

INDUCTIVE PROXIMITY SWITCH
DC 2WIRE TYPE

M A N U A L



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

※Please keep these instructions and review them before using this unit.

※Please observe the cautions that follow:

Warning Serious injury may result if instructions are not followed.

Caution Product may be damaged, or injury may result if instructions are not followed.

※The following is an explanation of the symbols used in the operation manual.

Caution: Injury or danger may occur under special conditions.

Warning

1. In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information on type required.

It may result in serious damage, fire or human injury.

Caution

1. Do not use this unit in place there are flammability gas or explosive gas.

It may shorten the life cycle of the product or give an electric shock.

2. Do not impact on this unit.

It may result in malfunction or damage to this product.

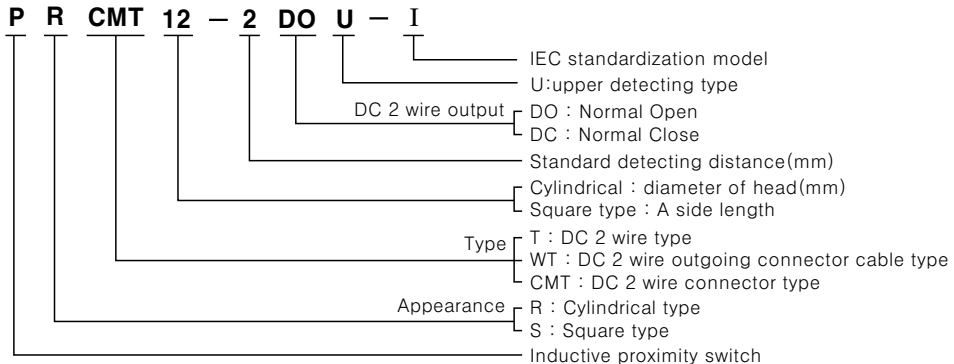
3. Do not apply AC power and observe specification rating.

It may result in serious damage to the product.

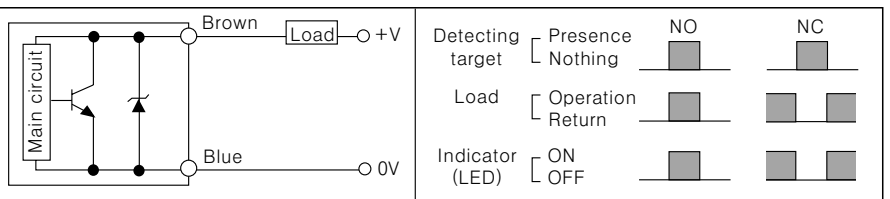
4. Do not connect power directly without load.

It may result in damage to inner components or burn them out.

Ordering information



Control output circuit & Load operating

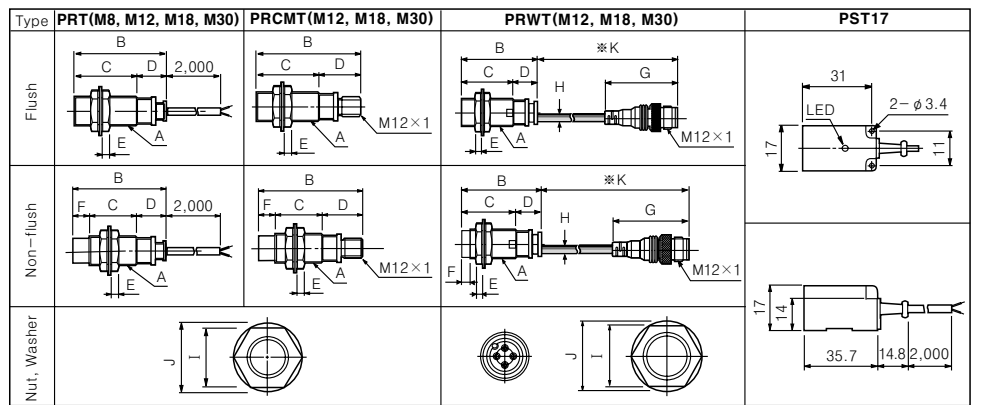


※The above specification are changeable without notice anytime.

Specification

Model	PRT08-1.5DO PRT08-1.5DC	PRT08-2DO PRT08-2DC	PRT12-2DO PRT12-2DC PRWT12-2DO PRWT12-2DC	PRT12-4DO PRT12-4DC PRWT12-4DO PRWT12-4DC	PRT18-5DO PRT18-5DC PRWT18-5DO PRWT18-5DC	PRT18-8DO PRT18-8DC PRWT18-8DO PRWT18-8DC	PRT30-10DO PRT30-10DC PRWT30-10DO PRWT30-10DC	PRT30-15DO PRT30-15DC PRWT30-15DO PRWT30-15DC	PST17-3DO PST17-5DO PST17-5DOU PST17-5DCU	
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			PRTW12-2DO-1 PRTW12-2DC-1 PRCMT12-2DO PRCMT12-2DC	PRTW12-4DO-1 PRTW12-4DC-1 PRCMT12-4DO PRCMT12-4DC	PRTW18-5DO-1 PRTW18-5DC-1 PRCMT18-5DO PRCMT18-5DC	PRTW18-8DO-1 PRTW18-8DC-1 PRCMT18-8DO PRCMT18-8DC	PRTW30-10DO-1 PRTW30-10DC-1 PRCMT30-10DO PRCMT30-10DC	PRTW30-15DO-1 PRTW30-15DC-1 PRCMT30-15DO PRCMT30-15DC		
			Detecting distance	1.5mm ±10%	2mm ±10%	2mm ±10%	4mm ±10%	5mm ±10%		8mm ±10%
Hysteresis	Max. 10% of detecting distance									
Standard detecting target	8×8×1mm(Iron)		12×12×1mm(Iron)		18×18×1mm (Iron)□		25×25×1mm (Iron)□		30×30×1mm (Iron)□	
Setting distance	0 to 1.05	0 to 1.4	0 to 1.4	0 to 2.8	0 to 3.5	0 to 5.6	0 to 7	0 to 10.5	0 to 2.1	0 to 3.5
Power supply (Operating voltage)	24VDC (15-30VDC)								24VDC (20-30VDC)	
Leakage current	Max. 0.9mA									
Response frequency	800Hz		400Hz		350Hz	200Hz	250Hz	100Hz	700Hz	500Hz
Residual voltage	Max. 7V									
Affection by Temp.	±10% max. of detecting distance at +20℃ within temperature range of -25 to +70℃(PRT08 Series : ±20% max.)									
Control output	50mA									
Insulation resistance	Min. 50MΩ (500VDC)									
Dielectric strength	1500VAC 50/60Hz for 1 minute									
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours									
Shock	500m/s² (50G) in X, Y, Z directions for 3 times									
Indicator	Operating indicator : Red LED									
Ambient temperature	-25 to +70℃ (non-freezing condition)									
Storage temperature	-30 to +80℃ (non-freezing condition)									
Ambient humidity	35 to 95%RH									
Protection circuit	Surge protection circuit		Surge protection circuit, overload & short circuit protection						Surge protection circuit	
Protection	IP67(IEC specification)									
Weight	Approx. 36g		PRT:Approx. 63g PRWT:Approx. 45g PRCMT:Approx. 24g		PRT:Approx. 122g PRWT:Approx. 65g PRCMT:Approx. 42g		PRT:Approx. 181g PRWT:Approx. 130g PRCMT:Approx. 102g		PST:Approx. 59g	

Dimension

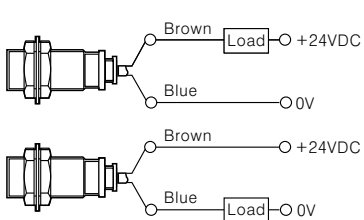


Type		A	B	C	D	E	F	G	H	I	J	K
Flush	M8	PRT	M8×1	30	30	—	4	—	—	4	13	15
		PRWT	M12×1	43	31.5	20	4	—	—	4	17	21
		PRCMT	M12×1	43	31.5	20	4	—	—	4	17	21
		PRCMT	M12×1	54.8	31.5	23.3	4	—	—	—	17	21
	M12	PRT	M12×1	47	29	18	4	—	—	5	24	29
		PRWT	M18×1	47	29	18	4	—	—	43.5	5	24
		PRCMT	M18×1	47	29	18	4	—	—	43.5	5	24
		PRCMT	M18×1	52.8	29	23.8	4	—	—	—	24	29
	M30	PRT	M30×1.5	58	38	20	5	—	—	5	35	42
		PRWT	M30×1.5	58	38	20	5	—	—	43.5	5	35
		PRCMT	M30×1.5	64	38	24.8	5	—	—	—	35	42
		PRCMT	M30×1.5	64	38	24.8	5	—	—	—	35	42
Non-flush	M8	PRT	M8×1	30	38	—	4	4	—	4	13	15
		PRWT	M12×1	51.5	24.5	20	4	7	—	4	17	21
		PRCMT	M12×1	51.5	31.5	20	4	7	—	43.5	4	17
		PRCMT	M12×1	56.8	24.5	23.3	4	7	—	—	17	21
	M12	PRT	M12×1	47	19	18	4	10	—	5	24	29
		PRWT	M18×1	47	29	18	4	10	—	43.5	5	24
		PRCMT	M18×1	47	29	18	4	10	—	43.5	5	24
		PRCMT	M18×1	52.8	19	23.8	4	10	—	—	24	29
	M30	PRT	M30×1.5	58	28	20	5	10	—	5	35	42
		PRWT	M30×1.5	58	38	20	5	10	—	43.5	5	35
		PRCMT	M30×1.5	62.8	28	24.8	5	10	—	—	35	42
		PRCMT	M30×1.5	62.8	28	24.8	5	10	—	—	35	42

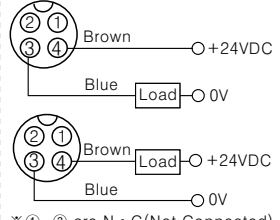
※K:Standard length 300mm.(Other lenght is optional)

Connection

•DC 2 wire standard

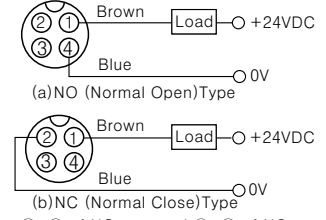


•CONNECTOR



※②, ③ are N・C(Not Connected) Terminals.

•IEC standardization model

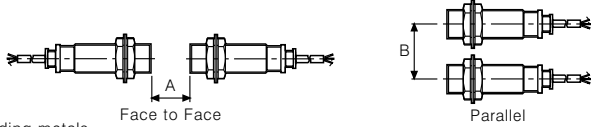


※②, ③ of NO type and ③, ④ of NC type are N・C(Not Connected) terminals.

Mutual-interference & Influence by surrounding metals

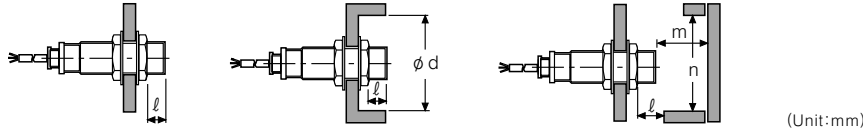
○Mutual-interference

When plural proximity switches are mounted in a close row, malfunction of switch may caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two switches, as below charts.



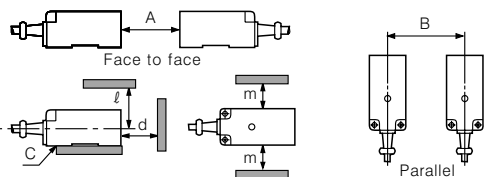
○Influence by surrounding metals

When switches are mounted on metallic panel, it must be prevented switches from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.

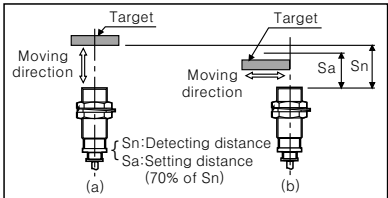


Model Item	PRT08-1.5DO	PRT08-2DO	PRT12-2DO	PRT12-4DO	PRT18-5DO	PRT18-8DO	PRT30-10DO	PRT30-15DO
A	9	12	12	24	30	48	60	90
B	16	24	24	36	36	54	60	90
ℓ	0	8	0	11	0	14	0	15
φd	8	12	12	36	18	54	30	90
m	4.5	6	6	12	15	24	30	54
n	12	18	18	36	27	54	45	90

Model Item	PST17-3DO	PST17-5DO
A	21	30
B	36	36
C	5	10
d	9	15
ℓ	18	24
m	18	18



Setting distance



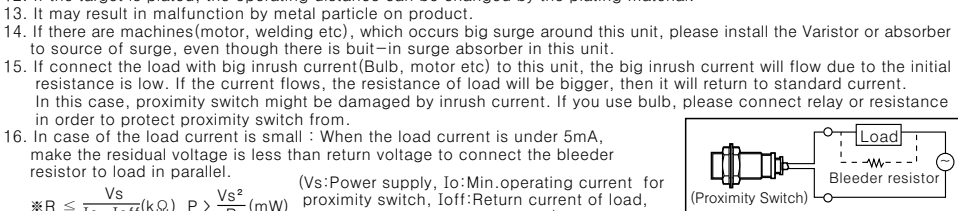
●Detecting distance can be changed by the shape, size or material of the target. Therefore please check the detecting distance like (a), then pass the target within range of setting distance(Sa).

●Setting distance(Sa)
= Detecting distance(Sn) × 70%
ex)PRCMT12-2DO(See ordering infomation)
Setting distance(Sa) = 2mm × 0.7 = 1.4mm

Caution for using

- This equipment shall not be used outdoors or beyond specified temperature range.
- Do not load over than tensile strength of cord. (φ4:30N max., φ5:50N max.)
- Do not use the same conduit with cord of this unit and electric power line or power line. Also avoid the same connection.
- Do not put overload to tighten nut, please use washer for tightening.
Note1)Allowable strength may be different by the length of head. As see the picture, allowable tightening strength of front part and rear part are in (Chart 1). Rear part includes head nut as like picture.
Note2)(Chart1) is for using washer.
Note3)PS17 Series : Tighten strength of installing bolts should be under 15kgf・cm.
- Please check the voltage changes of power source in order not to excess rating power input.
- Do not use this unit during transient time(80ms) after apply power.
- Do not connect capacity load to output part directly.
- It might result in damage to this product, if use automatic transformer. So please use insulated transformer.
- Please make wire short as much as possible in order to avoid noise.
- Be sure to cable as indicated specification on this product.
If use wrong cable or bended cable, it shall not maintain the water-proof.
- It is possible to extend cable with over 0.3mm² and max. 200m.
- If the target is plated, the operating distance can be changed by the plating material.
- It may result in malfunction by metal particle on product.
- If there are machines(motor, welding etc), which occurs big surge around this unit, please install the Varistor or absorber to source of surge, even though there is built-in surge absorber in this unit.
- If connect the load with big inrush current(Bulb, motor etc) to this unit, the big inrush current will flow due to the initial resistance is low. If the current flows, the resistance of load will be bigger, then it will return to standard current. In this case, proximity switch might be damaged by inrush current. If you use bulb, please connect relay or resistance in order to protect proximity switch from.
- In case of the load current is small : When the load current is under 5mA, make the residual voltage is less than return voltage to connect the bleeder resistor to load in parallel.

※R ≤ $\frac{Vs}{Io-Ioff}$ (kΩ) P > $\frac{Vs^2}{R}$ (mW)
(Vs:Power supply, Io:Min.operating current for proximity switch, Ioff:Return current of load, P:Bleeder resistor, number of W)



17. If make a transceiver close to proximity switch or wire connection, it may cause malfunction.

※It may cause malfunction if above instructions are not followed.

Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHOMETER
- LINE SPEED METER
- DISPLAY UNIT
- PROXIMITY SWITCH
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER

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NO20020518-EP-KE-07-0240