Inductive type proximity sensor

UP ☐ Round ☑ Square type

INSTRUCTION MANUAL

Thank you for purchasing HANYOUNG product.
Please check whether the product is the exactly same as you ordered.
Before using the product, please read this instruction manual carefully.
Please keep this manual where you can view at any time

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Safety information

Before using the product, please read the safety information thoroughly and use it properly.Alerts declared in the manual are classified to Danger, Warning and Caution by their criticality

⚠ DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
⚠ WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
⚠ CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury

⚠ Warning

- If the user use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
- If there is a possibility of an accident caused by errors or malfunctions of this product, install external protection circuit to prevent the accident.

⚠ Caution

- Pay attention that it is possible to damage a proximity sensor by a short circuit when wiring load.
- Wiring to an applicable device shall be certainly connected by using compressing terminals or soldering.
- Do not use PNP type or NPN type indiscriminately.
- Please wire after ensuring whether input conditions are accepted to an applicable device.
- When there is a power or high voltage line close to the cord of the proximity sensor, wire the cord with shielding such as an independent metal conduit to prevent against proximity sensor's damage or malfunction.
- Although the proximity sensor has a surge absorption circuit, if there is any machine that has a large surging one (e.g., a motor, welding machine, etc) near the proximity sensor, connect a varistor, surge absorber, noise filter to a surge generating area.
- Effect of Consumption Current : When AC type of proximity sensor is OFF, the proximity sensor has little consumption current for an operation of the circuit. Because of this fact, the little voltage left in the load may be a cause of load reset defective, so please make sure this voltage is less than the load reset voltage before using.
- In case of a load current is small : When a loaded current of AC type of proximity sensor is less than 5 mA, wire a bleeder resistor with the load in parallel so that make the residual voltage of the proximity sensor be less than the loaded reset voltage.
- Make the ripple content of the rated voltage which supplied into DC (NPN, PNP) type of proximity sensor be less than the maximum ± 10 % of the ripple content.
- In case of using a condenser as a load, wire a current-limiting resistor in series so that set the peak current shall be within the loaded current of the proximity sensor.
- In case of an inductive load (e.g., a motor, relay, magnet, etc), connect the load with surge bsorbing diode in parallel.
- Pay attention at a position of attachment, divergence, slack and distortion of a sensing surface or proximity sensor.
- In the place of possibly occurring metal particles, make sure whether a sensing distance is properly working since it can be affected if metal particles stick to the sensing surface.
- Pay attention on using or storing the proximity sensor outdoors.
- Do not use the proximity sensor in an environment with chemical, solvent or corrosive.
- Please avoid as much as possible to put the proximity sensor in hot water or to use them in a place where generates high pressure steam.
- The contents of this manual may be changed without prior notification.
- The maximum cable extension length shall be within 200 m.

Suffix code

Model	Code							Information
UP	☐	S-	☐	☐	☐	☐	☐	Inductive type proximity sensor
Sensing area size	8							8 X 8 ㎜
	12							12 X 12 ㎜
	18							18 X 18 ㎜
	25							25 X 25 ㎜
	30							30 X 30 ㎜
	40							40 X 40 ㎜
Structure type		S						Square type
		F						Flat type
Sensing distance			2					2 ㎜ (Only with UP8S-2)
			4					4 ㎜ (Only with UP12S-4)
			5					5 ㎜ (Only with UP18S-5, UP25S-5)
			8					8 ㎜ (Only with UP18S-8, UP25S-8, UP25F-8)
			10					10 ㎜ (Only with UP30S-10)
			12					12 ㎜ (Only with UP25S-12)
			15					15 ㎜ (Only with UP30S-15)
			20					20 ㎜ (Only with UP40S-20)
Power Supply and Output type				N				DC NPN type
				P				DC PNP type
				A				AC 2 wire type (But, UP8S, UP12S, UP18S is excluded)
				T				DC 2 wire type (Polarity)
				U				DC 2 wire type (No polarity) (But, UP8S is excluded)
Output type					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 UP12S, UP18S)
Connection structure							-	No indication (Cable type)
							CR	Relay connector type

Specification

■ DC 3 wire type (NPN/PNP)

Model	UP8S-2☐☐	UP12S-4☐☐	UP 18S-5☐☐ UP 18S-8☐☐	UP 25S-5☐☐ UP 25S-8☐☐ UP 25S-12☐☐	UP30S-10☐☐ UP30S-15☐☐	UP 40S-20☐☐	UP 25F-8☐☐
Sensing distance	2 ㎜	4 ㎜	5 ㎜, 8 ㎜	5㎜, 8㎜, 12㎜	10 ㎜, 15 ㎜	20 ㎜	8 ㎜
Setting distance	0 – 1.6 ㎜	0 – 3.2 ㎜	0 – 4 ㎜, 0 – 6.4 ㎜	0-4㎜, 0-6.4㎜, 0-9.6㎜	0 – 8 ㎜, 0 – 12 ㎜	0 – 16 ㎜	0 – 6.4 ㎜
Response frequency	800 Hz	800 Hz	800 Hz	350, 250, 200 Hz	250, 100 Hz	100 Hz	200 Hz
Standard sensing object (㎜)	Iron8×8×1	Iron12×12×1	Iron18×18×1 Iron25×25×1	Iron25×25×1 Iron25×25×1 Iron35×35×1	Iron30×30×1 Iron45×45×1	Iron60×60×1	Iron25×25×1
Hysteresis	Less than 10 % of sensing distance						
Power supply voltage	12 – 24 V d.c (5 – 35 V d.c)						
Control output	Resistive load : 200 ㎃ max.						
Residual voltage	1.5 V max						
Current consumption	6 ㎃ max						
Operation indication	Red LED						
Protective circuit	Power reversely connected protective circuit, surge protective circuit and over current protective circuit are built in.						
Ambient temperature	–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)						
Ambient humidity	35 ~ 85 % R.H						
Degree of protection	IP67 (IEC standard)						
Vibration resistance	10 – 55 Hz (cycle 1 min, double amplitude : 1.5 ㎜ 2 hours for each of X, Y and Z directions						
Dielectric strength	For 1 min at 2000 V a.c 50/60 Hz (between the recharging part and case)						
Shock resistance	500 ㎨ 3 times to each, X, Y and Z directions						
Insulation resistance	50 ㏁ min (500 V d.c mega standard)						
Material	CASE : PBT resin						

■ DC 2 wire type

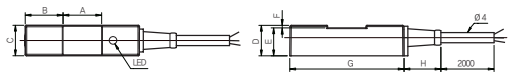
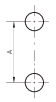
Model	UP8S-2☐☐	UP12S-4☐☐	UP 18S-5☐☐ UP 18S-8☐☐	UP 25S-5☐☐ UP 25S-8☐☐ UP 25S-12☐☐	UP30S-10☐☐ UP30S-15☐☐	UP 40S-20☐☐	UP 25F-8☐☐
Sensing distance	2 ㎜	4 ㎜	5 ㎜, 8 ㎜	5㎜, 8㎜, 12㎜	10 ㎜, 15 ㎜	20 ㎜	8 ㎜
Setting distance	0 – 1.6 ㎜	0 – 3.2 ㎜	0 – 4 ㎜, 0 – 6.4 ㎜	0-4㎜, 0-6.4㎜, 0-9.6㎜	0 – 8 ㎜, 0 – 12 ㎜	0 – 16 ㎜	0 – 6.4 ㎜
Response frequency	800 Hz	500 Hz	500, 300 Hz	350, 250, 200 Hz	250, 100 Hz	100 Hz	200 Hz
Standard sensing object (㎜)	Iron8×8×1	Iron12×12×1	Iron18×18×1 Iron25×25×1	Iron25×25×1 Iron25×25×1 Iron35×35×1	Iron30×30×1 Iron45×45×1	Iron60×60×1	Iron25×25×1
Hysteresis	Less than 10 % of sensing distance						
Power supply voltage	12 – 24 V d.c (10 – 30 V d.c)						
Control output	Resistive load : 100 ㎃ max.						
Residual voltage	T (Polarity) : 3.5 V max, U (No polarity) : 5 V max						
Leakage current	1 ㎃ max						
Operation indication	Red LED						
Protective circuit	surge protective circuit and over current protective circuit are built in.						
Ambient temperature	–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)						
Ambient humidity	35 ~ 85 % R.H						
Degree of protection	IP67 (IEC standard)						
Vibration resistance	10 – 55 Hz (cycle 1 min, double amplitude : 1.5 ㎜ 2 hours for each of X, Y and Z directions						
Dielectric strength	For 1 min at 2000 V a.c 50/60 Hz (between the recharging part and case)						
Shock resistance	500 ㎨ 3 times to each, X, Y and Z directions						
Insulation resistance	50 ㏁ min (500 V d.c mega standard)						
Material	CASE : PBT resin						

■ AC 2 wire type

Model	UP 25S–5A□ UP 25S–8A□	UP 30S–10A□ UP 30S–15A□	UP 40S–20A□	UP 25F–8A□
Sensing distance	5 ㎜, 8 ㎜	10 ㎜, 15 ㎜	20 ㎜	8 ㎜
Setting distance	0 – 4 ㎜, 0 – 6.4 ㎜	0 – 8 ㎜, 0 – 12 ㎜	0 – 16 ㎜	0 – 6.4 ㎜
Response frequency	20 Hz			
Standard sensing object (㎜)	Iron 25×25×1 Iron 30×30×1	Iron 40×40×1 Iron 50×50×1	Iron 60×60×1	Iron 25×25×1
Hysteresis	Less than 10 % of sensing distance			
Power supply voltage	100 – 240 V a.c (90 – 250 V a.c)			
Control output	Resistive load : 200 ㎃ max.			
Residual voltage	10 V a.c max			
Leakage current	2.2 ㎃ max			
Operation indication	Red LED			
Protective circuit	surge protective circuit built in.			
Ambient temperature	–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
Ambient humidity	35 ~ 85 % R.H			
Degree of protection	IP67 (IEC standard)			
Vibration resistance	10 – 55 Hz (cycle 1 min, double amplitude : 1.5 ㎜ 2 hours for each of X, Y and Z directions			
Dielectric strength	For 1 min at 2000 V a.c 50/60 Hz (between the recharging part and case)			
Shock resistance	500 ㎨ 3 times to each, X, Y and Z directions			
Insulation resistance	50 ㏁ min (500 V d.c mega standard)			
Material	CASE : PBT resin			

kích thước

Đơn vị : mm]

Mã hàng	vị trí lỗ	Kích thước
UP8S		
UP12S		
UP18S UP25S UP30S UP40S		

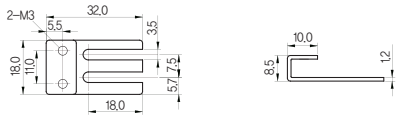
Mã hàng	Kích thước vít	A	B	C	D	E	F	G	H
UP8S	None	8	8	8	8	7.4	0.6	28	2
UP12S	None	15.1	15	12	12	11	1	45	14.5
UP18S	M3X20	11	31.4	18	18	14	0.5	36	15
UP25S	M4X22	18	36.3	25	25	17.2	1	39.5	15
UP30S	M4X30	22	49.3	30	30	21	0.8	53.5	16.5
UP40S	M5X40	29	47.8	40	40	25.5	1	53.3	16.5

■ Supporter

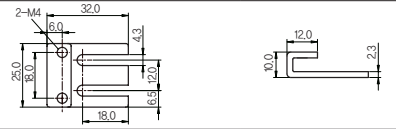
UP8S series

UP12S series

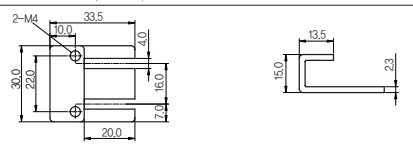
UP18S series



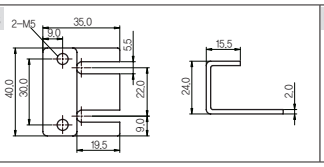
UP25S series



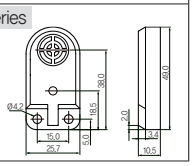
UP30S series



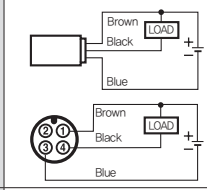
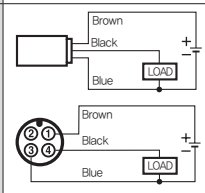
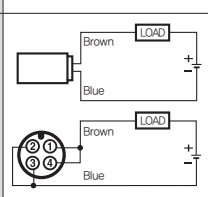
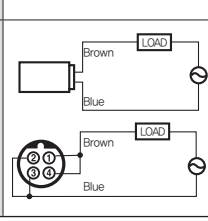
UP40S series



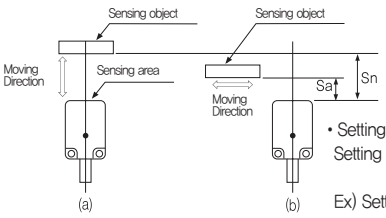
UP25F series



Connection diagram

Type		Connection method	Output state		
D.C open / close	NPN			NO	NC
			Sensing object	Yes / No	
			LOAD [Brown – Black]	Run / Return	
			Output voltage	H / L	
			Operation indicator	ON / OFF	
	PNP			NO	NC
			Sensing object	Yes / No	
			LOAD [Brown – Black]	Run / Return	
			Output voltage	H / L	
			Operation indicator	ON / OFF	
	2 Wire			NO	NC
			Sensing object	Yes / No	
			LOAD [Brown – Black]	Run / Return	
			Operation indicator	ON / OFF	
AC open / close				NO	NC
			Sensing object	Yes / No	
			LOAD [Brown – Black]	Run / Return	
			Operation indicator	ON / OFF	

How to set distance



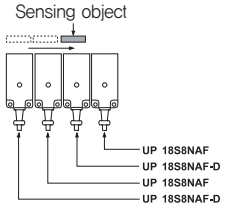
Sn : Sensing distance
Sa : Setting distance (80 % of Sn)

• Setting distance(Sa) Computing Equation :
Setting distance (Sa) =
Sensing distance(Sn) × 80 %
Ex) Setting distance(Sa) = 10 ㎜ × 0.8 = 8 ㎜

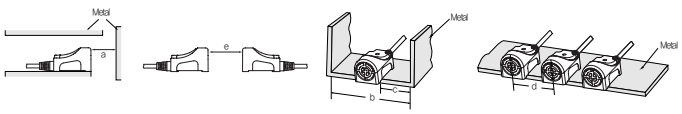
- When a proximity sensor is operating as a sensing object is approaching, a distance between the sensing surface and the sensing object is the operating distance of the proximity sensor.
- After measuring a maximum value of a perpendicular direction of a sensing object, install it within 80 %.
- When testing a sensing distance of a proximity sensor, a standard sensing object was used so a sensing distance can be varied by its shape, form or material. Please, consider these facts.

■ How to use differential wave method

- In case of attaching proximity sensors, malfunction can be occurred by mutual interference when the proximity sensors are closely attached. Therefore, please use proximity sensor of Differential Wave Type like the picture shown in the right.
  Differential Wave Type is only available in Square Type of 18 or 25.



Mutual interference and effects of surrounding metals



[Unit : mm]

List \ Model	UP 8S –2□□	UP 12S –4□□	UP 18S –5□□	UP 18S –8□□	UP 25S –5□□	UP 25S –8□□	UP 25S –12□□	UP 30S –10□□	UP 30S –15□□	UP 40S –20□□
a	6	12	15	24	15	24	36	30	45	60
b	24	36	–	54	–	–	75	–	90	–
c	8	12	18	18	25	25	25	30	30	40
d	16	24	36	36	50	50	50	60	60	80
e	12	24	30	48	30	48	72	60	90	120