

NON-CONTACT TRANSFER COMPONENTS

Attention

- ① Exterior color of pressure sensor heads will be changed from white to black. There is no change in performance.
- ② The body color, and the design of the Multi-Channel, Multi-Sensor Controller will be modified.



Features

- Capable of non-contact transfer of glass, semiconductor wafers, etc.
- Capable of holding porous or relatively convex or concave workpieces.
- Powerful suction force.
- Never leave pad contact marks or scratches on the workpiece.
- No maintenance required.
- Because they do not draw in surrounding dust, etc., the picking surface remains clean.

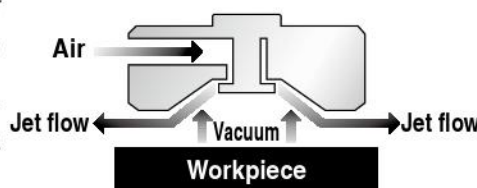
Operation Principles

This product blows air onto workpieces, improving and upgrading earlier technologies for holding of paper or thin plates, and consists of the ideal orifice and body design.

While it uses vacuum generated by jet of air blowing from a round air channel and along the product body to pick up the workpiece, a cushion of air also tends to repel the workpiece when it approaches too closely. The result is a non-contact hold of the workpiece that prevents actual contact with the workpiece.

This use of air for non-contact holding requires the need for installation of a guide to prevent drifting in the horizontal direction, and contact on the sides of the workpiece is inevitable.

The product's powerful pick up force is preeminently suited for non-contact transfer methods. Not only that, it is also effective as a method for positively contacting and holding elastic bodies.



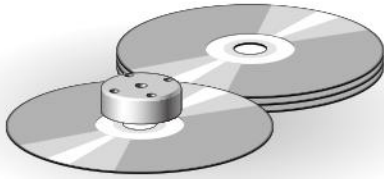
Product Range and Options

Model	NCT20	NCT30	NCT40	NCT60
Lifting force [N ^{Note}]	0.9	1.3	2.0	6.0
With bumper	●	●	●	●
With photoelectric sensor	—	●	●	●
With pressure sensor	●	●	●	●

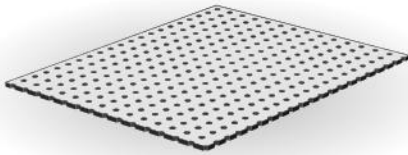
Note: For picking force conditions, see specifications on p.774.

Application Examples

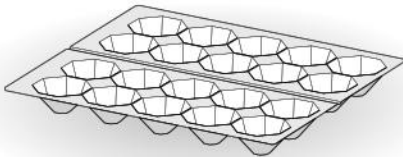
1. CD, DVD transfer



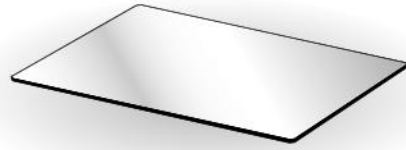
2. Circuit board transfer



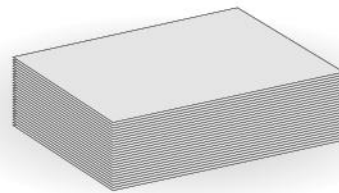
3. Egg carton transfer



4. Glass sheet transfer (No picking contact marks left behind)



5. Paper and vinyl transfer (No picking contact marks left behind)



6. Others

- Items with rough or convex/concave surfaces
- Items coated with dust, grit, or powder, etc.

Applications

Industries

- Electrical industry
- Semiconductor industry
- Food processing industry
- Printing industry
- Medical industry
- Liquid crystal industry
- Others

Processes

- Manufacturing equipment
- Transfer equipment
- Packaging machines
- Assembly machines

Workpieces

- CDs and DVDs
- Semiconductor wafers
- Mirrors
- Crackers
- French pastries
- Paperboard
- Paper
- Circuit boards
- Vinyl
- Cloth
- Film
- Glass
- Gauze
- Sponges
- Others

Safety Precautions (Non-contact Transfer Components)

The following are safety precautions to Non-contact Transfer Components. For other safety precautions, be sure to read the precautions on p.49.

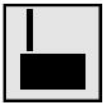
Warning

- Do not use the non-contact transfer component for absorbing shocks and vibrations of mechanical devices. It could break, resulting in personal injury or damage to the mechanical device.

Caution

- Do not use the pressure sensor in locations where large electric currents or strong magnetic fields can arise. Erratic operation could occur.
- Do not pull on the cords of the lead wires used for sensors mounted on the non-contact transfer component, grab the cords to pick up the device, place heavy objects on them, or otherwise subject them to excessive loads. Such actions could result in electrical leakage or circuit defects leading to fires, electrical shock, or abnormal operations, etc.

Handling Instructions and Precautions



Sensors

● Photoelectric sensor

1. A fiber unit is all that comes with the non-contact transfer component.

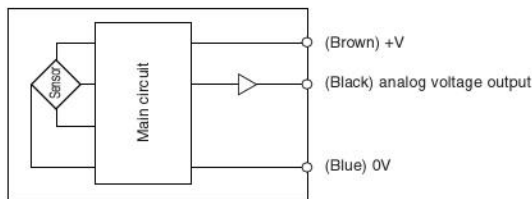
To activate the photoelectric sensor, an amp unit manufactured by KEYENCE CORPORATION is separately required. For details about the amp unit handling procedures, see the Owner's Manual provided with the amp unit.

2. When mounting the fiber unit to the body of the non-contact transfer component, use a tightening torque of 60N·cm [5.3in·lbf].
3. When mounting the fiber unit to the body of the non-contact transfer component, it should be screwed in to a depth of at least 5mm [0.20in.]. In addition, do not allow the end of the detecting side to protrude out from the body of the non-contact transfer component.

For inquiries about the photoelectric sensor's fiber unit FU-35FA and the special amp unit NCT-QPA1 (KEYENCE CORPORATION model :FS-V31), and for questions about guarantees, etc., contact the nearest KEYENCE CORPORATION sales office directly.

● Pressure sensor

1. Pressure sensor circuit diagram



2. Do not pull on, or otherwise apply strong force to, the pressure sensor cable.



General precautions

Mounting

1. Always thoroughly blow off (use compressed air) or air blowing the tubing before piping to the non-contact transfer component. Entering chips, sealing tape, rust, etc., produced during plumbing could lead to a deterioration of performance, or to functional shutdown due to clogging.
2. When mounting the non-contact transfer component, take care to avoid blocking the jet flow. Such blockage could result in defective picking up.
3. If using more than one non-contact transfer component in parallel, mount the non-contact transfer components with enough space in between them that they do not interfere with each other's jet flow. Moreover, mount them along the same surface so that no height differences between mounting surfaces occur. Such differences could result in defective picking up.

Media

1. Use air for the media. For the use of any other media, consult us.
2. Use clean air that does not contain deteriorated compressor oil or other contaminants. Install an air filter (with filtration of a minimum 0.01 μm) close to the valve to eliminate any airline condensate or dust. Use of air containing particles or oil can result in degradation of performance, or to functional shutdown due to clogging.

Atmosphere

The product cannot be used when the media or the ambient atmosphere contains any of the substances listed below. Organic solvents, phosphate ester type hydraulic oil, sulphur dioxide, chlorine gas, or acids, etc.

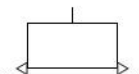
Wiring

After completion of wiring work, check that no miswiring has been made.

NON-CONTACT TRANSFER COMPONENTS



Symbol



Attention

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Specifications

● Body

Item	Model	NCT20	NCT30	NCT40	NCT60
Media		Air			
Port size		M5×0.8			
Operating pressure range	MPa [psi.]	0.1~0.7 [15~102]			
Operating temperature range	°C [°F]	5~60 [41~140] (5~50 [41~122]) ^{Note 1}			
Lifting force	N [lbf] ^{Note 2}	0.9 [0.20]	1.3 [0.29]	2.0 [0.45]	6.0 [1.35]
Consumption flow rate	ℓ/min [(1/3)min.] (ANR) ^{Note 2}	100 [3.5]		110 [3.9]	210 [7.4]
Mass (with pressure sensor)	g [oz.]	20 [0.71] (52 [1.83])	30 [1.06] (61 [2.15])	54 [1.90] (79 [2.79])	124 [4.37] (146 [5.15])

Notes: 1. Figure in parentheses () is for unit with pressure sensor.

2. Figures for $\phi 20$ and $\phi 30$ assume 0.5MPa [73psi.] applied to a $\phi 4 \times \phi 2.5$ tube of 1000mm [39in.].

Figures for $\phi 40$ and $\phi 60$ assume 0.5MPa [73psi.] applied to a $\phi 6 \times \phi 4$ tube of 1000mm [39in.].

Pressure sensor

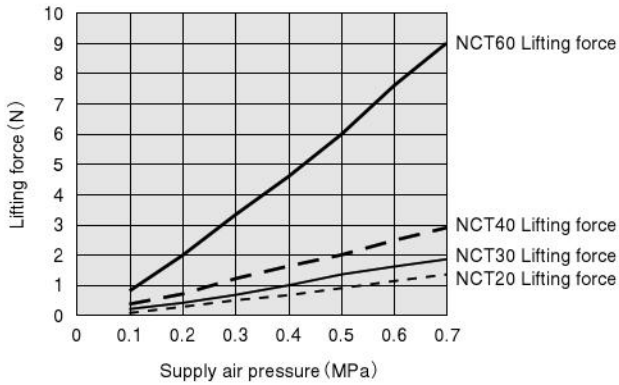
● Sensor head/Compound pressure sensor head

Item		
Cable		Oil and flex resistance PVC 26AWG×3-core 3000 mm [118 in.]
Media		Air or non-corrosive gas
Power supply	Voltage	24 VDC ±10%
	Consumption current	6 mA MAX.
Analog output	Output voltage	1 to 5 V
	Zero-point voltage (Vzero)	1.00 ± 0.05
	Span voltage	4.00 ± 0.07 (reference value)
	Temperature characteristics	Vzero: within ±30 mV; span: within ±2% F.S.
	Output current	1 mA max. (load resistance of 5 kΩ or more)
General	Operating pressure range	kPa -101.3 to 0
	Proof pressure	kPa 900
	Operating temperature range	0 to 50°C; when stored: -20 to 80°C (when stored: humidity of less than 65% RH, atmospheric pressure)
	Operating humidity range	35 to 85% RH
	Insulation resistance	100 MΩ MIN (at 500VDC megger)
	Dielectric strength	500 VAC 1 minute
	Mass	40 g

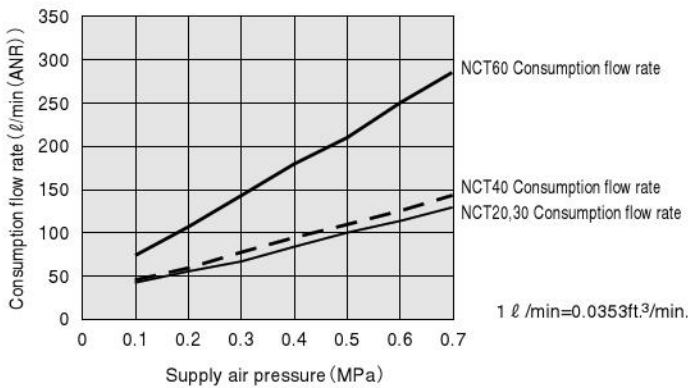
● Photoelectric sensor

Model		FU-35FA (made Keyence Corporation)
Detection method		Reflecting type
Type		Coaxial
Model	Body	24 VDC ±10%
	Fiber	6 mA MAX.
Detection distance	SUPER TURBO	100 [4.23]
	TURBO	70 [2.76]
	FINE	35 [1.38]
Operating temperature range		°C [°F] -40~70 [-40~158] (No freezing)
Operating humidity range		35~85%
Minimum bending radius		mm [in.] R25 [0.98]
Fiber material		Plastic
Mass	g [oz.]	6 [0.21]

Lifting Force Graph

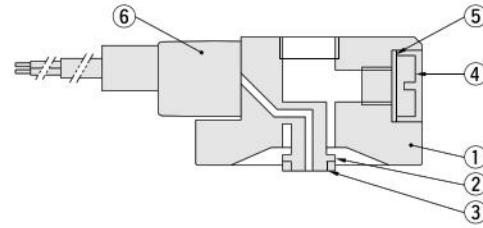


Consumption Flow Rate Graph



Inner Construction, Major Parts and Materials

● For NCT30-B □ S11



No.	Parts	Model	20	30	40	60
①	Body		Aluminum alloy (anodized)			
②	Nozzle		Stainless steel			
③	Bumper		-B1 : NBR, -B2 : silicone			
④	Plug		Brass (nickel plated)			
⑤	Seal		NBR+SPCC			
⑥	Pressure sensor		Body : Plastic			

Order Codes

NCT □ - □ - □

Size
 20 : φ 20
 30 : φ 30
 40 : φ 40
 60 : φ 60

Bumper^{Note 1}
Blank : No bumper
B1 : With bumper, material : NBR
B2 : With bumper, material : Silicone

Non-contact transfer component

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Sensors^{Note 1}

Blank : No sensor

S11 : With pressure sensor (vertical cable, loose end)^{Note 2}

S12 : With pressure sensor (horizontal cable, loose end)^{Note 2}

S21 : With photoelectric sensor (Not mountable for NCT20.)^{Note 3}



Notes: 1. Since the body shape will vary depending on whether the optional bumper and sensor are selected or not, options cannot be added or changed after the order has been completed.

Depending on the type of workpieces used by the customer, the pressure sensor may be unable to detect vacuum or air pressure. If you are uncertain about sensor selection, consult us before purchasing.

2. The pressure sensor provides analog output only. If switch output is required, you will need to obtain the separately available controller for the pressure sensor.

Multi-channel, multi-sensor controller MSU-□

● For details, see "Multi-channel Pressure Sensor Controllers" on p.780.)

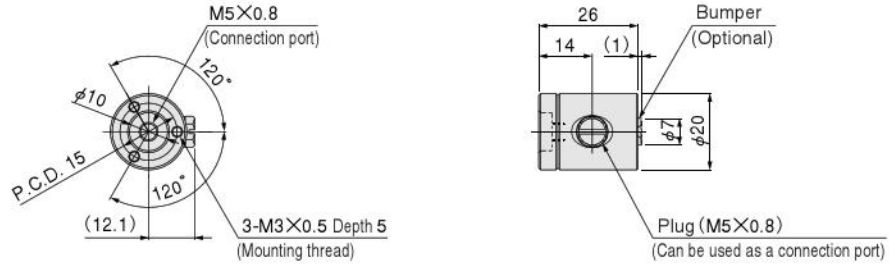
3. For the unit with photoelectric sensor, you will need the separately available special amp unit manufactured by KEYENCE CORPORATION.

Photoelectric Sensor Amp NCT-OPA1 (KEYENCE CORPORATION model No.: FS-V31)

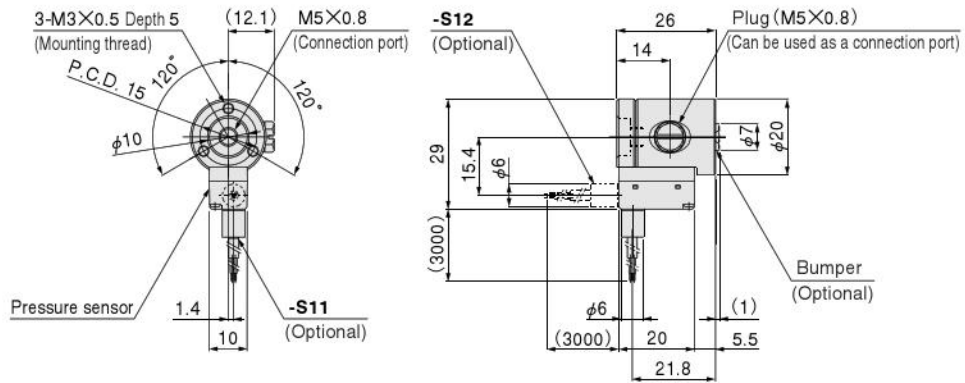
● For details and specifications, contact the nearest KEYENCE CORPORATION sales office directly.

Dimensions (mm)

NCT20-□



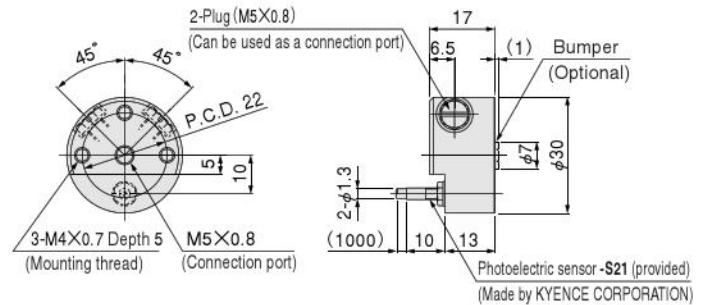
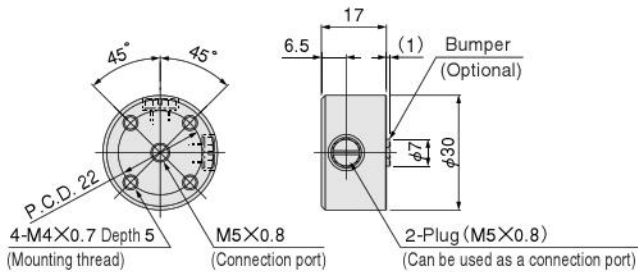
NCT20-□-S11 (Pressure sensor, vertical cable) -S12 (Pressure sensor, horizontal cable)



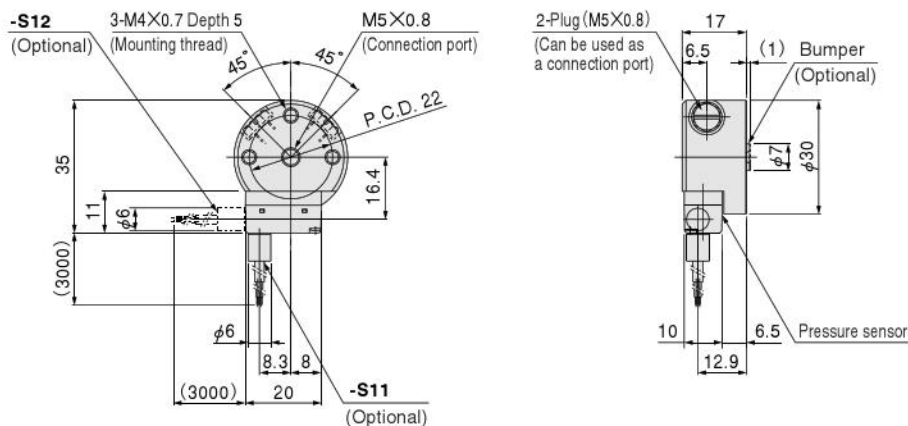
NCT30-□



NCT30-□-S21 (with photoelectric sensor)

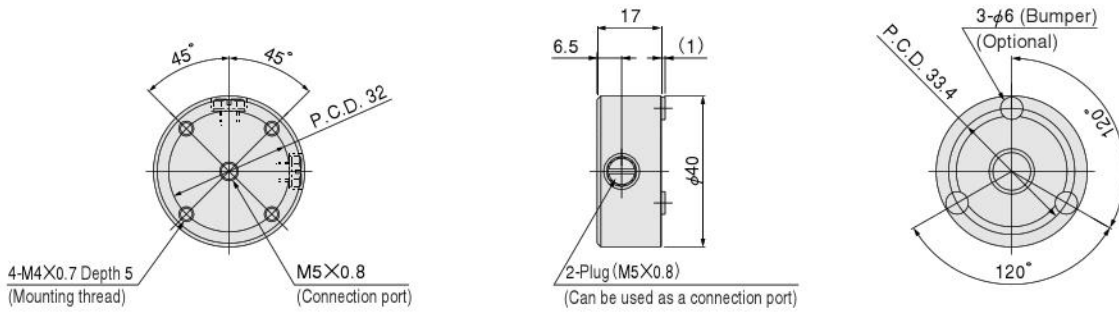


NCT30-□-S11 (Pressure sensor, vertical cable) -S12 (Pressure sensor, horizontal cable)

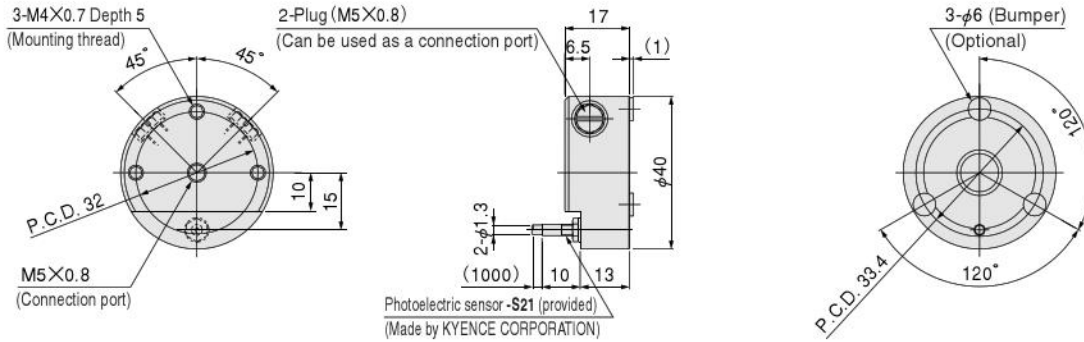


Dimensions (mm)

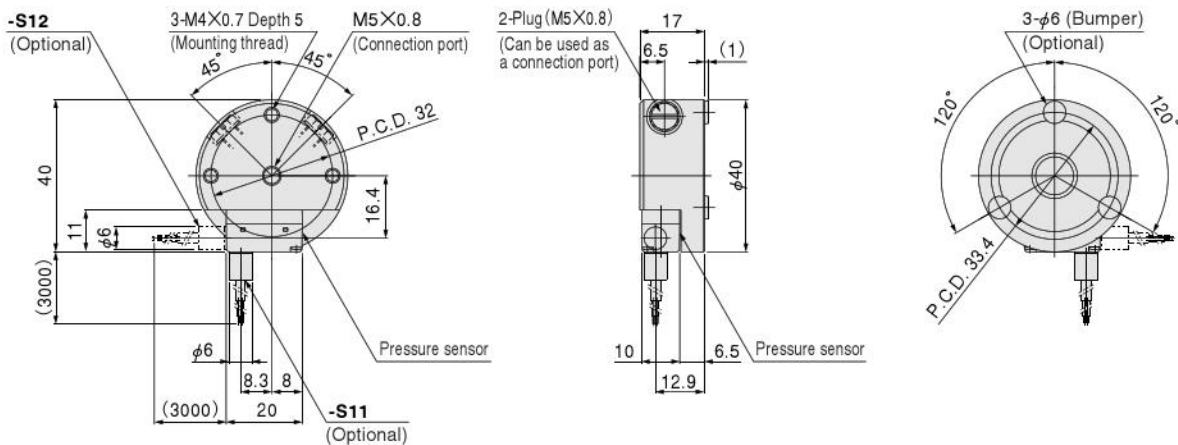
NCT40-□



NCT40-□-S21 (with photoelectric sensor)

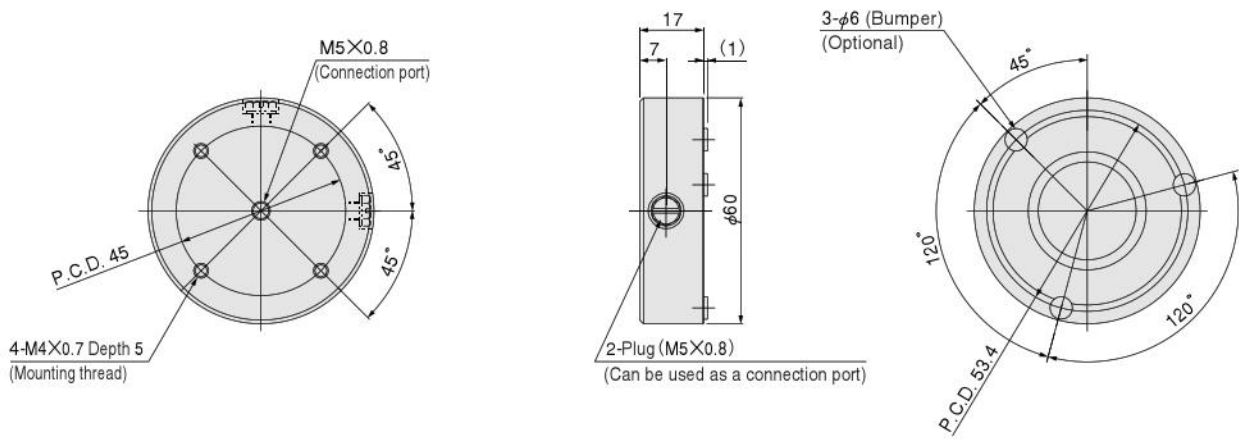


NCT40-□-S11 (Pressure sensor, vertical cable)
-S12 (Pressure sensor, horizontal cable)

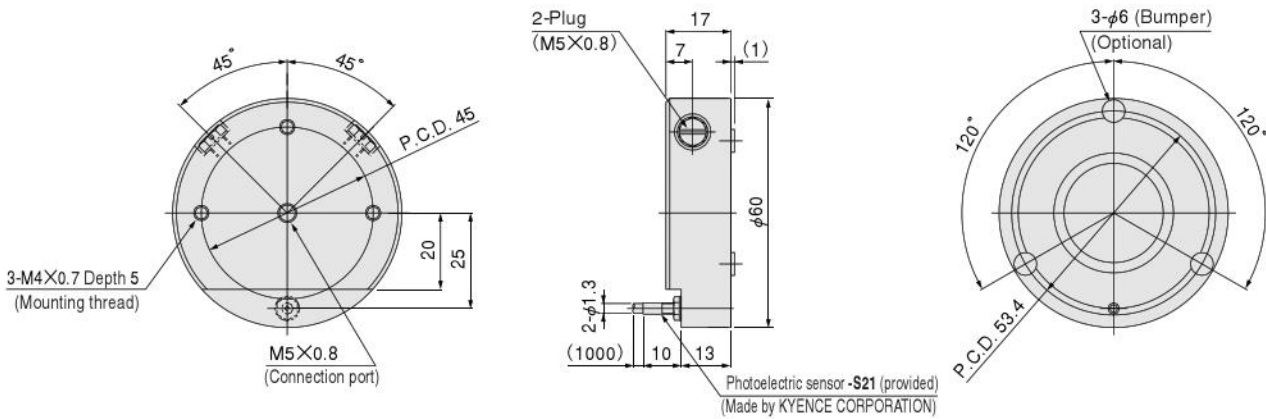


Dimensions (mm)

NCT60-□



NCT60-□-S21 (with photoelectric sensor)



NCT60-□-S11 (Pressure sensor, vertical cable) -S12 (Pressure sensor, horizontal cable)

