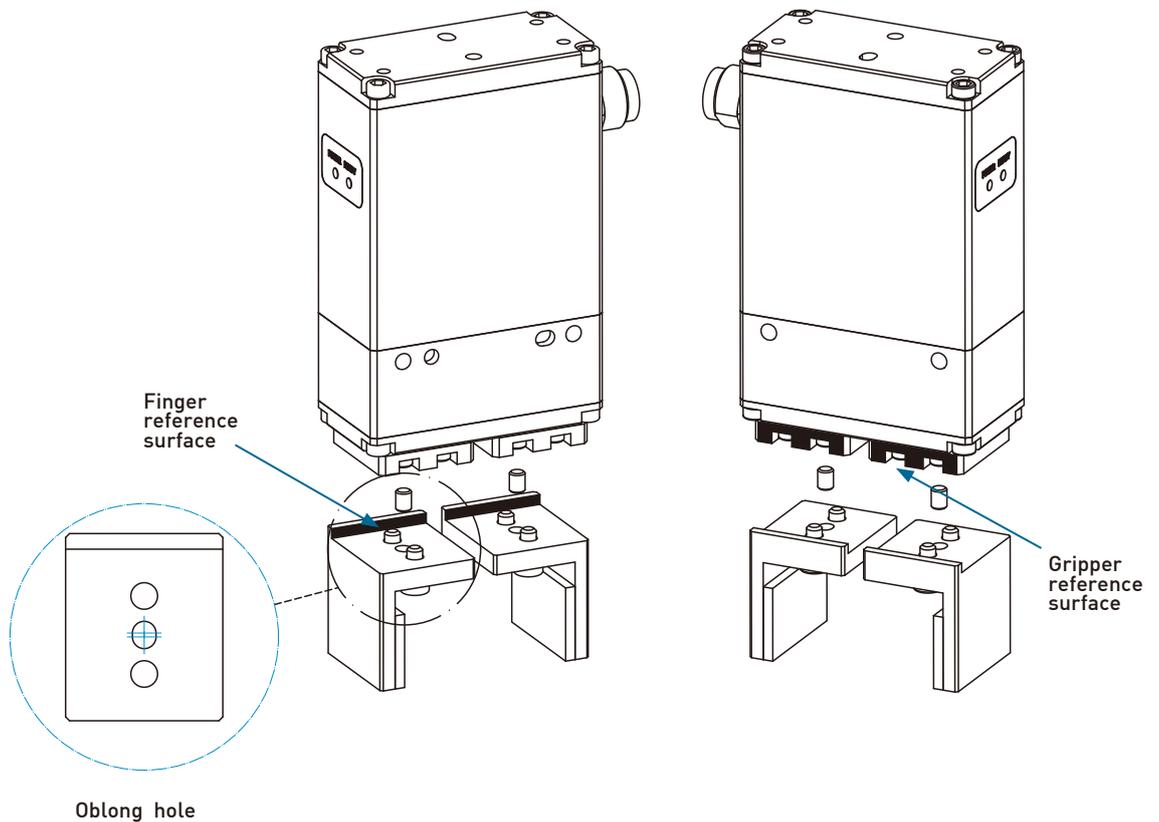
STG-16-RA605 accessory kit		
Item	Name	Amount
1	Positioning pin (Ø5X8L)	1
2	T16-605 Robot manipulator adapter	1
3	Bolt (M5X0.8PX10L SUS)	4
4	Positioning pin (Ø4X6L)	2
5	Bolt (M5X0.8PX10L SUS)	3
6	S-605HRS cable	1

6.4 Finger design guide

SEG-04 is a light gripping force gripper. 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.



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.



6.5 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 (Original Instruction) User Manual

Publication Date : July 2019

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