

Autonics

电感型接近开关

PSE系列(直流三线型, OVAL TYPE)

使 用 说 明 书



非常感谢您选择Autonics的产品
为了您的安全,请在使用前阅读以下的内容

■ 注意安全

* '注意安全' 是为安全正确使用产品, 预防事故及危险发生, 请务必遵守

* '注意安全' 中 '警告' 和 '注意' 两种意思如下

△ 警 告 若不按说明操作会引发严重伤亡

△ 注意 若不按说明操作会导致轻微伤害及产品损伤

* 产品和使用说明书中的符号说明如下

△ 特定条件下会发生危险

△ 警 告

1. 用于人身及财产上影响大的机器 (如: 核能控制、医疗器械、车辆、铁路、航空、易燃装置、娱乐设施及安全装置时), 务必加装双重安全措施
否则易引发火灾、人身伤亡及财产损失

△ 注意

- 严禁在有易燃易爆性气体、化学药品、强酸强碱性物质的环境下使用本产品
否则易引发火灾或爆炸
- 严禁冲压本产品
否则易损坏产品或引发误动作
- 严禁超出使用电压范围或使用交流电源
否则易损坏产品或引发误动作

■ 型号构成

P S E 1 7 - 5 D N

DC 3 线输出
DN : NPN NO (常开)
DN2 : NPN NC (常闭)
DP : PNP NO (常开)
DP2 : PNP NC (常闭)

尺寸
检测距离 (mm)

形状
方型
电感型接近开关

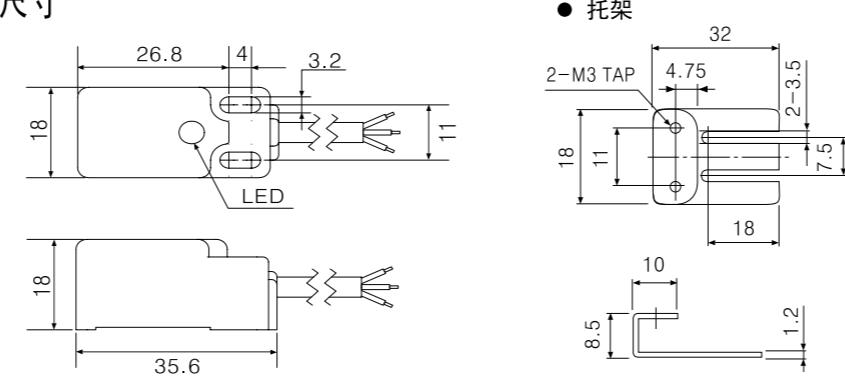
* 本说明书记载的事项, 外形尺寸等因产品的改进而变更时, 恕不另行通知。

■ 规格/性能

型号名	PSE17-5DN	PSE17-5DP
检测距离	5mm ±10%	
应差距离	实际探测距离10%以内	
标准检测物	18×18×1mm(铁)	
设定距离	0~3.5mm	
电源电压 (使用电压范围)	12~24VDC (10~30VDC)	
消耗电流	10mA 以下	
响应频率 (★1)	700Hz	
残留电压	1.5V 以下	
温度影响	-25 ~ +70°C 范围内距离的变化率为 +20°C 时的 ±10% 以内	
控制输出	200mA	
绝缘阻抗	50MΩ以上 (以500VDC绝缘阻抗表)	
耐电压	1500VAC 50/60Hz 1分钟	
耐振动	10~55Hz (周期一分钟) 振幅1mm, X, Y, Z各方向2小时	
抗冲击	500m/s² (50G) X, Y, Z 各方向3次	
指示灯	动作指示灯: 红色LED.	
环境温度	-25 ~ +70°C (未结冰状态下)	
存储温度	-30 ~ +80°C (未结冰状态下)	
环境湿度	35 ~ 95%RH	
保护电路	内置浪涌保护电路, 电源反接保护电路, 过电流保护电路	
防护等级	IP67 (IEC 规范)	
获得认证	CE	
重量	约 65g (不包括包装盒的重量)	

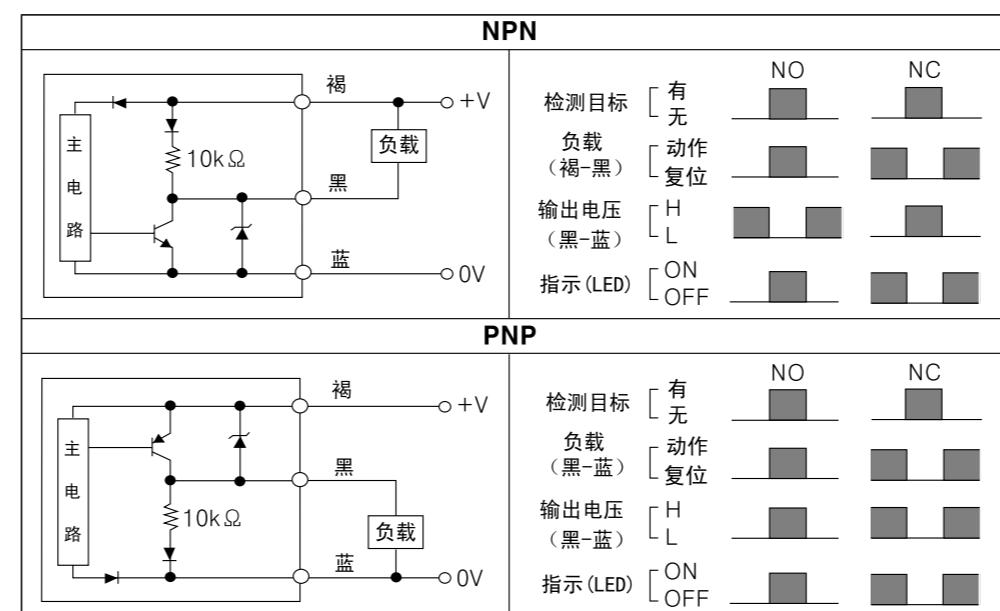
* (★1) 响应频率是平均值. 检测转盘上相邻标准感应目标的间隔是标准感应目标尺寸的2倍, 被检测产品与感应目标之间的距离是标准检测距离的1/2.

■ 尺寸



(单位:mm)

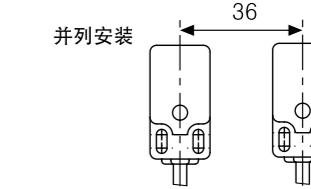
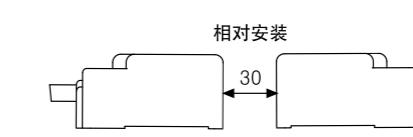
■ 控制输出图表



■ 相互干扰及周围金属的影响

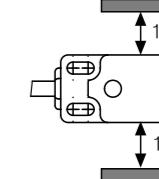
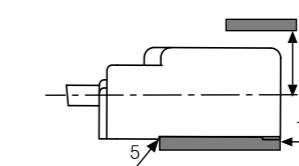
○ 相互干扰

2个以上的接近开关如下图所示, 相对或并列安装时, 频率干扰易引起误动作, 安装间距需在下表标记的尺寸以上



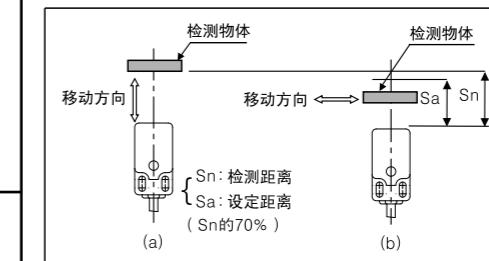
○ 周围金属的影响

接近开关周围若有金属, 受其影响会导致复位不良等误动作。为防止由周围金属引起的误动作, 安装间距需在下表标记的尺寸以上



(单位:mm)

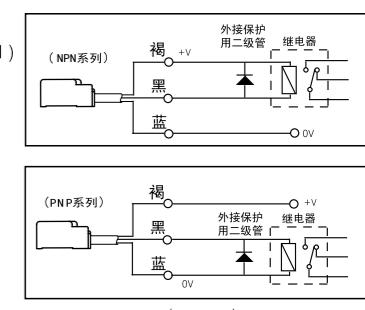
■ 设置距离



- 检测物体的形状、大小、材质均影响检测距离
如图(a)所示设定检测距离, 如图(b)所示,
检测物体在设定距离(Sa)内通过
- 设定距离(Sa)计算式: 检测距离(Sn) × 70%
例) PSE17-5DN (参照型号构成)
设定距离(Sa) = 5mm × 0.7 = 3.5mm

■ 使用注意

- 此产品不能在室外或超出使用温度范围的环境中使用。
- 拉接近开关的电缆时不能超出其抗拉强度。(Φ4: 最大 30N, Φ5: 最大 50N)
- 请避免将接近开关信号线和电源线与动力线一起铺设或连接。
- 紧固螺母时力矩不能超出 5 kgf·cm。
- 请检查所用电源电压的波动范围, 波动范围不能超出额定值。
- 电源接入后避免过度期间 (10ms) 内的使用。
- 使用自耦变压器可能会导致主体和电源损坏, 请务必使用隔离变压器。
- 尽可能减短连接线的长度以避免噪声干扰。
- 请使用产品要求规格的电线, 若使用指定外的或弯曲的电线将不能保证防水性。
- 若需延长电线, 0.3mm² 以上的电线最长只能 200m。
- 有电镀检测物时, 注意电镀性质可能改变动作距离。
- 检测面有金属粉尘附着时, 可能引起误动作。
- 在使用的接近开关周围有大浪涌发生装置 (发动机、焊接机等) 时, 尽管接近开关内置浪涌吸收电路, 但请注意在浪涌产生源处插入变阻器等吸收体 (吸收元件)。
- 负载为继电器时, 应在负载两端外接保护用的二极管。(Chart 1) 所示。
- 突兀电流负载 (DC用电灯等) 连接使用时, 初期阻抗低, 负载突兀电流流入。随着电流流入端负载阻抗提高, 一定时间后电流恢复正常, 如上述情况, 电源加入时的突兀电流会损坏接近开关, 需要使用DC用电灯时需另外使用继电器。请串联电流限制电阻, 需要使用DC用电灯时需另外使用继电器。请串联电流限制电阻来保护接近开关。
- 请将产品及连接线远离无线电设备, 以免发生误动作。
- ※ 如不按上述操作可能会引起产品故障。



(Chart 1)

■ 主要产品

- 光电传感器
- 温度控制器
- 光纤传感器
- 湿/温度传感器
- 门传感器
- 门侧面传感器
- 光幕
- 接近开关
- 压力传感器
- 旋转编码器
- 配线/配件
- 开关电源
- 控制用开关/灯/蜂鸣器
- I/O端子台/电缆
- 步进电机/驱动器/控制器
- 触摸屏
- 远程网络设备
- 激光打印系统(Fiber, CO2, Nd:YAG)
- 激光焊接/切割系统

Autonics Corporation
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Autonics**INDUCTIVE PROXIMITY SWITCH****PSE SERIES(SQUARE DC 3 WIRE, OVAL 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

- In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, equipment 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

- Do not use this unit in place where there is flammable, explosive gas, chemical or strong alkalis, acids.**

It may cause a fire or explosion.

- Do not impact on this unit.**

It may result in malfunction or damage to the product.

- Do not apply AC power and observe specification rating.**

It may result in serious damage to the product.

Ordering information**P SE 17 - 5 DN**DN : NPN NO(Normal Open)
DC 3wire output DN2 : NPN NC(Normal Close)DP : PNP NO(Normal Open)
DP2 : PNP NC(Normal Close)

Detecting distance Standard sensing distance(mm)

Dimension A side length(mm)

Appearance Square

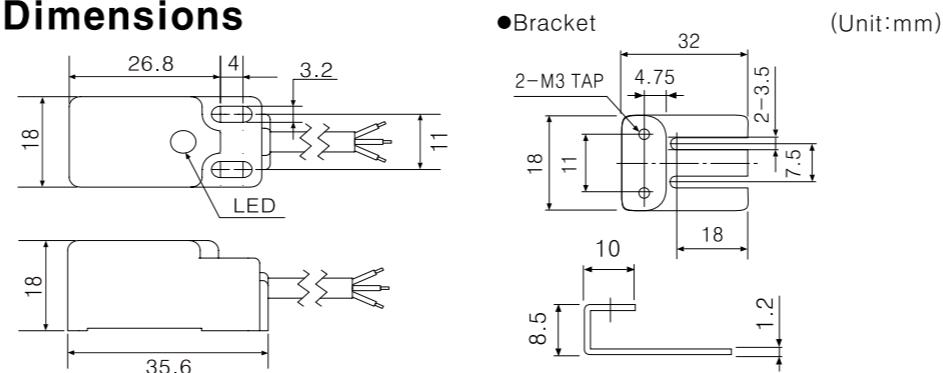
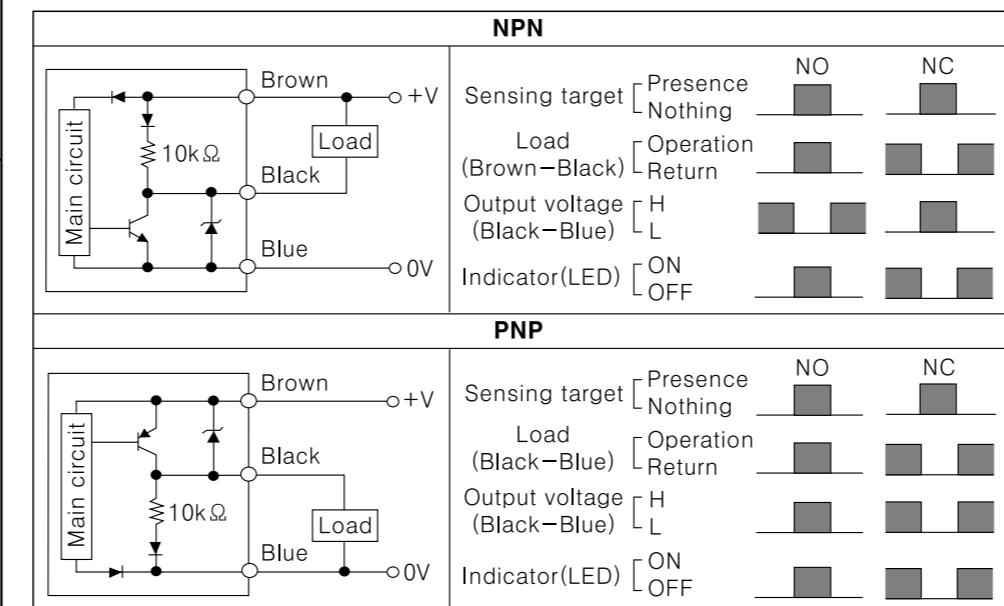
Item Inductive proximity switch

※ The above specifications are changeable at anytime without notice.

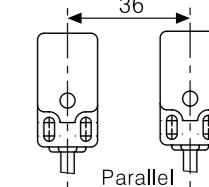
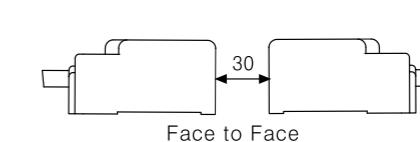
Specifications

Model	PSE17-5DN PSE17-5DN2	PSE17-5DP PSE17-5DP2
Sensing distance	5mm ±10%	
Hysteresis	Max. 10% of sensing distance	
Standard sensing target	18×18×1mm(Iron)	
Setting distance	0 ~ 3.5mm	
Power supply (Operating voltage)	12~24VDC (10~30VDC)	
Current consumption	Max. 10mA	
Response frequency(★1)	700Hz	
Residual voltage	Max. 1.5V	
Affection by temp.	±10% Max. of sensing distance at +20°C within temperature range of -25 to +70°C	
Control output	200mA	
Insulation resistance	Min.50MΩ(at 500VDC megger)	
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) X, Y, Z directions for 3 times	
Indicator	Operating indicator(Red LED)	
Ambient temperature	-25 to +70°C(non-freezing condition)	
Storage temperature	-30 to +80°C(non-freezing condition)	
Ambient humidity	35 to 95%RH	
Protection circuit	Surge protection circuit, Reverse polarity protection, Overload & short circuit protection	
Protection	IP67(IEC standard)	
Approval	CE	
Unit weight	Approx. 65g	

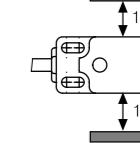
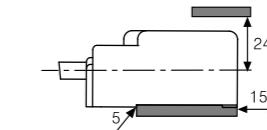
※(★1)The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

Dimensions**Control output diagram & Load operating****Mutual-interference & Influence by surrounding metals****Mutual-interference**

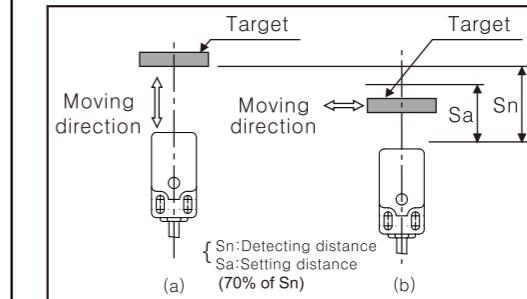
When several proximity switches are mounted closely, malfunction of switch may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two switches with referring to the chart below.

**Influence by surrounding metals**

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



(Unit:mm)

Setting distance

- Sensing 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)
 - =Sensing distance(Sn) × 70%
 - Ex) PSE17-5DN (See ordering information)
Setting distance(Sa)
=5mm × 0.7=3.5mm

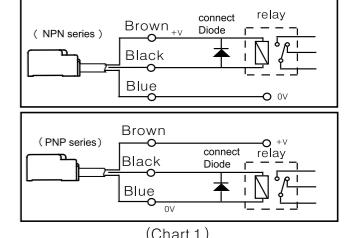
Caution for using

- This equipment shall not be used outdoors or beyond specified temperature range.
- Do not apply over 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.
- Tighten strength of installing bolts should be under 5kgf·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(10ms) after apply power.
- It might result in damage to this product, if use automatic transformer. So please use insulated transformer.
- Please make wire as short as possible in order to avoid noise.
- 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.
- 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 relay, please install the Varistor or absorber to source of surge, even though there is built-in surge absorber in this unit. in (Chart 1).
- 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 switch might be damaged by inrush current. If you use DC type bulb, please connect extra relay or resistance in order to protect proximity switch from.
- If making a transceiver close to proximity switch or wire connection, it may cause malfunction.

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

Major products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connectors/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, CO₂, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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