

Resin Cylindrical Type APS-30/31 Series

Multi-purpose Economical Type with Proven Performance



Types

DC voltage output type/DC 3-wire type

Shape	Operating distance (mm)	Output type	Model number	Remarks
M12 Non-embedded type	2	DC voltage	APS-30-2T	
		NPN N.O.	APS-30-2N	
	4	DC voltage	APS-30-4T	Frequency classification model available ("H" is added in the end of model number.)
		NPN N.O.	APS-30-4N	
M22 Non-embedded type	4	DC voltage	APS-31-4T	
		NPN N.O.	APS-31-4N	
	7	DC voltage	APS-31-7T	Frequency classification model available ("H" is added in the end of model number.)
		NPN N.O.	APS-31-7N	Frequency classification model available ("L" is added in the end of model number.)

* Frequency classification models (H/L) are non-stock product.

AC 2-wire type

Shape	Operating distance (mm)	Output type	Model number	Remarks
M22 Non-embedded type	7	N.O.	APS-31-7S	

* When installing the sensor, use the dedicated resin nut provided.

DC Voltage Output Type/DC 3-wire, Non-embedded Type

Effective operating distance	2 mm ±10%	4 mm ±10%	4 mm ±10%	7 mm ±10%		
Dimensions (mm)						
Remarks	Small-size/high-speed response Close-contact installation allowed	Small-size Frequency classification model available		Frequency classification model available		
Output type	DC voltage	Model number	APS-30-2T	APS-30-4T	APS-31-4T	APS-31-7T
		Price	¥5,400	¥5,400	¥3,680	¥3,680
	NPN NO	Model number	APS-30-2N	APS-30-4N	APS-31-4N	APS-31-7N
		Price	¥5,700	¥5,700	¥4,150	¥4,490
Rated operating voltage	T type	DC+12 V (+10 to +16 V) Permissible ripple rate: 3%p-p or less		DC+12 V (+10 to +16 V) Permissible ripple rate: 3%p-p or less		
	N type	DC+24 V(+20 to +28V) Permissible ripple rate: 3%p-p or less		DC+24 V(+20 to +30V) Full-wave rectified operating voltage available (average value)		
No-load current	15 mA or less		10 mA or less			
Standard target object (mm)	Iron 10 × 10 × 1t		Iron 20 × 20 × 1t	Iron 20 × 20 × 1t	Iron 30 × 30 × 1t	
Rated operating distance	0 to 1.4 mm		0 to 2.8 mm	0 to 2.8 mm	0 to 4.9 mm	
Responding material	Iron/nonferrous metal (operating distance varies with material)					
Differential travel	Approx. 10%					
Switching frequency	3 kHz		300 Hz	T type: 1 kHz	T type: 300 Hz	
				N type: 300 Hz	N type: 100 Hz	
Output	T type	Output impedance: 3.3 kΩ (output standard: 4P4N)				
	N type <small>Rated operating current</small>	60 mA max (load voltage: 40 V or less)		100 mA (+40°C) 80mA (load voltage: 50 V or less)		
Voltage drop	2.4 V or less					
Leakage current	300 μA or less					
Circuit protection	-			Short-circuit protection circuit (N type only)		
Operating temperature	-10 to +50°C					
Temperature characteristics	Within ±20% (of operating distance at +20°C)					
Withstand voltage	500 VAC, 50/60 Hz (1 minute)					
Insulation resistance	50 MΩ or higher (500 VDC)					
Vibration resistance	Double amplitude: 1.5 mm, 10 to 55 Hz (2 hours in each of X, Y and Z directions)					
Impact resistance	300 m/s ² , within 11 ms (10 cycles in each of X, Y and Z directions)					
Protection grade	IP66					
Casing material	Polycarbonate (Casing color: T type – blue, N type – green)					
Lead wire	Oil-resistant vinyl chloride cable 1.5 m Outer diameter (approx. ø3.5), 0.11 mm ² 3-wire		Oil-resistant vinyl chloride cable 1.5 m Outer diameter (approx. ø6), 0.5 mm ² 3-wire			
Tightening torque	0.8 Nm or less		3 Nm or less			
Weight	Approx. 30 g		Approx. 100 g			

* When installing the sensor, use the dedicated resin nut provided.

* The frequency classification models have "L" or "H" at the end of its model number (non-stock product).

APS-GMC

APS-GMD

APS-GM

APS-GK

APS-30/31

APS-CK

APS-S/M

APS-F/U

APS-10~15

APS-CU

CS

Resin Cylindrical Type APS-30/31 Series

AC 2-wire, Non-embedded Type

Effective operating distance	7 mm ±10%	
Dimensions (mm)		
Remarks		
Output type	NO	Model number
		Price
		APS-31-7S
		¥4,800
Rated operating voltage	AC90 to 250 V 50/60 Hz	
Standard target object (mm)	Iron 30 × 30 × 1t	
Rated operating distance	0 to 5.6 mm	
Responding material	Iron/nonferrous metal (operating distance varies with material)	
Differential travel	20% or less	
Switching frequency	10 Hz	
Rated operating current	10 to 200 mA (resistance load)	
Voltage drop	9 V or less	
Leakage current	2.5 mA or less	
Circuit protection	-	
Operating temperature	-25 to +70 °C	
Temperature characteristics	Within ±10% (of operating distance at +20 °C)	
Withstand voltage	1500 VAC, 50/60 Hz (1 minute)	
Insulation resistance	50 MΩ or higher (500 VDC)	
Vibration resistance	Double amplitude: 1.5 mm, 10 to 55 Hz (2 hours in each of X, Y and Z directions)	
Impact resistance	600 m/s ² , within 11 ms (10 cycles in each of X, Y and Z directions)	
Protection grade	IP66	
Casing material	Polycarbonate	
Lead wire	Oil-resistant vinyl chloride cable 1.5 m Outer diameter (approx. ø6), 0.5 mm ² 2-wire	
Tightening torque	3 Nm or less	
Weight	Approx. 100 g	

* When installing the sensor, use the dedicated resin nut provided.

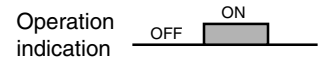
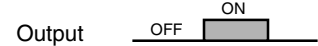
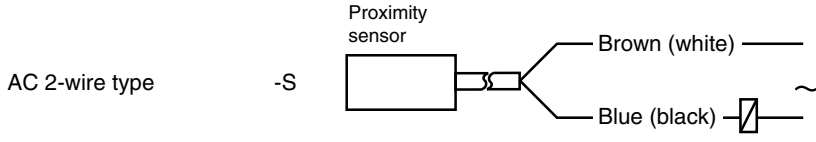
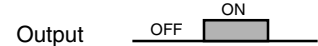
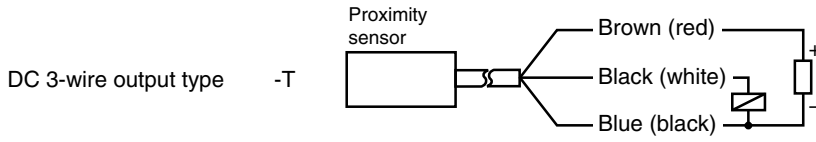
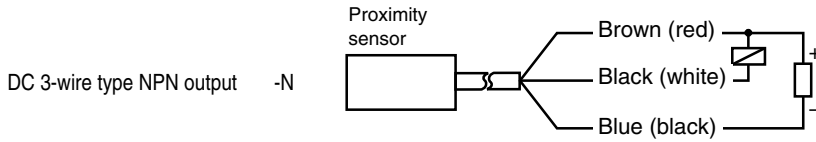
APS-GMC
APS-GMD
APS-GM
APS-GK
APS-30/31
APS-CK
APS-S/M
APS-F/U
APS-10~15
APS-CU
CS

Connection/Operation

(Target object

Not present	Present
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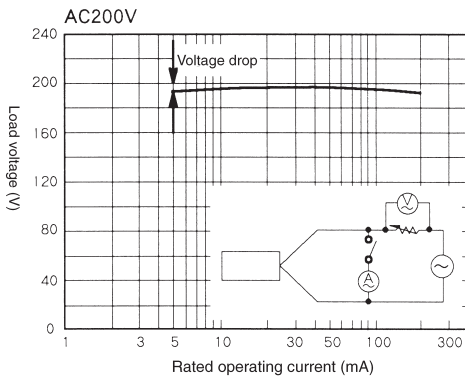
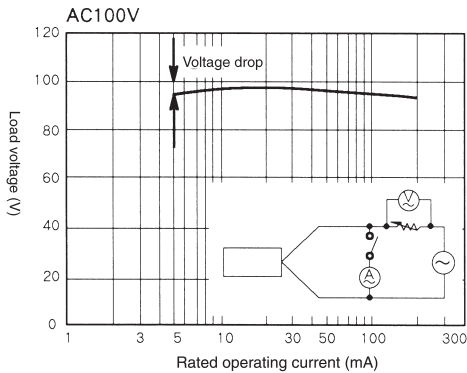


Note: indicates a load. Operation indication is only available for models having LED.

Characteristics Diagrams

AC 2-wire type -S

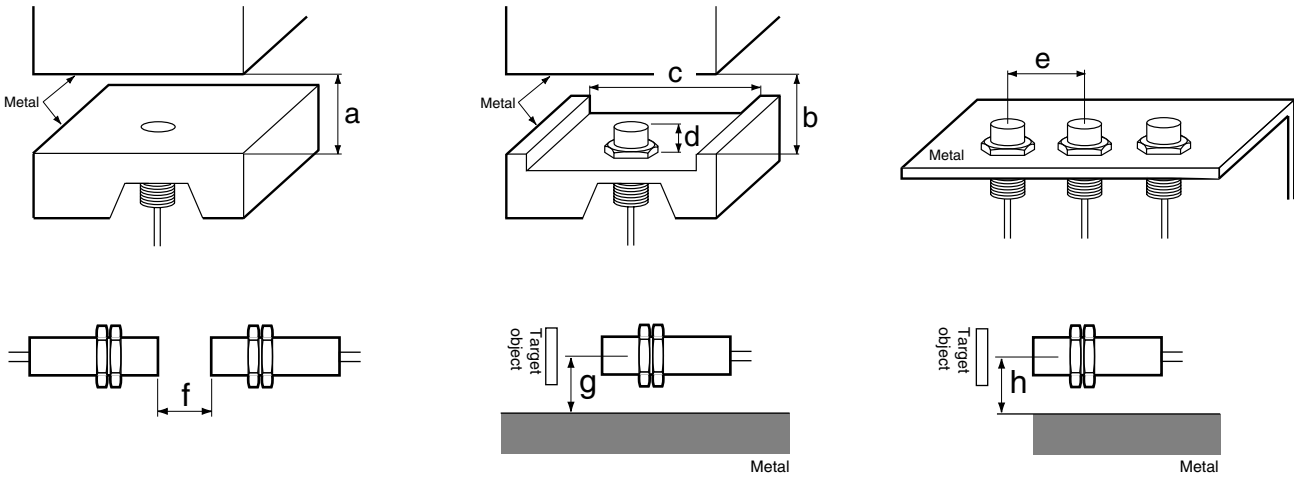
● Voltage Drop Characteristics (Representative Examples)



APS-GMC
APS-GMD
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Installation and Influence of Surrounding Metals

A proximity sensor is susceptible to surrounding metals. When installing the sensor, secure a sufficient distance longer than the indicated dimension.



(in mm)

Model number	a	b	c	d	e	f	g	h
APS-30-2...	–	5	15	7	15	20	7	5
APS-30-4...	–	10	20	7	30	40	10	8
APS-31-4...	–	10	35	15	40	59	13	11
APS-31-7...	–	18	50	15	70	90	18	15

Mutual Interference and Classification of Frequencies

When using two or more proximity sensors in close contact with each other, secure an interval between the proximity sensors (center to center) at least 10 times the operating distance. If the interval is inadequate, mutual interference may occur.

In applications where it is impossible to secure adequate intervals, use models classified by frequency. Normally, frequency classification is indicated by an alphabet immediately after the operating distance of the model number.

- Those models classified by frequency have either of the following markings on the cable so that they can easily be distinguished from other models.

For high frequencies (H) : yellow spiral mark

For low frequencies (L) : red spiral mark

Example:








APS-30 - 4T (M) Model with a standard frequency
- 4N (M) (normally, "M" is omitted)

APS-31 - 7NL Model with a lower frequency than the standard frequency

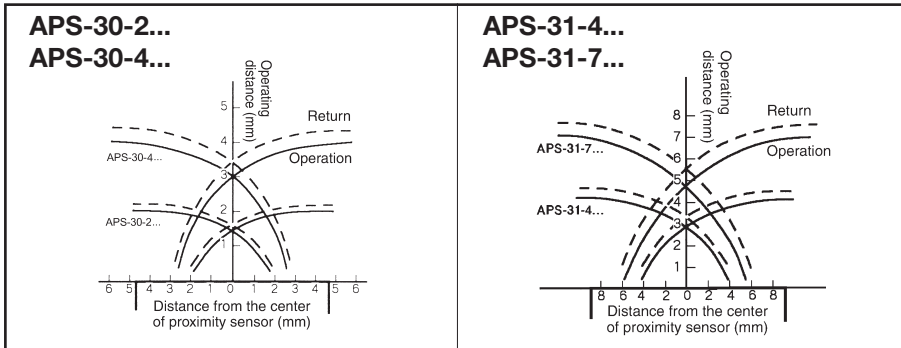
APS-31 - 7TH Model with a higher frequency than the standard frequency

Combinations of models classified by frequency

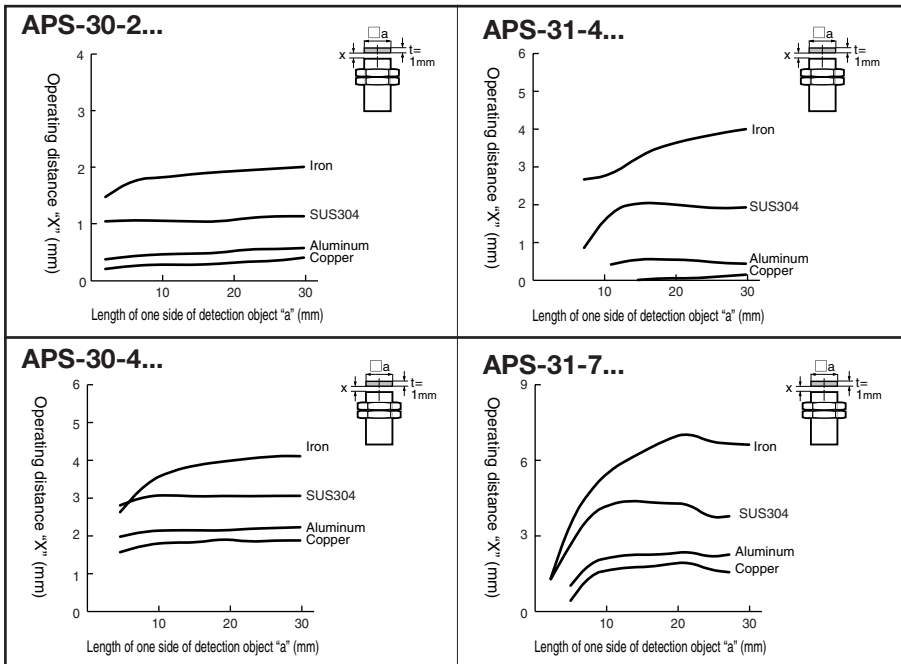
(can be installed in close contact with each other)

<p>APS-30-4T(M)H APS-30-4N(M)H</p>	<p>L  (M)  H </p> <p>* To install four or more sensors in close contact, preliminary study is required.</p>
<p>APS-31-7T(M)H</p>	<p>(M)  H </p> <p>* To install three or more sensors in close contact, preliminary study is required.</p>
<p>APS-31-7N(M)L</p>	<p>L  (M) </p> <p>* To install three or more sensors in close contact, preliminary study is required.</p>

Detection Area Diagrams (Representative Examples)



Shape Characteristics (Representative Examples)



APS-GMC
APS-GMD
APS-GM
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APS-30/31
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APS-10~15
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