

## Capacitive type proximity sensor

- Internal noise enhanced circuit
- Leakage current less than 2 mA
- Power supply voltage 18 – 250 V AC/DC dual usage



### Suffix code

Model	Code						Description
CUP-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Capacitive type proximity sensor
Sensing area size	18						M18
	30						M30
Structure type	R						Round type (Brass chrome plating case)
	RP						Round type (Plastic case)
Sensing distance	8						8 mm(Only with CUP-18□-8)
	15						15 mm(Only with CUP-30□-15)
Power and output type				N			DC NPN output
				P			DC PNP output
				F			AC/DC 2 wire type (dual usage) (Non polarity)
Output state				A			Normal Open (NO)
				C			Normal Close (NC)
Connection structure				*			No indication (Cable type)
				CR			Relay connector type

F

Proximity Sensor

### Specification

#### Capacitive DC 3 wire type

Model	NPN	CUP-18R-8N□□	CUP-18RP-8N□□	CUP-30R-15N□□	CUP-30RP-15N□□
	PNP	CUP-18R-8P□□	CUP-18RP-8P□□	CUP-30R-15P□□	CUP-30RP-15P□□
	Size	M18		M30	
Shield	Non shield		Non shield		
Standard sensing object(mm)	Iron 50 X 50 X 1 (Grounded (earthed) state)				
Sensing distance	8 mm (Volume variation)		15 mm (Volume variation)		
Setting distance	0 ~ 6.4 mm		0 ~ 12 mm		
Hysteresis	Less than 20 % of sensing distance				
Response frequency	50 Hz				
Power supply voltage	12 - 24 V DC (Usable voltage range 10 - 30V DC)				
Control output	Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 1.5V				
Current consumption	Max 10 mA				
Operation indication	Red LED				
Protective circuit	Power reversely connected protective circuit, surge protective circuit and over current protective circuit are built in.				
Connection structure	Cable type (standard cable length 2m), Relay connector type, Connector type				
Material	CUP-18R/CUP-30R (Case: brass chrome plating, sensing surface: PBT resin), CUP-18RP/CUP-30RP (Case and sensing surface one body type: PBT resin)				
Weight	Cable type	approx. 70g	approx. 70g	approx. 120g	approx. 120g
	Connector type	approx. 30g	approx. 30g	approx. 80g	approx. 80g

#### Capacitive DC/AC dual usage 2 wire type

Model	For AC	CUP-18R-8F□□	CUP-18RP-8F□□	CUP-30R-15F□□	CUP-30RP-15F□□
	Size	M18		M30	
shield	Non shield		Non shield		
Standard sensing object(mm)	Iron 50 X 50 X 1 (Grounded (earthed) state)				
Sensing distance	8 mm (Volume variation)		15 mm (Volume variation)		
Setting distance	0 ~ 6.4 mm		0 ~ 12 mm		
Hysteresis	Less than 20 % of sensing distance				
Response frequency	DC : 40 Hz / AC : 20 Hz				
Power supply voltage	20 - 240 V AC/DC (Usable voltage range 18 - 250 V AC/DC)				
Control output	Open/Close capacitance : 5 - 250 mA max (Resistive load), Residual voltage : Max 7 V (AC/DC)				
Leakage current	2 mA max				
Operation indication	Red LED				
Protective circuit	Surge protective circuit built in.				
Connection structure	Cable type (standard cable length 2 m), Relay connector type, Connector type				
Case	Brass (Chrome plating)	PTB resin	Brass (Chrome plating)	PTB resin	
Material	CUP-18R/CUP-30R (Case : brass chrome plating, sensing surface: PBT resin), CUP-18RP/CUP-30RP (Case and sensing surface one body type : PBT resin)				
Weight	Cable type	approx. 70g		approx. 120g	
	Connector type	approx. 30g		approx. 80g	

### Environment

Degree of protection	IP67 (IEC standard)
Ambient temperature	-25 ~ 70 °C (Less than ±10 % of sensing distance at temperature 20 °C)
Ambient humidity	35 ~ 85 %RH
Insulation resistance	50 M $\Omega$ min (500 V DC mega standard)
Dielectric strength	For 1 min at 2000 V AC 50/60 Hz (between the recharging part and case)
Vibration resistance	10 – 55 Hz (cycle 1 min, Double amplitude : 1.5 mm 2 hours for each of X, Y and Z directions)
Shock resistance	500 % 3 times to each of X, Y and Z directions

### Connection diagram

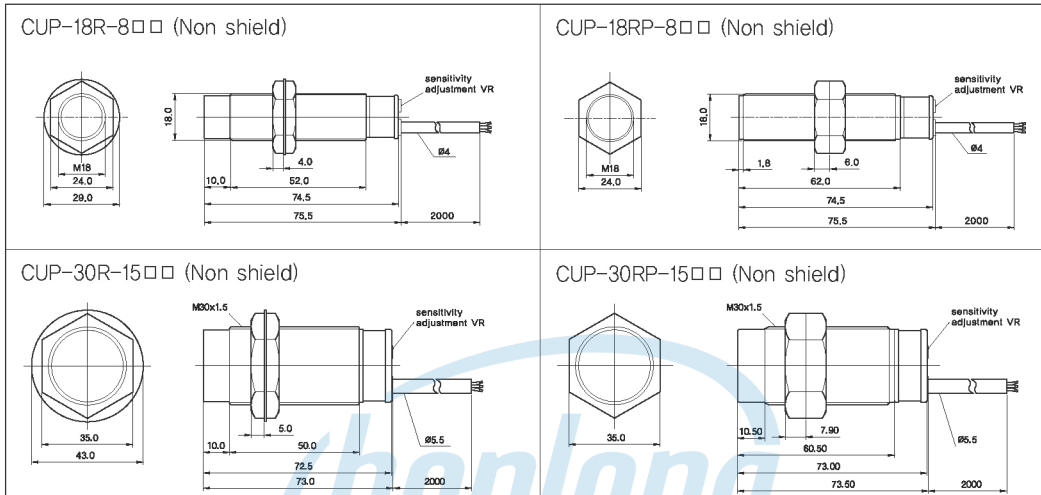
#### ■ Capacitive type (Cable type, Relay connector type)

Type	Connection method		Output state																					
	Cable type	Relay connector type																						
DC open / close			<table border="1"> <tr> <td rowspan="2">Sensing object</td> <td>Yes</td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>No</td> <td>[High]</td> <td>[High]</td> </tr> <tr> <td rowspan="2">LOAD [Brown - Black]</td> <td>Run</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td>Return</td> <td>[Low]</td> <td>[High]</td> </tr> <tr> <td rowspan="2">Operation indicator</td> <td>ON</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td>OFF</td> <td>[Low]</td> <td>[High]</td> </tr> </table>	Sensing object	Yes	N.O	N.C	No	[High]	[High]	LOAD [Brown - Black]	Run	[High]	[Low]	Return	[Low]	[High]	Operation indicator	ON	[High]	[Low]	OFF	[Low]	[High]
	Sensing object	Yes	N.O		N.C																			
No		[High]	[High]																					
LOAD [Brown - Black]	Run	[High]	[Low]																					
	Return	[Low]	[High]																					
Operation indicator	ON	[High]	[Low]																					
	OFF	[Low]	[High]																					
DC and AC open/close			<table border="1"> <tr> <td rowspan="2">Sensing object</td> <td>Yes</td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>No</td> <td>[High]</td> <td>[High]</td> </tr> <tr> <td rowspan="2">LOAD</td> <td>Run</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td>Return</td> <td>[Low]</td> <td>[High]</td> </tr> <tr> <td rowspan="2">Operation indicator</td> <td>ON</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td>OFF</td> <td>[Low]</td> <td>[High]</td> </tr> </table>	Sensing object	Yes	N.O	N.C	No	[High]	[High]	LOAD	Run	[High]	[Low]	Return	[Low]	[High]	Operation indicator	ON	[High]	[Low]	OFF	[Low]	[High]
	Sensing object	Yes	N.O		N.C																			
No		[High]	[High]																					
LOAD	Run	[High]	[Low]																					
	Return	[Low]	[High]																					
Operation indicator	ON	[High]	[Low]																					
	OFF	[Low]	[High]																					

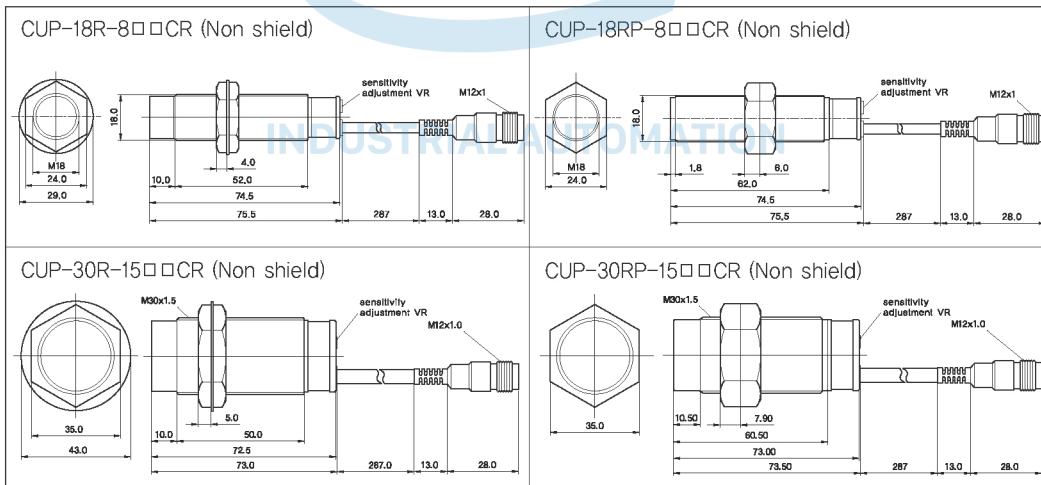
F  
Proximity Sensor

### Dimension (unit : mm)

#### ■ Cable type



#### ■ Relay connector type



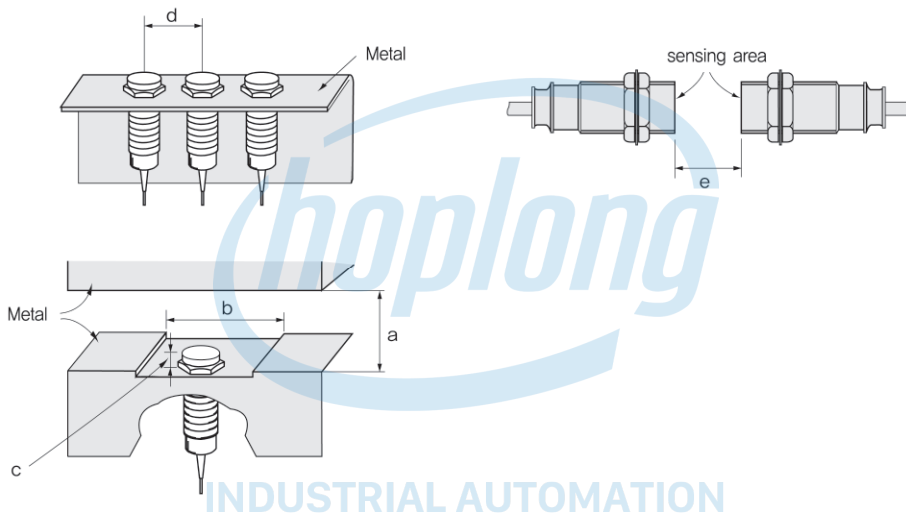
F

Proximity  
Sensor

## ●● Important features

When attaching more than 1 proximity sensors in parallel direction or facing each other, it can cause the malfunction. When there are metals around the proximity sensor, it can cause malfunctions such as abnormal return due to the existence of metals around the proximity sensor. In order to avoid the malfunction which caused by surrounding metals, please install it with sufficient gap from each other. (Wider than the values written in below chart)

### Capacitive type



F  
Proximity  
Sensor

[unit : mm]

MODEL	a	b	c	d	e
CUP-18	24	54	20	54	48
CUP-30	45	90	10	90	90