

# Proximity Sensor



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# Proximity sensor

## Summary

### What is Proximity sensor?

Proximity sensor can detect the sensing object without touching it. Also the sensing method is divided into 2 types which are inductive type (detect by using the electromagnetic induction) and capacitive type (detect the variation of capacitance in between the sensor and sensing object).

#### ■ How to distinguish

##### 1) Distinguish by the sensing head

Type	Appearance	Information
Shield type		Sensing coil side is covered with the metal case.
None shield type		Sensing coil side is protruded from the metal case.

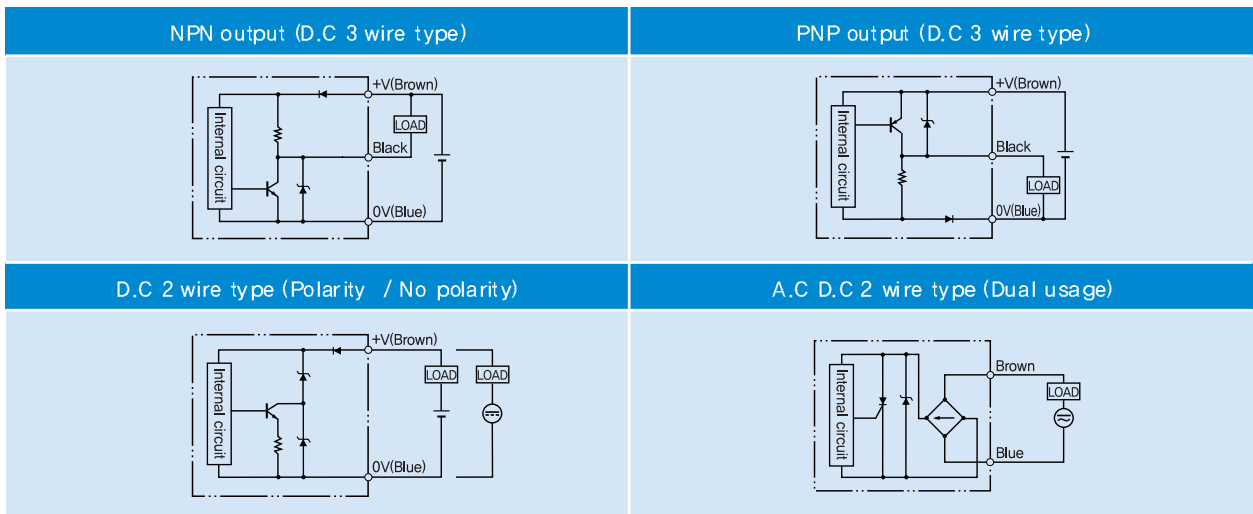
##### 2) Distinguish by the color

D.C 3 wire type		D.C 2 wire type and A.C 2 wire type	
NPN(Green)	PNP(Purple)	N.O(Green)	N.C(Purple)
			
			
			

\* Square type : Case color

\* Round type : Sensing part color (Capacitive type plastic case is gray)

### 3) Distinguish by the output circuit



### ■ Selection of proximity sensor

Sensing method	Appearance	Sensing distance(mm)	Power supply voltage	Connection structure	Output type	Reference
Inductive type	Square type	5	D.C	3 wire type	NPN	※ Cable structure ① Cable type ② Relay connector type ③ Connector type  But square type and flat type only can be manufactured as the cable type and relay connector type.
		8			PNP	
		10		A.C	2 wire type	
		12	-			
		15	-			
		20	-			
	Flat type	D.C	3 wire type	NPN		
				8	PNP	
			A.C	2 wire type	-	
		-				
		-				
		Round type	D.C	3 wire type	NPN	
1.5	PNP					
2	-					
4	-					
A.C	2 wire type		-			
			5	-		
			8	-		
			10	-		
15	-					
Capacitive type	Round type	8	D.C	3 wire type	NPN	※ Cable structure ① Cable type ② Relay connector type
					PNP	
		15	A.C/D.C (Dual usage)	2 wire type	-	

# Proximity sensor

## Table

### Square type (Cable type/Relay connector type)

■ Inductive D.C 3 wire type (NPN/PNP)

※mm : The side length of sensing surface

Sensing face size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
18 mm		12 - 24 V d.c	NPN (3 wire type)	 5	UP18S-5N□□	16
				 8	UP18S-8N□□	
25 mm				 5	UP18S-5N□U□	
				 8	UP18S-8N□U□	
				 5	UP25S-5N□□	
				 8	UP25S-8N□□	
30 mm				 12	UP25S-12N□□	
				 10	UP30S-10N□□	
40 mm				 15	UP30S-15N□□	
				 20	UP40S-20N□□	
18 mm		12 - 24 V d.c	PNP (3 wire type)	 5	UP18S-5P□□	16
				 8	UP18S-8P□□	
25 mm				 5	UP18S-5P□U□	
				 8	UP18S-8P□U□	
				 5	UP25S-5P□□	
				 8	UP25S-8P□□	
30 mm				 12	UP25S-12P□□	
				 10	UP30S-10P□□	
40 mm				 15	UP30S-15P□□	
				 20	UP40S-20P□□	






■ Inductive D.C 2 wire type (Polarity / No polarity)

※mm : The side length of sensing surface

Sensing face size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page			
18 mm		12 - 24 V d.c	2 wire type (N.O)	5	UP18S-5□A□	17			
				8	UP18S-8□A□				
25 mm				5	UP18S-5□AU				
				8	UP18S-8□AU				
30 mm				5	UP25S-5□A□				
				8	UP25S-8□A□				
40 mm				12	UP25S-12□A□				
				10	UP30S-10□A□				
18 mm				12 - 24 V d.c	2 wire type (N.C)		15	UP30S-15□A□	17
							20	UP40S-20□A□	
25 mm		5	UP18S-5□C□						
		8	UP18S-8□C□						
30 mm		5	UP18S-5□CU						
		8	UP18S-8□CU						
40 mm		5	UP25S-5□C□						
		8	UP25S-8□C□						
18 mm		12	UP25S-12□C□						
		10	UP30S-10□C□						
25 mm		15	UP30S-15□C□						
		20	UP40S-20□C□						

■ Inductive A.C 2 wire type




※mm : The side length of sensing surface

Sensing face size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
25 mm		100 - 240 V a.c	2 wire type (N.O)	5	UP25S-5AA□	18
				8	UP25S-8AA□	
30 mm				10	UP30S-10AA□	
				15	UP30S-15AA□	
40 mm				20	UP40S-20AA□	

# Proximity sensor



## ■ Inductive A.C 2 wire type

※mm : The side length of sensing surface





Sensing face size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
25 mm		100 – 240 V a.c	2 wire type (N.C)	5	UP25S-5AC□	18
				8	UP25S-8AC□	
30 mm				10	UP30S-10AC□	
				15	UP30S-15AC□	
40 mm				20	UP40S-20AC□	

## Flat type (Cable type/Relay connector type)



### ■ Inductive D.C 3 wire type (NPN/PNP)

	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
Flat type		12 – 24 V d.c	NPN 3 wire type	8	UP25F-8N□□	24
			PNP 3 wire type	8	UP25F-8P□□	

### ■ Inductive D.C 2 wire type (Polarity / No polarity)






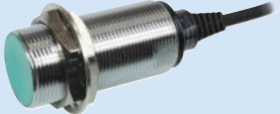






	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
Flat type		12 – 24 V d.c	2 wire type (Polarity)	8	UP25F-8TA□	24
				8	UP25F-8TC□	
			2 wire type (No polarity)	8	UP25F-8UA□	
				8	UP25F-8UC□	

### ■ Inductive A.C 2 wire type

	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
Flat type		100 – 240 V a.c	2 wire type	8	UP25F-8AA□	25
				8	UP25F-8AC□	




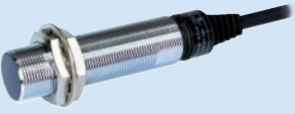





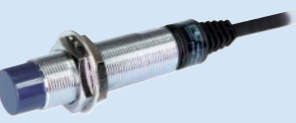


## Round type (Cable type/Relay connector type/Connector type)

■ Inductive D.C 3 wire type (PNP/NPN) ※ M8 (Ø8) is only available with the cable type.

	Size	Appearance	Power supply voltage	Out put	Sensing distance(mm)	Code	Page
Shield	M8		12 - 24 V d.c	NPN (3 wire type)	1.5	UP8RM-1.5N□□	28
	M12				2	UP12RM-2N□□	
	M18				5	UP18RM-5N□□	
					5	UP18RLM-5N□□	
	M30				10	UP30RM-10N□□	29
					10	UP30RLM-10N□□	
None shield	M8		12 - 24 V d.c	NPN (3 wire type)	2	UP8RD-2N□□	28
	M12				4	UP12RD-4N□□	
	M18				8	UP18RD-8N□□	
					8	UP18RLD-8N□□	
	M30				15	UP30RD-15N□□	29
					15	UP30RLD-15N□□	












# Proximity sensor

■ Inductive D.C 3 wire type (PNP/NPN) ※ M8(Ø8) is only available with the cable type

	Size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
Shield	M8		12 - 24 V d.c	PNP (3 wire type)	1.5	UP8RM-1.5P□□	28
	M12				2	UP12RM-2P□□	
	M18				5	UP18RM-5P□□	
					5	UP18RLM-5P□□	
	M30				10	UP30RM-10P□□	29
					10	UP30RLM-10P□□	
None shield	M8		12 - 24 V d.c	PNP (3 wire type)	2	UP8RD-2P□□	28
	M12				4	UP12RD-4P□□	
	M18				8	UP18RD-8P□□	
					8	UP18RLD-8P□□	
	M30				15	UP30RD-15P□□	29
					15	UP30RLD-15P□□	




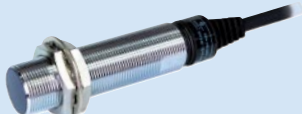










■ Inductive D.C 2 wire type (Polarity / No polarity)









	Size	Appearance	Power supply voltage	Out put	Sensing distance(mm)	Code	Page
Shield	M8		12 - 24 V d.c	2 wire type (N.O)	1.5	UP8RM-1.5□A□	29
	M12				2	UP12RM-2□A□	
	M18				5	UP18RM-5□A□	30
					5	UP18RLM-5□A□	
	M30				10	UP30RM-10□A□	
					10	UP30RLM-10□A□	
None shield	M8		12 - 24 V d.c	2 wire type (N.O)	2	UP8RD-2□A□	29
	M12				4	UP12RD-4□A□	
	M18				8	UP18RD-8□A□	30
					8	UP18RLD-8□A□	
	M30				15	UP30RD-15□A□	
					15	UP30RLD-15□A□	

# Proximity sensor

## ■ Inductive D.C 2 wire type (Polarity / No polarity)

	Size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
Shield	M8		12 – 24 V d.c	2 wire type (N.C)	1.5	UP8RM-1.5□C□	29
	M12				2	UP12RM-2□C□	
	M18				5	UP18RM-5□C□	30
					5	UP18RLM-5□C□	
	M30				10	UP30RM-10□C□	
					10	UP30RLM-10□C□	
None shield	M8		12 – 24 V d.c	2 wire type (N.C)	2	UP8RD-2□C□	29
	M12				4	UP12RD-4□C□	
	M18				8	UP18RD-8□C□	30
					8	UP18RLD-8□C□	
	M30				15	UP30RD-15□C□	
					15	UP30RLD-15□C□	

■ Inductive A.C 2 wire type





	Size	Appearance	Power supply voltage	Out put	Sensing distance(mm)	Code	Page	
Shield	M12		100 – 240 V a.c	2 wire type (N.O)	2	UP12RM-2AA□	31	
	M18				5	UP18RM-5AA□		
					5	UP18RLM-5AA□		
	M30				10	UP30RM-10AA□		32
					10	UP30RLM-10AA□		
	None shield	M12				100 – 240 V a.c		2 wire type (N.O)
M18			8	UP18RD-8AA□				
			8	UP18RLD-8AA□				
M30			15	UP30RD-15AA□	32			
			15	UP30RLD-15AA□				

# Proximity sensor

## ■ Inductive A.C 2 wire type









	Size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page	
Shield	M12		100 – 240 V a.c	2 wire type (N.C)	2	UP12RM-2AC□	31	
	M18				5	UP18RM-5AC□		
					5	UP18RLM-5AC□		
	M30				10	UP30RM-10AC□		32
					10	UP30RLM-10AC□		
	None shield	M12				100 – 240 V a.c		2 wire type (N.C)
M18			8	UP18RD-8AC□				
			8	UP18RLD-8AC□				
M30			15	UP30RD-15AC□	32			
			15	UP30RLD-15AC□				

■ Capacitive D.C 3 wire type (NPN/PNP) ※ Only available with the cable type/Relay connector type

Size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page				
None shield		12 - 24 V d.c	NPN (3 wire type)	8	CUP-18R-8N□□	38				
				8	CUP-18RP-8N□□					
				15	CUP-30R-15N□□					
					15		CUP-30RP-15N□□			
	M18				12 - 24 V d.c		PNP (3 wire type)	8	CUP-18R-8P□□	38
								8	CUP-18RP-8P□□	
M30		15	CUP-30R-15P□□							
			15	CUP-30RP-15P□□						

# Proximity sensor

■ Capacitive D.C 3 wire type (NPN/PNP) ※ Only available with the cable type/Relay connector type

	Size	Appearance	Power supply voltage	Output	Sensing distance(mm)	Code	Page
None shield	M18		20 - 240 V a.c/d.c (Dual usage)	2 wire type (N.O)	8	CUP-18R-8FA□	38
				2 wire type (N.C)	8	CUP-18R-8FC□	
				2 wire type (N.O)	8	CUP-18RP-8FA□	
				2 wire type (N.C)	8	CUP-18RP-8FC□	
	M30			2 wire type (N.O)	15	CUP-30R-15FA□	
				2 wire type (N.C)	15	CUP-30RP-15FC□	
				2 wire type (N.O)	15	CUP-30RP-15FA□	
				2 wire type (N.C)	15	CUP-30RP-15FC□	

## Square type proximity sensor

- Applied the I.C exclusive for C-MOS (World-first)
- Wide range of power supply voltage (5 – 35 V d.c : D.C 3 wire type)
- Internal noise enhanced circuit
- Applied the 2 wire type proximity none polarity



### Suffix code

Model	Code						Information
UP	<input type="checkbox"/>	S-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inductive type proximity sensor
Sensing area size	18						18 X 18 mm
	25						25 X 25 mm
	30						30 X 30 mm
	40						40 X 40 mm
Structure type	S						Square type
Sensing distance	5						5 mm (Only with UP18S-5, UP25S-5)
	8						8 mm (Only with UP18S-8, UP25S-8)
	10						10 mm (Only with UP30S-10)
	12						12 mm (Only with UP25S-12)
	15						15 mm (Only with UP30S-15)
	20						20 mm (Only with UP40S-20)
Power and output type	N						D.C NPN output
	P						D.C PNP output
	A						A.C 2 wire type (But UP18S is excluded)
	T						D.C 2 wire type (Polarity)
	U						D.C 2 wire type (No polarity)
Output state	A						Normal Open (N.O)
	C						Normal Close (N.C)
Sensing direction	*						No indication (Detect front side)
	U						Detect upper side (Only available with the square type UP18S)
Connection structure	*						No indication (Cable type)
	CR						Relay connector type

# Proximity sensor

## Specification

### ■ Inductive D.C 3 wire type

Model	NPN	UP18S-5N□□	UP18S-8N□□	UP25S-5N□□	UP25S-8N□□	UP25S-12N□□
	PNP	UP18S-5P□□	UP18S-8P□□	UP25S-5P□□	UP25S-8P□□	UP25S-12P□□
	Size	Side length 18			Side length 25	
Standard sensing object(mm)		Iron 18X18X1	Iron 25X25X1	Iron 25X25X1	Iron 30X30X1	Iron 35X35X1
Sensing distance		5 mm	8 mm	5 mm	8 mm	12 mm
Setting distance		0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 9.6 mm
Hysteresis		Less than 10% of sensing distance				
Response frequency		800 Hz	800 Hz	350 Hz	250 Hz	200 Hz
Power supply voltage		12 - 24 V d.c (Usable voltage range 5 - 35 V d.c)				
Control output	Open/Close capacitance	200 mA max (Resistive load)				
	Residual voltage	Max 1.5 V				
Current consumption		Max 6 mA				
Operation indication		Red LED				
Protective circuit		Power reversely connected protective circuit, surge protective circuit and over current protective circuit are built in.				
Degree of protection		IP67(IEC standard)				
Connection structure		Cable type (standard cable length 2 m), relay connector type				
Material		Case : PBT resin, cable holder : Polyester elastomer				
Weight	Cable type	approx. 60g	approx. 60g	approx. 80g	approx. 80g	approx. 80g
	Relay connector type	approx. 20g	approx. 20g	approx. 40g	approx. 40g	approx. 40g

### ■ Inductive D.C 3 wire type

Model	NPN	UP30S-10N□□	UP30S-15N□□	UP40S-20N□□
	PNP	UP30S-10P□□	UP30S-15P□□	UP40S-20P□□
	Size	Side length 30		Side length 40
Standard sensing object(mm)		Iron 30 X 30 X 1	Iron 45 X 45 X 1	Iron 60 X 60 X 1
Sensing distance		10 mm	15 mm	20 mm
Setting distance		0 ~ 8 mm	0 ~ 12 mm	0 ~ 16 mm
Hysteresis		Less than 10% of sensing distance		
Response frequency		250 Hz	100 Hz	100 Hz
Power supply voltage		12 - 24 V d.c (Usable voltage range 5 - 35 V d.c)		
Control output	Open/Close capacitance	200 mA max (Resistive load)		
	Residual voltage	Max 1.5 V		
Current consumption		Max 6 mA		
Operation indication		Red LED		
Protective circuit		Power reversely connected protective circuit, surge protective circuit and over current protective circuit are built in.		
Degree of protection		IP67(IEC standard)		
Connection structure		Cable type (standard cable length 2 m), relay connector type		
Material		Case : PBT resin, cable holder : Polyester elastomer		
Weight	Cable type	approx. 90g	approx. 90g	approx. 110g
	Relay connector type	approx. 60g	approx. 60g	approx. 80g



■ Inductive D.C 2 wire type

Code	Polarity	UP18S-5T□□	UP18S-8T□□	UP25S-5T□□	UP25S-8T□□	UP25S-12T□□
	No polarity	UP18S-5U□□	UP18S-8U□□	UP25S-5U□□	UP25S-8U□□	UP25S-12U□□
	Size	Side length 18			Side length 25	
Standard sensing object(mm)		Iron 18 X 18 X 1	Iron 25 X 25 X 1	Iron 25 X 25 X 1	Iron 25 X 25 X 1	Iron 35 X 35 X 1
Sensing distance		5 mm	8 mm	5 mm	8 mm	12 mm
Setting distance		0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 9.6 mm
Hysteresis		Less than 10% of sensing distance				
Response frequency		500 Hz	300 Hz	350 Hz	250 Hz	200 Hz
Power supply voltage		12 - 24 V d.c (Usable voltage range 10 - 30 V d.c)				
Control output	Open/Close capacitance	100 mA max (Resistive load)				
	Residual voltage	T (Polarity): max 3.5V, U (No polarity): max 5V				
Leakage current		Max 1 mA				
Operation indication		Red LED				
Protective circuit		Power reversely connected protective circuit, surge protective circuit and over current protective circuit are built in.				
Degree of protection		IP67(IEC standard)				
Connection structure		Cable type (standard cable length 2 m), relay connector type				
Material		Case : PBT resin, cable holder : Polyester elastomer				
Weight	Cable type	approx. 60g	approx. 60g	approx. 80g	approx. 80g	approx. 80g
	Relay connector type	approx. 20g	approx. 20g	approx. 40g	approx. 40g	approx. 40g

■ Inductive D.C 2 wire type

Code	Polarity	UP30S-10T□□	UP30S-15T□□	UP40S-20T□□
	No polarity	UP30S-10U□□	UP30S-15U□□	UP40S-20U□□
	Size	Side length 30		Side length 40
Standard sensing object(mm)		Iron 30 X 30 X 1	Iron 45 X 45 X 1	Iron 60 X 60 X 1
Sensing distance		10 mm	15 mm	20 mm
Setting distance		0 ~ 8 mm	0 ~ 12 mm	0 ~ 16 mm
Hysteresis		Less than 10% of sensing distance		
Response frequency		250 Hz	100 Hz	100 Hz
Power supply voltage		12 - 24 V d.c (Usable voltage range 10 - 30 V d.c)		
Control output	Open/Close capacitance	100 mA max (Resistive load)		
	Residual voltage	T (Polarity): max 3.5V, U (No polarity): max 5V		
Leakage current		Max 1 mA		
Operation indication		Red LED		
Protective circuit		Power reversely connected protective circuit, surge protective circuit and over current protective circuit are built in.		
Degree of protection		IP67(IEC standard)		
Connection structure		Cable type (standard cable length 2 m), relay connector type		
Material		Case : PBT resin, cable holder : Polyester elastomer		
Weight	Cable type	approx. 90g	approx. 90g	approx. 110g
	Relay connector type	approx. 60g	approx. 60g	approx. 80g

# Proximity sensor

## ■ Inductive A.C 2 wire type

Model	AC	UP25S-5A□□	UP25S-8A□□	UP30S-10A□□
	Size	Side length 25		Side length 30
Standard sensing object(mm)		Iron 25 X 25 X 1	Iron 25 X 25 X 1	Iron 30 X 30 X 1
Sensing distance		5 mm	8 mm	10 mm
Setting distance		0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 8 mm
Hysteresis		Less than 10% of sensing distance		
Response frequency		20 Hz		
Power supply voltage		100 - 240 V d.c (Usable voltage range 90 - 250 V d.c)		
Control output	Open/Close capacitance	200 mA max (Resistive load)		
	Residual voltage	Max 10 V a.c		
Leakage current		Max 2.2 mA		
Operation indication		Red LED		
Protective circuit		surge protective circuit are built in.		
Degree of protection		IP67(IEC standard)		
Connection structure		Cable type (standard cable length 2 m), relay connector type		
Material		Case : PBT resin, cable holder : Polyester elastomer		
Weight	Cable type	approx. 80g	approx. 80g	approx. 90g
	Relay connector type	approx. 40g	approx. 40g	approx. 60g

## ■ Inductive A.C 2 wire type

Model	For A.C	UP30S-15A□□	UP40S-20A□□
	Size	Side length 30	Side length 40
Standard sensing object(mm)		Iron 45 X 45 X 1	Iron 60 X 60 X 1
Sensing distance		15 mm	20 mm
Setting distance		0 ~ 12 mm	0 ~ 16 mm
Hysteresis		Less than 10% of sensing distance	
Response frequency		20 Hz	
Power supply voltage		100 - 240 V a.c (Usable voltage range 90 V - 250 V a.c)	
Control output	Open/Close capacitance	200 mA max (Resistive load)	
	Residual voltage	Max 10 V a.c	
Leakage current		Max 2.2 mA	
Operation indication		Red LED	
Protective circuit		surge protective circuit are built in.	
Degree of protection		IP67(IEC standard)	
Connection structure		Cable type (standard cable length 2 m), relay connector type	
Material		Case : PBT resin, cable holder : Polyester elastomer	
Weight	Cable type	approx. 90g	approx. 110g
	Relay connector type	approx. 60g	approx. 80g

## Environment

Ambient temperature	-25 ~ 70 °C (Less than ±10% of sensing distance at temperature 20 °C)
Ambient humidity	35 ~ 85 %RH
Insulation resistance	min 50 M $\Omega$ (500V d.c mega standard)
Dielectric strength	For 1 min at 2000 V a.c 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 and operation chart

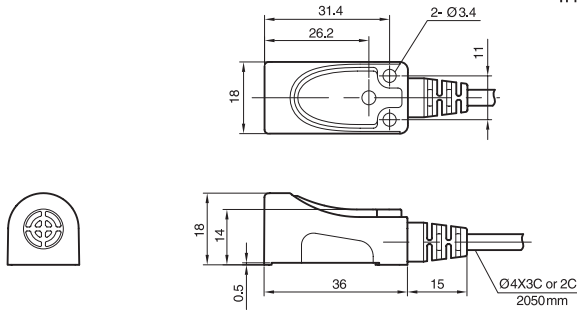
Type		Connection method		Output state																								
		Cable type	Relay connector type																									
D.C open / close	NPN			<table border="0"> <tr> <td>Sensing object</td> <td>Yes</td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td></td> <td>No</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td>[Brown - Black]</td> <td>Return</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td></td> <td>OFF</td> <td>[High]</td> <td>[Low]</td> </tr> </table>	Sensing object	Yes	N.O	N.C		No	[High]	[Low]	LOAD	Run	[High]	[Low]	[Brown - Black]	Return	[High]	[Low]	Operation indicator	ON	[High]	[Low]		OFF	[High]	[Low]
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Operation indicator	ON	[High]	[Low]																									
	OFF	[High]	[Low]																									

# Proximity sensor

## Dimension (Unit : mm)

### ■ Cable type

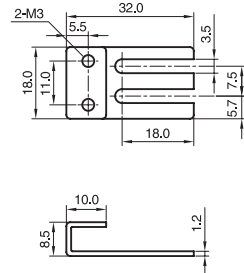
UP18S-5□□ / UP18S-8□□



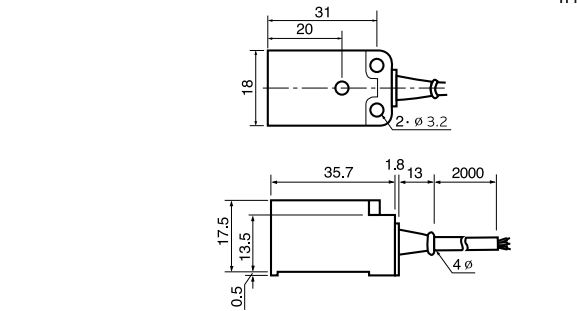
• Installation hole panel cutout



• supporter



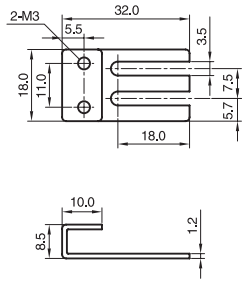
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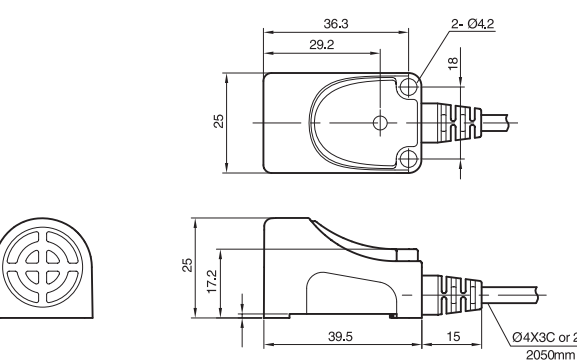
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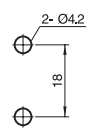
• supporter



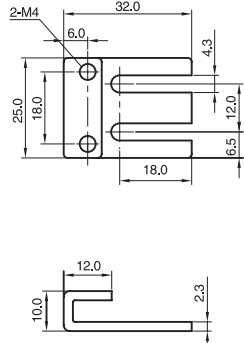
UP25S-5□□ / UP25S-8□□ / UP25S-12□□



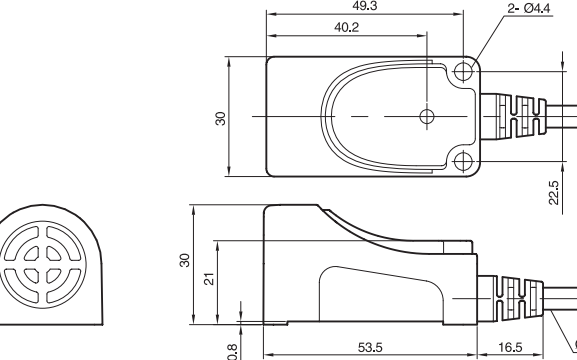
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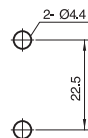
• supporter



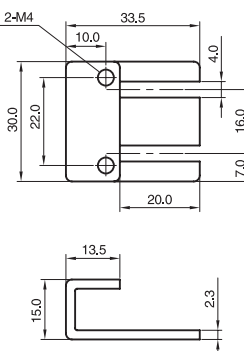
UP30S-10□□/UP30S-15□□



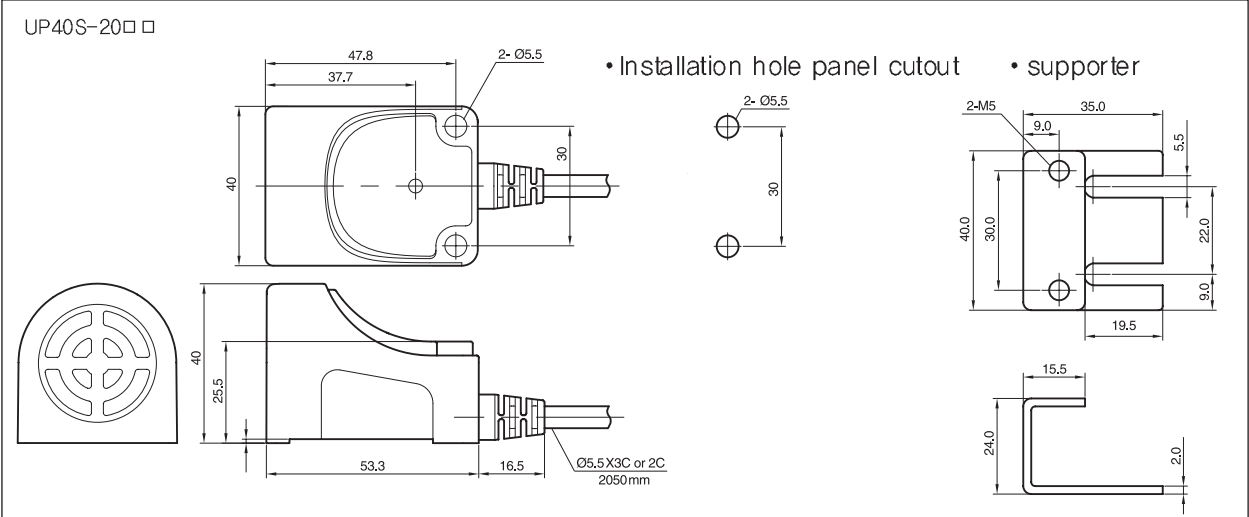
• Installation hole panel cutout



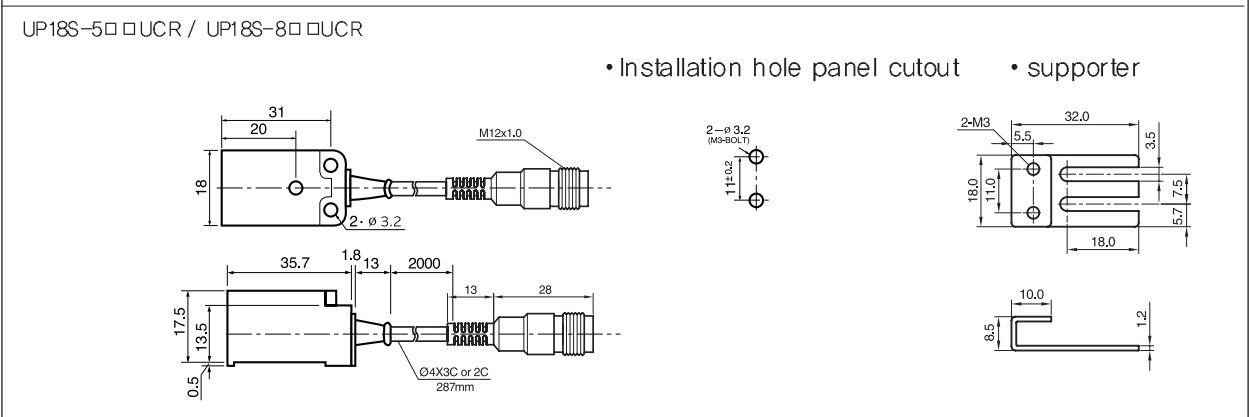
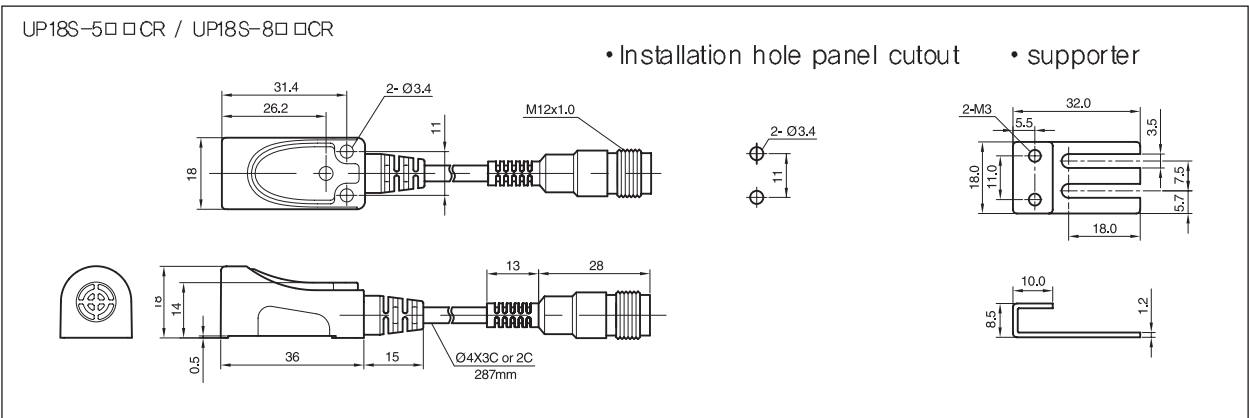
• supporter



■ Cable type



■ Relay connector type

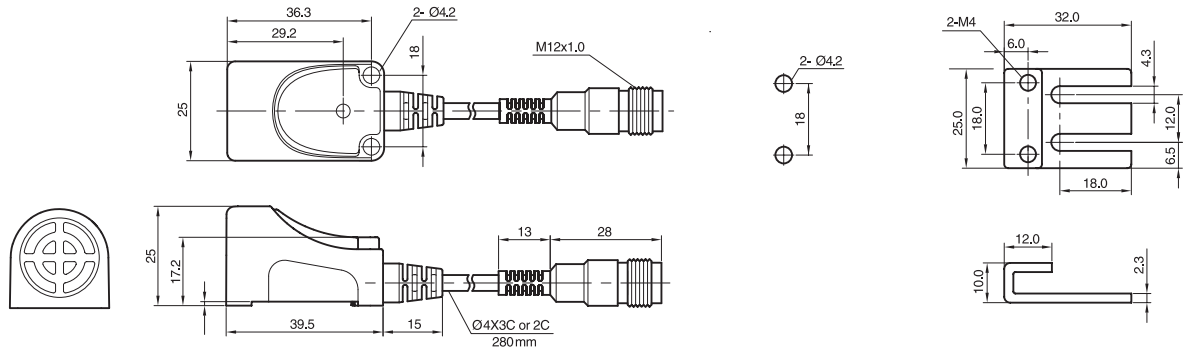


# Proximity sensor

## ■ Relay connector type

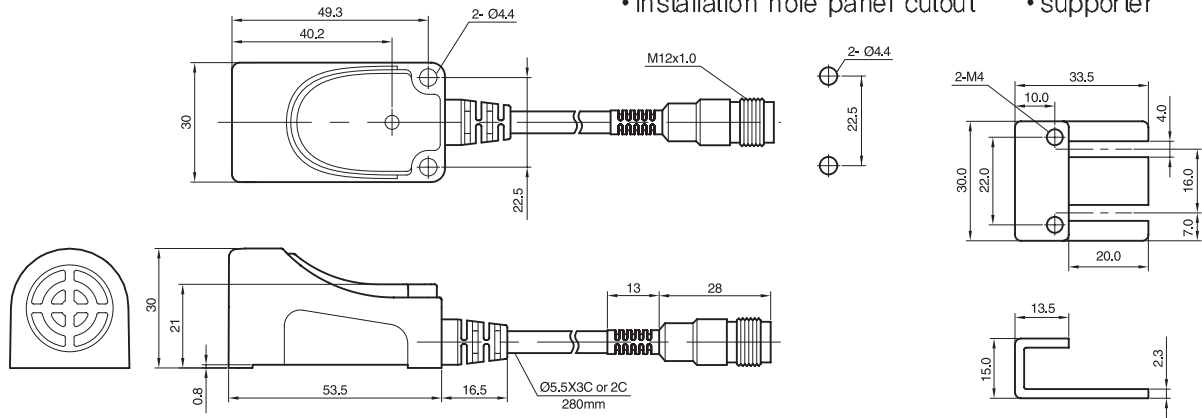
UP25S-5□□CR / UP25S-8□□CR / UP25S-12□□CR

• Installation hole panel cutout • supporter



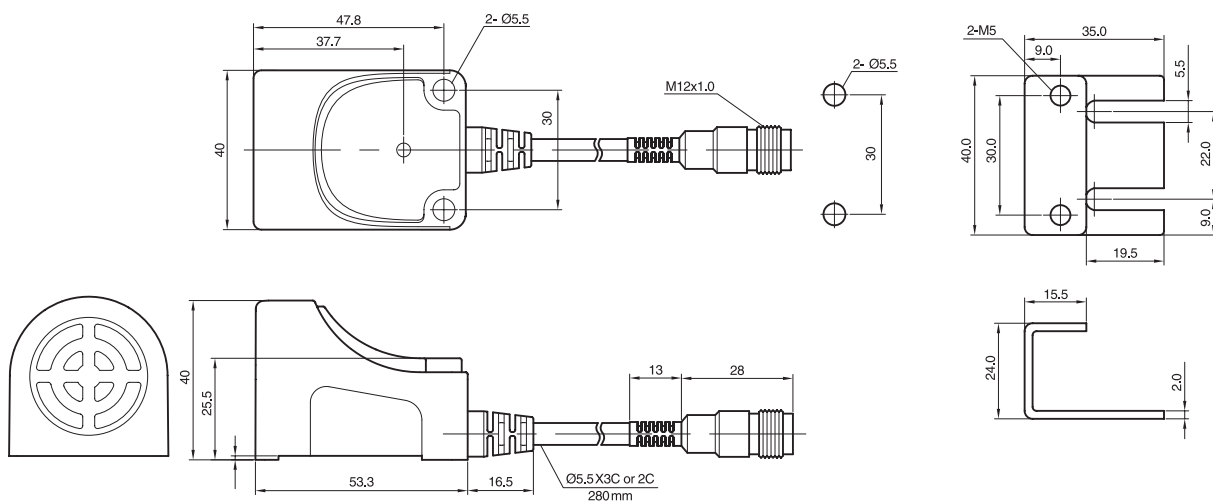
UP30S-10□□CR / UP30S-15□□CR

• Installation hole panel cutout • supporter



UP40S-20□□CR

• Installation hole panel cutout • supporter



## Flat type proximity sensor

- Applied the I.C exclusive for C-MOS (World-first)
  - Wide range of power supply voltage (5 – 35 V d.c : D.C 3 wire type)
  - Internal noise enhanced circuit
  - Applied the 2 wire type proximity none polarity
  - Able to install at metal surface directly
- Sensing distance 8 m, thickness 10.5 mm Flat type



### Suffix code

Model	Code					Information
UP	25	F-	8	<input type="checkbox"/>	<input type="checkbox"/>	Inductive type proximity sensor
Sensing area size	25					Please refer to the dimension (25 X 49 X 10 mm)
Structure type		F				Flat type
Sensing distance			8			8 mm
Power and output type				N		D.C NPN output
				P		D.C PNP output
				A		A.C 2 wire type
				T		D.C 2 wire type (Polarity )
				U		D.C 2 wire type (No polarity)
Output state				A		Normal Open (N.O)
				C		Normal Close (N.C)
Connection structure				*		No indication (Cable type)
				CR		Relay connector

# Proximity sensor

## Specification

### ■ Inductive D.C 3 wire type/2 wire type

Model	D.C 3 wire type		D.C 2 wire type	
	NPN	UP25F-8N□□	Polarity	UP25F-8T□□
	PNP	UP25F-8P□□	No polarity	UP25F-8U□□
Size	25 X 49 Flat type		25 X 49 Flat type	
Standard sensing object(mm)	Iron 25 X 25 X 1			
Sensing distance	8 mm			
Setting distance	0 ~ 6.4 mm			
Hysteresis	Less than 10% of sensing distance			
Response frequency	200 Hz			
Power supply voltage	12 - 24 V d.c (Usable voltage range 5 - 35 V d.c)		12 - 24 V d.c (Usable voltage range 10 - 30 V d.c)	
Control output	Open/Close capacitance	200 mA max (Resistive load)		100 mA max (Resistive load)
	Residual voltage	Max 1.5V		Polarity : max 3.5 V, No polarity : max 5 V
Current consumption	Max 6 mA		-	
Leakage current	-		max 1 mA	
Operation indication	Red LED			
Protective circuit	Power reversely connected protective circuit, surge protective circuit and over current protective circuit are built in.			
Degree of protection	IP67 (IEC standard)			
Connection structure	Cable type (standard cable length 2m), relay connector type			
Material	Case : PBT resin, cable holder : Polyester elastomer			
Weight	Cable type	approx. 60g		approx. 60g
	Relay connector type	approx. 20g		approx. 20g



■ Inductive A.C 2 wire type

Model		UP25F-8A□□
Standard sensing object(mm)		Iron 25 X 25 X 1
Sensing distance		8 mm
Setting distance		0 ~ 6.4 mm
Hysteresis		Less than 10% of sensing distance
Response frequency		20 Hz
Power supply voltage		100 - 240 V a.c (Usable voltage range 90 - 250 V a.c)
Control output	Open/Close capacitance	200 mA max (Resistive load)
	Residual voltage	Max 10 V a.c
Leakage current		Max 2.2 mA
Operation indication		Red LED
Protective circuit		Surge protective circuit built in.
Degree of protection		IP67 (IEC standard)
Connection structure		Cable type (standard cable length 2 m), relay connector type
Material		Case : PBT resin, cable holder : Polyester elastomer
Weight	Cable type	approx. 60g
	Relay connector type	approx. 20g

**Environment**

Ambient temperature	-25 ~ 70 °C (Less than ±10 % of sensing distance at temperature 20 °C)
Ambient humidity	35 ~ 85 %RH
Insulation resistance	min 50 M $\Omega$ (500V d.c mega standard)
Dielectric strength	For 1 min at 2000 V a.c 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

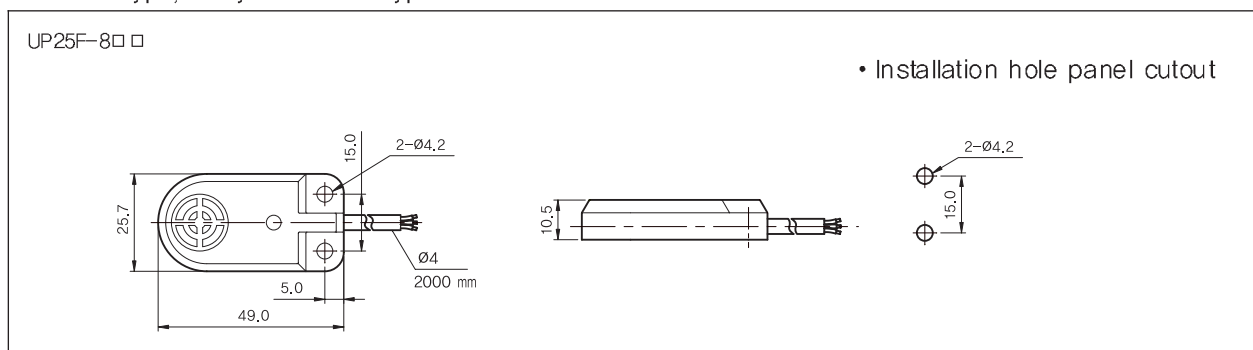
# Proximity sensor

## Connection diagram and operation chart

Type		Connection method		Output state																								
		Cable type	Relay connector type																									
D.C. open / close	NPN			<table border="1"> <tr> <td>Sensing object</td> <td>Yes</td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td></td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Return</td> <td></td> <td></td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td></td> <td></td> </tr> <tr> <td></td> <td>OFF</td> <td></td> <td></td> </tr> </table>	Sensing object	Yes	N.O	N.C		No			LOAD	Run				Return			Operation indicator	ON				OFF		
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	LOAD	Run																										
	Return																											
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PNP			<table border="1"> <tr> <td>Sensing object</td> <td>Yes</td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td></td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Return</td> <td></td> <td></td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td></td> <td></td> </tr> <tr> <td></td> <td>OFF</td> <td></td> <td></td> </tr> </table>	Sensing object	Yes	N.O	N.C		No			LOAD	Run				Return			Operation indicator	ON				OFF			
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	No																											
LOAD	Run																											
	Return																											
Operation indicator	ON																											
	OFF																											

## Dimension (unit : mm)

### ■ Cable type, relay connector type



## Round type proximity sensor

- Applied the I.C exclusive for C-MOS (World-first)
- Wide range of power supply voltage (5 – 35 V d.c : D.C 3 wire type)
- Internal noise enhanced circuit
- Applied the 2 wire type proximity none polarity



### Suffix code

Model	Code						Information
UP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inductive type proximity sensor
Sensing area size	8						M8
	12						M12
	18						M18
	30						M30
Structure type	RM						Round type Shield
	RD						Round type None Shield
	RLM						Long round type Shield (M8 and M12 are excluded)
	RLD						Long round type None Shield (M8 and m12 are excluded)
Sensing distance	*						Please refer to the sensing distance of each specification (unit : mm)
Power and output type	N						D.C NPN output
	P						D.C PNP output
	A						A.C 2 wire type
	T						D.C 2 wire type (Polarity )
	U						D.C 2 wire type (No polarity) ※ But M8 is excluded
Output state	A						Normal Open (N.O)
	C						Normal Close (N.C)
Connection structure	*						No indication (Cable type)
	CR						Relay connector type
	C						Connector type

※ M8 (Ø8) is only available with the cable type

# Proximity sensor

## Specification

### ■ Inductive D.C 3 wire type

Model	NPN	UP8RM-1.5N□□	UP8RD-2N□□	UP12RM-2N□□	UP12RD-4N□□
	PNP	UP8RM-1.5P□□	UP8RD-2P□□	UP12RM-2P□□	UP12RD-4P□□
	Size	M8		M12	
Shield	Shield	None shield		Shield	None shield
Standard sensing object(mm)	Iron 8 X 8 X 1			Iron 12 X 12 X 1	
Sensing distance	1.5 mm	2 mm		2 mm	4 mm
Setting distance	0 ~ 1.2 mm	0 ~ 1.6 mm		0 ~ 1.6 mm	0 ~ 3.2 mm
Hysteresis	Less than 10 % of sensing distance				
Response frequency	800 Hz			800 Hz	400 Hz
Power supply voltage	12 - 24 V d.c (Usable voltage range 5 - 35 V d.c)				
Control output	Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 1.5V				
Current consumption	Max 6 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 2 m), relay connector type, connector type				
Material	Case: stainless Sensing surface: PBT, Cable holder: Polyester elastomer Case: brass (chrome plating), Sensing surface: PBT, Cable holder: Polyester elastomer				
Weight	Cable type	approx. 60g	approx. 60g	approx. 70g	approx. 70g
	Relay connector type	None	None	approx. 30g	approx. 30g
	Connector type	None	None	approx. 30g	approx. 30g

### ■ Inductive D.C 3 wire type

Model	NPN	UP18RM-5N□□	UP18RD-8N□□	UP18RLM-5N□□	UP18RLD-8N□□
	PNP	UP18RM-5P□□	UP18RD-8P□□	UP18RLM-5P□□	UP18RLD-8P□□
	Size	M18		M18	
Shield	Shield	None shield		Shield	None shield
Standard sensing object(mm)	Iron 18 X 18 X 1	Iron 25 X 25 X 1		Iron 18 X 18 X 1	Iron 25 X 25 X 1
Sensing distance	5 mm	8 mm		5 mm	8 mm
Setting distance	0 ~ 4 mm	0 ~ 6.4 mm		0 ~ 4 mm	0 ~ 6.4 mm
Hysteresis	Less than 10% of sensing distance				
Response frequency	350 Hz	200 Hz		350 Hz	200 Hz
Power supply voltage	12 - 24 V d.c (Usable voltage range 5 - 35 V d.c)				
Control output	Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 1.5V				
Current consumption	Max 6 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 2 m), relay connector type, connector type				
Material	Case: brass (chrome plating), Sensing surface : PBT, Cable holder: Polyester elastomer				
Weight	Cable type	approx. 120g	approx. 120g	approx. 140g	approx. 140g
	Relay connector type	approx. 80g	approx. 80g	approx. 100g	approx. 100g
	Connector type	approx. 60g	approx. 60g	approx. 80g	approx. 80g

■ Inductive D.C 3 wire type

Model	NPN	UP30RM-10N□□	UP30RD-15N□□	UP30RLM-10N□□	UP30RLD-15N□□
	PNP	UP30RM-10P□□	UP30RD-15P□□	UP30RLM-10P□□	UP30RLD-15P□□
	Size	M30		M30	
Shield	Shield	Shield	None shield	Shield	None shield
Standard sensing object(mm)	Iron 30 X 30 X 1		Iron 45 X 45 X 1	Iron 30 X 30 X 1	
Sensing distance	10 mm		15 mm	10 mm	
Setting distance	0 ~ 8 mm		0 ~ 12 mm	0 ~ 8 mm	
Hysteresis	Less than 10% of sensing distance				
Response frequency	250 Hz		100 Hz	250 Hz	
Power supply voltage	12 - 24 V d.c (Usable voltage range 5 - 35 V d.c)				
Control output	Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 1.5V				
Current consumption	Max 6 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 2 m), relay connector type, connector type				
Material	Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer				
Weight	Cable type	approx. 170g	approx. 170g	approx. 220g	approx. 220g
	Relay connector type	approx. 130g	approx. 130g	approx. 180g	approx. 180g
	Connector type	approx. 150g	approx. 150g	approx. 200g	approx. 200g

■ Inductive D.C 2 wire type (Polarity / No polarity)

Model	Polar	UP8RM-1.5T□□	UP8RD-2T□□	UP12RM-2T□□	UP12RD-4T□□
	No polarity	UP8RM-1.5U□□	UP8RD-2U□□	UP12RM-2U□□	UP12RD-4U□□
	Size	M8		M12	
Shield	Shield	Shield	None shield	Shield	None shield
Standard sensing object(mm)	Iron 8 X 8 X 1			Iron 12 X 12 X 1	
Sensing distance	1.5 mm		2 mm	2 mm	
Setting distance	0 ~ 1.2 mm		0 ~ 1.6 mm	0 ~ 1.6 mm	
Hysteresis	Less than 10% of sensing distance				
Response frequency	800 Hz			800 Hz	
Power supply voltage	12 - 24 V d.c (Usable voltage range 10 - 30 V d.c)				
Control output	Open/Close capacitance : 100 mA max (Resistive load), Residual voltage : T (Polarity) : max 3.5 V, U (No polarity) : max 5 V				
Leakage current	Max 1mA				
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	Case: stainless Sensing surface: PBT, Cable holder: Polyester elastomer			Case: brass (chrome plating), Sensing surface: PBT, Cable holder: Polyester elastomer	
Weight	Cable type	approx. 60g		approx. 70g	
	Relay connector type	None		approx. 30g	
	Connector type	None		approx. 30g	

# Proximity sensor

## ■ Inductive D.C 2 wire type

Model	Polarity	UP18RM-5T□□	UP18RD-8T□□	UP18RLM-5T□□	UP18RLD-8T□□
	No polarity	UP18RM-5U□□	UP18RD-8U□□	UP18RLM-5U□□	UP18RLD-8U□□
	Size	M18		M18	
Shield	Shield	None shield	Shield	None shield	
Standard sensing object(mm)	Iron 18 X 18 X 1	Iron 25 X 25 X 1	Iron 18 X 18 X 1	Iron 25 X 25 X 1	
Sensing distance	5 mm	8 mm	5 mm	8 mm	
Setting distance	0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4 mm	0 ~ 6.4 mm	
Hysteresis	Less than 10 % of sensing distance				
Response frequency	800 Hz	400 Hz	800 Hz	400 Hz	
Power supply voltage	12 - 24 V d.c (Usable voltage range 10 - 30 V d.c)				
Control output	Open/Close capacitance : 100 mA max (Resistive load, Residual voltage : T (Polarity) : max 3.5 V, U (No polarity) : max 5 V				
Leakage current	Max 1mA				
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 2 m), relay connector type, connector type				
Material	Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer				
Weight	Cable type	approx. 120g	approx. 120g	approx. 140g	approx. 140g
	Relay connector type	approx. 80g	approx. 80g	approx. 100g	approx. 100g
	Connector type	approx. 60g	approx. 60g	approx. 80g	approx. 80g

## ■ Inductive D.C 2 wire type

Model	Polarity	UP30RM-10T□□	UP30RD-15T□□	UP30RLM-10T□□	UP30RLD-15T□□
	No polarity	UP30RM-10U□□	UP30RD-15U□□	UP30RLM-10U□□	UP30RLD-15U□□
	Size	M30		M30	
Shield	Shield	None shield	Shield	None shield	
Standard sensing object(mm)	Iron 30 X 30 X 1	Iron 45 X 45 X 1	Iron 30 X 30 X 1	Iron 45 X 45 X 1	
Sensing distance	10 mm	15 mm	10 mm	15 mm	
Setting distance	0 ~ 8 mm	0 ~ 12 mm	0 ~ 8 mm	0 ~ 12 mm	
Hysteresis	Less than 10 % of sensing distance				
Response frequency	250 Hz	100 Hz	250 Hz	100 Hz	
Power supply voltage	12 - 24 V d.c (Usable voltage range 10 - 30 V d.c)				
Control output	Open/Close capacitance : 100 mA max (Resistive load, Residual voltage : T (Polarity) : max 3.5 V, U (No polarity) : max 5 V				
Leakage current	Max 1mA				
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 2 m), relay connector type, connector type				
Material	Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer				
Weight	Cable type	approx. 170g		approx. 220g	
	Relay connector type	approx. 130g		approx. 180g	
	Connector type	approx. 150g		approx. 200g	

■ Inductive A.C 2 wire type

Model	For A.C	UP12RM-2A□□	UP12RD-4A□□
	Size	M12	M12
Shield		Shield	None shield
Standard sensing object(mm)		Iron 12 X 12 X 1	
Sensing distance		2 mm	4 mm
Setting distance		0 ~ 1.6 mm	0 ~ 3.2 mm
Hysteresis		Less than 10% of sensing distance	
Response frequency		20 Hz	
Power supply voltage		100 - 240 V a.c (Usable voltage range 90 - 250 V a.c)	
Control output		Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 10 V	
Leakage current		Max 2.2mA	
Operation indication		Red LED	
Protective circuit		Surge protective circuit built in.	
Connection structure		Cable type (standard cable length 2m), relay connector type, connector type	
Material		Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer	
Weight	Cable type	approx. 70g	approx. 70g
	Relay connector type	approx. 30g	approx. 30g
	Connector type	approx. 30g	approx. 30g

■ Inductive A.C 2 wire type

Model	For A.C	UP18RM-5A□□	UP18RD-8A□□	UP18RLM-5A□□	UP18RLD-8A□□
	Size	M18		M18	
Shield		Shield	None shield	Shield	None shield
Standard sensing object(mm)		Iron 18 X 18 X 1	Iron 25 X 25 X 1	Iron 18 X 18 X 1	Iron 25 X 25 X 1
Sensing distance		5 mm	8 mm	5 mm	8 mm
Setting distance		0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4 mm	0 ~ 6.4 mm
Hysteresis		Less than 10% of sensing distance			
Response frequency		20 Hz			
Power supply voltage		100 - 240 V a.c (Usable voltage range 90 - 250 V a.c)			
Control output		Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 10 V			
Leakage current		Max 2.2mA			
Operation indication		Red LED			
Protective circuit		Surge protective circuit built in.			
Connection structure		Cable type (standard cable length 2m), relay connector type, connector type			
Material		Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer			
Weight	Cable type	approx. 120g		approx. 140g	
	Relay connector type	approx. 80g		approx. 100g	
	Connector type	approx. 60g		approx. 80g	

# Proximity sensor

## ■ Inductive A.C 2 wire type

Model	For A.C	UP30RM-10A □□	UP30RD-15A □□	UP30RLM-10A □□	UP30RLD-15A □□
	Size	M30		M30	
Shield		Shield	None shield	Shield	None shield
Standard sensing object(mm)		Iron 30 X 30 X 1	Iron 45 X 45 X 1	Iron 30 X 30 X 1	Iron 45 X 45 X 1
Sensing distance		10 mm	15 mm	10 mm	15 mm
Setting distance		0 ~ 8 mm	0 ~ 12 mm	0 ~ 8 mm	0 ~ 12 mm
Hysteresis		Less than 10% of sensing distance			
Response frequency		20 Hz			
Power supply voltage		100 – 240 V a.c (Usable voltage range 90 – 250 V a.c)			
Control output		Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 10 V			
Leakage current		Max 2.2mA			
Operation indication		Red LED			
Protective circuit		Surge protective circuit built in.			
Connection structure		Cable type (standard cable length 2m), relay connector type, connector type			
Material		Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer			
Weight	Cable type	approx. 170g	approx. 170g	approx. 220g	approx. 220g
	Relay connector type	approx. 130g	approx. 130g	approx. 180g	approx. 180g
	Connector type	approx. 150g	approx. 150g	approx. 200g	approx. 200g

## 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	min 50 M $\Omega$ (500 V d.c mega standard)
Dielectric strength	For 1 min at 2000 V a.c 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 and operation chart

Type		Connection method		Output state																												
		Cable type	Relay connector type																													
D.C. open / close	N P N			<table border="0"> <tr> <td></td> <td></td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>Sensing object</td> <td>Yes</td> <td></td> <td></td> </tr> <tr> <td></td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Return</td> <td></td> <td></td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td></td> <td></td> </tr> <tr> <td></td> <td>OFF</td> <td></td> <td></td> </tr> </table>			N.O	N.C	Sensing object	Yes				No			LOAD	Run				Return			Operation indicator	ON				OFF		
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P N P			<table border="0"> <tr> <td></td> <td></td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>Sensing object</td> <td>Yes</td> <td></td> <td></td> </tr> <tr> <td></td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Return</td> <td></td> <td></td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td></td> <td></td> </tr> <tr> <td></td> <td>OFF</td> <td></td> <td></td> </tr> </table>			N.O	N.C	Sensing object	Yes				No			LOAD	Run				Return			Operation indicator	ON				OFF			
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	2 wire type polarity none			<table border="0"> <tr> <td></td> <td></td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>Sensing object</td> <td>Yes</td> <td></td> <td></td> </tr> <tr> <td></td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Return</td> <td></td> <td></td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td></td> <td></td> </tr> <tr> <td></td> <td>OFF</td> <td></td> <td></td> </tr> </table>			N.O	N.C	Sensing object	Yes				No			LOAD	Run				Return			Operation indicator	ON				OFF		
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A.C open/ close				<table border="0"> <tr> <td></td> <td></td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>Sensing object</td> <td>Yes</td> <td></td> <td></td> </tr> <tr> <td></td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Return</td> <td></td> <td></td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td></td> <td></td> </tr> <tr> <td></td> <td>OFF</td> <td></td> <td></td> </tr> </table>			N.O	N.C	Sensing object	Yes				No			LOAD	Run				Return			Operation indicator	ON				OFF		
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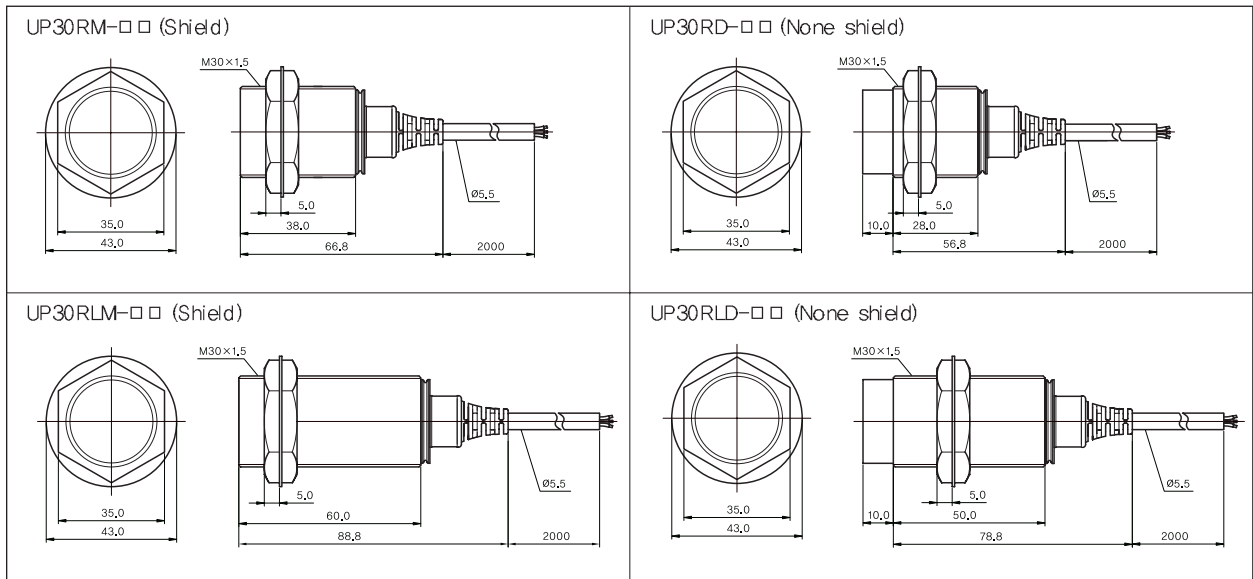
# Proximity sensor

## Dimension (Unit : mm)

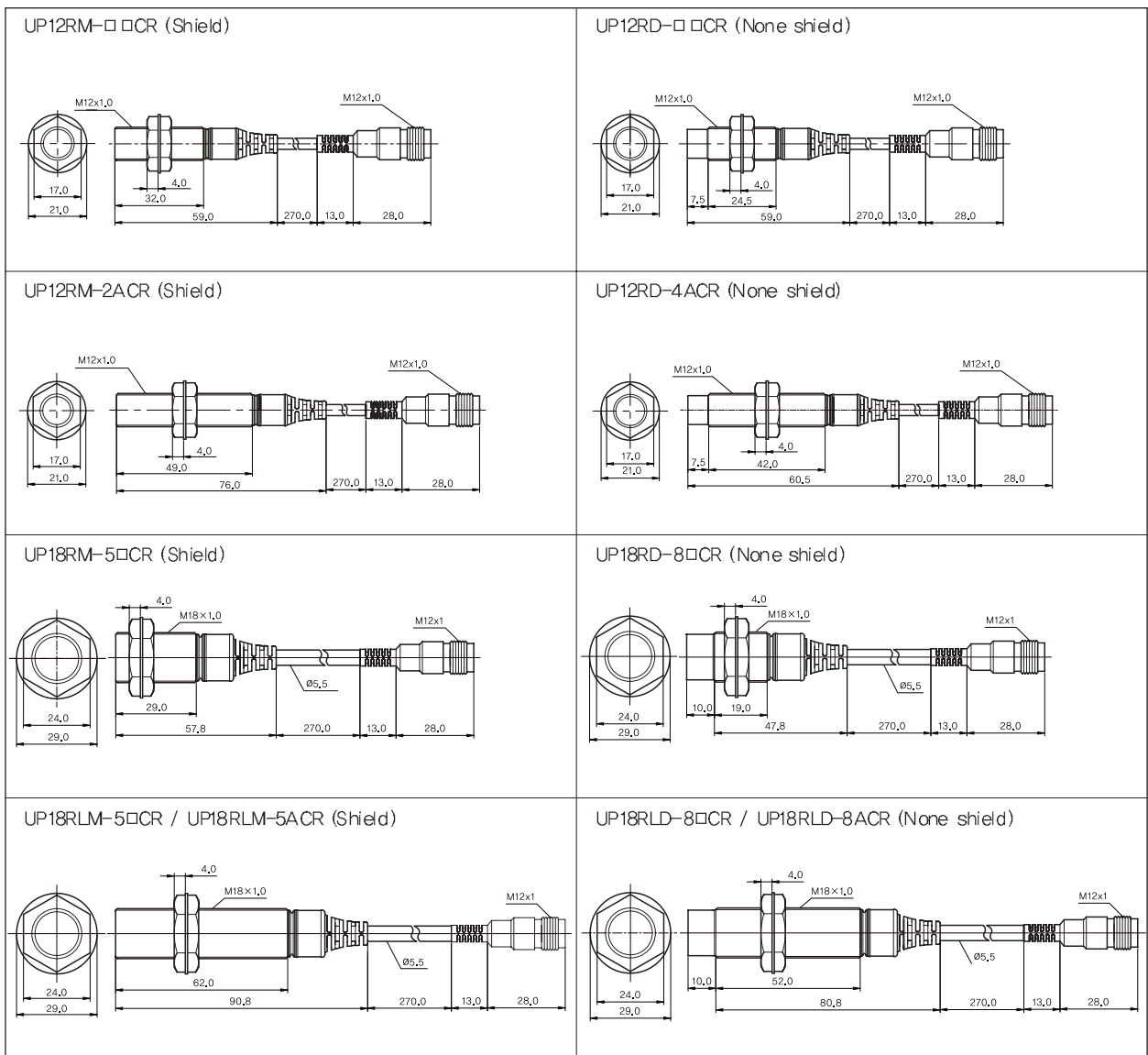
### ■ Cable type

<p>UP8RM-□□ (Shield)</p>	<p>UP8RD-□□ (None shield)</p>
<p>UP12RM-□□ (Shield)</p>	<p>UP12RD-□□ (None shield)</p>
<p>UP12RM-2A (Shield)</p>	<p>UP12RD-4A (None shield)</p>
<p>UP18RM-5□ (Shield)</p>	<p>UP18RD-8□ (None shield)</p>
<p>UP18RLM-5□ / UP18RLM-5A (Shield)</p>	<p>UP18RLD-8□ / UP18RLD-8A (None shield)</p>
<p>UP18RM-5A (Shield)</p>	<p>UP18RD-8A (None shield)</p>

■ Cable type



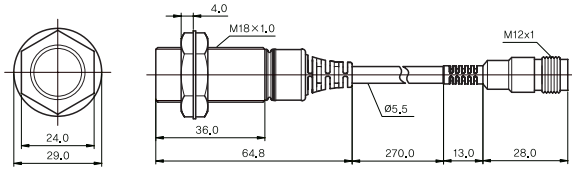
■ Relay connector type



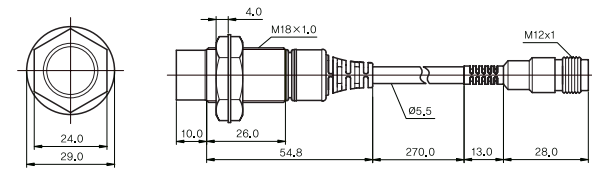
# Proximity sensor

## ■ Relay connector type

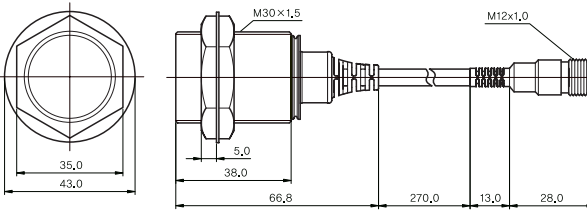
UP18RM-5ACR (Shield)



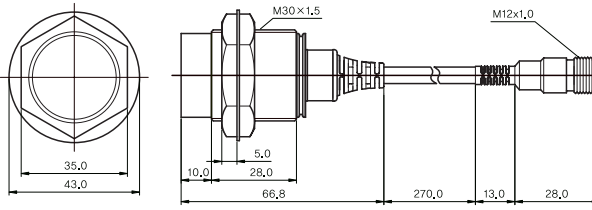
UP18RD-8ACR (None shield)



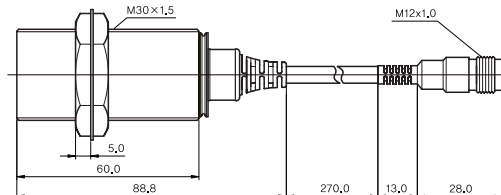
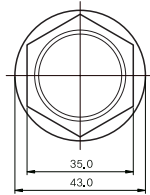
UP30RM-□□CR (Shield)



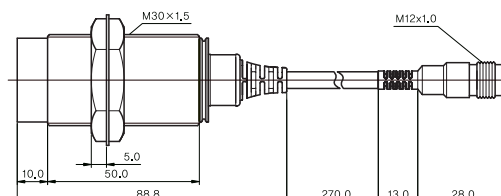
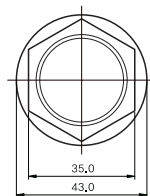
UP30RD-□□CR (None shield)



UP30RLM-□□CR (Shield)

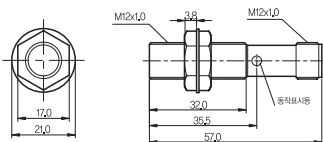


UP30RLD-□□CR (None shield)

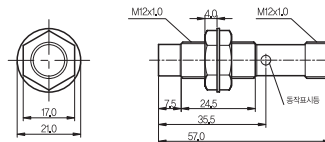


## ■ Connector type

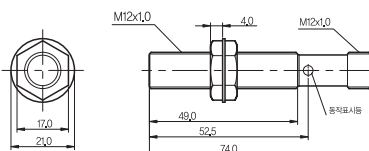
UP12RM-□□C (Shield)



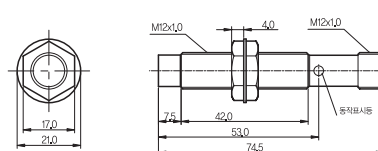
UP12RD-□□C (None shield)



UP12RM-2AC (Shield)



UP12RD-4AC (None shield)



■ Connector type

<p>UP18RM-5□C (Shield)</p>	<p>UP18RD-8□C (None shield)</p>
<p>UP18RLM-5□C / UP18RLM-5AC (Shield)</p>	<p>UP18RLD-8□C / UP18RLD-8AC (None shield)</p>
<p>UP18RM-5AC (Shield)</p>	<p>UP18RD-8AC (None shield)</p>
<p>UP30RM-□□C (Shield)</p>	<p>UP30RD-□□C (None shield)</p>
<p>UP30RLM-□□C (Shield)</p>	<p>UP30RLD-□□C (None shield)</p>

※ M8 and M12 Long type are not available

# Proximity sensor

## Capacitive type proximity sensor

- Internal noise enhanced circuit
- Leakage current less than 2 mA
- Power supply voltage 18 – 250 V a.c./d.c dual usage



### Suffix code

Model	Code						Information
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						D.C NPN output
	P						D.C PNP output
	F						A.C/D.C 2 wire type (dual usage) (Polarity, No polarity)
Output state	A						Normal Open (N.O)
	C						Normal Close (N.C)
Connection structure	*						No indication (Cable type)
	CR						Relay connector type

## Specification

### ■ Capacitive D.C 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	None shield			None 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 d.c (Usable voltage range 10-30V d.c)				
Control output	Open/Close capacitance : 200 mA max (Resistive load), Residual voltage : Max 1.5V				
Current consumption	Max 10mA				
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 type, D.C/A.C dual usage 2 wire type

Model	For D.C	CUP-18R-8F□□	CUP-18RP-8F□□	CUP-30R-15F□□	CUP-30RP-15F□□
	Size	M18		M30	
shield	None shield			None 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	D.C : 40 Hz / A.C : 20 Hz				
Power supply voltage	20 - 240 V a.c/d.c (Usable voltage range 18 - 250 V a.c/d.c)				
Control output	Open/Close capacitance : 5 - 250 mA max (Resistive load), Residual voltage : Max 7 V 이하 (a.c/d.c)				
Leakage current	Max 2 mA				
Operation indication	Red LED				
Protective circuit	Surge protective circuit built in.				
Connection structure	Cable type (standard cable length 2m), 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	

# Proximity sensor

## 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	min 50 M $\Omega$ (500 V d.c mega standard)
Dielectric strength	For 1 min at 2000 V a.c 50/60 Hz (between the recharging part and case)
Vibration resistance	10 - 55Hz (cycle 1 min, double amplitude: 1.5 mm 2 hours for each of X, Y and Z directions)
Shock resistance	500 $\text{m/s}^2$ 3 times to each of X, Y and Z directions

## Connection diagram

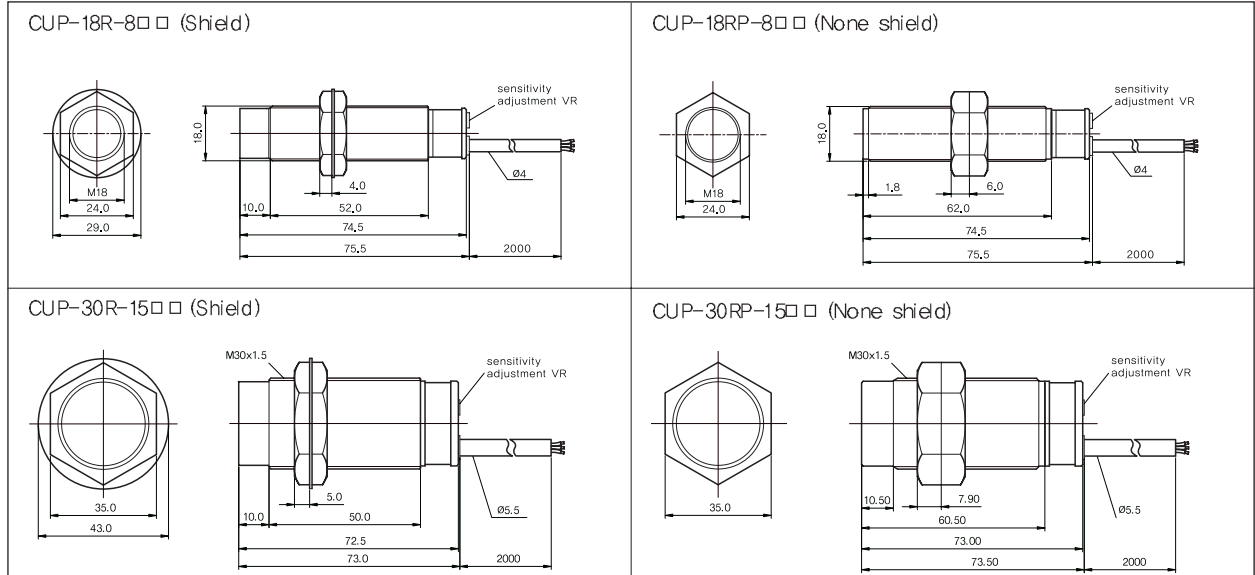
### Capacitive type (Cable type, Relay connector type)

Type		Connection method		Output state																												
		Cable type	Relay connector type																													
D.C open / close	N P N			<table border="0"> <tr> <td></td> <td></td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>Sensing object</td> <td>Yes</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td></td> <td>No</td> <td>[Low]</td> <td>[High]</td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td></td> <td>Return</td> <td>[Low]</td> <td>[High]</td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td></td> <td>OFF</td> <td>[Low]</td> <td>[High]</td> </tr> </table>			N.O	N.C	Sensing object	Yes	[High]	[Low]		No	[Low]	[High]	LOAD	Run	[High]	[Low]		Return	[Low]	[High]	Operation indicator	ON	[High]	[Low]		OFF	[Low]	[High]
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D.C and A.C open/close				<table border="0"> <tr> <td></td> <td></td> <td>N.O</td> <td>N.C</td> </tr> <tr> <td>Sensing object</td> <td>Yes</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td></td> <td>No</td> <td>[Low]</td> <td>[High]</td> </tr> <tr> <td>LOAD</td> <td>Run</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td></td> <td>Return</td> <td>[Low]</td> <td>[High]</td> </tr> <tr> <td>Operation indicator</td> <td>ON</td> <td>[High]</td> <td>[Low]</td> </tr> <tr> <td></td> <td>OFF</td> <td>[Low]</td> <td>[High]</td> </tr> </table>			N.O	N.C	Sensing object	Yes	[High]	[Low]		No	[Low]	[High]	LOAD	Run	[High]	[Low]		Return	[Low]	[High]	Operation indicator	ON	[High]	[Low]		OFF	[Low]	[High]
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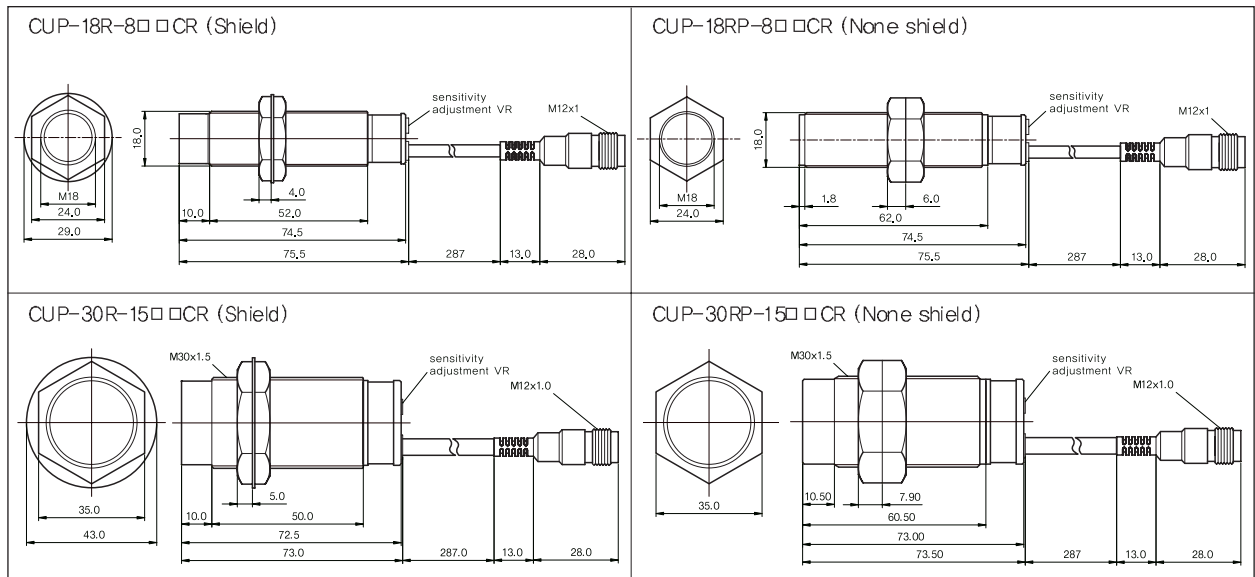


●● Dimension (unit : mm)

■ Cable type



■ Relay connector type



# Proximity sensor

## Connector cable

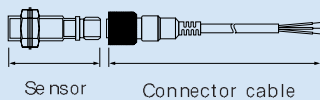
- Applied when wiring the connector type and relay connector type proximity sensor
- Extend the wire when using the connector type and relay connector type (Relay cable)
- Replace the proximity sensor only when repairing the line so excellent workability.

### Suffix code

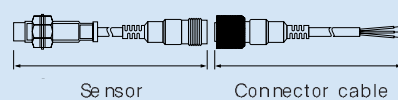
Model	Code					Information
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
						Cable for connecting proximity sensor
Cable	A					Connector cable
	B					Relay cable
Power supply voltage	A					AC
	D					DC
Number of wires			2			2 wires
			3			3 wires
			4			4 wires
Connector type				S		Straight type
				A		Angle type
Cable length				2M		2 m
				5M		5 m

#### ■ Normal connection

##### • Connector type

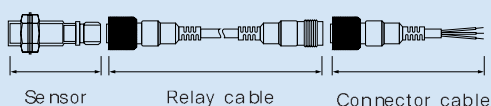


##### • Relay connector type

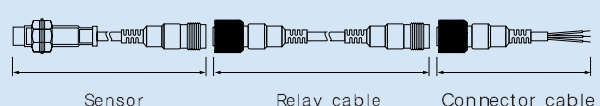


#### ■ Connection method when extending the length of wire

##### • Connector type



##### • Relay connector type



■ Connector cable and relay cable

type	Appearance	Model	Cable length	Usable power
Connector cable		AA2S-2M	2 m	A.C 2 wire type
		AA2S-5M	5 m	
		AD3S-2M	2 m	D.C 3 wire type
		AD3S-5M	5 m	
		AD2S-2M	2 m	D.C 2 wire type
		AD2S-5M	5 m	
		AA2A-2M	2 m	A.C 2 wire type
		AA2A-5M	5 m	
		AD3A-2M	2 m	D.C 3 wire type
		AD3A-5M	5 m	
		AD2A-2M	2 m	D.C 2 wire type
		AD2A-5M	5 m	
Relay cable		BA4S-2M	2 m	A.C
		BA4S-5M	5 m	
		BD4S-2M	2 m	D.C
		BD4S-5M	5 m	
		BA4A-2M	2 m	A.C
		BA4A-5M	5 m	
		BD4A-2M	2 m	D.C
		BD4A-5M	5 m	


● Dimension (unit : mm)

Type	Code	Power/Number of wire	Dimension
Connector cable	AD3S	DC 3 wire	<ul style="list-style-type: none"> <li>• Straight type</li> </ul>
	AD2S	DC 2 wire	
	AA2S	AC 2 wire	
	AD3A	DC 3 wire	<ul style="list-style-type: none"> <li>• Angle type</li> </ul>
	AD2A	DC 2 wire	
	AA2A	AC 2 wire	
Relay cable	BD4S	DC 4 wire	<ul style="list-style-type: none"> <li>• Straight type</li> </ul>
	BA4S	AC 4 wire	
	BD4A	DC 4 wire	<ul style="list-style-type: none"> <li>• Angle type</li> </ul>
	BA4A	AC 4 wire	

# Proximity sensor

## Connection diagram

Type	Code	Power/Number of wire	Connection diagram
Connector cable	AD3S	DC 3 wire	<ul style="list-style-type: none"> <li>• Straight type/angle type</li> </ul>
	AD2S	DC 2 wire	
	AA2S	AC 2 wire	
	AD3A	DC 3 wire	
	AD2A	DC 2 wire	
	AA2A	AC 2 wire	
Relay cable	BD4S	DC 4 wire	<ul style="list-style-type: none"> <li>• Straight type/angle type</li> </ul>
	BA4S	AC 4 wire	
	BD4A	DC 4 wire	
	BA4A	AC 4 wire	



## Protection plan from the proximity sensor current consumption (leakage current)

- In case of A.C 2 wire type

Connect the breeder resistance, bypass the leakage current flowing in the load and make the current flowing in the load less than the return current of load.

In case of A.C 2 wire type, connect the breeder resistance and let more than 10mA of current to flow in the proximity sensor so the load remaining voltage become less than the return voltage of load when turning OFF the proximity sensor.

How to calculate the breeder resistance value and allowable power

$$R \leq \frac{V_s}{5 - I} \text{ (k}\Omega\text{)} \quad P > \frac{V_s^2}{R} \text{ (mW)}$$

R : Breeder resistance

P : Watt of breeder resistance (actual value is much larger)

I : Load current(mA)

V<sub>s</sub> : Power supply voltage

Here, in case of 110 V a.c, use max 20 kΩ and min 3 W

In case of 220 V a.c, use max 40 kΩ and min 10 W

- In case of D.C 2 wire type

Connect the breeder resistance, bypass the leakage current flowing in the load and make the current flowing in the load less than the return current of load.

$$R \leq \frac{V_s}{iR - i_{off}} \text{ (k}\Omega\text{)} \quad P > \frac{V_s^2}{R} \text{ (mW)}$$

R : Breeder resistance

P : Watt of breeder resistance (actual value is much larger)

iR : Leakage current of proximity switch(mA)

i<sub>off</sub> : Return current of load(mA)

V<sub>s</sub> : Power supply voltage

Here, in case of 12 V d.c, use max 15 kΩ and min 450 mW

In case of 24 V d.c, use max 30 kΩ and min 0.1 W