



## IPX SERIES

### OVERVIEW

Standard sensors for detecting metals

IP-Rating : IP67



### CLASSIFICATION

**PX - D 18 - 05 E1 R N □**  
 ① ② ③ ④ ⑤ ⑥ ⑦

① Type	A		AC 2-Wire Model
	D		DC 3-Wire Model
	2D		DC 2-Wire Model
② Shape / Size	Rectangular	12	∅12
		18	∅18
		30	∅30
	Cylindrical	17	□ 17mm
		25	□ 25mm
		30	□ 30mm
		40	□ 40mm
③ Sensing Distance	number	Rated sensing distance (Sn)	
④ Control output	E1	AC 3-wire model	NPN NO
	E2		NPN NC
	E3		PNP NO
	E4		PNP NC
	A1	AC 2-Wire Model	NO
	A2	DC 2-Wire Model	NC
⑤ Connection Method	none	Pre-wired	
	Rectangular	Connector	
	W	Wired connector	
	S	Pre-wired (rectangular model)	
⑥ Shielding	none	Shielded	
	N	Unshielded	
⑦ Polarity	F	No polarity	
	none	Polarity	

## DC 3-wire model (Shielded) - Cylindrical

Appearance	Sensing distance	Set distance	Response frequency	Connection method	Operation mode	Model
Cylindrical	Ø12	2.0m m ±10%	0-1.6m m	Pre-wired	NPN NO	IPX-D 12-02E1
					NPN NC	IPX-D 12-02E2
					PNP NO	IPX-D 12-02E3
					PNP NC	IPX-D 12-02E4
				Connector	NPN NO	IPX-D 12-02E1R
					NPN NC	IPX-D 12-02E2R
					PNP NO	IPX-D 12-02E3R
					PNP NC	IPX-D 12-02E4R
				Wire connector	NPN NO	IPX-D 12-02E1W
					NPN NC	IPX-D 12-02E2W
					PNP NO	IPX-D 12-02E3W
					PNP NC	IPX-D 12-02E4W
	Ø18	5.0m m ±10%	0-4.0m m	Pre-wired	NPN NO	IPX-D 18-05E1
					NPN NC	IPX-D 18-05E2
					PNP NO	IPX-D 18-05E3
					PNP NC	IPX-D 18-05E4
				Connector	NPN NO	IPX-D 18-05E1R
					NPN NC	IPX-D 18-05E2R
					PNP NO	IPX-D 18-05E3R
					PNP NC	IPX-D 18-05E4R
				Wire connector	NPN NO	IPX-D 18-05E1W
					NPN NC	IPX-D 18-05E2W
					PNP NO	IPX-D 18-05E3W
					PNP NC	IPX-D 18-05E4W
Ø30	10.0m m ±10%	0-8.0m m	Pre-wired	NPN NO	IPX-D 30-10E1	
				NPN NC	IPX-D 30-10E2	
				PNP NO	IPX-D 30-10E3	
				PNP NC	IPX-D 30-10E4	
			Connector	NPN NO	IPX-D 30-10E1R	
				NPN NC	IPX-D 30-10E2R	
				PNP NO	IPX-D 30-10E3R	
				PNP NC	IPX-D 30-10E4R	
			Wire connector	NPN NO	IPX-D 30-10E1W	
				NPN NC	IPX-D 30-10E2W	
				PNP NO	IPX-D 30-10E3W	
				PNP NC	IPX-D 30-10E4W	

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## DC 3-wire model (Unshielded) - Cylindrical

Appearance		Sensing distance	Set distance	Response frequency	Connection method	Operation mode	Model
Cylindrical	∅12	4.0mm ±10%	0-3.2mm	400Hz	Pre-wired	NPN NO	IPX-D12-04E1N
						NPN NC	IPX-D12-04E2N
						PNP NO	IPX-D12-04E3N
						PNP NC	IPX-D12-04E4N
					Connector	NPN NO	IPX-D12-04E1RN
						NPN NC	IPX-D12-04E2RN
						PNP NO	IPX-D12-04E3RN
						PNP NC	IPX-D12-04E4RN
					Wire connector	NPN NO	IPX-D12-04E1WN
						NPN NC	IPX-D12-04E2WN
						PNP NO	IPX-D12-04E3WN
						PNP NC	IPX-D12-04E4WN
	∅18	8.0mm ±10%	0-6.4mm	200Hz	Pre-wired	NPN NO	IPX-D18-08E1RN
						NPN NC	IPX-D18-08E2RN
						PNP NO	IPX-D18-08E3RN
						PNP NC	IPX-D18-08E4RN
					Connector	NPN NO	IPX-D18-08E1WN
						NPN NC	IPX-D18-08E2WN
						PNP NO	IPX-D18-08E3WN
						PNP NC	IPX-D18-08E4WN
					Wire connector	NPN NO	IPX-D18-08E1SN
						NPN NC	IPX-D18-08E2SN
						PNP NO	IPX-D18-08E3SN
						PNP NC	IPX-D18-08E4SN
∅30	15.0mm ±10%	0-12.0mm	100Hz	Pre-wired	NPN NO	IPX-D30-15E1N	
					NPN NC	IPX-D30-15E2N	
					PNP NO	IPX-D30-15E3N	
					PNP NC	IPX-D30-15E4N	
				Connector	NPN NO	IPX-D30-15E1RN	
					NPN NC	IPX-D30-15E2RN	
					PNP NO	IPX-D30-15E3RN	
					PNP NC	IPX-D30-15E4RN	
				Wire connector	NPN NO	IPX-D30-15E1WN	
					NPN NC	IPX-D30-15E2WN	
					PNP NO	IPX-D30-15E3WN	
					PNP NC	IPX-D30-15E4WN	

## DC 3-wire model (Unshielded) - Rectangular

Appearance	Sensing distance	Set distance	Response frequency	Connection method	Operation mode	Model	
Rectangular	□ 17	5.0m m ±10%	0-4.0m m	500Hz	Pre-wired	NPN NO	IPX-D 12-02E1S
						NPN NC	IPX-D 12-02E2S
						PNP NO	IPX-D 12-02E3S
						PNP NC	IPX-D 12-02E4S
	□ 25	5.0m m ±10%	0-4.0m m	350Hz		NPN NO	IPX-D 12-04E1S
						NPN NC	IPX-D 12-04E2S
						PNP NO	IPX-D 12-04E3S
						PNP NC	IPX-D 12-04E4S
	□ 30	10.0m m ±10%	0-8.0m m	250Hz		NPN NO	IPX-D 18-05E1S
						NPN NC	IPX-D 18-05E2S
						PNP NO	IPX-D 18-05E3S
						PNP NC	IPX-D 18-05E4S
□ 40	20.0m m ±10%	0-16.0m m	100Hz	NPN NO	IPX-D 18-20E1S		
				NPN NC	IPX-D 18-20E2S		
				PNP NO	IPX-D 18-20E3S		
				PNP NC	IPX-D 18-20E4S		

## Specification for DC 3-wire model

Rated operating voltage		12-24VDC
Power supply voltage		10-30VDC
Detectable object		Ferrous metal
Differential travel		max. 10% of sensing distance
Control output		max. 200mA
Indicator		red LED
Protection circuit		Surge suppressor, bad short-circuit protection, protection circuit of reverse power polarity
Ambient temperature	operating	-15°C-+55°C
	storage	-30°C-+80°C
Ambient humidity		35-95% RH
Insulation resistance		Minimum 50MΩ (500VDC)
Dielectric strength		1,500VAC 50/60Hz for 1min.
Vibration resistance		10-55Hz double amplitude 1.5mm (at X, Y and Z axis) for 2hrs
Shock resistance		50G
Degree of protection		IP67
Materials	Case	Brass
	Sensing surface	PBT

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## Dimensions for DC 3-wire model

DC 3-Wire Model	Ø12	
	Shielded	Unshielded
Pre-wired		
Connector		
Wired Connector		

Dimensions for DC 3-wire model

DC 3-Wire Model	Ø18	
	Shielded	Unshielded
Pre-wired		
Connector	<p>AC DC</p>	<p>AC DC</p>
Wired Connector	<p>AC DC</p>	<p>AC DC</p>

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Dimensions for DC 3-wire model

DC 3-Wire Model	Ø30	
	Shielded	Unshielded
Pre-wired		
Connector		
Wired Connector		



# PROXIMITY SENSORS

## Dimensions for DC 3-wire model

	□ 17	□ 25
<p>DC 3-Wire Model Rectangular</p>		

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## I/O Circuit Diagram for DC 3-wire model

Control output	Timing chart	Output circuit
NPN NO		
NPN NC		
PNP NO		
PNP NC		