Autonics

LONG DISTANCE INDUCTIVE PROXIMITY SENSOR (SPATTER RESISTANT TYPE)

PRDAT/PRDAWT SERIES

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.
2. **Do not connect power directly without load.**
   It may result in damage to inner components or burn them out.

⚠Caution

1. **Do not use this unit in place where there are flammable, explosive gas, chemical or strong alkalis, acids.**
   It may cause a fire or explosion.
2. **Do not impact on this unit.**
   It may result in malfunction or damage to the product.
3. **Do not apply AC power and observe specification rating.**
   It may result in serious damage to the product.

▣ Ordering information

P R DA T 18 - 7 DO - V

Item	**P**	Inductive proximity sensor
Shape	**R**	Cylindrical type
Feature	**DA**	Long sensing distance, Spatter resistance type
Connection	**T**	DC 2wire cable outgoing type
	WT	DC 2wire cable outgoing connector type
Dimension	**Number**	Diameter of head(mm)
Standard sensing distance	**Number**	Unit: mm
Output type	**DO**	Normally Open(N.O.)
	DC	Normally Closed(N.C.)
Cable type		Standard cable
	I	Standard cable(IEC standards model)
	V	Oil resistant cable
	IV	Oil resistant cable(IEC standards model)

※ The above specifications are subject to change without notice.

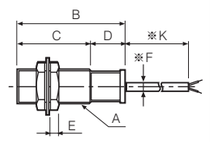
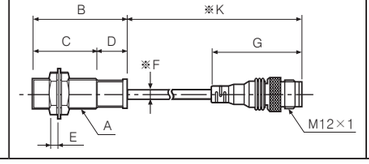
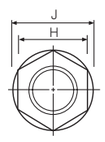
▣ Specifications

Type	Cable outgoing type	Cable outgoing connector type	Cable outgoing type	Cable outgoing connector type
Model	PRDAT18-7DO PRDAT18-7DC PRDAT18-7 DO-V PRDAT18-7DC-V	PRDAWT18-7DO PRDAWT18-7DC PRDAWT18-7DO-I PRDAWT18-7DC-I PRDAWT18-7DO-IV PRDAWT18-7DC-IV	PRDAT30-15DO PRDAT30-15DC PRDAT30-15DO-V PRDAT30-15DC-V	PRDAWT30-15DO PRDAWT30-15DC PRDAWT30-15DO-I PRDAWT30-15DC-I PRDAWT30-15DO-IV PRDAWT30-15DC-IV
Sensing distance	7mm		15mm	
Hysteresis	Max. 10% of sensing distance			
Standard sensing target	20×20×1mm(Iron)		45×45×1mm(Iron)	
Setting distance	0~4.9mm		0~10.5mm	
Power supply (Operating voltage)	12-24VDC (10-30VDC)			
Leakage current	Max. 0.6mA			
Response frequency(※1)	250Hz		100Hz	
Residual voltage	Max. 3.5V			
Affection by Temp.	Within ±10% max. of sensing distance at 20℃ in temperature range of -25 ~ 70℃			
Control output	2 ~ 100mA			
Insulation resistance	Min. 50MΩ(500VDC megger)			
Dielectric strength	1,500VAC 50/60Hz for 1minute			
Vibration	1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500㎨(50G) X, Y, Z directions for 3 times			
Indicator	Operating indicator(Red LED)			
Environment: Ambient temperature	-25 ~ 70℃, Storage: -30 ~ 80℃			
Environment: Ambient humidity	35 ~ 95%RH, Storage: 35 ~ 95%RH			
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overcurrent protection			
Protection	IP67(IEC Standards)			
Meterials	Case/Nut/Washer: Teflon coated brass, Sensing surface: Teflon Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chloride(PVC)			
Approval	CE			
Unit weight	Approx. 122g	Approx. 65g	Approx. 184g	Approx. 143g

※ **1**: The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.
※ Condition for use in Environment is no freezing or condensation.

▣ Dimensions

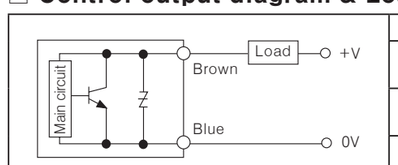
(Unit:mm)

Type	Outgoing type	Outgoing connector type	Nut, Washer
	PRDAT(M18, M30)	PRDAWT(M18, M30)	
Flush			

Type			A	B	C	D	E	F	G	H	J	K
Flush	M18	PRDAT	M18×1	47	29	18	4	5	-	24	29	2,000
		PRDAWT	M18×1	47	29	18	4	5	43.5	24	29	300
	M30	PRDAT	M30×1.5	58	38	20	5	5	-	35	42	2,000
		PRDAWT	M30×1.5	58	38	20	5	5	43.5	35	42	300

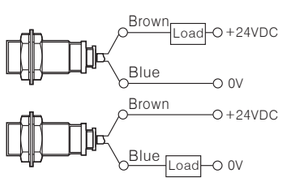
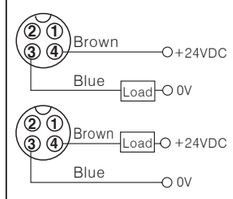
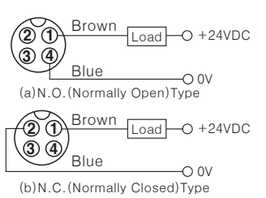
※"**K**" type standard: Cable outgoing type/2,000mm, Cable outgoing connector type/300mm
※"**F**" type: ϕ5, 2 cores(Conductor cross section: 0.3mm², Insulator diameter: ϕ1.25)

▣ Control output diagram & Load operating



	Normally Open	Normally Closed
Sensing target	Presence / Nothing	Presence / Nothing
Load	Operation / Return	Operation / Return
Indicator (LED)	ON / OFF	ON / OFF

▣ Connections

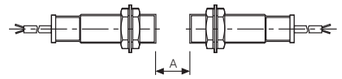
DC 2wire standard type	Connector	Connector IEC Standards Model
		
※	※①,② are N·C(Not Connected) Terminals.	※②,③ of N.O. Type and ③,④ of N.C. Type are N·C(Not Connected) Terminals.

▣ Mutual-interference & Influence by surrounding metals

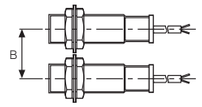
◎Mutual- interference

When several proximity sensors are mounted closely, malfunction of sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors with referring to the chart below.

Face to Face

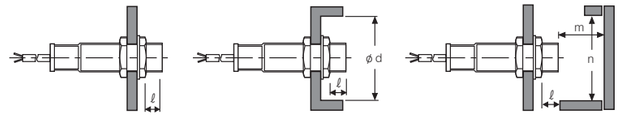


Parallel



◎Influence by surrounding metals

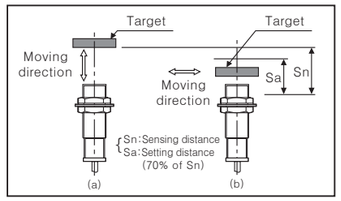
When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart.



(Unit:mm)

PRDA□T18-7D□				PRDA□T30-15D□			
A	42	ϕd	18	A	90	ϕd	30
B	36	m	21	B	60	m	45
ℓ	0	n	27	ℓ	0	n	45

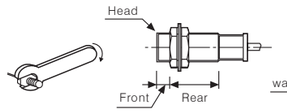
▣ Setting distance



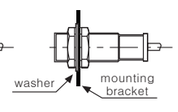
- Sensing distance can be changed by the shape, size or material of the target. Therefore please check the sensing distance like (a), then pass the target within range of setting distance(Sa).
- Setting distance(Sa)
  = Sensing distance(Sn) × 70%
  Ex)PRDAT18-7DO
  Setting distance(Sa) = 7mm × 0.7 = 4.9mm

▣ Caution for using

1. This equipment shall not be used outdoors or beyond specified temperature range.
2. Do not apply over tensile strength of cord. (ϕ4: 30N max., ϕ5: 50N max.)
3. Do not use the same conduit with cord of this unit and electric power line or power line.
4. Do not put overload to tighten nut, please use the supplied washer for tightening.



[Picture 1]



[Picture 2]

Model \ Strength		Front		Rear
		Size	Torque	Torque
PRDAT18 PRDAWT18 Series	Flush	-	150kgf·cm (14.7N·m)	
PRDAT30 PRDAWT30 Series		26mm	500kgf·cm (49N·m)	800kgf·cm (78.4N·m)

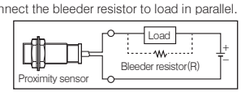
[Table 1]

Note1)Allowable tightening torque of a nut may be different by the distance from the head. For allowable tightening torque and the range of front and rear parts, refer to [Table 1] and above [Picture 1] respectively. The rear part includes a nut on the head side(see above [Picture 1]). Please apply a tightening torque of the front part when the nut on the front is located in the front part.
Note2)The allowable tightening torque denotes a torque value when using a provided washer as above [Picture 2].

5. Please check the voltage changes of power source in order not to excess rating power input.
6. Do not use this unit during transient time(80ms) after apply power.
7. It might result in damage to this product, if use automatic transformer. So please use insulated transformer.
8. Please make wire as short as possible in order to avoid noise.
9. Be sure to use cable as indicated specification on this product. If wrong cable or bended cable is used, it shall not maintain the water-proof.
10. It is possible to extend cable with over 0.3mm² and max. 200m.
11. If the target is plated, the operating distance can be changed by the plating material.
12. It may result in malfunction by metal particle on product.
13. 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.
14. If connecting the load with big inrush current(DC type bulb) to this unit, the big inrush current will flow since 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 sensor might be damaged by inrush current.
    If you use DC type bulb, please connect extra relay or resistance in order to protect proximity sensor from.
15. If making a transceiver close to proximity sensor or wire connection, it may cause malfunction.
16. In case of the load current is small: Make the residual current is less than return current to connect the bleeder resistor to load in parallel.

Vs:Power supply, Io:Min.operating current for proximity sensor, Ioff:Return current of load, P:Resistance W of Bleeder resistor

※$R \leq \frac{Vs}{Io-Ioff}$ (kΩ) $P > \frac{Vs^2}{R}$ (mW)



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

▣ Major products

- Proximity sensors
- Area sensors
- Photoelectric sensors
- Fiber optic sensors
- Door/Door side sensors
- Sensor controllers
- Graphic/Logic panels
- Temperature controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Switching power supplies
- Stepping motors/drivers/motion controllers
- Field network devices
- Laser marking system(CO_2, Nd:YAG)
- Laser welding/soldering system
- Counters
- Timers
- Display units
- Panel meters
- Pressure sensors
- Rotary encoders
- Power controllers

Autonics Corporation
http://www.autonics.com
Satisfiable Partner For Factory Automation
■HEAD QUARTERS :
41-5. Yongdang-dong, Yangsan-si, Gyeongnam, 626-847, Korea
■OVERSEAS SALES :
Bldg. 402 3rd FL., Bucheon Techno Park, 193, Yakdae-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do, 420-734, Korea
TEL : 82-32-610-2730 / FAX : 82-32-329-0728
■E-mail : sales@autonics.com

The proposal of a product improvement and development :product@autonics.com

EP-KE-07-0460C