

# NON-CONTACT TRANSFER COMPONENTS



## 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.

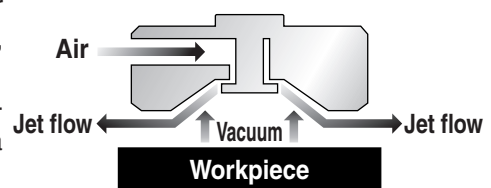
## Operation Principles

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.



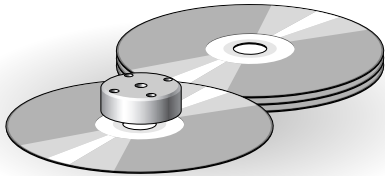
## Product Range and Options

Model	NCT20	NCT30	NCT40	NCT60
Lifting force[N <sup>Note</sup> ]	0.9	1.3	2.0	6.0
With bumper	●	●	●	●
With photoelectric sensor	—	●	●	●
With pressure sensor	●	●	●	●

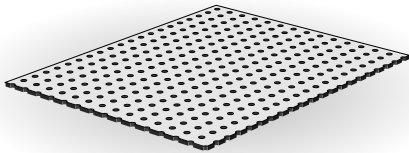
Note: For picking force conditions, see specifications on p.774.

## Application Examples

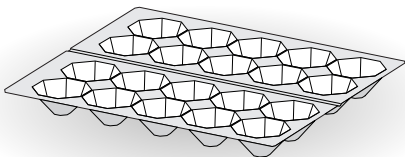
### 1. CD, DVD transfer



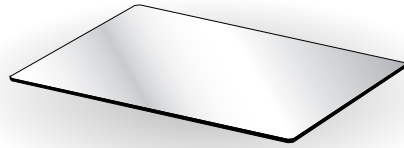
### 2. Circuit board transfer



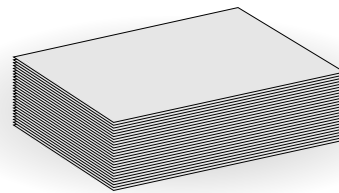
### 3. Egg carton transfer



### 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.

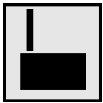
### Warning

- 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.

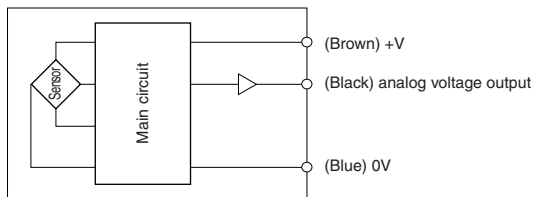
To activate the photoelectric sensor, an amp unit manufactured by KEYENCE CORPORATION is separately required. For details about the amp unit handling procedures, see the Owner's Manual provided with the amp unit.

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  $\mu\text{m}$ ) 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



## 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]) <sup>Note 1</sup>			
Lifting force	N [lbf] <sup>Note 2</sup>	0.9 [0.20]	1.3 [0.29]	2.0 [0.45]	6.0 [1.35]
Consumption flow rate	ℓ/min [ft <sup>3</sup> /min.] (ANR) <sup>Note 2</sup>	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× $\phi$  2.5 tube of 1000mm [39in.].

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

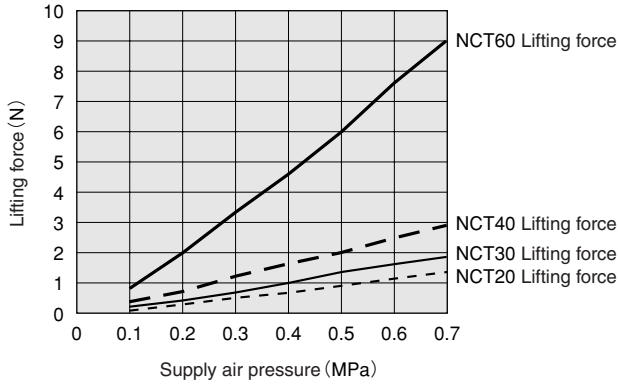
### ●Pressure sensor

Operating pressure range	kPa [psi.]	0~101.3 [0~14.7]
Proof pressure	kPa [psi.]	300 [43.5]
Cable type		Oil-resistant, bending-resistant vinyl cabtyre 0.15SQ×3-lead×3000mm [118in.]
Materials		Body : PBT, Piping connection seal : NBR
Supply voltage		DC24V±10%
Consumption current		6mA or less
Analog output	Output voltage	1~5V
	Zero-point voltage	1±0.05V
	Span voltage	4±0.07V (reference value)
	Temperature characteristics Vzero	±30mV or less (at 0~50°C [32~122°F])
	Temperature characteristics Vspan	Within ±2% F.S. (at 0~50°C [32~122°F])
Output current		1mA or less (load resistance 5k $\Omega$ min.)
Operating humidity range		35~85%RH
Dielectric strength		AC500V, 1 minute
Insulation resistance		100M $\Omega$ MIN. (at DC500V megger)
Vibration resistance	m/s <sup>2</sup> [G]	98.1 [10]
Shock resistance	m/s <sup>2</sup> [G]	490 [50] (Non-repeated shock)
Mass	g [oz.]	33 [1.16] (with cable)

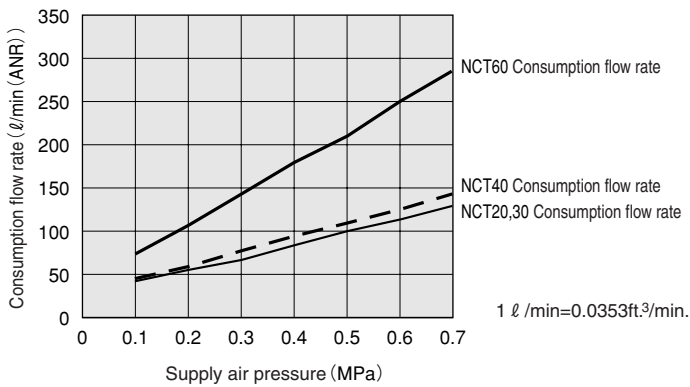
### ●Photoelectric sensor

Model		FU-35FA (made by Keyence Corporation)
Detection method		Reflecting type
Type		Coaxial
Model	Body	M3×0.5, length 18mm [0.71in.]
	Fiber	$\phi$ 1.3×2, 1000mm [39in.] free cut
Detection distance	SUPER TURBO	110 [4.33]
	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

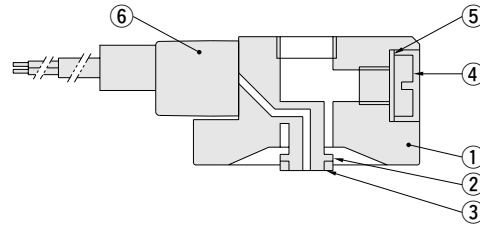


## Consumption Flow Rate Graph



## 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<sup>Note 1</sup>**  
**Blank** : No bumper  
**B1** : With bumper, material : NBR  
**B2** : With bumper, material : Silicone

**Sensors<sup>Note 1</sup>**

**Blank** : No sensor

**S11** : With pressure sensor (vertical cable, loose end)<sup>Note 2</sup>

**S12** : With pressure sensor (horizontal cable, loose end)<sup>Note 2</sup>

**S21** : With photoelectric sensor (Not mountable for NCT20.)<sup>Note 3</sup>

**S11**



**S12**



**S21**



Non-contact transfer component

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 Sensor Controller PSU-□**

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

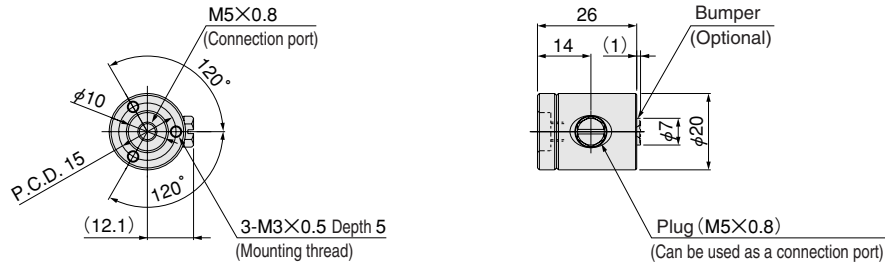
3. For the unit with photoelectric sensor, you will need the separately available special amp unit manufactured by KEYENCE CORPORATION.

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

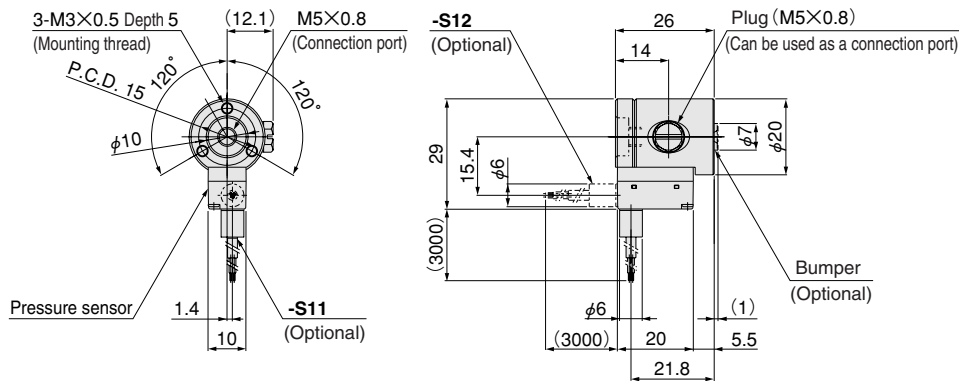
● For details and specifications, contact the nearest KEYENCE CORPORATION sales office directly.

# Dimensions (mm)

## NCT20-□



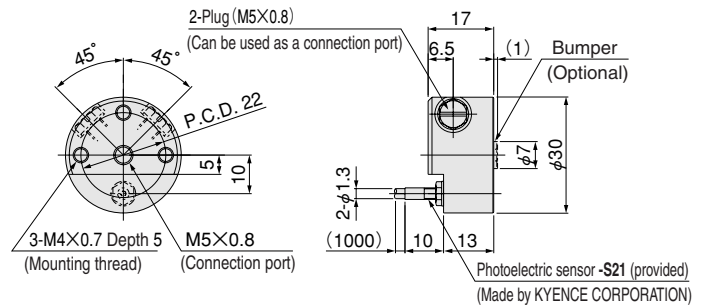
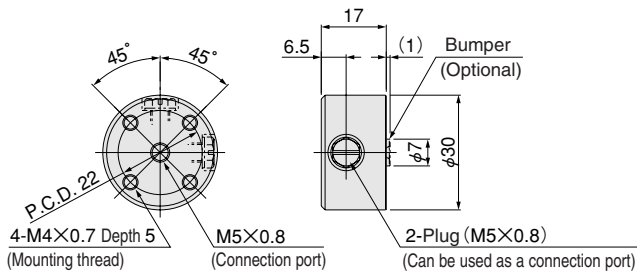
## NCT20-□-S11 (Pressure sensor, vertical cable) -S12 (Pressure sensor, horizontal cable)



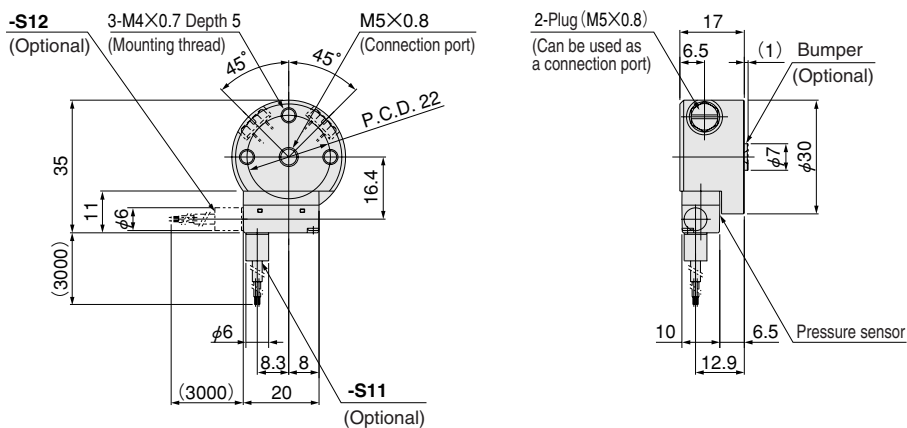
## NCT30-□



## NCT30-□-S21 (with photoelectric sensor)

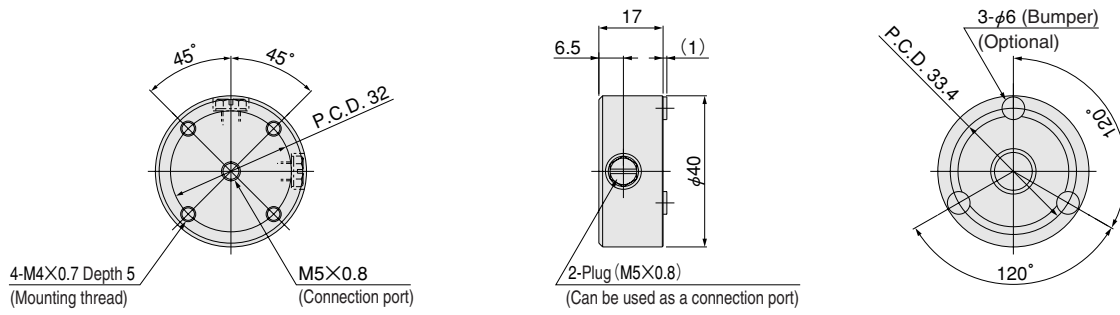


## NCT30-□-S11 (Pressure sensor, vertical cable) -S12 (Pressure sensor, horizontal cable)

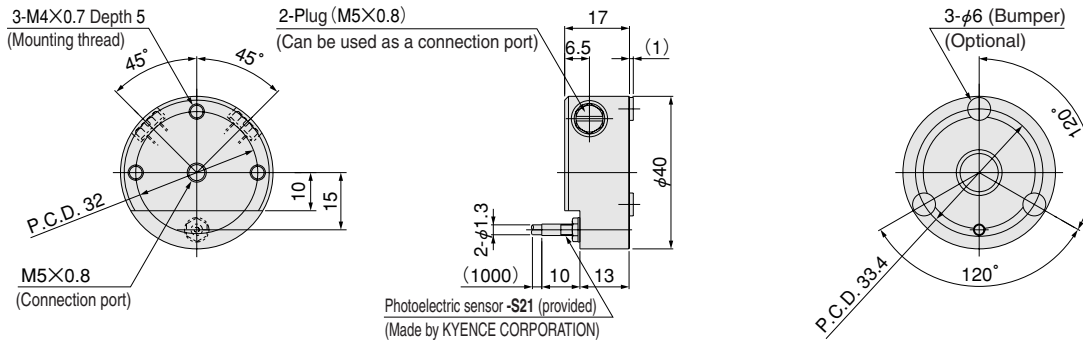


# Dimensions (mm)

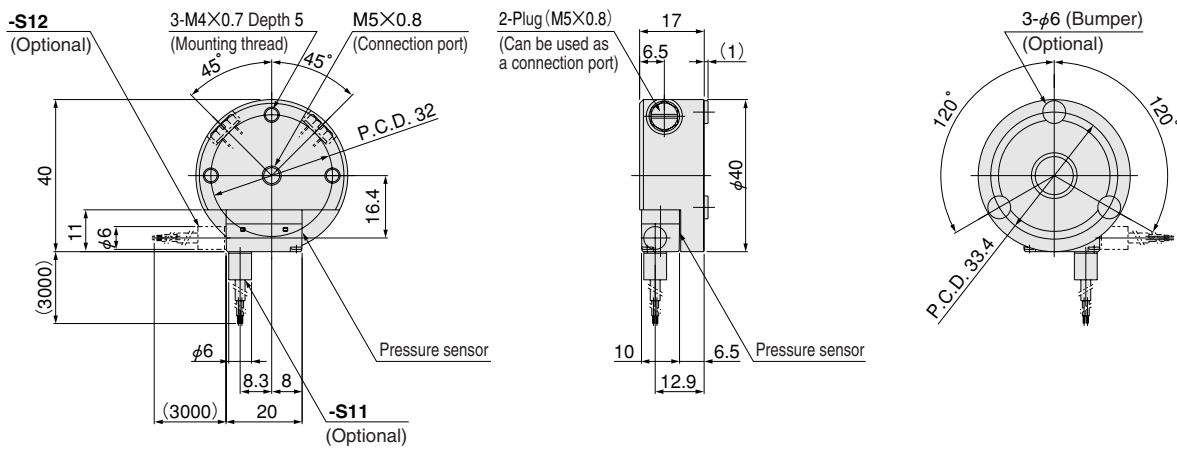
## NCT40-□



## NCT40-□-S21 (with photoelectric sensor)

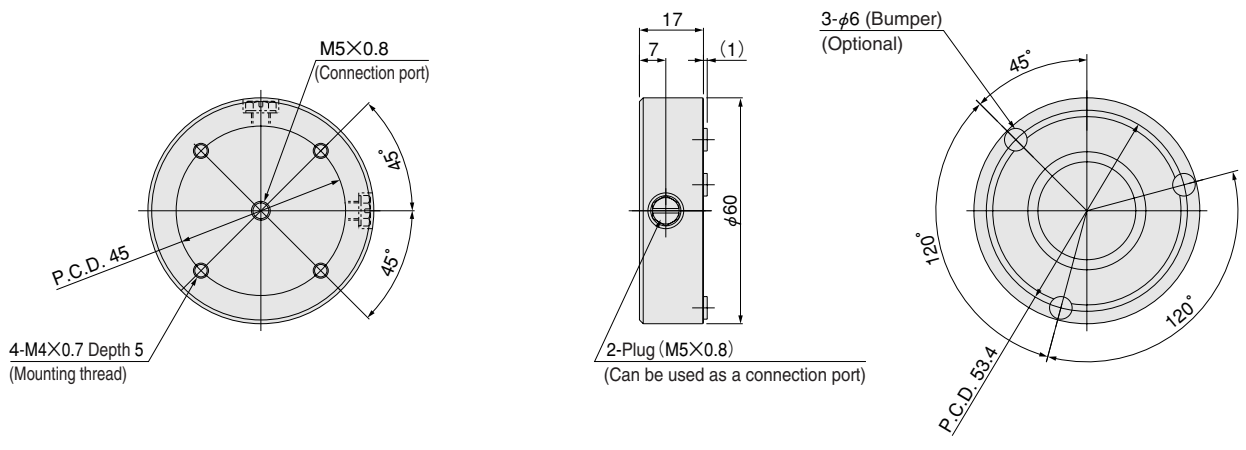


## NCT40-□-S11 (Pressure sensor, vertical cable) -S12 (Pressure sensor, horizontal cable)

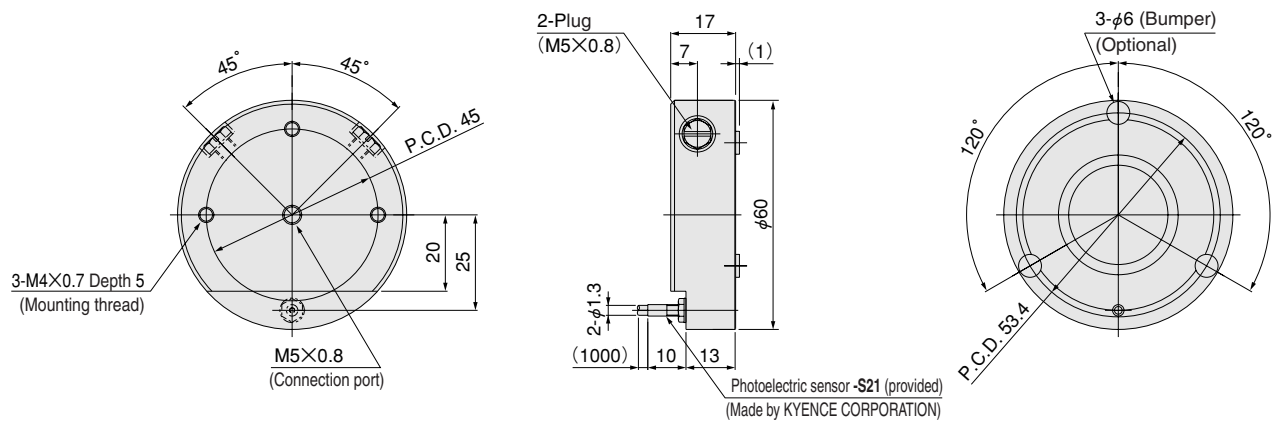


# Dimensions (mm)

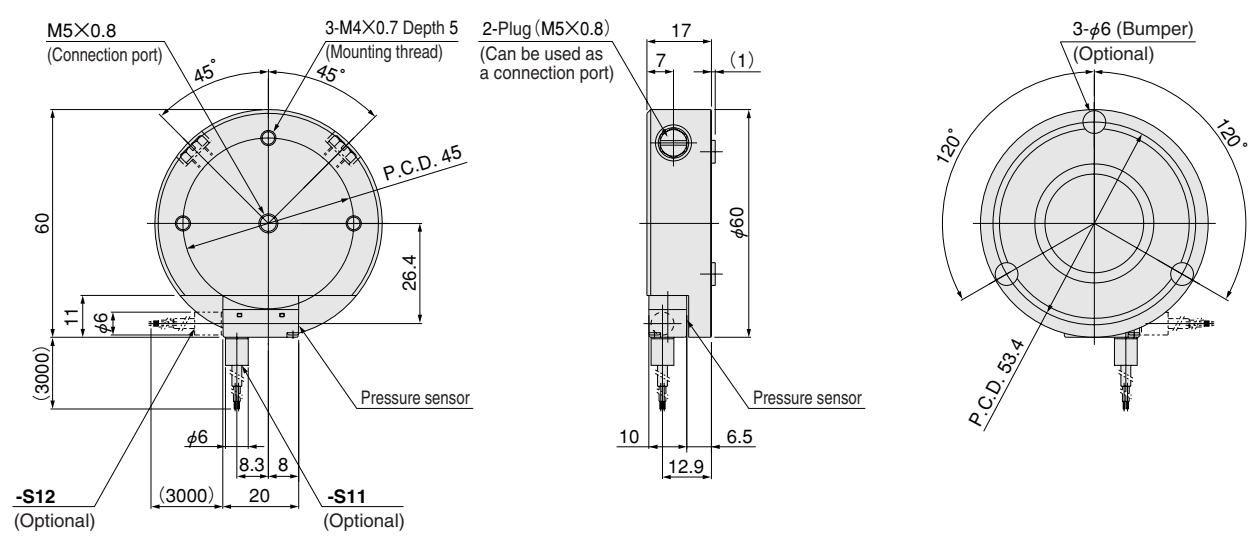
## NCT60-□



## NCT60-□-S21 (with photoelectric sensor)



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



NON-CONTACT TRANSFER COMPONENTS