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**HUCHUANG 沪创**

选型手册

# Production Manual

接近开关/光电开关/磁性开关

Promixity Switches/photoelectric Switch/Magnetic switch series

科技创新，不断超越

Science and technology innovation, constantly surpass

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## Brand Reputation

品牌实力

接近开关/光电开关/磁性开关  
Promixity Switches/photoelectric Switch/Magnetic switch series



公司实施现场管理和流程 化生产控制模式，强化生产过程管理，确保每道工序质量达标，保证品质零缺陷，使得我们产品在制造过程中亦体现出卓越的品质与潜在的价值，为沪创品牌树立打下了坚实基础。

在高品质、高精度目标的坚持下，结合沪创人的智慧与勤劳，不断为全球客户提供高质量、高性能的产品，在强手如林的电气制造领域里，闯出一片更为广阔的天地！

The company carry out on-site management and production process control, strengthen the management of the production process, to ensure that each process quality standard, to ensure the quality of zero defects, making our products in the manufacturing process also reflects the excellent quality and potential value, as the Huchuang set up to lay a solid foundation.

In the high-quality, high precision target's insistence, with the Huchuang People and Wisdom and hard-working, for global customers with high quality, high performance products, in the electrical compny manufacturing field, break a more vast world!

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## 企业简介 Company Introduction

**HUCHUANG 沪创**

沪创电气是一家国内较早专业从事自动化工控系列产品集研发、制造、销售为一体的企业之一。座落在富有“中国电器之都”之称的乐清市柳市镇。坚持以“科技创新，不断超越”为宗旨。并和国内各专业从事自动化工控系列产品研发的部门合作与交流，不断提高产品品质。

沪创电气生产的电感式接近开关、光电开关、电容式接近开关、霍尔开关、磁性开关、正反转传感器、小型继电器、计数器、门禁系统等系列工控产品均以达到国际IEC,国家GBT14048.102008等标准。公司研发部门还可根据客户要求开发各类自动化工控系列产品来满足市场需求。

沪创电气产品广泛用于通讯，电梯，纺织，矿山，冶金，机床，烟草，包装等自动化领域。热忱欢迎广大新老客户光临指导，愿我们真诚合作，共创辉煌！

YUEQINGSHI HUCHUANG ELECTRIC CO.,LTD.

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## ■ 圆柱型接近开关型号命名及含义

|      |              |                                                              |                                    |                         |                                                        |     |
|------|--------------|--------------------------------------------------------------|------------------------------------|-------------------------|--------------------------------------------------------|-----|
| CHE  | 18           | 8                                                            | N                                  | A                       | A                                                      | 710 |
| 沪创电气 | 外形序号         | 动作距离                                                         | 输出形式                               | 输出状态                    | 产品分类                                                   |     |
|      | 12: 外形直径12mm | 2: 2mm<br>4: 4mm<br>5: 5mm<br>8: 8mm<br>10: 10mm<br>15: 15mm | N: NPN<br>P: PNP<br>D: 直流<br>Y: 交流 | A 常开<br>B 常闭<br>AB 一开一闭 | A 接近开关<br>B 光电开关<br>C 磁性开关<br>D 电容式<br>H 霍尔开关<br>N 耐高温 |     |

注: 有些老型号因以前按单种型号定型和命名, 现无法归纳现在的基本型号及含义, 所以仍然以老型号命名, 若有不详之处, 请联系!

## ■ 光电开关型号命名及含义

|      |                                              |                                                                      |                                    |                         |                                               |     |
|------|----------------------------------------------|----------------------------------------------------------------------|------------------------------------|-------------------------|-----------------------------------------------|-----|
| CHE  | 18                                           | 10                                                                   | N                                  | A                       | B                                             | 710 |
| 沪创电气 | 外形序号                                         | 动作距离                                                                 | 输出形式                               | 输出状态                    | 产品分类                                          |     |
|      | 12: 外形直径12mm<br>18: 外形直径18mm<br>30: 外形直径30mm | 5: 5cm<br>10: 10cm<br>20: 20cm<br>30: 30cm<br>50: 50cm<br>100: 100cm | N: NPN<br>P: PNP<br>D: 直流<br>Y: 交流 | A 常开<br>B 常闭<br>AB 一开一闭 | A 接近开关<br>B 光电开关<br>C 磁性开关<br>H 霍尔开关<br>N 耐高温 |     |

## ■ 方型接近开关型号命名及含义

|       |                                                                                                                   |                                            |                                    |                         |                                                        |     |
|-------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------|-------------------------|--------------------------------------------------------|-----|
| CHE / | JL                                                                                                                | 5                                          | N                                  | A                       | A                                                      | 710 |
| 沪创电气  | 外型序号                                                                                                              | 动作距离                                       | 输出形式                               | 输出状态                    | 产品分类                                                   |     |
|       | JL: 17×17×28<br>JL1: 25×25×38<br>JL2: 30×30×52<br>JL3: 40×40×52<br>JS: 18×18×36<br>JPL: 17×17×35<br>JPS: 17×17×28 | 5: 5mm<br>10: 10mm<br>15: 15mm<br>20: 20mm | N: NPN<br>P: PNP<br>D: 直流<br>Y: 交流 | A 常开<br>B 常闭<br>AB 一开一闭 | A 接近开关<br>B 光电开关<br>C 磁性开关<br>D 电容式<br>H 霍尔开关<br>N 耐高温 |     |

## ■ 霍尔传感器型号命名及含义

|      |                                             |                      |                                           |                         |                                                        |     |
|------|---------------------------------------------|----------------------|-------------------------------------------|-------------------------|--------------------------------------------------------|-----|
| CHE  | 12                                          | 10                   | N                                         | A                       | H                                                      | 710 |
| 沪创电气 | 外形序号                                        | 动作距离                 | 输出形式                                      | 输出状态                    | 产品分类                                                   |     |
|      | 08: 外形直径8mm<br>12: 外形直径12mm<br>18: 外形直径18mm | 10: 10mm<br>20: 20mm | N: NPN<br>P: PNP<br>N11: 双向<br>CKZS: 初开自锁 | A 常开<br>B 常闭<br>AB 一开一闭 | A 接近开关<br>B 光电开关<br>C 磁性开关<br>D 电容式<br>H 霍尔开关<br>N 耐高温 |     |

## ■ 圆柱形超短型型号命名及含义

|      |                                              |                                                              |                                    |                         |                            |                       |
|------|----------------------------------------------|--------------------------------------------------------------|------------------------------------|-------------------------|----------------------------|-----------------------|
| CHE  | 18                                           | 8                                                            | N                                  | A                       | A                          | 610                   |
| 沪创电气 | 外形序号                                         | 动作距离                                                         | 输出形式                               | 输出状态                    | 产品分类                       | 产品长度                  |
|      | 12: 外形直径12mm<br>18: 外形直径18mm<br>30: 外形直径30mm | 2: 2mm<br>4: 4mm<br>5: 5mm<br>8: 8mm<br>10: 10mm<br>15: 15mm | N: NPN<br>P: PNP<br>D: 直流<br>Y: 交流 | A 常开<br>B 常闭<br>AB 一开一闭 | A 接近开关<br>C 磁性开关<br>H 霍尔开关 | 610: 总长42mm<br>螺纹32mm |



## ■ 圆柱型接近开关型号命名及含义 The columned proximity switches model named and meaning

|                |                                         |                                                      |                                                |                                                                                                 |                                                                           |                                                                     |                                                                                 |                                                      |                                                |
|----------------|-----------------------------------------|------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------|
| LJ             |                                         | 18                                                   | A3                                             | 8                                                                                               | Z                                                                         | B                                                                   | X                                                                               | A                                                    | P                                              |
| 接近开关代号<br>沪创电气 | 感应方式<br>无表示:<br>为电感式<br>C:电容式<br>G:干簧管式 | 外形序号<br>12: 外形直径12mm<br>18: 外形直径18mm<br>30: 外形直径30mm | 结构形式<br>A3: 圆柱型<br>螺管金属外壳<br>A4: 圆柱型<br>螺管塑料外壳 | 动作距离<br>1: 1mm<br>4: 4mm<br>8: 8mm<br>.....<br>B: 1-10mm<br>T: 1-15mm<br>H: 1-20mm<br>K: 1-25mm | 工作电源范围<br>Z: DC6-36V<br>Z1: DC30-65V<br>J: AC90-250V<br>J1:<br>AC300-400V | 输出形式<br>A: 三线制常闭<br>B: 三线制常开<br>C: 四线制常开及常闭<br>D: 二线制常闭<br>E: 二线制常开 | 输出电流<br>X: NPN DC 200mA<br>Y: PNP DC 200mA<br>Z: 400mA<br>M: 500mA<br>W: 1500mA | 应用表示<br>A: 耐高低温及全密封型, 如AJ带继电器型为大电流输出<br>“□”无表示: 工业配用 | 使用分类<br>P: 配用单片机、PC机、电子计数、数码控制<br>“□”无表示: 工业配用 |

注: 有些老型号因以前按单种型号定型和命名, 现无法归纳现在的基本型号及含义, 所以仍然以老型号命名, 若有不详之处, 请联系!

## ■ 光电开关型号命名及含义 Photoelectric switch type naming and meaning

|                                                                                                                                                                    |                                                          |                                                          |                                          |              |                                                   |                                                                                           |                                                   |                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|------------------------------------------|--------------|---------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------|
| E3F                                                                                                                                                                |                                                          | D                                                        | S                                        | 10           |                                                   | C                                                                                         | 4                                                 |                                             |
| 外形序号<br>例: E3F1: Φ12圆柱<br>E3F: Φ18圆柱<br>E3F3: Φ30圆柱<br>GDN15: 42×75×94<br>GDN16: 60×40×100<br>E3JK: 50×50×18<br>E3JK: 25×60×75<br>E3S: 20×20×65<br>E3K80: 24×50×80 | 检出方向<br>无表示:<br>平行于开关光轴的<br>顶端面<br>2:<br>垂直于开关光轴的<br>上端面 | 检出方式<br>D: 漫反射形<br>R:<br>反馈反射形<br>G: 槽形<br>无字母表示:<br>对射形 | 检出距离单位<br>S:<br>CM, 厘米<br>无字母表示:<br>M, 米 | 检出距离<br>具体数字 | 对射形<br>L: 表示<br>发射器<br>↑表示<br>D: 表示<br>接收器<br>↓表示 | 检出形式<br>N, C4, E4: NPN<br>300mA输出<br>P: PNP<br>300mA输出<br>M: 继电器触点<br>1A开·闭输出<br>Y: 交流二线制 | 输出状态<br>1: 常开<br>2: 常闭<br>3(12):<br>一开一闭<br>4: 常开 | T 1:<br>带延时<br>T 2:<br>带延时<br>T 1 2:<br>带延时 |

## ■ 无接触开关型号命名及含义

|                 |                                                                                                      |                                             |                                                                |                                                                             |
|-----------------|------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------|
| JWK             | 220                                                                                                  | A                                           | 10                                                             | JK                                                                          |
| 无触点开关代号<br>沪创电气 | 电源电压<br>220: AC220V电源<br>110: AC110V电源<br>36: AC36V电源<br>380: AC380V电源<br>24: DC24V电源<br>12: DC12V电源 | 感应面方向位置<br>A: 表示感应方向为开关上端<br>D: 表示感应方向为开关前端 | 动作距离<br>10: 10mm<br>15: 15mm<br>20: 20mm<br>25: 25mm<br>5: 5mm | 输出方式<br>JK: 继电器触点<br>输出如图JK<br>J: 电压输出<br>如图JJ<br>P: 晶体管输出<br>如图JA<br>..... |

## ■ 方型、圆柱型接近开关型号命名及含义

|                                                                                                                                                                                                                                                                        |                                                  |                                                                                                           |                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| TCA                                                                                                                                                                                                                                                                    | 20                                               | 20                                                                                                        | A                                                                                                                    |
| 外形序号<br>TCA Φ100×50×100mm TCB Φ140×55×140mm<br>TCC Φ210×50×210mm TCO Φ140×55×140mm<br>SE Φ55×35mm HJ 80×30×120mm<br>SD Φ42×32mm SR Φ42×24mm<br>HE 55×55×50mm SK Φ35×18mm<br>HD 50×50×45mm HY 55×55×190mm<br>SC Φ40×20×42×1.5×55mm SH Φ34×32mm<br>SM Φ40×22×42×1.5×55mm | 电源电压<br>20: 表示<br>AC90-250V<br>30: 表示<br>DC6-36V | 动作距离<br>5 : 5mm<br>8 : 8mm<br>15 : 15mm<br>20 : 20mm<br>25 : 25mm<br>50 : 50mm<br>80 : 80mm<br>120: 120mm | 输出方式<br>A: DC为NPN三线常开, AC为交流二线常开<br>B: DC为NPN三线常闭, AC为交流二线常闭<br>C: PNP三线常开<br>D: PNP三线常闭<br>AL: DC二线常开<br>BL: DC二线常闭 |

## ■ LJ2系列接近开关型号命名及含义

|                                 |                                    |                                                     |                                                   |                                                                           |                                         |                                                    |   |
|---------------------------------|------------------------------------|-----------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------|---|
| LJ2                             |                                    | 15                                                  | -                                                 | /                                                                         | 2                                       | 2                                                  | 1 |
| 外形序号<br>高: 40<br>宽: 38<br>长: 80 | 无表示:<br>直流型接近开关<br>L表示:<br>交流型接近开关 | 动作距离<br>5 : 5mm<br>10: 10mm<br>15: 15mm<br>20: 20mm | 无表示:<br>感应位置在开关<br>关左、右、上<br>方向<br>I表示:<br>感应头分离型 | 无表示:<br>输出电流为300mA<br>2: DC型为24V<br>交流型(前面板)<br>1: AC90-250V<br>2: AC380V | 接线方式<br>2: 螺纹头<br>引线型<br>1: 航空插头<br>接插型 | 感应面方向<br>1: 前端<br>2: 左端<br>3: 右端<br>4: 底端<br>5: 上端 |   |

## ■ 圆柱型接近开关型号命名及含义

|         |                                  |                                                                                                                             |                                                                                            |                                                                                                                                                              |
|---------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P       | R                                | 12                                                                                                                          | 4                                                                                          | DN                                                                                                                                                           |
| 电感式接近开关 | 外形<br>R: 圆柱型<br>S: 角柱型<br>L: 小方型 | 外形尺寸<br>8: M8×1×30mm<br>12: M12×1×42.5mm<br>18: M18×1×47mm<br>30: M30×1.5×58mm<br>PS: 17×17×28mm<br>PL: 17×17×35mm<br>..... | 感应距离<br>1: 1mm<br>2: 2mm<br>4: 4mm<br>5: 5mm<br>8: 8mm<br>10: 10mm<br>15: 15mm<br>20: 20mm | DN: 直流NPN三线常开<br>DN2: 直流NPN三线常闭<br>DP: 直流PNP三线常开<br>DP2: 直流PNP三线常闭<br>DO: 直流二线常开<br>DC: 直流二线常闭<br>AO: 交流二线常开<br>AC: 交流二线常闭<br>D表示电压DC6-36V<br>A表示电压AC90-250V |

## ■ 角柱型接近开关型号命名及含义

|           |                                                                                              |         |                                                                  |                                       |   |
|-----------|----------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------|---------------------------------------|---|
| TL        | -                                                                                            | Q5      | M                                                                | C                                     | 1 |
| 角柱型接近开关序号 | 感应距离<br>Q: 最小角柱型<br>N: 外型大点的角柱型<br>5: 5mm 10: 10mm<br>15: 15mm 20: 20mm<br>25: 25mm 30: 30mm | M: 非埋入型 | 输出方式<br>C: NPN三线<br>F: PNP三线<br>(B): PNP三线<br>D: 直流二线<br>Y: 交流二线 | 1: 常开型输出<br>2: 常闭型输出<br>1 2: 常开+常闭型输出 |   |

## ■ 霍尔传感器型号命名及含义

|                 |                                                |                                                                                          |                                                                             |                                                         |
|-----------------|------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------|
| NJK             | 50                                             | 02                                                                                       | C                                                                           |                                                         |
| 霍尔传感器代号<br>沪创电气 | 外形尺寸<br>50: 25mm 长<br>80: 35mm 长<br>90: 50mm 长 | 外形体积<br>01: 传感器外形直径为Φ8mm<br>02: 传感器外形直径为Φ12mm<br>03: 传感器外形直径为Φ18mm<br>010: 传感器外形直径为Φ10mm | C或□无表示:<br>表示NPN常开<br>D: NPN 常闭<br>A: PNP 常开<br>B: PNP 常闭<br>K: 记忆<br>L: 反锁 | 无表示为:<br>输出电流200mA,<br>输入电源DC6-36V<br>如有其它电压电流需求, 直接注明。 |

## 接近开关工作原理 Proximity switch working principle

接近开关又称接近传感器。接近传感器分电感式、电容式、模拟式、霍尔式、磁性式。传感器可与PLC可编程控制器、单片机、非门电路、电子计数器、固态继电器、小型继电器等产品配套使用。

电感式接近传感器由高频振荡、检波、放大、触发及输出电路等组成。振荡器在传感器检测面产生一个交变电磁场，当金属物体接近其检测面时，金属中产生的涡流吸收了振荡器的能量，使振荡减弱以至停振。振荡器的振荡及停振这二种状态，转换为电信号通过整形放大器转换成二进制的开关信号，经功率放大后输出。

电容式接近传感器由高频振荡器和放大器等组成，由传感器的检测面与大地间构成一个电容器，参与振荡回路工作，起始处于停振状态。当物体接近其检测面对，回路的电容量发生变化，使高频振荡器振荡，振荡与停振这二种状态转换为电信号经放大器转换成二进制的开关信号。

模拟传感器(又称线性位移传感器)，当金属物体接近其检测面时，随着距离的变化，其输出一个与距离成线性关系变化的电信号，从而达到监控的目的。

霍尔传感器是一种内含霍尔集成电路的接近传感器，利用霍尔效应将磁信号的有或无转换成开关量，广泛应用与信号检测、自动控制、安全保护。

磁性传感器由舌簧管和放大器组成，当外磁场靠近传感器迫使簧片磁化而动作，再经放大电路放大，增大开关电量，以实现对外接电路的通断控制。

Promixity switches also called proximity sensors. Sensor can be divided into inductive type, capacitive type, simulative type, Hall type, magnetic type. Sensor can support using of PLC programmable controller, SCM, Sr circuit, Electronic counters, Solid-state relay, Small relays and other products.

Capacitive proximity switch are composed by High frequency concussion and amplification. Sensor detection surface and between the earth form a capacitor. participate Oscillation circuit work, starting at the stop vibration state. When the object near the surface, The circuit capacity changes, is the Oscillation of high-frequency oscillator. The two states of Oscillator- Oscillations and stopping vibration, Converted to electrical signals through the shaping amplifier Switch into binary signals.

Simulative sensor (also known as the linear displacement sensor), when the metal object close to the detection surface. With the change of the distance, then output the signal which have linear relationship changes with the distance, So as to achieve the purpose of monitoring.

Hall sensor is a kind of proximity sensor which inside with Hall IC. Using Hall effect convert magnetic signal on or off into switch capacity. Widely used in signal detection, automatic control and safety protection.

Magnetic sensor are composed by reed tube and amplification. When the external magnetic field near the magnetic reed sensor to force the action, and then amplified by the amplifier, increasing the switching capacity, in order to realize the on-off control of external circuits.

## 接近开关技术术语 Proximity switches technical terms

### ● 动作距离 action distance

动作距离是接近开关最重要的参数，它主要是取决于接近开关的感应面直径大小，感应目标的材料及环境温度也影响接近开关的动作距离；对于磁性、霍尔传感器，安装在铁板上及磁性强度也同样影响传感器的动作距离；接近开关的动作方式有两种：轴向接近，径向接近，一般都采用轴向接近。

Operating distance is the most important parameter of the proximity switch, which mainly depends on the proximity switch sensing face diameter, sensing target material and ambient temperature also affects the proximity switch movement distance. For magnetic, Hall sensor, installed on the iron plate or on the items which with the magnetic strength, also affects the movement distance; There are two action ways of the proximity switch: Axial close and Radial close, Generally using axial approach.

### ● 额定感应距离(Sn) Rated sensing distance (Sn)

它是一个标准值，不考虑外部环境因素。

It's a standard value without regard to the influence of external environment.

### ● 标准检测片 Standard detection sheet

检测片设计成正方形，厚度为1mm；材料为ST37号钢，表面光滑，它的边长为 $3 \times S_n$ 。检测目标尺寸或材料的改变会衰减感应范围。

The detection sheet is designed into square type. The thickness is 1 mm, the material is ST37 with smooth surface and the side length is  $3 \times S_n$ . The alternation of the detection object dimension or material will attenuate the inductive range.

### ● 有效动作距离(Sr) Effective action distance (Sr)

开关在额定工作电压及室温下( $23 \pm 5^\circ\text{C}$ )测得的动作距离： $0.9S_n \leq S_r \leq 1.1S_n$

The action distance detected at the rated operating voltage and room temperature ( $23 \pm 5^\circ\text{C}$ ):  $0.9S_n \leq S_r \leq 1.1S_n$

### ● 可用动作距离(Su) Practicable action distance (Su)

开关在允许的环境温度 $-25^\circ\text{C} \sim +70^\circ\text{C}$ 下，输入电压在额定电压的85%到110%的范围内，测得的动作距离： $0.9S_r \leq S_u \leq 1.1S_r$

The action distance detected when the input voltage is in the range of 85% to 110% the rated voltage and the switch works at the allowable ambient temperature  $-25^\circ\text{C}$  to  $+70^\circ\text{C}$ :  $0.9S_r \leq S_u \leq 1.1S_r$



### ● 可靠动作距离(Sa) Reliable action distance (Sa)

测量目标在这个动作距离内，开关的动作是可靠的： $0 \leq Sa \leq 0.81Sn$

When the measure object is in this action distance, the action of the switch is reliable:  $0 \leq Sa \leq 0.81Sn$

### ● 重复精度(R) Repeatability precision (R)

是指在环境温度( $23 \pm 5^\circ\text{C}$ )，相对湿度为随机的，供电电压为 $U_e \pm 5\%$ ，在8个小时的范围内进行测量所产生的有效作用距离的变化量： $R \leq 0.1Sn$

It is the convert value of the effective action distance that is measured in 8 hours when the ambient temperature is  $23 \pm 5^\circ\text{C}$ , relative humidity is random and the service voltage is  $U_e \pm 5\%$ :  $R \leq 0.1Sn$

### ● 确保开关断开距离 Ensure the switch breaking distance

当检测片到开关感应面的距离大于开关的额定动作距离时，确保开关断开。

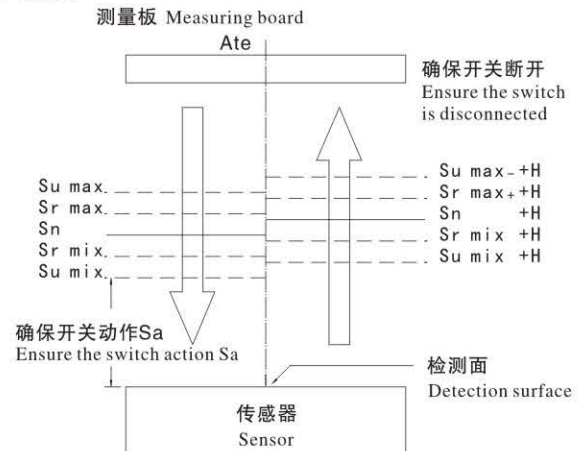
When the distance between the detection sheet and the switch inductive surface is larger than the rated action distance, ensure the switch is disconnected.

### ● 衰减作用 Attenuation

衰减系数是指某一种材料的动作距离相对于用ST37号钢作检测片时减少了多少。

对于电感式接近开关而言，检测片材料的导电性是影响衰减系数的主要参数。

Attenuation coefficient means how much the action distance of a certain kind of material is attenuated when St37 steel is used as detection sheet. For inductive type proximity switch, the electrical conductivity of the detection sheet material is the main parameter affecting attenuation coefficient.



| 电感式接近开关对部分材料衰减系数<br>Inductive proximity switch on the part of the material attenuation coefficient |                              |
|----------------------------------------------------------------------------------------------------|------------------------------|
| 材料 Material                                                                                        | 衰减系数 Attenuation Coefficient |
| 钢 Steel                                                                                            | 1.0                          |
| 不锈钢 Stainless steel                                                                                | 0.85                         |
| 铝 Aluminum                                                                                         | 0.4                          |
| 黄铜 Brass                                                                                           | 0.4                          |
| 铜 Bronze                                                                                           | 0.3                          |

| 电容式接近开关对部分材料衰减系数<br>Capacitive proximity switch on the part of the material attenuation coefficient |                              |
|-----------------------------------------------------------------------------------------------------|------------------------------|
| 材料 Material                                                                                         | 衰减系数 Attenuation Coefficient |
| 接地板 Earth plate                                                                                     | 1.0                          |
| 水 Water                                                                                             | 1.0                          |
| 酒精 Alcohol                                                                                          | 0.75                         |
| 陶瓷 Ceramic                                                                                          | 0.6                          |
| PVC                                                                                                 | 0.45                         |

### ● 空载电流(IO) No-load current (IO)

是指接近开关在没有负载时所测得的电流消耗。

It means the current consumption that is measured when the proximity switch is on no-load.

### ● 工作电流(IL) Operating current (IL)

是指开关在连续工作时的最大负载电流。

It means the maximum load current when the switch works continuously.

### ● 瞬间电流(IK) Instantaneous current (IK)

是指当开关闭合时不会损坏接近开关短时间内出现的允许电流。

It means the allowable current in a short time that doesn't ruin the switch when the switch is closed.

### ● 剩余电流(IR) Residual current (IR)

是指接近开关断开时流过负载的电流。

It means the current that goes through the load when the proximity switch is disconnected.

### ● 工作电压(UB) Operating voltage (UB)

是指工作电压的最大，最小值；在这个范围内接近开关可以保证安全工作。

It means the maximum and minimum of the operating voltage. In this range, the proximity switch can ensure the safe operation.

### ● 电压降(UD) Voltage drop (UD)

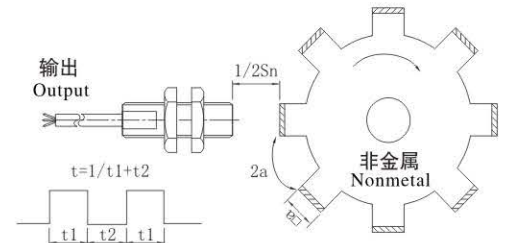
是指开关接通时在开关两端所测得的电压。

It means the voltage measured at the both ends of the switch when the switch is turned on.

### ● 工作频率(F) Operating frequency (F)

是指从衰减状态转变到无衰减状态的最大变换次数，用赫兹(Hz)来表示。

It means the maximum switching times from the attenuation state to non-attenuation state, shown as Hz.





### 接近开关安装方法 Proximity switch installation method

#### ● 圆柱型接近开关 Cylindrical type proximity switch

非屏蔽式接近开关可以获得最大的动作距离(与直径有关);但为了防止开关周围的金属对开关影响,开关感应头必须与周围的金属保持一定的间隙。(图1)

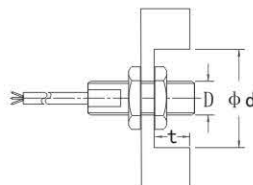
屏蔽式接近开关由于内部特殊的屏蔽作用,使侧面径向的磁场减小,感应距离大约是非屏蔽式的60%,因以可以齐平安装在金属内。(图2)

磁式传感器不受安装条件的影响,只要周围的材料不被磁化。

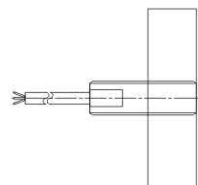
Non-screen shield type proximity switch can achieve the biggest action distance (related to the diameter); but in order to avoid the influence from the metal surrounding the switch to the switch, the switch inductive head must keep a certain space with the surrounding metal. (Chart 1)

The inside special screen shielding of the screen shield type proximity switch makes the magnetic field of side radial decrease and the sensing distance is about 60% that of the non-screen shield type, therefore it can be flush mounted inside the metal. (Chart 2)

Magnetic type sensor doesn't affected by the installation condition, as long as the surrounding materials aren't be magnetized.



(图1)Chart 1

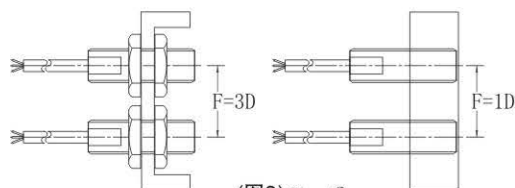


(图2)Chart 2

并排安装的影响(图3) Influence of parallel installation (Chart 3)

为了防止相互干扰,必须保持相互间的最小距离。

To avoid mutual interference, the minimum distance between them must be kept.



(图3)Chart 3

具体数据请参阅各种型号的使用说明书。

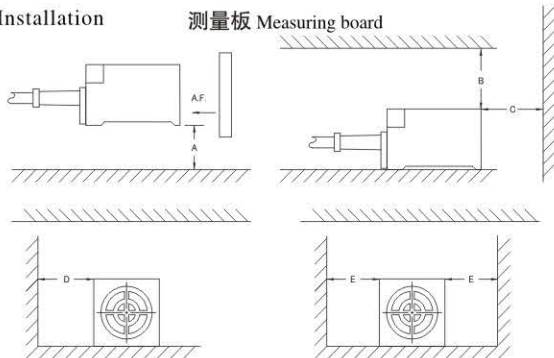
For detailed data, refer to the operation instruction of various types

#### ● 角型及方型接近开关安装要求

Horn type and the square of proximity switches installation requirements

安装 Installation

测量板 Measuring board



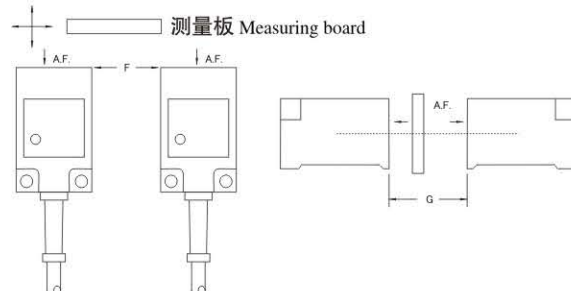
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并排安装的影响 Influence of parallel installation

为了防止相互干扰,必须保持相互间的最小距离。

To avoid mutual interference, the minimum distance between them must be kept.



可编程控制器DC输入模块 DC input module of programmable controller

### 接近开关输出方式和电气特性

Proximity switch output way and electrical characteristics

#### ● 接近开关与可编程控制器的连接

Connection between proximity switch and programmable controller

可与直流开关三线制NPN型输出

Can be connected with the proximity switch of DC switch three-wire system

NPN type output

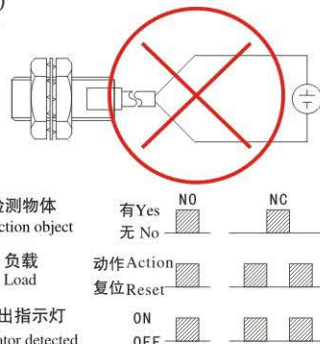
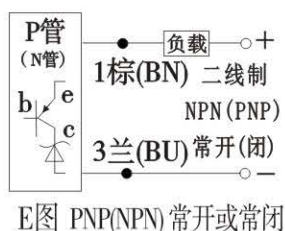
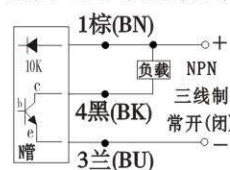
#### ● 直线二线制NO或NC

DC two-wire system NO or NC

传感器必须与负载串联起来使用,绝不能直接接上电源两端,以防引起火灾,传感器有极性保护功能;在开路状态,存在有很小的漏电流;在闭路状态,开关元件上有一个较小的电压降。

The sensor must be and load series rises use, can never directly connected to the power source, with both ends Fire prevention, sensor have polarity protection function; In open state, there are small and leakage Current, In closed-circuit state, switch components on a smaller voltage drop.

#### A1图 NPN 常开或常闭



● 直流三线制(N,P型)NO或NC

DC three-wire system (N, P type) NO or NC

开关的负载和供电电源分开连接;有极性保护功能, 剩余电流可以忽略。

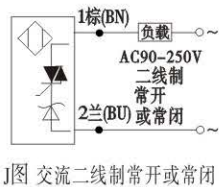
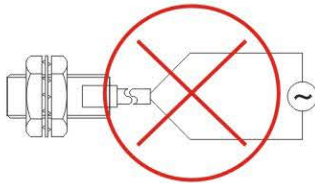
The load of these switches connects separately with the power supply, owning the functions of polarity, short-circuit and over-load protection. The residual current can be neglected.



● 交流二线制NO或NC

AC two-wire system NO or NC

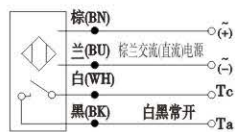
传感器必须与负载串联起来使用, 绝不能直接接上电源两端, 以防引起火灾; 传感器在开路状态, 存在有很小和漏电流; 在闭路状态, 开关元件上有一个较小的电压降。



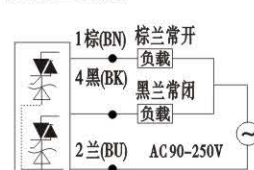
● 交流四线制NO与NC



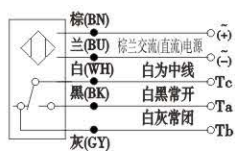
● (交流、直流)电源继电器四线制输出接线图



● 交流三线制NO+NC



● (交流、直流)电源继电器五线制输出接线图



● (交流、直流)电源继电器六线制输出接线图

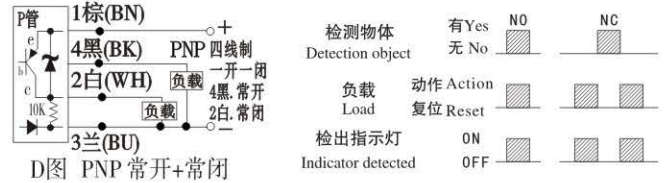
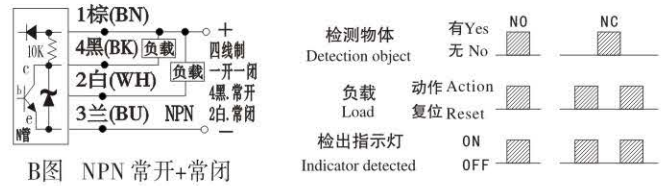


● 直流四线制(N,P型)NO或NC

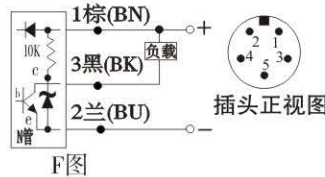
DC four-wire system (N, P type) NO plus NC

开关可提供常开, 常闭两组输出。

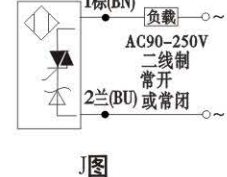
The switches can provide two groups of output NO and NC



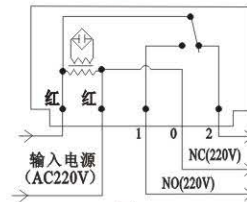
● LJ2插头系列接线图



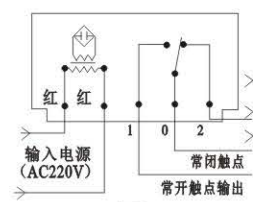
● JWK 220 - A10TJ、D10TJ接线图



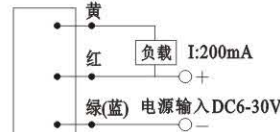
● JWK 220 - A10J、D10J接线图



● JWK 220 - A10JK、D10JK 接线图



● JWK 24 - A10P、D(10\20\5)P接线图



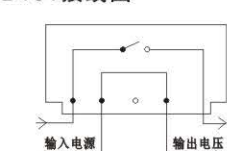
● JWKL12 - B 接线图



● JWK 24 - A10PJ、D(10\20\5)PJ接线图



● JWK 220 - A10T、D10T接线图





- **接近开关的并联、串联** Series and parallel connection of proximity switch  
OR连接(NPN, PNP)型不可混杂使用, 并联接近开关OR连接, 任意一个接近开关动作就可驱动负载。接近开关的数量取决于漏电流的和, 只要它不影响负载动作, 就可多个连接。

OR connection (NPN and PNP types can be used mixed) series When the proximity switch is OR connected, the action of any proximity switch can drive load. The quantity of the proximity switches depends on the sum of leakage current. More connections are available given that it doesn't affect the loading action.

- **AND连接(串联)** AND connection (series)

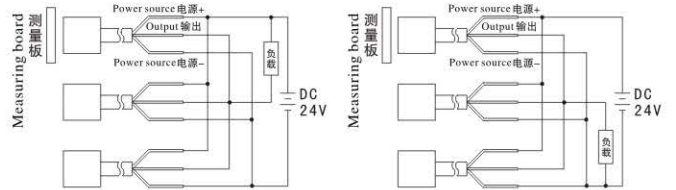
当接近开关AND连接, 全部的接近开关动作时可驱动负载。接近开关的数量取决于其饱和电压的和, 只要它不影响接近开关的电源电压, 就可多个连接。接近开关的响应频率为各个接近开关初始复位的累加。

When the proximity switch is AND connected, the action of all proximity switches can drive load. The quantity of the proximity switches depends on the sum of saturation voltage. More connections are available given that it doesn't affect the supply voltage of the proximity switch. The response frequency of the proximity switch is the accumulation of initialized reset of various proximity switch.

- **接近开关的并联、串联** Series and parallel connection of proximity switch

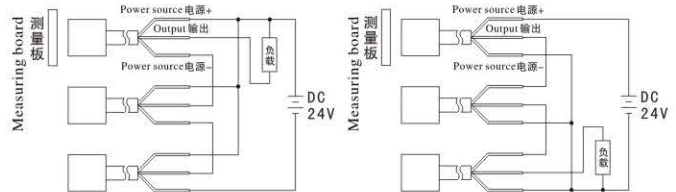
AND连接(串联)NPN, PNP混杂使用

AND connection (series) NPN, PNP mixed-use



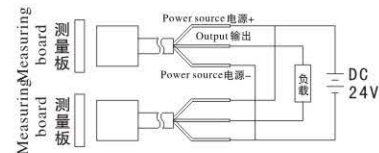
NPN输出的OR连接  
OR connection of NPN output

PNP输出的OR连接  
OR connection of PNP output



NPN输出的AND连接  
NPN connection of AND output

PNP输出的AND连接  
PNP connection of AND output



#### 接近开关使用注意事项 Proximity switches matters need attention

- **接通或断开电源时的注意事项** Cautions when connected or disconnected with the power supply

将接近开关与计数器, 可编程控制器相联接时, 其内部带有初始复位电路, 不会有问题。请注意避免发生以下情况:

检测物体位于接近开关的检测距离附近; 对于直流电压型和直流开关型接近开关, 在电源接通(断开)时, 时间常数出现大幅上升(下降)的情况; 交流开关型接近开关在其电流接通(断开)时, 有自激, 噪音的情况下。

When connecting the proximity switch with the counter and the programmable controller, there isn't any problem because of the built-in initialized reset circuit. Please avoid the conditions mentioned below

The detection object lies around the detection distance of the proximity switch; For DC voltage type and DC switch type, when power supply is turned on (turned off), time constant rises (drops) greatly; There is self-excitation and noise when the AC switch type proximity switch is power-on (off)

- **电容、灯负载** Capacitor, light load

接近开关不能把电容、灯等突升电流较大的负荷作为与其直流连接的负载; 请通过继电器连接或串接一限流电阻。限流电阻R设定的峰值电流在接近开关的负载电流内一限流电阻; 请务必经过负载进行连接。

The proximity switch can't have the capacitor or light that has larger jumping current as the load directly connected to be connected through a relay or series connected with a current-limiting resistance. The peak current set by current-limiting resistance R is within the load current of the proximity switch; Make sure to connect through load.

$$\frac{\text{电源电压} V}{\text{接近开关的最大负荷电流} \text{mA}} \leq R(\text{K}\Omega)$$

电阻R的容许损失(W)

$$\frac{\text{电源电压} V^2}{\leq R(\text{K}\Omega)} \times 2 \text{倍以上}$$

$$\frac{\text{Supply voltage } V}{\text{Peak load current value of proximity switch mA}} \leq R(\text{K}\Omega)$$

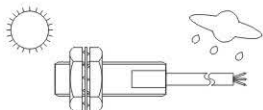
Allowable loss of resistance R (W)

$$\frac{\text{Supply voltage } V^2}{\leq R(\text{K}\Omega)} \times 2 \text{ times above}$$

- **接近开关安装注意事项** Installation notice of proximity switch

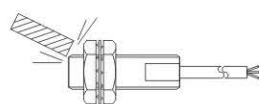
- 请不要在露天环境中使用, 必要时请使用保护罩。

Don't use it in the open air, and use a protective cover, if necessary.



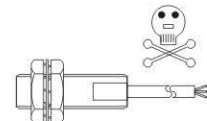
- 请不要用硬的物体撞击检测面, 必要时请使用保护罩。

Don't knock the detection surface with hard objects and use a protective cover, if necessary.



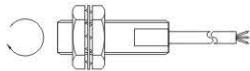
- 请不要在有腐蚀性物品的环境中使用。

Don't use it in the environment with corrosive objects.

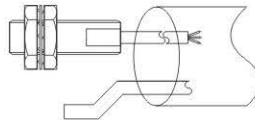




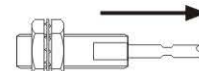
- 请不要用大力量紧固，紧固时，请使用弹垫紧固。  
Don't fasten it with a big force, but fasten it with spring washer



- 接近开关的配线应单独配金属软管，请不要与电力线，动力线一起在同一金属软管内。  
The proximity switch must be equipped individually with metal flexible pipe, and don't make it with the electric line and power line in the same metal flexible pipe



- 请不要用大力量拉伸接近开关的电源线。  
Don't stretch the power line of the proximity switch with a big force.



### 接近、光电开关的应用实例 Application Examples of Proximity Switch and Photoelectric Switch

|                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1、厚纸箱检测</b><br/>Thick carton detection</p> <p>一侧不能装设传感器时，采用漫反射式光电开关<br/>Use photoelectric switch with diffuse reflection when the sensor can't be mounted on one side</p> <p>内置电源型光电开关<br/>Built-in power type photoelectric switch</p> <p>漫反射式光电开关<br/>Photoelectric switch with diffuse reflection</p> | <p><b>2、起重机的报警装置</b><br/>Alarm device of the crane</p> <p>起重机的方向判断和进入危险区的检测<br/>The direction judgment of the crane and the detection of the approach into the dangerous zone</p> <p>槽型光电开关<br/>Slot type photoelectric switch</p> | <p><b>3、啤酒瓶的有无检测</b><br/>Tag detection of the beer bottle</p> <p>用反射式光电开关检测啤酒瓶，用对射式光电开关检测有无标签。<br/>Check the beer bottle with the reflection type photoelectric switch, and check whether there is a tag with the correlation type photoelectric switch.</p> <p>反射式光电开关，对射式光电开关<br/>Reflection type photoelectric switch, correlation type photoelectric switch</p> | <p><b>4、镜面的稳定检测</b><br/>Steady detection of mirror surface object</p> <p>按MSR功能，镜面也能毫无误动作地稳定检测。<br/>It's available for mirror surface object to undertake steady detection without any misoperation in terms of function MSR.</p> <p>反射式光电开关<br/>Reflection type photoelectric switch</p> | <p><b>5、玻璃管内的水位检测</b><br/>Water level detection inside glass tube</p> <p>把投光器和受光器稍微错开角度安装，仅投光器上透镜是关键。水位下降时则变成遮光状态，可实现精度为1mm的水位检测。<br/>Mount the light projector and the light receptor at a slightly staggered angle and the lens on the light projector is the key point. The water level drops, it turns into lightproof state, and the precision of water level detection is up to 1mm.</p> <p>对射式光纤传感器<br/>Correlation type optical fiber sensor</p> |
| <p><b>6、气密检测</b><br/>Gas tight detection</p> <p>衬底为半透明时，用对射式可检测。<br/>When the substrate is translucent, undertake detection with correlation type.</p> <p>光纤对射式光电开关<br/>Optical fiber correlation type photoelectric switch</p>                                                                                | <p><b>7、检志检测</b><br/>Mark detection</p> <p>标志传感器<br/>Mark sensor</p>                                                                                                                                                               | <p><b>8、斜度检测</b><br/>Inclination detection</p> <p>漫反射式光电开关<br/>Photoelectric switch with diffuse reflection</p>                                                                                                                                                                                                                                                     | <p><b>9、机器人工作区安全检测</b><br/>Safety detection in robot work area</p> <p>安全光幕传感器<br/>Safety optical veiling sensor</p>                                                                                                                                                                       | <p><b>10、机加工中心的各种位置检测</b><br/>Various position detection in machining centre</p> <p>圆柱型接近开关<br/>Cylindrical type proximity switch</p>                                                                                                                                                                                                                                                                                                                    |
| <p><b>11、动作时凸轮检出</b><br/>Action sequence cam detection</p> <p>扁平型接近开关<br/>Flat type proximity switch</p>                                                                                                                                                                                                       | <p><b>12、脉冲发生器</b><br/>Pulser</p> <p>槽型接近开关<br/>Slot type proximity switch</p>                                                                                                                                                     | <p><b>13、瓶盖检测</b><br/>Bottle cap detection</p> <p>防水型接近开关<br/>Water-proof type proximity switch</p>                                                                                                                                                                                                                                                                 | <p><b>14、磨床挡块检测</b><br/>Grinder stop detection</p> <p>防水型接近开关<br/>Water-proof type proximity switch</p>                                                                                                                                                                                   | <p><b>15、检测纸包装内有无牛奶</b><br/>Detect whether there is milk inside the paper packet</p> <p>电容式接近开关<br/>Capacitive type proximity switch</p>                                                                                                                                                                                                                                                                                                                 |

**圆柱型、能与国内外各相同品种直接替换** Cylinder type, can be the direct substitution of the same type both at home and abroad

- 电源反接保护、短路保护，可直接与PLC相联接
- 普通场合使用，耐环境性能中等
- 红色LED显示可以检测传感器工作状态
- 经济并且简单的操作
- 应用广泛，可替换小型开关和限位开关
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC  
Used in common places with medium environment resistance  
Red LED indicates that it's available to detect the sensor operating state  
Economic and simple operation  
Widely used, can be the substitution of min-type switch and limiting switch  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                  |       | Φ4 (LJ4)                  | M5 (LJ5)                  | Φ6 (LJ6)                  |                                | M8 (LJ8)                  |                                | M10 (LJ10)                     |
|-------------------------------------|----------------|------------------|-------|---------------------------|---------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                  |       | 屏蔽式<br>Screen shield type | 屏蔽式<br>Screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>Type                          | 直流型<br>DC type | N                | NO    | LJ4A3-1-Z/BX              | LJ5A3-1-Z/BX              | LJ6A3-1-Z/BX              | LJ6A3-2-Z/BX                   | LJ8A3-1-Z/BX              | LJ8A3-2-Z/BX                   | LJ10A3-3-Z/BX                  |
|                                     |                |                  | NC    | LJ4A3-1-Z/AX              | LJ5A3-1-Z/AX              | LJ6A3-1-Z/AX              | LJ6A3-2-Z/AX                   | LJ8A3-1-Z/AX              | LJ8A3-2-Z/AX                   | LJ10A3-3-Z/AX                  |
|                                     |                |                  | NO+NC |                           |                           |                           |                                |                           |                                | LJ10A3-2-Z/CX                  |
|                                     |                | P                | NO    | LJ4A3-1-Z/BY              | LJ5A3-1-Z/BY              | LJ6A3-1-Z/BY              | LJ6A3-2-Z/BY                   | LJ8A3-1-Z/BY              | LJ8A3-2-Z/BY                   | LJ10A3-3-Z/BY                  |
|                                     |                |                  | NC    | LJ4A3-1-Z/AY              | LJ5A3-1-Z/AY              | LJ6A3-1-Z/AY              | LJ6A3-2-Z/AY                   | LJ8A3-1-Z/AY              | LJ8A3-2-Z/AY                   | LJ10A3-3-Z/AY                  |
|                                     |                |                  | NO+NC |                           |                           |                           |                                |                           |                                |                                |
|                                     | 交流型<br>AC type | 二线<br>Two-wire   | NO    |                           |                           | LJ6A3-1-Z/EX              | LJ6A3-2-Z/EX                   | LJ8A3-1-Z/EX              | LJ8A3-2-Z/EX                   | LJ10A3-3-Z/EX                  |
|                                     |                |                  | NC    |                           |                           | LJ6A3-1-Z/DX              | LJ6A3-2-Z/DX                   | LJ8A3-1-Z/DX              | LJ8A3-2-Z/DX                   | LJ10A3-3-Z/DX                  |
|                                     |                | 三线<br>Three-wire | NO    |                           |                           | LJ6A3-1-J/EZ              | LJ6A3-2-J/EZ                   | LJ8A3-1-J/EZ              | LJ8A3-2-J/EZ                   | LJ10A3-3-J/EZ                  |
|                                     |                |                  | NC    |                           |                           | LJ6A3-1-J/DZ              | LJ6A3-2-J/DZ                   | LJ8A3-1-J/DZ              | LJ8A3-2-J/DZ                   | LJ10A3-3-J/DZ                  |
|                                     |                |                  | NO+NC |                           |                           |                           |                                |                           |                                |                                |
|                                     |                |                  |       |                           |                           |                           |                                |                           |                                |                                |
| 检测距离 Detection distance             |                |                  |       | 1mm±10%                   | 1mm±10%                   | 1.5mm±10%                 | 2mm±10%                        | 1.5mm±10%                 | 2mm±10%                        | 3mm±10%                        |
| 设定距离 Set distance                   |                |                  |       | 0~0.7mm                   | 0~0.7mm                   | 0~1.2mm                   | 0~1.6mm                        | 0~1.2mm                   | 0~1.6mm                        | 0~1.6mm                        |
| 标准检测物体<br>Standard detection object |                |                  |       | 铁5×5×1mm                  | 铁5×5×1mm                  | 铁8×8×1mm                  | 铁12×12×1mm                     | 铁8×8×1mm                  | 铁12×12×1mm                     | 铁8×8×1mm                       |
| 响应频率 Response frequency             |                |                  |       | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                |                  |       | 图33 Chart 33              | 图34 Chart 34              | 图35 Chart 35              |                                | 图36 Chart 36              | 图37 Chart 37                   | 图38 Chart 38                   |

### 型号规格 Type and Specification

| 尺寸 Dimension                        |                           |                      | M12 (LJ12)                |                                | M18 (LJ18)                |                                | M24 (LJ24)                |                                | M30 (LJ30)                |                                |                |
|-------------------------------------|---------------------------|----------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|----------------|
| 安装方式<br>Mounting way                |                           |                      | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type |                |
| 型<br>号<br>规<br>格                    | 直<br>流<br>型<br>DC<br>type | N                    | NO                        | LJ12A3-2-Z/BX                  | LJ12A3-4-Z/BX             | LJ18A3-5-Z/BX                  | LJ18A3-8-Z/BX             | LJ24A3-8-Z/BX                  | LJ24A3-10-Z/BX            | LJ30A3-10-Z/BX                 | LJ30A3-15-Z/BX |
|                                     |                           |                      | NC                        | LJ12A3-2-Z/AX                  | LJ12A3-4-Z/AX             | LJ18A3-5-Z/AX                  | LJ18A3-8-Z/AX             | LJ24A3-8-Z/AX                  | LJ24A3-10-Z/AX            | LJ30A3-10-Z/AX                 | LJ30A3-15-Z/AX |
|                                     |                           |                      | NO+NC                     | LJ12A3-2-Z/CX                  | LJ12A3-4-Z/CX             | LJ18A3-5-Z/CX                  | LJ18A3-8-Z/CX             | LJ24A3-8-Z/CX                  | LJ24A3-10-Z/CX            | LJ30A3-10-Z/CX                 | LJ30A3-15-Z/CX |
|                                     |                           | P                    | NO                        | LJ12A3-2-Z/BY                  | LJ12A3-4-Z/BY             | LJ18A3-5-Z/BY                  | LJ18A3-8-Z/BY             | LJ24A3-8-Z/BY                  | LJ24A3-10-Z/BY            | LJ30A3-10-Z/BY                 | LJ30A3-15-Z/BY |
|                                     |                           |                      | NC                        | LJ12A3-2-Z/AY                  | LJ12A3-4-Z/AY             | LJ18A3-5-Z/AY                  | LJ18A3-8-Z/AY             | LJ24A3-8-Z/AY                  | LJ24A3-10-Z/AY            | LJ30A3-10-Z/AY                 | LJ30A3-15-Z/AY |
|                                     |                           |                      | NO+NC                     | LJ12A3-2-Z/CY                  | LJ12A3-4-Z/CY             | LJ18A3-5-Z/CY                  | LJ18A3-8-Z/CY             | LJ24A3-8-Z/CY                  | LJ24A3-10-Z/CY            | LJ30A3-10-Z/CY                 | LJ30A3-15-Z/CY |
|                                     | 交<br>流<br>型<br>AC<br>type | 二<br>线<br>Two-wire   | NO                        | LJ12A3-2-Z/EX                  | LJ12A3-4-Z/EX             | LJ18A3-5-Z/EX                  | LJ18A3-8-Z/EX             | LJ24A3-8-Z/EX                  | LJ24A3-10-Z/EX            | LJ30A3-10-Z/EX                 | LJ30A3-15-Z/EX |
|                                     |                           |                      | NC                        | LJ12A3-2-Z/DX                  | LJ12A3-4-Z/DX             | LJ18A3-5-Z/DX                  | LJ18A3-8-Z/DX             | LJ24A3-8-Z/DX                  | LJ24A3-10-Z/DX            | LJ30A3-10-Z/DX                 | LJ30A3-15-Z/DX |
|                                     |                           | 三<br>线<br>Three-wire | NO                        | LJ12A3-2-J/EZ                  | LJ12A3-4-J/EZ             | LJ18A3-5-J/EZ                  | LJ18A3-8-J/EZ             | LJ24A3-8-J/EZ                  | LJ24A3-10-J/EZ            | LJ30A3-10-J/EZ                 | LJ30A3-15-J/EZ |
|                                     |                           |                      | NC                        | LJ12A3-2-J/DZ                  | LJ12A3-4-J/DZ             | LJ18A3-5-J/DZ                  | LJ18A3-8-J/DZ             | LJ24A3-8-J/DZ                  | LJ24A3-10-J/DZ            | LJ30A3-10-J/DZ                 | LJ30A3-15-J/DZ |
| 检测距离 Detection distance             |                           |                      | 2mm±10%                   | 4mm±10%                        | 5mm±10%                   | 8mm±10%                        | 8mm±10%                   | 10mm±10%                       | 10mm±10%                  | 15mm±10%                       |                |
| 设定距离 Set distance                   |                           |                      | 0~1.6mm                   | 0~3.6mm                        | 0~4mm                     | 0~7mm                          | 0~7mm                     | 0~8mm                          | 0~8mm                     | 0~13mm                         |                |
| 标准检测物体<br>Standard detection object |                           |                      | 铁12×12×1mm                | 铁15×15×1mm                     | 铁18×18×1mm                | 铁30×30×1mm                     | 铁24×24×1mm                | 铁30×30×1mm                     | 铁30×30×1mm                | 铁54×54×1mm                     |                |
| 响应频率 Response frequency             |                           |                      | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            |                |
| 图例 Illustration                     |                           |                      | 图39 Chart 39              | 图40 Chart 40                   | 图41 Chart 41              | 图42 Chart 42                   | 图43 Chart 43              | 图44 Chart 44                   | 图45 Chart 45              | 图46 Chart 46                   |                |



### 特性参数 Characteristic parameters

滞后距离: 检测距离的10%以下  
检测物体: 磁性金属(非磁性金属时检测距离减小)  
电源电压: 直流型: DC12~24V(6~36V)脉动(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz  
消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时, ±15%检测距离以内,  
温度范围-25~+60℃, +23℃时, ±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: 黄铜镀镍) (检测面: ABS)

Delay distance: 10% below of the detection distance  
Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz  
Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below  
Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below  
Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95%RH  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;  
temperature range -25~+60℃, at +23℃, ±10% detection distance  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance  
Protection structure: IP67 (IEC specification)  
Material: (Housing: Nickel plated brass), (Detection surface: ABS).

### 外形尺寸(mm) External dimension

Chart 33 图33 LJ4A3-1-□

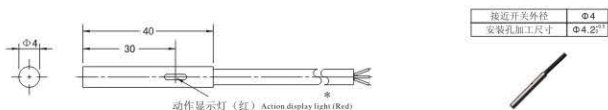


Chart 34 图34 LJ5A3-1-□

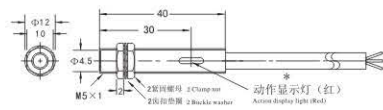


Chart 35 图35 LJ6A3-1-□

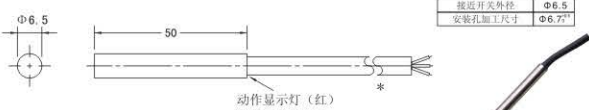


Chart 36 图36 LJ8A3-1-□

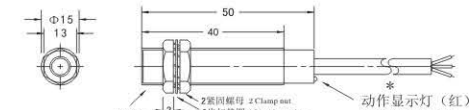


Chart 37 图37 LJ8A3-2-□

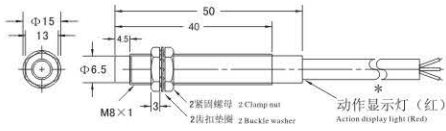


Chart 38 图38 LJ10A3-3-□

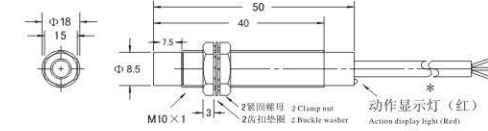


Chart 39 图39 LJ12A3-2-□

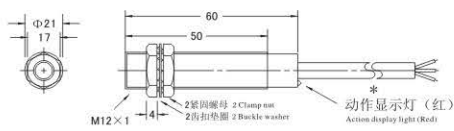


Chart 40 图40 LJ12A3-4-□

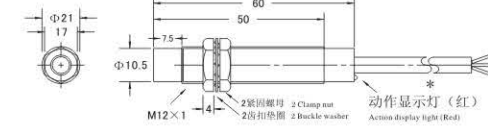


Chart 41 图41 LJ18A3-5-□

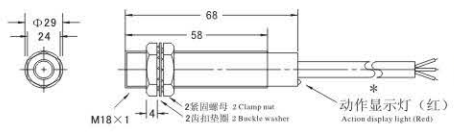


Chart 42 图42 LJ18A3-8-□

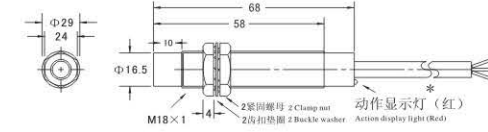


Chart 43 图43 LJ24A3-8-□

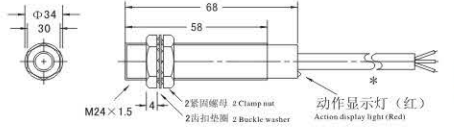


Chart 44 图44 LJ24A3-10-□

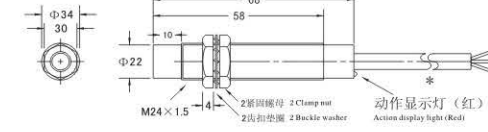


Chart 45 图45 LJ30A3-10-□

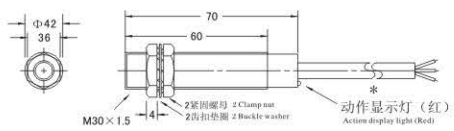
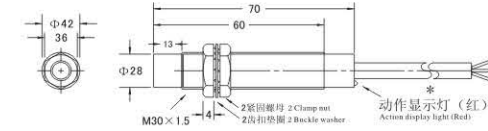


Chart 46 图46 LJ30A3-15-□



**圆柱型、能与国内外各相同品种直接替换** Cylinder type, can be the direct substitution of the same type both at home and abroad

- 电源反接保护、短路保护，可直接与PLC相联接
- 普通场合使用，耐环境性能中等
- 红色LED显示可以检测传感器工作状态
- 经济并且简单的操作
- 应用广泛，可替换小型开关和限位开关
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC  
Used in common places with medium environment resistance  
Red LED indicates that it's available to detect the sensor operating state  
Economic and simple operation  
Widely used, can be the substitution of min-type switch and limiting switch  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



**型号规格 Type and Specification**

| 尺寸 Dimension                        |                |                |               | M14 (LJ14)                |                                | M16 (LJ16)                |                                | M20 (LJ20)                |                                | M22 (LJ22)                |                                |
|-------------------------------------|----------------|----------------|---------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                |               | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号 Type                             | 直流型<br>DC type | NPN            | NO            | LJ14A3-3-Z/BX             | LJ14A3-5-Z/BX                  | LJ16A3-3-Z/BX             | LJ16A3-5-Z/BX                  | LJ20A3-5-Z/BX             | LJ20A3-8-Z/BX                  | LJ22A3-5-Z/BX             | LJ22A3-8-Z/BX                  |
|                                     |                |                | NC            | LJ14A3-3-Z/AX             | LJ14A3-5-Z/AX                  | LJ16A3-3-Z/AX             | LJ16A3-5-Z/AX                  | LJ20A3-5-Z/AX             | LJ20A3-8-Z/AX                  | LJ22A3-5-Z/AX             | LJ22A3-8-Z/AX                  |
|                                     |                |                | NO+NC         | LJ14A3-3-Z/CX             | LJ14A3-5-Z/CX                  | LJ16A3-3-Z/CX             | LJ16A3-5-Z/CX                  | LJ20A3-5-Z/CX             | LJ20A3-8-Z/CX                  | LJ22A3-5-Z/CX             | LJ22A3-8-Z/CX                  |
|                                     |                | PNP            | NO            | LJ14A3-3-Z/BY             | LJ14A3-5-Z/BY                  | LJ16A3-3-Z/BY             | LJ16A3-5-Z/BY                  | LJ20A3-5-Z/BY             | LJ20A3-8-Z/BY                  | LJ22A3-5-Z/BY             | LJ22A3-8-Z/BY                  |
|                                     |                |                | NC            | LJ14A3-3-Z/AY             | LJ14A3-5-Z/AY                  | LJ16A3-3-Z/AY             | LJ16A3-5-Z/AY                  | LJ20A3-5-Z/AY             | LJ20A3-8-Z/AY                  | LJ22A3-5-Z/AY             | LJ22A3-8-Z/AY                  |
|                                     |                |                | NO+NC         | LJ14A3-3-Z/CY             | LJ14A3-5-Z/CY                  | LJ16A3-3-Z/CY             | LJ16A3-5-Z/CY                  | LJ20A3-5-Z/CY             | LJ20A3-8-Z/CY                  | LJ22A3-5-Z/CY             | LJ22A3-8-Z/CY                  |
|                                     | 二线<br>Two-wire | NO             | LJ14A3-3-Z/EX | LJ14A3-5-Z/EX             | LJ16A3-3-Z/EX                  | LJ16A3-5-Z/EX             | LJ20A3-5-Z/EX                  | LJ20A3-8-Z/EX             | LJ22A3-5-Z/EX                  | LJ22A3-8-Z/EX             |                                |
|                                     |                | NC             | LJ14A3-3-Z/DX | LJ14A3-5-Z/DX             | LJ16A3-3-Z/DX                  | LJ16A3-5-Z/DX             | LJ20A3-5-Z/DX                  | LJ20A3-8-Z/DX             | LJ22A3-5-Z/DX                  | LJ22A3-8-Z/DX             |                                |
|                                     |                | 交流型<br>AC type | NO            | LJ14A3-3-J/EZ             | LJ14A3-5-J/EZ                  | LJ16A3-3-J/EZ             | LJ16A3-5-J/EZ                  | LJ20A3-5-J/EZ             | LJ20A3-8-J/EZ                  | LJ22A3-5-J/EZ             | LJ22A3-8-J/EZ                  |
|                                     |                |                | NC            | LJ14A3-3-J/DZ             | LJ14A3-5-J/DZ                  | LJ16A3-3-J/DZ             | LJ16A3-5-J/DZ                  | LJ20A3-5-J/DZ             | LJ20A3-8-J/DZ                  | LJ22A3-5-J/DZ             | LJ22A3-8-J/DZ                  |
| 三<br>Three-wire                     |                |                | NO+NC         |                           |                                |                           |                                | LJ20A3-5-J/EDZ            | LJ20A3-8-J/EDZ                 | LJ22A3-5-J/EDZ            | LJ22A3-8-J/EDZ                 |
| 检测距离 Detection distance             |                |                |               | 3mm±10%                   | 5mm±10%                        | 3mm±10%                   | 5mm±10%                        | 5mm±10%                   | 8mm±10%                        | 5mm±10%                   | 8mm±10%                        |
| 设定距离 Set distance                   |                |                |               | 0~2.1mm                   | 0~4mm                          | 0~2.4mm                   | 0~4mm                          | 0~4mm                     | 0~7mm                          | 0~4mm                     | 0~7mm                          |
| 标准检测物体<br>Standard detection object |                |                |               | 铁14×14×1mm                | 铁15×15×1mm                     | 铁20×20×1mm                | 铁30×30×1mm                     | 铁20×20×1mm                | 铁30×30×1mm                     | 铁22×22×1mm                | 铁30×30×1mm                     |
| 响应频率 Response frequency             |                |                |               | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                |                |               | 图47 Chart 47              | 图48 Chart 48                   | 图49 Chart 49              | 图50 Chart 50                   | 图51 Chart 51              | 图52 Chart 52                   | 图53 Chart 53              |                                |

**型号规格 Type and Specification**

| 尺寸 Dimension                        |                |                  |       | M38 (LJ38)                     | Φ40+M24 (SC)                   | Φ48+M24 (SM)                   | Φ34 (SH)                       | Φ45 (SG)                       |
|-------------------------------------|----------------|------------------|-------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                  |       | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号 Type                             | 直流型<br>DC type | NPN              | NO    | LJ38A4-18-Z/BX                 | SC-3020A                       | SM-3025A                       | SH-3020A                       | SG-3020A                       |
|                                     |                |                  | NC    | LJ38A4-18-Z/AX                 | SC-3020B                       | SM-3025B                       | SH-3020B                       | SG-3020B                       |
|                                     |                |                  | NO+NC | LJ38A4-18-Z/CX                 | SC-3020AB                      | SM-3025AB                      | SH-3020AB                      | SG-3020AB                      |
|                                     |                | PNP              | NO    | LJ38A4-18-Z/BY                 | SC-3020C                       | SM-3025C                       | SH-3020C                       | SG-3020C                       |
|                                     |                |                  | NC    | LJ38A4-18-Z/AY                 | SC-3020D                       | SM-3025D                       | SH-3020D                       | SG-3020D                       |
|                                     |                |                  | NO+NC | LJ38A4-18-Z/CY                 | SC-3020CD                      | SM-3025CD                      | SH-3020CD                      | SG-3020CD                      |
|                                     | 交流型<br>AC type | 二线<br>Two-wire   | NO    | LJ38A4-18-Z/EX                 | SC-3020AL                      | SM-3025AL                      | SH-3020AL                      | SG-3020AL                      |
|                                     |                |                  | NC    | LJ38A4-18-Z/DX                 | SC-3020BL                      | SM-3025BL                      | SH-3020BL                      | SG-3020BL                      |
|                                     |                | 三线<br>Three-wire | NO    | LJ38A4-18-J/EZ                 | SC-2020A                       | SM-2025A                       | SH-2020A                       | SG-2020A                       |
|                                     |                |                  | NC    | LJ38A4-18-J/DZ                 | SC-2020B                       | SM-2025B                       | SH-2020B                       | SG-2020B                       |
|                                     |                |                  | NO+NC | LJ38A4-18-J/EDZ                | SC-2020AB                      | SM-2025AB                      | SH-2020AB                      | SG-2020AB                      |
| 检测距离 Detection distance             |                |                  |       | 18mm±10%                       | 20mm±10%                       | 25mm±10%                       | 20mm±10%                       | 20mm±10%                       |
| 设定距离 Set distance                   |                |                  |       | 0~16mm                         | 0~17mm                         | 0~22mm                         | 0~17mm                         | 0~17mm                         |
| 标准检测物体<br>Standard detection object |                |                  |       | 铁54×54×1mm                     | 铁54×54×1mm                     | 铁65×65×1mm                     | 铁78×78×1mm                     | 铁70×70×1mm                     |
| 响应频率 Response frequency             |                |                  |       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                |                  |       | 图54 Chart 54                   | 图55 Chart 55                   | 图56 Chart 56                   | 图57 Chart 57                   | 图58 Chart 58                   |



### 特性参数 Characteristic parameters

滞后距离: 检测距离的10%以下

检测物体: 磁性金属(非磁性金属时检测距离减小)

电源电压: 直流型: DC12~24V(6~36V)脉动(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz

消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下

控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下

回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收

环境温度、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH

绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间

耐电压: AC1000V 50/60Hz 1min充电部分与外壳间

温度的影响: 温度范围-30~+65℃, +23℃时, ±15%检测距离以内,

温度范围-25~+60℃, +23℃时, ±10%检测距离以内

电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内

保护构造: IP65(IEC规格)

材质: (外壳: 黄铜镀镍) (检测面: ABS)

Delay distance: 10% below of the detection distance

Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)

Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz

Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below

Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below

Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption

Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95%RH

Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing

Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing

Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;

temperature range -25~+60℃, at +23℃, ±10% detection distance

Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance

Protection structure: IP65 (IEC specification)

Material: (Housing: Nickel plated brass), (Detection surface: ABS).

### 外形尺寸(mm) External dimension

Chart 47 图47 LJ14A3-3-□

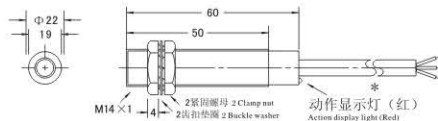


Chart 48 图48 LJ14A3-5-□

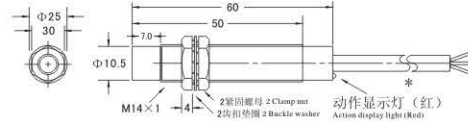


Chart 49 图49 LJ16A3-3-□

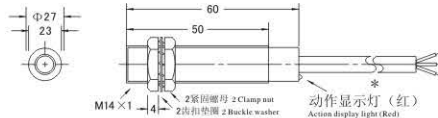


Chart 50 图50 LJ16A3-5-□

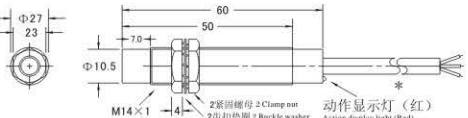


Chart 51 图51 LJ20A3-5-□

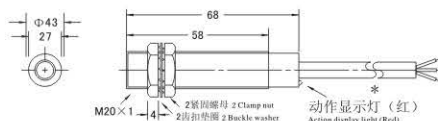


Chart 52 图52 LJ20A3-8-□

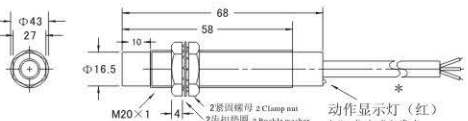


Chart 53 图53 LJ22A3-8-□

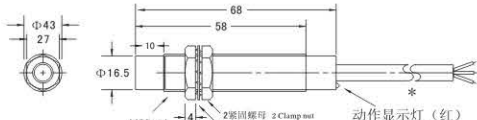


Chart 54 图54 LJ38A4-18-□

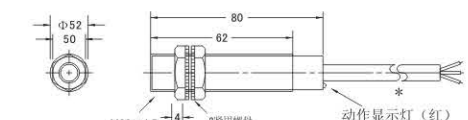


Chart 55 图55 SC-□

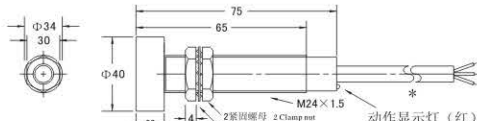


Chart 56 图56 SM-□

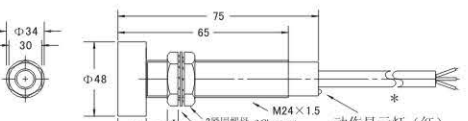


Chart 57 图57 SH-□

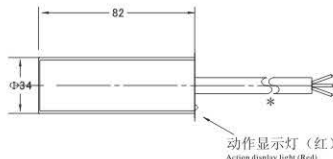
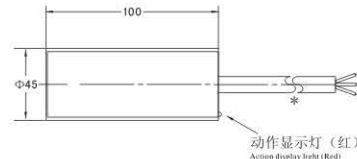


Chart 58 图58 SG-□



可视型能与欧姆龙、奥托尼克斯相同品种直接替换 Visible type, can be the direct substitution of the same types of Omron and Autonics

- 电源反接保护、短路保护，可直接与PLC相联接 Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- 长寿命和高可靠性，耐环境性强 Long service life, high reliability and strong resistance property to environment
- 增加外壳强度 Countermeasure to improve the housing intensity
- IP67防护结构(IEC规格) IP67 protection structure (IEC specification)
- 使用前请先阅读产品说明书的“注意事项” Read the “Matters needing attention” of the Product Instruction before use



### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                |                     | M8(PR08)                  |                                | M12(PR12)                 |                                | M18(PR18)                 |                                | M30(PR30)                 |                                |
|-------------------------------------|----------------|----------------|---------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                |                     | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>Type                          | 直流型<br>DC type | N              | NO                  | PR08-1.5DN                | PR08-2DN                       | PR12-2DN                  | PR12-4DN                       | PR18-5DN                  | PR18-8DN                       | PR30-10DN                 | PR30-15DN                      |
|                                     |                |                | NC                  | PR08-1.5DN2               | PR08-2DN2                      | PR12-2DN2                 | PR12-4DN2                      | PR18-5DN2                 | PR18-8DN2                      | PR30-10DN2                | PR30-15DN2                     |
|                                     |                |                | NO+NC               |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     |                | P              | NO                  | PR08-1.5DP                | PR08-2DP                       | PR12-2DP                  | PR12-4DP                       | PR18-5DP                  | PR18-8DP                       | PR30-10DP                 | PR30-15DP                      |
|                                     |                |                | NC                  | PR08-1.5DP2               | PR08-2DP2                      | PR12-2DP2                 | PR12-4DP2                      | PR18-5DP2                 | PR18-8DP2                      | PR30-10DP2                | PR30-15DP2                     |
|                                     |                |                | NO+NC               |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     | 二线<br>Two-wire | NO             | PR08-1.5DO          | PR08-2DO                  | PR12-2DO                       | PR12-4DO                  | PR18-5DO                       | PR18-8DO                  | PR30-10DO                      | PR30-15DO                 |                                |
|                                     |                | NC             | PR08-1.5DC          | PR08-2DC                  | PR12-2DC                       | PR12-4DC                  | PR18-5DC                       | PR18-8DC                  | PR30-10DC                      | PR30-15DC                 |                                |
|                                     |                | 交流型<br>AC type | 二线<br>Two-wire      | NO                        |                                | PR12-2AO                  | PR12-4AO                       | PR18-5AO                  | PR18-8AO                       | PR30-10AO                 | PR30-15AO                      |
|                                     |                |                | NC                  |                           | PR12-2AC                       | PR12-4AC                  | PR18-5AC                       | PR18-8AC                  | PR30-10AC                      | PR30-15AC                 |                                |
| 三线<br>Three-wire                    | NO+NC          |                |                     |                           |                                |                           |                                |                           |                                |                           |                                |
| 检测距离 Detection distance             |                |                | 1.5mm±10%           | 2mm±10%                   | 2mm±10%                        | 4mm±10%                   | 5mm±10%                        | 8mm±10%                   | 10mm±10%                       | 15mm±10%                  |                                |
| 设定距离 Set distance                   |                |                | 0~1.2mm             | 0~1.6mm                   | 0~1.6mm                        | 0~3.2mm                   | 0~4mm                          | 0~7mm                     | 0~8mm                          | 0~13mm                    |                                |
| 标准检测物体<br>Standard detection object |                |                | 铁8×8×1mm            | 铁12×12×1mm                | 铁12×12×1mm                     | 铁15×15×1mm                | 铁18×18×1mm                     | 铁30×30×1mm                | 铁30×30×1mm                     | 铁54×54×1mm                |                                |
| 响应频率 Response frequency             |                |                | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       |                                |
| 图例 Illustration                     |                |                | 图17 Chart 17        | 图18 Chart 18              | 图19 Chart 19                   | 图20 Chart 20              | 图21 Chart 21                   | 图22 Chart 22              | 图23 Chart 23                   | 图24 Chart 24              |                                |

### 型号规格 Type and Specification

| 尺寸 Dimension                        |                    |                    |          | M8                        |                                | M12                       |                                | M18                       |                                | M30                       |                                |
|-------------------------------------|--------------------|--------------------|----------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                    |                    |          | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>Type                          | 直流型<br>DC type     | N<br>P<br>N        | NO       | E2E-X1R5E1                | E2E-X2ME1                      | E2E-X2E1                  | E2E-X5ME1                      | E2E-X5E1                  | E2E-X10ME1                     | E2E-X10E1                 | E2E-X18ME1                     |
|                                     |                    |                    | NC       | E2E-X1R5E2                | E2E-X2ME2                      | E2E-X2E2                  | E2E-X5ME2                      | E2E-X5E2                  | E2E-X10ME2                     | E2E-X10E2                 | E2E-X18ME2                     |
|                                     |                    |                    | NO+NC    |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     |                    | P<br>N<br>P        | NO       | E2E-X1R5F1                | E2E-X2MF1                      | E2E-X2F1                  | E2E-X5MF1                      | E2E-X5F1                  | E2E-X10MF1                     | E2E-X10F1                 | E2E-X18MF1                     |
|                                     |                    |                    | NC       | E2E-X1R5F2                | E2E-X2MF2                      | E2E-X2F2                  | E2E-X5MF2                      | E2E-X5F2                  | E2E-X10MF2                     | E2E-X10F2                 | E2E-X18MF2                     |
|                                     |                    |                    | NO+NC    |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     | 二<br>线<br>Two-wire | NO                 | E2E-X2D1 | E2E-X4MD1                 | E2E-X3D1                       | E2E-X8MD1                 | E2E-X7D1                       | E2E-X14MD1                | E2E-X2D1                       | E2E-X20MD1                |                                |
|                                     |                    | NC                 | E2E-X2D2 | E2E-X4MD2                 | E2E-X3D2                       | E2E-X8MD2                 | E2E-X7D2                       | E2E-X14MD2                | E2E-X2D2                       | E2E-X20MD2                |                                |
|                                     |                    | 二<br>线<br>Two-wire | NO       |                           |                                | E2E-X2Y1                  | E2E-X5MY1                      | E2E-X5Y1                  | E2E-X10MY1                     | E2E-X10Y1                 | E2E-X18MY1                     |
|                                     |                    |                    | NC       |                           |                                | E2E-X2Y2                  | E2E-X5MY2                      | E2E-X5Y2                  | E2E-X10MY2                     | E2E-X10Y2                 | E2E-X18MY2                     |
| 三<br>线<br>Three-wire                | NO+NC              |                    |          |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     |                    |                    |          |                           |                                |                           |                                |                           |                                |                           |                                |
| 检测距离 Detection distance             |                    |                    |          | 1.5mm±10%                 | 2mm±10%                        | 2mm±10%                   | 5mm±10%                        | 5mm±10%                   | 10mm±10%                       | 10mm±10%                  | 18mm±10%                       |
| 设定距离 Set distance                   |                    |                    |          | 0~1.2mm                   | 0~1.6mm                        | 0~1.6mm                   | 0~4mm                          | 0~4mm                     | 0~8mm                          | 0~8mm                     | 0~16mm                         |
| 标准检测物体<br>Standard detection object |                    |                    |          | 铁8×8×1mm                  | 铁12×12×1mm                     | 铁12×12×1mm                | 铁15×15×1mm                     | 铁18×18×1mm                | 铁30×30×1mm                     | 铁30×30×1mm                | 铁54×54×1mm                     |
| 响应频率 Response frequency             |                    |                    |          | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                    |                    |          | 图25 Chart 25              | 图26 Chart 26                   | 图27 Chart 27              | 图28 Chart 28                   | 图29 Chart 29              | 图30 Chart 30                   | 图31 Chart 31              | 图32 Chart 32                   |



## 特性参数 Characteristic parameters

滞后距离: 检测距离的10%以下  
检测物体: 磁性金属(非磁性金属时检测距离减小)  
电源电压: 直流型: DC12~24V(6~36V)脉动(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz  
消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温度、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: 黄铜镀镍) (检测面: ABS)

Delay distance: 10% below of the detection distance  
Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz  
Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below  
Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below  
Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95% RH  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;  
temperature range -25~+60℃, at +23℃, ±10% detection distance  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance  
Protection structure: IP67 (IEC specification)  
Material: (Housing: Nickel plated brass), (Detection surface: ABS).

## 外形尺寸(mm) External dimension

|                        |                         |
|------------------------|-------------------------|
| Chart 17 图17 PR08-1.5□ | Chart 18 图18 PR08-2□    |
| Chart 19 图19 PR12-2□   | Chart 20 图20 PR12-4□    |
| Chart 21 图21 PR18-5□   | Chart 22 图22 PR18-8□    |
| Chart 23 图23 PR30-10□  | Chart 24 图24 PR30-15□   |
| Chart 25 图25 E2E-X2D1  | Chart 26 图26 E2E-X4MD1  |
| Chart 27 图27 E2E-X3D1  | Chart 28 图28 E2E-X8MD1  |
| Chart 29 图29 E2E-X7D1  | Chart 30 图30 E2E-X14MD1 |
| Chart 31 图31 E2E-X10D1 | Chart 32 图32 E2E-X20MD1 |

**全能型能与倍加福、图尔克各相同品种直接替换** All-purpose type, which can directly substitute the same type of P+F and TURCK

- 电源反接保护、短路保护，可直接与PLC相联接
- 新增电流过载保护，元器件采用进口芯片
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- 全螺纹形，增大了安装空间；可直接用扳手夹钳
- 增加外壳强度和断线的对策
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC  
Newly added current over-load protection; the elements are made of imported chip  
Long service life, high reliability and strong resistance property to environment  
Red LED indicates that it's available to detect the sensor operating state  
Full thread shape to enlarge the installation space; can use wrench and clamp directly  
Countermeasure to improve the housing intensity and  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



**型号规格 Type and Specification**

| 尺寸 Dimension                        |                |                  |       | M8                        |                                | M12                       |                                | M18                       |                                | M30                       |                                |
|-------------------------------------|----------------|------------------|-------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                  |       | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号 Type                             | 直流型<br>DC type | NPN              | NO    | Bi1.5-M8-AN6X             | Ni2-M8-AN6X                    | Bi2-M12-AN6X              | Ni4-M12-AN6X                   | Bi5-M18-AN6X              | Ni8-M18-AN6X                   | Bi10-M30-AN6X             | Ni15-M30-AN6X                  |
|                                     |                |                  | NC    | Bi1.5-M8-RN6X             | Ni2-M8-RN6X                    | Bi2-M12-RN6X              | Ni4-M12-RN6X                   | Bi5-M18-RN6X              | Ni8-M18-RN6X                   | Bi10-M30-RN6X             | Ni15-M30-RN6X                  |
|                                     |                |                  | NO+NC |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     |                | PNP              | NO    | Bi1.5-M8-AP6X             | Ni2-M8-AP6X                    | Bi2-M12-AP6X              | Ni4-M12-AP6X                   | Bi5-M18-AP6X              | Ni8-M18-AP6X                   | Bi10-M30-AP6X             | Ni15-M30-AP6X                  |
|                                     |                |                  | NC    | Bi1.5-M8-RP6X             | Ni2-M8-RP6X                    | Bi2-M12-RP6X              | Ni4-M12-RP6X                   | Bi5-M18-RP6X              | Ni8-M18-RP6X                   | Bi10-M30-RP6X             | Ni15-M30-RP6X                  |
|                                     |                |                  | NO+NC |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     | 交流型<br>AC type | 二线<br>Two-wire   | NO    | Bi1.5-M8-AD4X             | Ni2-M8-AD4X                    | Bi2-M12-AD4X              | Ni4-M12-AD4X                   | Bi5-M18-AD4X              | Ni8-M18-AD4X                   | Bi10-M30-AD4X             | Ni15-M30-AD4X                  |
|                                     |                |                  | NC    | Bi1.5-M8-RD4X             | Ni2-M8-RD4X                    | Bi2-M12-RD4X              | Ni4-M12-RD4X                   | Bi5-M18-RD4X              | Ni8-M18-RD4X                   | Bi10-M30-RD4X             | Ni15-M30-RD4X                  |
|                                     |                | 三线<br>Three-wire | NO    | Bi1.5-M8-AZ3X             | Ni2-M8-AZ3X                    | Bi2-M12-AZ3X              | Ni4-M12-AZ3X                   | Bi5-M18-AZ3X              | Ni8-M18-AZ3X                   | Bi10-M30-AZ3X             | Ni15-M30-AZ3X                  |
|                                     |                |                  | NC    | Bi1.5-M8-RZ3X             | Ni2-M8-RZ3X                    | Bi2-M12-RZ3X              | Ni4-M12-RZ3X                   | Bi5-M18-RZ3X              | Ni8-M18-RZ3X                   | Bi10-M30-RZ3X             | Ni15-M30-RZ3X                  |
|                                     |                | NO+NC            |       |                           |                                |                           |                                |                           |                                |                           |                                |
| 检测距离 Detection distance             |                |                  |       | 1.5mm±10%                 | 2mm±10%                        | 2mm±10%                   | 4mm±10%                        | 5mm±10%                   | 8mm±10%                        | 10mm±10%                  | 15mm±10%                       |
| 设定距离 Set distance                   |                |                  |       | 0~1.2mm                   | 0~1.6mm                        | 0~1.6mm                   | 0~3.2mm                        | 0~4mm                     | 0~7mm                          | 0~8mm                     | 0~13mm                         |
| 标准检测物体<br>Standard detection object |                |                  |       | 铁8×8×1mm                  | 铁12×12×1mm                     | 铁12×12×1mm                | 铁15×15×1mm                     | 铁18×18×1mm                | 铁30×30×1mm                     | 铁30×30×1mm                | 铁54×54×1mm                     |
| 响应频率 Response frequency             |                |                  |       | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                |                  |       | 图1 Chart 1                | 图2 Chart 2                     | 图3 Chart 3                | 图4 Chart 4                     | 图5 Chart 5                | 图6 Chart 6                     | 图7 Chart 7                | 图8 Chart 8                     |

**型号规格 Type and Specification**

| 尺寸 Dimension                        |                        |                    |       | M8                        |                                | M12                       |                                | M18                       |                                | 方壳                             |                                |
|-------------------------------------|------------------------|--------------------|-------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|--------------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                        |                    |       | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>Screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型<br>号<br>Type                      | 直<br>流<br>型<br>DC type | N<br>P<br>N        | NO    | Bi1.5-M8-AN6X-H1141       | Ni2-M8-AN6X-H1141              | Bi2-M12-AN6X-H1141        | Ni4-M12-AN6X-H1141             | Bi5-M18-AN6X-H1141        | Ni8-M18-AN6X-H1141             | Ni10-Q25-AN6X                  | Ni15-Q30-AN6X                  |
|                                     |                        |                    | NC    | Bi1.5-M8-RN6X-H1141       | Ni2-M8-RN6X-H1141              | Bi2-M12-RN6X-H1141        | Ni4-M12-RN6X-H1141             | Bi5-M18-RN6X-H1141        | Ni8-M18-RN6X-H1141             | Ni10-Q25-RN6X                  | Ni15-Q30-RN6X                  |
|                                     |                        |                    | NO+NC |                           |                                |                           |                                |                           |                                |                                |                                |
|                                     |                        | P<br>N<br>P        | NO    | Bi1.5-M8-AP6X-H1141       | Ni2-M8-AP6X-H1141              | Bi2-M12-AP6X-H1141        | Ni4-M12-AP6X-H1141             | Bi5-M18-AP6X-H1141        | Ni8-M18-AP6X-H1141             | Ni10-Q25-AP6X                  | Ni15-Q30-AP6X                  |
|                                     |                        |                    | NC    | Bi1.5-M8-RP6X-H1141       | Ni2-M8-RP6X-H1141              | Bi2-M12-RP6X-H1141        | Ni4-M12-RP6X-H1141             | Bi5-M18-RP6X-H1141        | Ni8-M18-RP6X-H1141             | Ni10-Q25-RP6X                  | Ni15-Q30-RP6X                  |
|                                     |                        |                    | NO+NC |                           |                                |                           |                                |                           |                                |                                |                                |
|                                     | 交<br>流<br>型<br>AC type | 二<br>线<br>Two-wire | NO    | Bi1.5-M8-AD4X-H1141       | Ni2-M8-AD4X-H1141              | Bi2-M12-AD4X-H1141        | Ni4-M12-AD4X-H1141             | Bi5-M18-AD4X-H1141        | Ni8-M18-AD4X-H1141             | Ni10-Q25-AD4X                  | Ni15-Q30-AD4X                  |
|                                     |                        |                    | NC    | Bi1.5-M8-RD4X-H1141       | Ni2-M8-RD4X-H1141              | Bi2-M12-RD4X-H1141        | Ni4-M12-RD4X-H1141             | Bi5-M18-RD4X-H1141        | Ni8-M18-RD4X-H1141             | Ni10-Q25-RD4X                  | Ni15-Q30-RD4X                  |
|                                     |                        |                    | NO    | Bi1.5-M8-AZ3X-H1141       | Ni2-M8-AZ3X-H1141              | Bi2-M12-AZ3X-H1141        | Ni4-M12-AZ3X-H1141             | Bi5-M18-AZ3X-H1141        | Ni8-M18-AZ3X-H1141             | Ni10-Q25-AZ3X                  | Ni15-Q30-AZ3X                  |
|                                     |                        |                    | NC    | Bi1.5-M8-RZ3X-H1141       | Ni2-M8-RZ3X-H1141              | Bi2-M12-RZ3X-H1141        | Ni4-M12-RZ3X-H1141             | Bi5-M18-RZ3X-H1141        | Ni8-M18-RZ3X-H1141             | Ni10-Q25-RZ3X                  | Ni15-Q30-RZ3X                  |
|                                     |                        | NO+NC              |       |                           |                                |                           |                                |                           |                                |                                |                                |
| 检测距离 Detection distance             |                        |                    |       | 1.5mm±10%                 | 2mm±10%                        | 2mm±10%                   | 4mm±10%                        | 5mm±10%                   | 8mm±10%                        | 10mm±10%                       | 15mm±10%                       |
| 设定距离 Set distance                   |                        |                    |       | 0~1.2mm                   | 0~1.6mm                        | 0~1.6mm                   | 0~3.2mm                        | 0~4mm                     | 0~7mm                          | 0~8mm                          | 0~13mm                         |
| 标准检测物体<br>Standard detection object |                        |                    |       | 铁8×8×1mm                  | 铁12×12×1mm                     | 铁12×12×1mm                | 铁15×15×1mm                     | 铁18×18×1mm                | 铁30×30×1mm                     | 铁30×30×1mm                     | 铁50×50×1mm                     |
| 响应频率 Response frequency             |                        |                    |       | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                        |                    |       | 图9 Chart 9                | 图10 Chart 10                   | 图11 Chart 11              | 图12Chart 12                    | 图13 Chart 13              | 图14 Chart 14                   | 图15 Chart 15                   | 图16 Chart 16                   |



## 特性参数 Characteristic parameters

滞后距离: 检测距离的10%以下  
检测物体: 磁性金属(非磁性金属时检测距离减小)  
电源电压: 直流型: DC12~24V(6~36V)脉冲(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz  
消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: 黄铜镀镍) (检测面: ABS)

Delay distance: 10% below of the detection distance  
Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz  
Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below  
Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below  
Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95%RH  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;  
temperature range -25~+60℃, at +23℃, ±10% detection distance  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance  
Protection structure: IP67 (IEC specification)  
Material: (Housing: Nickel plated brass), (Detection surface: ABS).

## 外形尺寸(mm) External dimension

Chart 1 图1 Bi1.5-M8-□

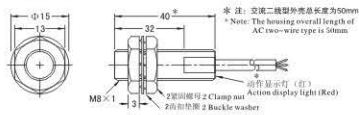


Chart 2 图2 Ni2-M8-□

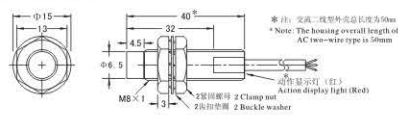


Chart 3 图3 Bi2-M12-□

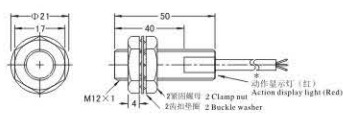


Chart 4 图4 Ni4-M12-□

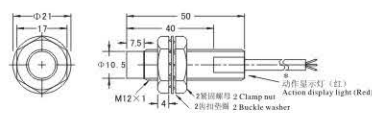


Chart 5 图5 Bi5-M18-□

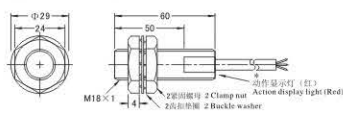


Chart 6 图6 Ni8-M18-□

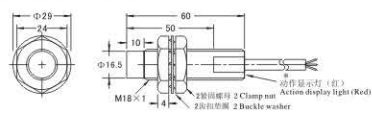


Chart 7 图7 Bi10-M30-□

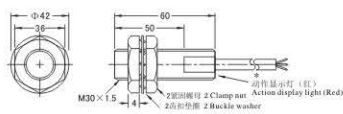


Chart 8 图8 Ni15-M30-□

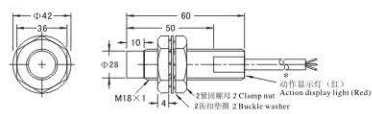


Chart 9 图9 Bi1.5-M8-□-H1141

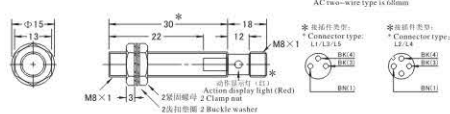


Chart 10 图10 Ni2-M8-□-H1141

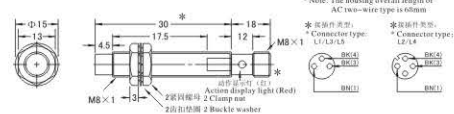


Chart 11 图11 Bi2-M12-□-H1141

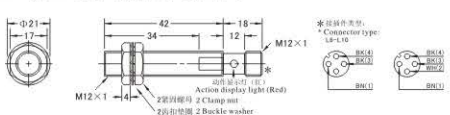


Chart 12 图12 Ni4-M12-□-H1141



Chart 13 图13 Bi5-M18-□-H1141



Chart 14 图14 Ni8-M18-□-H1141

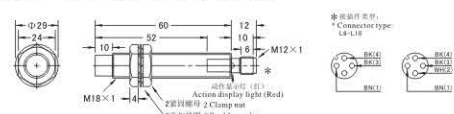


Chart 15 图15 Ni10-Q25-□

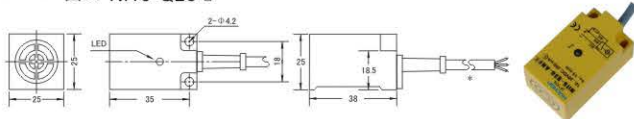
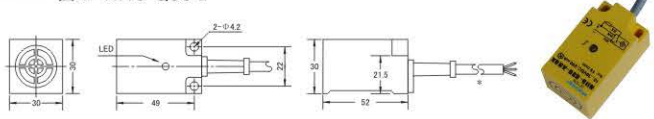


Chart 16 图16 Ni15-Q30-□



角型能与国内外各相同品种直接替换 Horn type, can be the direct substitution of the same type both at home and abroad

- 电源反接保护、短路保护，可直接与PLC相联接
- 经济并且简单的操作
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC  
Economic and simple operation  
Long service life, high reliability and strong resistance property to environment  
Red LED indicates that it's available to detect the sensor operating state  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                | 17×17×28                       | 25×25×38                       | 30×30×52                       | 35×35×52                       | 40×40×52                       | 18×18×36                       | 17×17×28                       | 17×17×28                       |         |         |
|-------------------------------------|----------------|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------|---------|
| 安装方式<br>Mounting way                |                |                | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |         |         |
| 型号<br>Type                          | 直流型<br>DC type | NPN            | NO                             | TL-Q5MC1                       | TL-N5ME1                       | TL-N10ME1                      | TL-N15ME1                      | TL-N20ME1                      | PS17-5DN                       | PS-05N                         | PS-08N  |         |
|                                     |                |                | NC                             | TL-Q5MC2                       | TL-N5ME2                       | TL-N10ME2                      | TL-N15ME2                      | TL-N20ME2                      | PS17-5DN2                      | PS-05N2                        | PS-08N2 |         |
|                                     |                |                | NO+NC                          |                                |                                |                                |                                |                                | PS17-5DN3                      |                                |         |         |
|                                     |                | PNP            | NO                             | TL-Q5MF1                       | TL-N5MF1                       | TL-N10MF1                      | TL-N15MF1                      | TL-N20MF1                      | PS17-5DP                       | PS-05P                         | PS-08P  |         |
|                                     |                |                | NC                             | TL-Q5MF2                       | TL-N5MF2                       | TL-N10MF2                      | TL-N15MF2                      | TL-N20MF2                      | PS17-5DP2                      | PS-05P2                        | PS-08P2 |         |
|                                     |                |                | NO+NC                          |                                |                                |                                |                                |                                | PS17-5DP3                      |                                |         |         |
|                                     | 二线<br>Two-wire | NO             | TL-Q5MD1                       | TL-N5MD1                       | TL-N10MD1                      | TL-N15MD1                      | TL-N20MD1                      | PS17-5D1                       | PS-05D1                        | PS-08D1                        |         |         |
|                                     |                | NC             | TL-Q5MD2                       | TL-N5MD2                       | TL-N10MD2                      | TL-N15MD2                      | TL-N20MD2                      | PS17-5D2                       | PS-05D2                        | PS-08D2                        |         |         |
|                                     |                | 交流型<br>AC type | 二线<br>Two-wire                 | NO                             | TL-Q5MY1                       | TL-N5MY1                       | TL-N10MY1                      | TL-N15MY1                      | TL-N20MY1                      | PS17-5Y1                       | PS-05Y1 | PS-08Y1 |
|                                     |                |                | NC                             | TL-Q5MY2                       | TL-N5MY2                       | TL-N10MY2                      | TL-N15MY2                      | TL-N20MY2                      | PS17-5Y2                       | PS-05Y2                        | PS-08Y2 |         |
| 三线<br>Three-wire                    | NO+NC          |                |                                |                                |                                |                                |                                |                                |                                |                                |         |         |
| 检测距离 Detection distance             |                |                | 5mm±10%                        | 5mm±10%                        | 10mm±10%                       | 15mm±10%                       | 20mm±10%                       | 5mm±10%                        | 5mm±10%                        | 8mm±10%                        |         |         |
| 设定距离 Set distance                   |                |                | 0~4mm                          | 0~4mm                          | 0~8mm                          | 0~13mm                         | 0~17mm                         | 0~4mm                          | 0~4mm                          | 0~7mm                          |         |         |
| 标准检测物体<br>Standard detection object |                |                | 铁18×18×1mm                     | 铁25×25×1mm                     | 铁45×45×1mm                     | 铁45×45×1mm                     | 铁50×50×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     |         |         |
| 响应频率 Response frequency             |                |                | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |         |         |
| 图例 Illustration                     |                |                | 图59 Chattr59                   | 图60 Chattr60                   | 图61 Chattr61                   | —                              | 图62 Chattr62                   | 图63 Chattr63                   | 图64 Chattr64                   |                                |         |         |

### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                  |       | 17×17×35                       | 17×17×35                       | 18×18×36                       | 18×18×34                       | 17×17×29                       | 20×20×36                       | 30×30×52                       | 40×40×52                       |
|-------------------------------------|----------------|------------------|-------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                  |       | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>Type                          | 直流型<br>DC type | NPN              | NO    | PL-05N                         | PL-08N                         | SN04-N                         | SN05-N                         | SN06-N                         | SN07-N                         | SN10-N                         | SN20-N                         |
|                                     |                |                  | NC    | PL-05N2                        | PL-08N2                        | SN04-N2                        | SN05-N2                        | SN06-N2                        | SN07-N2                        | SN10-N2                        | SN20-N2                        |
|                                     |                |                  | NO+NC |                                |                                |                                |                                |                                |                                |                                |                                |
|                                     |                | PNP              | NO    | PL-05P                         | PL-08P                         | SN04-P                         | SN05-P                         | SN06-P                         | SN07-P                         | SN10-P                         | SN20-P                         |
|                                     |                |                  | NC    | PL-05P2                        | PL-08P2                        | SN04-P2                        | SN05-P2                        | SN06-P2                        | SN07-P2                        | SN10-P2                        | SN20-P2                        |
|                                     |                |                  | NO+NC |                                |                                |                                |                                |                                |                                |                                |                                |
|                                     | 交流型<br>AC type | 二线<br>Two-wire   | NO    | PL-05D1                        | PL-08D1                        | SN04-D1                        | SN05-D1                        | SN06-D1                        | SN07-D1                        | SN10-D1                        | SN20-D1                        |
|                                     |                |                  | NC    | PL-05D2                        | PL-08D2                        | SN04-D2                        | SN05-D2                        | SN06-D2                        | SN07-D2                        | SN10-D2                        | SN20-D2                        |
|                                     |                | 三线<br>Three-wire | NO    | PL-05Y1                        | PL-08Y1                        | SN04-Y1                        | SN05-Y1                        | SN06-Y1                        | SN07-Y1                        | SN10-Y1                        | SN20-Y1                        |
|                                     |                |                  | NC    | PL-05Y2                        | PL-08Y2                        | SN04-Y2                        | SN05-Y2                        | SN06-Y2                        | SN07-Y2                        | SN10-Y2                        | SN20-Y2                        |
| 检测距离 Detection distance             |                |                  |       | 5mm±10%                        | 8mm±10%                        | 5mm±10%                        | 5mm±10%                        | 5mm±10%                        | 8mm±10%                        | 10mm±10%                       | 20mm±10%                       |
| 设定距离 Set distance                   |                |                  |       | 0~4mm                          | 0~7mm                          | 0~4mm                          | 0~4mm                          | 0~4mm                          | 0~7mm                          | 0~8mm                          | 0~17mm                         |
| 标准检测物体<br>Standard detection object |                |                  |       | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁45×45×1mm                     | 铁50×50×1mm                     |
| 响应频率 Response frequency             |                |                  |       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                |                  |       | 图65 Chatr65                    |                                | 图66 Chatr66                    | 图67 Chatr67                    | —                              | —                              | —                              | —                              |



### 特性参数 Characteristic parameters

滞后距离: 检测距离的10%以下  
检测物体: 磁性金属(非磁性金属时检测距离减小)  
电源电压: 直流型: DC12~24V(6~36V)脉动(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz  
消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: ABS) (检测面: ABS)

Delay distance: 10% below of the detection distance  
Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz  
Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below  
Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below  
Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95%RH  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;  
temperature range -25~+60℃, at +23℃, ±10% detection distance  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance  
Protection structure: IP67 (IEC specification)  
Material: (Housing: ABS), (Detection surface: ABS).

### 外形尺寸(mm) External dimension

Chart59 图59 TL-Q5M□

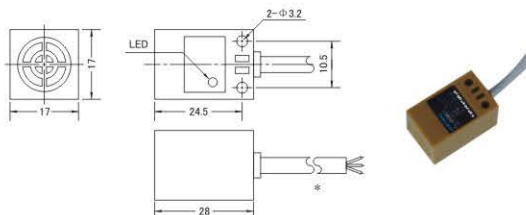


Chart60 图60 TL-N5M□

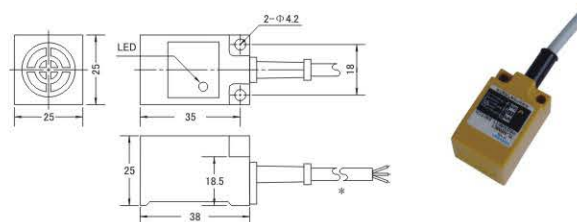


Chart61 图61 TL-N10M□

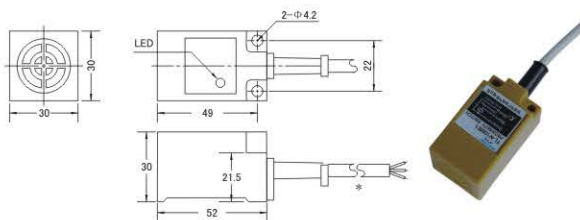


Chart62 图62 TL-N20M□

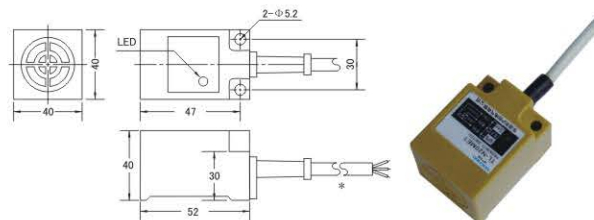


Chart63 图63 PS17-5□

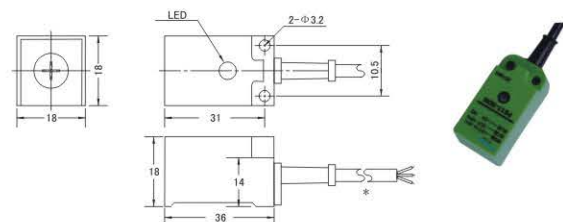


Chart64 图64 PS-05(8)□

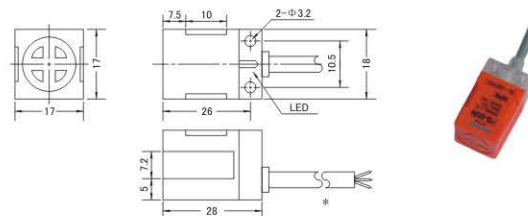


Chart65 图65 PL-05(8)□

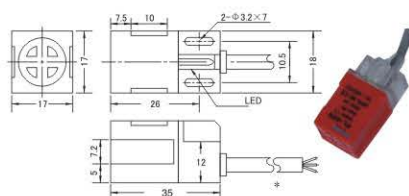


Chart66 图66 SN04-□

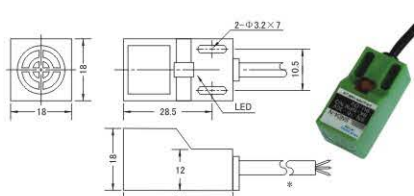
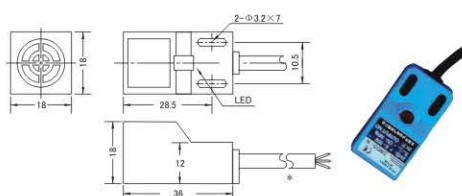


Chart67 图67 SN05-□



**角型 方型能与国内外各相同品种直接替换** Horn type and square type, can be the direct substitution of the same type both at home and abroad

- 电源反接保护、短路保护，可直接与PLC相联接
- 经济并且简单的操作
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC  
Economic and simple operation  
Long service life, high reliability and strong resistance property to environment  
Red LED indicates that it's available to detect the sensor operating state  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



#### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                  |       | 12×12×45                       | 25×25×39                       | 30×30×53                       |                     | 40×40×53                       | 30×18×10                       | 50×25×10                       | 45×30×12                       |
|-------------------------------------|----------------|------------------|-------|--------------------------------|--------------------------------|--------------------------------|---------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                  |       | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |                     | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>Type                          | 直流型<br>DC type | NPN              | NO    | PS12-4DN                       | PSN25-5DN                      | PSN30-10DN                     | PSN30-15DN          | PSN40-20DN                     | GKB-M0524NA                    | TL-W5E1                        | TL-W7E1                        |
|                                     |                |                  | NC    | PS12-4DN2                      | PSN25-5DN2                     | PSN30-10DN2                    | PSN30-15DN2         | PSN40-20DN2                    | GKB-M0524NB                    | TL-W5E2                        | TL-W7E2                        |
|                                     |                |                  | NO+NC |                                | PSN25-5DN3                     | PSN30-10DN3                    | PSN30-15DN3         | PSN40-20DN3                    |                                |                                |                                |
|                                     |                | PNP              | NO    | PS12-4DP                       | PSN25-5DP                      | PSN30-10DP                     | PSN30-15DP          | PSN40-20DP                     | GKB-M0524PA                    | TL-W5F1                        | TL-W7F1                        |
|                                     |                |                  | NC    | PS12-4DP2                      | PSN25-5DP2                     | PSN30-10DP2                    | PSN30-15DP2         | PSN40-20DP2                    | GKB-M0524PB                    | TL-W5F2                        | TL-W7F2                        |
|                                     |                |                  | NO+NC |                                | PSN25-5DP3                     | PSN30-10DP3                    | PSN30-15DP3         | PSN40-20DP3                    |                                |                                |                                |
|                                     | 交流型<br>AC type | 二线<br>Two-wire   | NO    | PS12-4DO                       | PSN25-5DO                      | PSN30-10DO                     | PSN30-15DO          | PSN40-20DO                     | GKB-M0524D1                    | TL-W5D1                        | TL-W7D1                        |
|                                     |                |                  | NC    | PS12-4DC                       | PSN25-5DC                      | PSN30-10DC                     | PSN30-15DC          | PSN40-20DC                     | GKB-M0524D2                    | TL-W5D2                        | TL-W7D2                        |
|                                     |                | 三线<br>Three-wire | NO    | PS12-4AO                       | PSN25-5AO                      | PSN30-10AO                     | PSN30-15AO          | PSN40-20AO                     |                                | TL-W5A1                        | TL-W7A1                        |
|                                     |                |                  | NC    | PS12-4AC                       | PSN25-5AC                      | PSN30-10AC                     | PSN30-15AC          | PSN40-20AC                     |                                | TL-W5A2                        | TL-W7A2                        |
|                                     |                |                  | NO+NC |                                |                                |                                |                     |                                |                                |                                |                                |
|                                     |                |                  |       |                                |                                |                                |                     |                                |                                |                                |                                |
| 检测距离 Detection distance             |                |                  |       | 4mm±10%                        | 5mm±10%                        | 10mm±10%                       | 15mm±10%            | 20mm±10%                       | 5mm±10%                        | 5mm±10%                        | 7mm±10%                        |
| 设定距离 Set distance                   |                |                  |       | 0~3.6mm                        | 0~4mm                          | 0~8mm                          | 0~13mm              | 0~17mm                         | 0~4mm                          | 0~4mm                          | 0~5mm                          |
| 标准检测物体<br>Standard detection object |                |                  |       | 铁18×18×1mm                     | 铁30×30×1mm                     | 铁45×45×1mm                     | 铁45×45×1mm          | 铁50×50×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁25×25×1mm                     |
| 响应频率 Response frequency             |                |                  |       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                |                  |       | 图68 Chatr68                    | 图69 Chatr69                    | 图70 Chatr70                    |                     | 图71 Chatr71                    | 图72 Chatr72                    | 图73 Chatr73                    | 图74 Chatr74                    |



### 特性参数 Characteristic parameters

滞后距离: 检测距离的10%以下  
检测物体: 磁性金属(非磁性金属时检测距离减小)  
电源电压: 直流型: DC12~24V(6~36V)脉动(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz  
消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时, ±15%检测距离以内,  
温度范围-25~+60℃, +23℃时, ±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: ABS) (检测面: ABS)

Delay distance: 10% below of the detection distance  
Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz  
Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below  
Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below  
Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95%RH  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;  
temperature range -25~+60℃, at +23℃, ±10% detection distance  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance  
Protection structure: IP67 (IEC specification)  
Material: (Housing: ABS), (Detection surface: ABS).

### 外形尺寸(mm) External dimension

Chart68 图68 PS12-4□

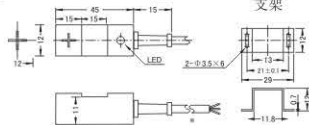


Chart69 图69 PSN25-5□

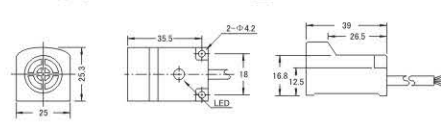


Chart70 图70 PSN30-10(15)□

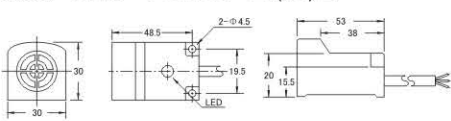


Chart71 图71 PSN40-20□

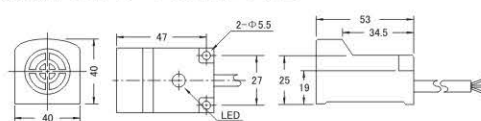


Chart72 图72 GKB-M0524□

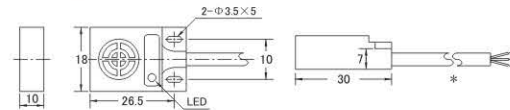


Chart73 图73 TL-W5□

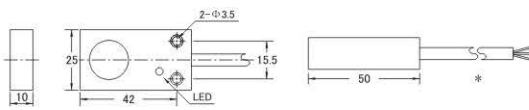


Chart74 图74 TL-W7□

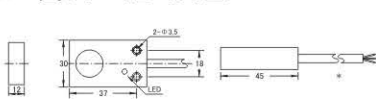


Chart75 图75 HJ-□

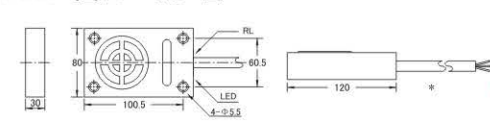


Chart76 图76 GN-02(04)□

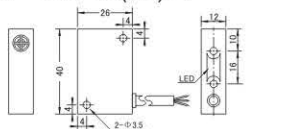


Chart77 图77 ST-□

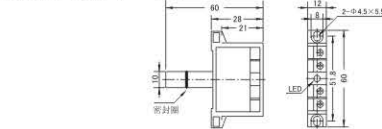


Chart78 图78 TK-T□

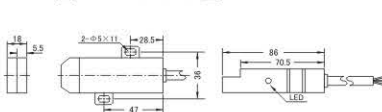


Chart79 图79 TC-T□

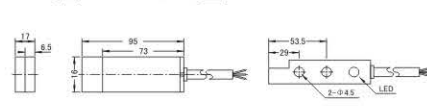


Chart80 图80 JKD-□

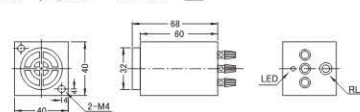
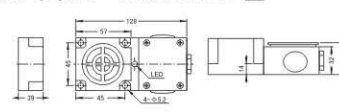


Chart81 图81 3SG3266-□



方型能与国内外各相同品种直接替换 Square type, can be the direct substitution of the same type both at home and abroad

- 电源反接保护、短路保护，可直接与PLC相联接 Power supply reversal connection protection; short-circuit protection, can directly connect with PLC
- 经济并且简单的操作 Economic and simple operation
- 长寿命和高可靠性，耐环境性强 Long service life, high reliability and strong resistance property to environment
- 红色LED显示可以检测传感器工作状态 Red LED indicates that it's available to detect the sensor operating state
- IP67防护结构(IEC规格) IP67 protection structure (IEC specification)
- 使用前请先阅读产品说明书的“注意事项” Read the "Matters needing attention" of the Product Instruction before use



### 型号规格 Type and Specification

| 尺寸 Dimension                        |                | 30×30×80                       | 40×40×118                      |                     | 55×55×130                      | 50×50×50                       | 55×55×52                       | 80×80×48                       |           |           |
|-------------------------------------|----------------|--------------------------------|--------------------------------|---------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------|-----------|
| 安装方式<br>Mounting way                |                | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |                     | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |           |           |
| 型号 Type                             | 直流型<br>DC type | N                              | NO                             | HY-3010A            | HY-3015A                       | HY-3020A                       | HY-3030A                       | HD-3020A                       | HE-3025A  | HM-3040A  |
|                                     |                |                                | NC                             | HY-3010B            | HY-3015B                       | HY-3020B                       | HY-3030B                       | HD-3020B                       | HE-3025B  | HM-3040B  |
|                                     |                |                                | NO+NC                          | HY-3010AB           | HY-3015AB                      | HY-3020AB                      | HY-3030AB                      |                                |           |           |
|                                     |                | P                              | NO                             | HY-3010C            | HY-3015C                       | HY-3020C                       | HY-3030C                       | HD-3020C                       | HE-3025C  | HM-3040C  |
|                                     |                |                                | NC                             | HY-3010D            | HY-3015D                       | HY-3020D                       | HY-3030D                       | HD-3020D                       | HE-3025D  | HM-3040D  |
|                                     |                |                                | NO+NC                          | HY-3010CD           | HY-3015CD                      | HY-3020CD                      | HY-3030CD                      |                                |           |           |
|                                     | 交流型<br>AC type | 二线<br>Two-wire                 | NO                             | HY-3010AL           | HY-3015AL                      | HY-3020AL                      | HY-3030AL                      | HD-3020AL                      | HE-3025AL | HM-3040AL |
|                                     |                |                                | NC                             | HY-3010BL           | HY-3015BL                      | HY-3020BL                      | HY-3030BL                      | HD-3020BL                      | HE-3025BL | HM-3040BL |
|                                     |                | 三线<br>Three-wire               | NO                             | HY-2010A            | HY-2015A                       | HY-2020A                       | HY-2030A                       | HD-2020A                       | HE-2025A  | HM-2040A  |
|                                     |                |                                | NC                             | HY-2010B            | HY-2015B                       | HY-2020B                       | HY-2030B                       | HD-2020B                       | HE-2025B  | HM-2040B  |
|                                     |                | NO+NC                          |                                | HY-2015AB           | HY-2020AB                      | HY-2030AB                      | HD-2020AB                      | HE-2025AB                      | HM-2040AB |           |
| 检测距离 Detection distance             |                | 10mm±10%                       | 15mm±10%                       | 20mm±10%            | 30mm±10%                       | 20mm±10%                       | 25mm±10%                       | 40mm±10%                       |           |           |
| 设定距离 Set distance                   |                | 0~8mm                          | 0~13mm                         | 0~17mm              | 0~27mm                         | 0~17mm                         | 0~22mm                         | 0~35mm                         |           |           |
| 标准检测物体<br>Standard detection object |                | 铁30×30×1mm                     | 铁50×50×1mm                     | 铁50×50×1mm          | 铁65×65×1mm                     | 铁50×50×1mm                     | 铁60×60×1mm                     | 铁90×90×2mm                     |           |           |
| 响应频率 Response frequency             |                | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |           |           |
| 图例 Illustration                     |                | 图82 Chattr82                   | 图83 Chattr83                   |                     | 图84 Chattr84                   | 图85 Chattr85                   | 图86 Chattr86                   | 图87 Chattr87                   |           |           |

### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                | 38×40×80                            | 44×45×90                                    | 52×33×25                       | 56×36×26                       | 65×39×25                       | 31×33×50                       | 31×33×50                       | 34×42×73                       |
|-------------------------------------|----------------|----------------|-------------------------------------|---------------------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                | 非屏蔽式(屏蔽式)<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type              | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>adX <sub>1</sub> Type         | 直流型<br>DC type | N              | NO                                  | LJ2-15(10)/221<br><small>(211 接插式)</small>  | LJ2-20/221                     | LJ1A-24                        |                                | JWK-D5P                        | JWK-A5P                        | JWK-D10P                       |
|                                     |                | P              | NC                                  | LJ2-15G(10)/221<br><small>(211 接插式)</small> | LJ2-20G/221                    | LJ1A-24B                       |                                | JWK-D5P2                       | JWK-A5P2                       | JWK-D10P2                      |
|                                     | 交流型<br>AC type | 二线<br>Two-wire | NO                                  | LJ2L-15(10)/4/121                           | LJ2L-20-4/121                  | LJ1A-220                       | WJK-II (绿壳)                    | WJK2-II (白壳)                   |                                |                                |
|                                     |                | 二线<br>Two-wire | NC                                  | LJ2L-15G(10)/4/121                          | LJ2L-20G-4/121                 | LJ1A-220B                      | WJK-II 2 (绿壳)                  | WJK2-II 2 (白壳)                 |                                |                                |
| 检测距离 Detection distance             |                |                | 15mm±10%                            | 20mm±10%                                    | 8mm±10%                        | 8mm±10%                        | 8mm±10%                        | 5mm±10%                        | 5mm±10%                        | 10mm±10%                       |
| 设定距离 Set distance                   |                |                | 0~13mm                              | 0~17mm                                      | 0~7mm                          | 0~7mm                          | 0~7mm                          | 0~4mm                          | 0~4mm                          | 0~8mm                          |
| 标准检测物体<br>Standard detection object |                |                | 铁45×45×1mm                          | 铁50×50×1mm                                  | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁25×25×1mm                     |
| 响应频率 Response frequency             |                |                | DC: 0.5kHz AC: 25Hz                 | DC: 0.5kHz AC: 25Hz                         | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |
| 图例 Illustration                     |                |                | 图88 Chattr88                        | 图89 Chattr89                                | 图90 Chattr90                   | 图91 Chattr91                   | 图92 Chattr92                   | 图93 Chattr93                   | 图94 Chattr94                   |                                |

| 尺寸 Dimension                     |             | 34×42×73                    | 48×48×105                   | 38×40×92                    | 32×26×80                    | 42×90×65                    | 65×55×48                   | 50×25×32                    | 62×25×24                    |            |
|----------------------------------|-------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------|------------|
| 安装方式 Mounting way                |             | 非屏蔽式 Non-screen shield type | 非屏蔽式 Non-screen shield type | 非屏蔽式 Non-screen shield type | 非屏蔽式 Non-screen shield type | 非屏蔽式 Non-screen shield type | 屏蔽式 Non-screen shield type | 非屏蔽式 Non-screen shield type | 非屏蔽式 Non-screen shield type |            |
| 型号 Type                          | 直流型 DC type | N                           | NO                          | JWK-A10P                    |                             | JWKL12-AΩ                   |                            | SQS19-Z4N                   | LJ1-24                      | LXU1-115G  |
|                                  |             | P                           | NC                          | JWK-A10P2                   |                             | JWKL12-BΩ                   |                            | SQS19-Z4N2                  | LJ1-24B                     | LXU1-115G2 |
|                                  | 交流型 AC type | 继电器输出型 Relay output type    |                             |                             | JWK220-A(D)10J(电压型)         | GS-M1522KCT                 |                            | LXJ0-1A(NO+NC)              |                             |            |
|                                  |             |                             |                             | JWK220-A(D)10JK(触点型)        | LJG8D-15/J2H1               |                             | LXJ0-2D(NO+NC)             |                             |                             |            |
| 检测距离 Detection distance          |             | 10mm±10%                    | 10mm±10%                    | 15mm±10%                    | 8mm±10%                     | 10mm±10%                    | 4mm±10%                    | 5mm±10%                     | 5mm±10%                     |            |
| 设定距离 Set distance                |             | 0~8mm                       | 0~8mm                       | 0~13mm                      | 0~7mm                       | 0~8mm                       | 0~3.6mm                    | 0~4mm                       | 0~4mm                       |            |
| 标准检测物体 Standard detection object |             | 铁30×30×1mm                  | 铁30×30×1mm                  | 铁30×30×1mm                  | 铁18×18×1mm                  | 铁30×30×1mm                  | 铁30×30×1mm                 | 铁18×18×1mm                  | 铁18×18×1mm                  |            |
| 响应频率 Response frequency          |             | DC: 0.5kHz AC: 25Hz         | DC: 0.5kHz AC: 25Hz         | DC: 0.5kHz AC: 25Hz         | DC: 0.5kHz AC: 25Hz         | DC: 0.5kHz AC: 25Hz         | DC: 0.5kHz AC: 25Hz        | DC: 0.5kHz AC: 25Hz         | DC: 0.5kHz AC: 25Hz         |            |
| 图例 Illustration                  |             | 图94 Chattr94                |                             | 图95 Chattr95                |                             | —                           | —                          | —                           | —                           |            |



### 特性参数 Characteristic parameters

滞后距离: 检测距离的10%以下  
检测物体: 磁性金属(非磁性金属时检测距离减小)  
电源电压: 直流型: DC12~24V(6~36V)脉动(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz  
消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温度、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时, ±15%检测距离以内,  
温度范围-25~+60℃, +23℃时, ±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: ABS) (检测面: ABS)

Delay distance: 10% below of the detection distance  
Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz  
Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below  
Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below  
Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95%RH  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;  
temperature range -25~+60℃, at +23℃, ±10% detection distance  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance  
Protection structure: IP67 (IEC specification)  
Material: (Housing: ABS), (Detection surface: ABS).

### 外形尺寸(mm) External dimension

Chart 82 图82 HY-□10□

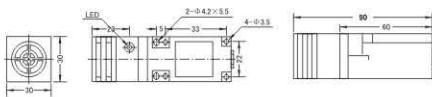


Chart 83 图83 HY-□15(20)□

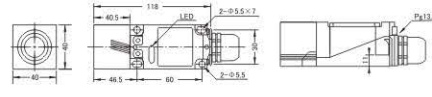


Chart 84 图84 HY-□30□

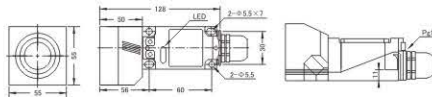


Chart 85 图85 HD-□20□

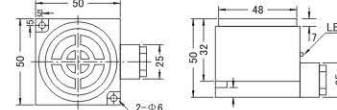


Chart 86 图86 HE-□25□

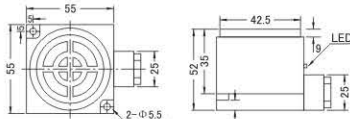


Chart 87 图87 HM-□40□

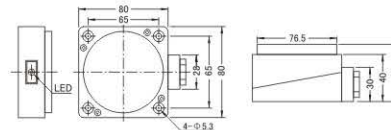


Chart 88 图88 LJ2-15□

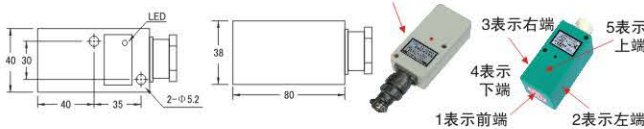


Chart 89 图89 LJ2-20□

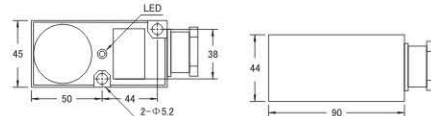


Chart 90 图90 LJ1A-□

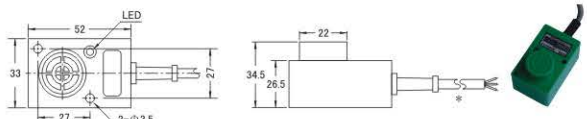


Chart 91 图91 WJK-II

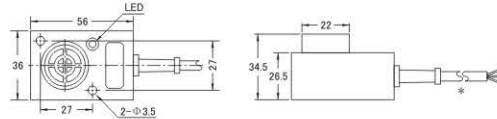


Chart 92 图92 WJK-II

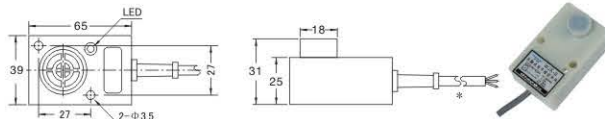


Chart 93 图93 JWK-D(A)5□

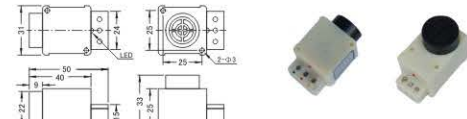


Chart 94 图94 JWK-D(A)10□

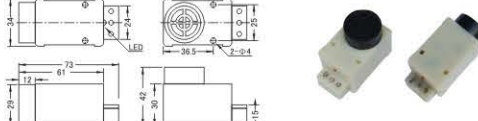
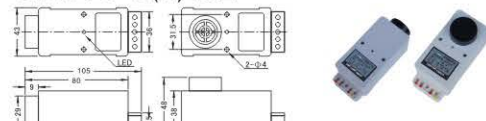


Chart 95 图95 JWK220-D(A)10□



**方型 槽型能与国内外各相同品种直接替换** Square and groove type, can be the direct substitution of the same type both at home and abroad

- 电源反接保护、短路保护，可直接与PLC相联接
- 经济并且简单的操作
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC

Economic and simple operation

Long service life, high reliability and strong resistance property to environment

Red LED indicates that it's available to detect the sensor operating state

IP67 protection structure (IEC specification)

Read the "Matters needing attention" of the Product Instruction before use



#### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                |                | 28×16×12                       | 32×22×11                       | 10×17×20            | 16×25×44            | 16×23×42            | 15×29×31            | 86×29×18                       | 87×70×45            |
|-------------------------------------|----------------|----------------|----------------|--------------------------------|--------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------------------|---------------------|
| 安装方式<br>Mounting way                |                |                |                | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 槽 式<br>Slot type    | 槽 式<br>Slot type    | 槽 式<br>Slot type    | 槽 式<br>Slot type    | 非屏蔽式<br>Non-screen shield type | 槽 式<br>Slot type    |
| 型号<br>Type                          | 直流型<br>DC type | NPN            | NO             | LJG5C-4/Z2CN2                  | LJG5C-5/Z2CN2                  | LU3-10N1            | LU4-16N1            | LU5-16N1            | LU5-15N1            | JKD-J-D12                      |                     |
|                                     |                |                | NC             | LJG5C-4/Z2BN2                  | LJG5C-5/Z2BN2                  | LU3-10N2            | LU4-16N2            | LU5-16N2            | LU5-15N2            |                                |                     |
|                                     |                |                | NO+NC          |                                |                                |                     |                     |                     |                     |                                |                     |
|                                     |                | PNP            | NO             | LJG5C-4/Z2CP2                  | LJG5C-5/Z2CP2                  | LU3-10P1            | LU4-16P1            | LU5-16P1            | LU5-15P1            |                                | JKS-J-D             |
|                                     |                |                | NC             | LJG5C-4/Z2BP2                  | LJG5C-5/Z2BP2                  | LU3-10P2            | LU4-16P2            | LU5-16P2            | LU5-15P2            |                                |                     |
|                                     |                |                | NO+NC          |                                |                                |                     |                     |                     |                     |                                |                     |
|                                     | 二线<br>Two-wire | NO             | LJG5C-4/Z0AN2  | LJG5C-5/Z0AN2                  |                                | LU4-16D1            | LU5-16D1            | LU5-15D1            |                     |                                |                     |
|                                     |                | NC             | LJG5C-4/Z0BN2  | LJG5C-5/Z0BN2                  |                                | LU4-16D2            | LU5-16D2            | LU5-15D2            |                     |                                |                     |
|                                     |                | 交流型<br>AC type | 二线<br>Two-wire | NO                             |                                |                     |                     |                     |                     |                                |                     |
|                                     | NC             |                |                |                                |                                |                     |                     |                     |                     |                                |                     |
| NO+NC                               |                |                |                |                                |                                |                     |                     |                     |                     |                                |                     |
| 检测距离 Detection distance             |                |                |                | 4mm±10%                        | 5mm±10%                        | 3mm±10%             | 4mm±10%             | 5mm±10%             | 5mm±10%             | 10mm±10%                       | 10mm±10%            |
| 设定距离 Set distance                   |                |                |                | 0~3.6mm                        | 0~4mm                          | 3mm                 | 4mm                 | 5mm                 | 5mm                 | 0~8mm                          | 10mm                |
| 标准检测物体<br>Standard detection object |                |                |                | 铁18×18×1mm                     | 铁18×18×1mm                     | 铁18×18×1mm          | 铁25×25×1mm          | 铁25×25×1mm          | 铁25×25×1mm          | 铁30×30×1mm                     | 铁30×30×1mm          |
| 响应频率 Response frequency             |                |                |                | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz |
| 图例 Illustration                     |                |                |                | 图96 Chattr96                   | 图97 Chattr97                   | 图98 Chattr98        | 图99 Chattr99        | 图100 Chattr100      | 图101 Chattr101      | —                              | —                   |

#### 型号规格 Type and Specification

| 尺寸 Dimension                        |                |                |                | Φ36×18                         | Φ42×25                         | Φ48×32                         | Φ55×35                         | Φ80×40                         | Φ100×50                        | Φ140×55                        | Φ210×64                        |            |
|-------------------------------------|----------------|----------------|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|------------|
| 安装方式<br>Mounting way                |                |                |                | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |            |
| 型号 Type                             | 直流型<br>DC type | NPN            | NO             | SK-3015A                       | SR-3020A                       | SD-3020A                       | SE-3025A                       | TCO-3040A                      | TCA-3050A                      | TCB-3080A                      | TCC-30120A                     |            |
|                                     |                |                | NC             | SK-3015B                       | SR-3020B                       | SD-3020B                       | SE-3025B                       | TCO-3040B                      | TCA-3050B                      | TCB-3080B                      | TCC-30120B                     |            |
|                                     |                |                | NO+NC          | SK-3015AB                      | SR-3020AB                      | SD-3020AB                      | SE-3025AB                      | TCO-3040AB                     | TCA-3050AB                     | TCB-3080AB                     | TCC-30120AB                    |            |
|                                     |                | PNP            | NO             | SK-3015C                       | SR-3020C                       | SD-3020C                       | SE-3025C                       | TCO-3040C                      | TCA-3050C                      | TCB-3080C                      | TCC-30120C                     |            |
|                                     |                |                | NC             | SK-3015D                       | SR-3020D                       | SD-3020D                       | SE-3025D                       | TCO-3040D                      | TCA-3050D                      | TCB-3080D                      | TCC-30120D                     |            |
|                                     |                |                | NO+NC          | SK-3015CD                      | SR-3020CD                      | SD-3020CD                      | SE-3025CD                      | TCO-3040CD                     | TCA-3050CD                     | TCB-3080CD                     | TCC-30120CD                    |            |
|                                     | 二线<br>Two-wire | NO             | SK-3015AL      | SR-3020AL                      | SD-3020AL                      | SE-3025AL                      | TCO-3040AL                     | TCA-3050AL                     | TCB-3080AL                     | TCC-30120AL                    |                                |            |
|                                     |                | NC             | SK-3015BL      | SR-3020BL                      | SD-3020BL                      | SE-3025BL                      | TCO-3040BL                     | TCA-3050BL                     | TCB-3080BL                     | TCC-30120BL                    |                                |            |
|                                     |                | 交流型<br>AC type | 二线<br>Two-wire | NO                             | SK-2015A                       | SR-2020A                       | SD-2020A                       | SE-2025A                       | TCO-2040A                      | TCA-2050A                      | TCB-2080A                      | TCC-20120A |
|                                     |                |                | NC             | SK-2015B                       | SR-2020B                       | SD-2020B                       | SE-2025B                       | TCO-2040B                      | TCA-2050B                      | TCB-2080B                      | TCC-20120B                     |            |
| 三线<br>Three-wire                    | NO+NC          |                |                |                                | SD-2020AB                      | SE-2025AB                      | TCO-2040AB                     | TCA-2050AB                     | TCB-2080AB                     | TCC-20120AB                    |                                |            |
| 检测距离 Detection distance             |                |                |                | 15mm±10%                       | 20mm±10%                       | 20mm±10%                       | 25mm±10%                       | 40mm±10%                       | 50mm±10%                       | 80mm±10%                       | 120mm±10%                      |            |
| 设定距离 Set distance                   |                |                |                | 0~13mm                         | 0~16mm                         | 0~17mm                         | 0~22mm                         | 0~35mm                         | 0~40mm                         | 0~65mm                         | 0~90mm                         |            |
| 标准检测物体<br>Standard detection object |                |                |                | 铁55×55×1mm                     | 铁60×60×1mm                     | 铁65×65×1mm                     | 铁75×75×1mm                     | 铁80×80×2mm                     | 铁100×100×2mm                   | 铁140×140×2mm                   | 铁210×210×2mm                   |            |
| 响应频率 Response frequency             |                |                |                | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz            |            |
| 图例 Illustration                     |                |                |                | 图102 Chatr102                  | 图103 Chatr103                  | 图104 Chatr104                  | 图105 Chatr105                  | 图106 Chatr106                  | 图107 Chatr107                  | 图108 Chatr108                  | 图109 Chatr109                  |            |



### 特性参数 Characteristic parameter

滞后距离: 检测距离的10%以下  
检测物体: 磁性金属(非磁性金属时检测距离减小)  
电源电压: 直流型: DC12~24V(6~36V)脉动(P-P)10%以下,  
交流型: AC110~220V(36~250V)50/60Hz  
消耗电流: N.P型: 13mA以下, D型: 0.8mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, D型: 200mA以下, A型: 400mA以下  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~+65℃  
(不结冰、不结露), 动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时±10%  
检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: ABS) (检测面: ABS)

Delay distance: 10% below of the detection distance  
Detection object: Magnetic metal (the detection distance decreases when it is non-magnetic metal)  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below, AC type: AC110~220V  
(36~250V) 50/60Hz  
Consumption current: N.P type: 13mA below, D type: 0.8mA below, A type: 1.7mA below  
Control output: N.P type: 300mA below, D type: 200mA below, A type: 400mA below  
Loop protection: N.P.D type: reversal connection protection, surge absorption, load short-circuit  
protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually -30~+65℃ (no freeze,  
no dew), During operation, storage: individually 35~95%RH  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part and housing  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection distance;  
temperature range -25~+60℃, at +23℃, ±10% detection distance  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply voltage value,  
inside ±10% detection distance  
Protection structure: IP67 (IEC specification)  
Material: (Housing: ABS), (Detection surface: ABS).

### 外形尺寸(mm) External dimension

Chart 96 图96 LJG5C-4(2)□

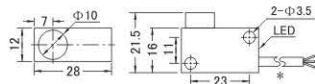


Chart 97 图97 LJG5C-5□

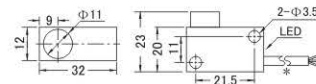


Chart 98 图98 LU3-10□

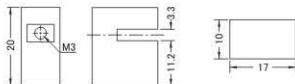


Chart 99 图99 LU4-16□

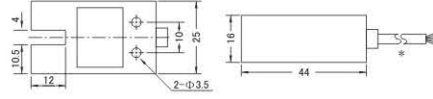


Chart 100 图100 LU5-16□

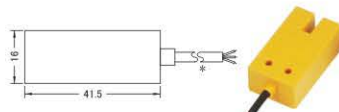
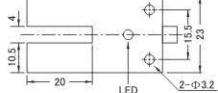


Chart 101 图101 LU5-15□

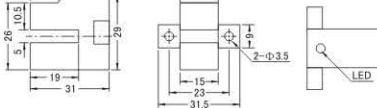


Chart 102 图102 SK-□15□

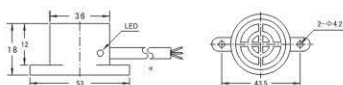


Chart 103 图103 SR-□20□

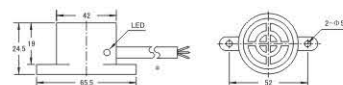


Chart 104 图104 SD-□20□

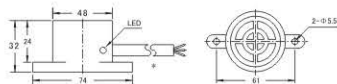


Chart 105 图105 SE-□25□

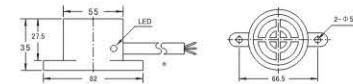


Chart 106 图106 TCO-□40□

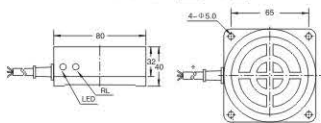


Chart 107 图107 TCA-□50□

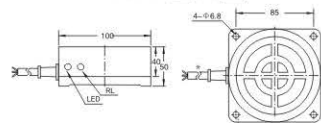


Chart 108 图108 TCB-□80□

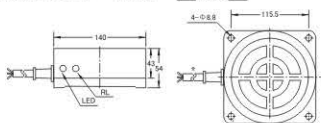
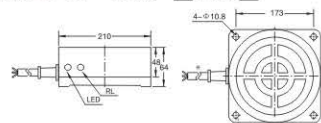


Chart 109 图109 TCC-□120□



电容式，能与国内外各相同品种直接替换 Conductive type, can be the direct substitution of the same type both at home and abroad

- 电源反接保护、短路保护，可直接与PLC相联接
- 经济并且简单的操作
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC  
Economic and simple operation  
Long service life, high reliability and strong resistance property to environment  
Red LED indicates that it's available to detect the sensor operating state  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



### 规格型号 Type and Specification

| 尺寸 Dimension                        |                |                  |                     | M12×1                     |                                | M18×1                     |                                | M24×1.5                   |                                | M30×1                     |                                |
|-------------------------------------|----------------|------------------|---------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                  |                     | 屏蔽式<br>screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>screen shield type | 非屏蔽式<br>Non-screen shield type | 屏蔽式<br>screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>Type                          | 直流型<br>DC type | NPN              | NO                  | LJC12A3-2-Z/BX            | LJC12A3-A-Z/BX                 | LJC18A3-5-Z/BX            | LJC18A3-B-Z/BX                 | LJC24A3-8-Z/BX            | LJC24A3-T-Z/BX                 | LJC30A3-10-Z/BX           | LJC30A3-H-Z/BX                 |
|                                     |                |                  | NC                  | LJC12A3-2-Z/AX            | LJC12A3-A-Z/AX                 | LJC18A3-5-Z/AX            | LJC18A3-B-Z/AX                 | LJC24A3-8-Z/AX            | LJC24A3-T-Z/AX                 | LJC30A3-10-Z/AX           | LJC30A3-H-Z/AX                 |
|                                     |                |                  | NO+NC               |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     |                | PNP              | NO                  | LJC12A3-2-Z/BY            | LJC12A3-A-Z/BY                 | LJC18A3-5-Z/BY            | LJC18A3-B-Z/BY                 | LJC24A3-8-Z/BY            | LJC24A3-T-Z/BY                 | LJC30A3-10-Z/BY           | LJC30A3-H-Z/BY                 |
|                                     |                |                  | NC                  | LJC12A3-2-Z/AY            | LJC12A3-A-Z/AY                 | LJC18A3-5-Z/AY            | LJC18A3-B-Z/AY                 | LJC24A3-8-Z/AY            | LJC24A3-T-Z/AY                 | LJC30A3-10-Z/AY           | LJC30A3-H-Z/AY                 |
|                                     |                |                  | NO+NC               |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     | 交流型<br>AC type | 二线<br>Two-wire   | NO                  |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     |                |                  | NC                  |                           |                                |                           |                                |                           |                                |                           |                                |
|                                     |                | 三线<br>Three-wire | NO                  |                           |                                | LJC18A3-5-J/EZ            | LJC18A3-B-J/EZ                 | LJC24A3-8-J/EZ            | LJC24A3-T-J/EZ                 | LJC30A3-10-J/EZ           | LJC30A3-H-J/EZ                 |
|                                     |                |                  | NC                  |                           |                                | LJC18A3-5-J/DZ            | LJC18A3-B-J/DZ                 | LJC24A3-8-J/DZ            | LJC24A3-T-J/DZ                 | LJC30A3-10-J/DZ           | LJC30A3-H-J/DZ                 |
| 检测距离<br>Detection distance          |                |                  | 2mm±10%             | 5mm±10%                   | 5mm±10%                        | 10mm±10%                  | 8mm±10%                        | 15mm±10%                  | 10mm±10%                       | 25mm±10%                  |                                |
| 设定距离<br>Set distance                |                |                  | 0~1.7mm             | 0~4mm                     | 0~4mm                          | 0~8mm                     | 0~7mm                          | 0~13mm                    | 0~8mm                          | 0~18mm                    |                                |
| 标准检测物体<br>Standard detection object |                |                  | 铁SPCC 50×50×1mm     |                           |                                |                           |                                |                           |                                |                           |                                |
| 响应频率<br>Response frequency          |                |                  | DC: 0.5kHz AC: 25Hz | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       | DC: 0.5kHz AC: 25Hz            | DC: 0.5kHz AC: 25Hz       |                                |
| 图例<br>Illustration                  |                |                  | 图110 Chattr110      | 图111 Chattr111            | 图112 Chattr112                 | 图113 Chattr113            | 图114 Chattr114                 | 图115 Chattr115            | 图116 Chattr116                 | 图117 Chattr117            |                                |

### 规格型号 Type and Specification

| 尺寸 Dimension                        |                |                  |                   | Φ20                            | Φ34                            | M38×1.5                        | Φ80×80×40                      |
|-------------------------------------|----------------|------------------|-------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 安装方式<br>Mounting way                |                |                  |                   | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type | 非屏蔽式<br>Non-screen shield type |
| 型号<br>Type                          | 直流型<br>DC type | NPN              | NO                | LJC20A4-10-Z/BX                | LJC34A3-K-Z/BX                 | LJC38A4-20-Z/BX                | LJC80A4-40-Z/BX                |
|                                     |                |                  | NC                | LJC20A4-10-Z/AX                | LJC34A3-K-Z/AX                 | LJC38A4-20-Z/AX                | LJC80A4-40-Z/AX                |
|                                     |                |                  | NO+NC             |                                |                                |                                |                                |
|                                     |                | PNP              | NO                | LJC20A4-10-Z/BY                | LJC34A3-K-Z/BY                 | LJC38A4-20-Z/BY                | LJC80A4-40-Z/BY                |
|                                     |                |                  | NC                | LJC20A4-10-Z/AY                | LJC34A3-K-Z/AY                 | LJC38A4-20-Z/AY                | LJC80A4-40-Z/AY                |
|                                     |                |                  | NO+NC             |                                |                                |                                |                                |
|                                     | 交流型<br>AC type | 二线<br>Two-wire   | NO                |                                |                                |                                |                                |
|                                     |                |                  | NC                |                                |                                |                                |                                |
|                                     |                | 三线<br>Three-wire | NO                | LJC20A4-10-J/EZ                | LJC34A3-K-J/EZ                 | LJC38A4-20-J/EZ                | LJC80A4-40-J/EZ                |
|                                     |                |                  | NC                | LJC20A4-10-J/DZ                | LJC34A3-K-J/DZ                 | LJC38A4-20-J/DZ                | LJC80A4-40-J/DZ                |
| 检测距离 Detection distance             |                |                  | 10mm±10%          | 25mm±10%                       | 20mm±10%                       | 40mm±10%                       |                                |
| 设定距离 Set distance                   |                |                  | 0~8mm             | 0~22mm                         | 0~18mm                         | 0~35mm                         |                                |
| 标准检测物体<br>Standard detection object |                |                  | 铁SPCC 50×50×1mm   |                                |                                |                                |                                |
| 响应频率 Response frequency             |                |                  | DC:0.5kHz AC:25Hz | DC:0.5kHz AC:25Hz              | DC:0.5kHz AC:25Hz              | DC:0.5kHz AC:25Hz              |                                |
| 图例 Illustration                     |                |                  | 图118 Chattr118    | 图119 Chattr119                 | 图120 Chattr120                 | 图121 Chattr121                 |                                |





### 霍尔型能检测物体的计数 Holzer could count to detect objects.

- 电源反接保护
- 长寿命和高可靠性
- 红色LED显示可以检测传感器工作状态
- 距离可调节的简单操作
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection  
Long service life, high reliability  
Red LED indicates that it's available to detect the sensor operating state  
Simple operation with adjustable distance  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



### 规格型号)

Type and Specification(Simulation displacement sensor)

| 尺寸 Dimension                        |     |               | M8×1×37                   | M12×1×37                  | M18×1×37                  | M17×17×28                 |
|-------------------------------------|-----|---------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 安装方式<br>Mounting way                |     |               | 屏蔽式<br>screen shield type | 屏蔽式<br>screen shield type | 屏蔽式<br>screen shield type | 屏蔽式<br>screen shield type |
| 型号<br>Type                          | NPN | NO            | NJK-8001C                 | NJK-5002C                 | NJK-5003C                 | CHE/JL-10NA-H710          |
|                                     |     | NC            | NJK-8001D                 | NJK-5002D                 | NJK-5003D                 | CHE/JL-10NB-H710          |
|                                     |     | NO+NC         | NJK-8001CD                | NJK-5002CD                | NJK-5003CD                | CHE/JL-10NAB-H710         |
|                                     | PNP | NO            | NJK-8001A                 | NJK-5002A                 | NJK-5003A                 | CHE/JL-10PA-H710          |
|                                     |     | NC            | NJK-8001B                 | NJK-5002B                 | NJK-5003B                 | CHE/JL-10PB-H710          |
|                                     |     | NO+NC         | NJK-8001AB                | NJK-5002AB                | NJK-5003AB                | CHE/JL-10PAB-H710         |
| 检测距离 Detection distance             |     | 10mm±10%      | 10mm±10%                  | 10mm±10%                  | 10mm±10%                  |                           |
| 设定距离 Set distance                   |     | 0-10mm        | 0-10mm                    | 0-20mm                    | 0-10mm                    |                           |
| 标准检测物体<br>Standard detection object |     | Φ8×2mm 磁铁     | Φ12×2mm 磁铁                | Φ18×3mm 磁铁                | Φ12×2mm 磁铁                |                           |
| 响应频率 Response frequency             |     | 100kHz        | 100kHz                    | 100kHz                    | 100kHz                    |                           |
| 图例 Illustration                     |     | 图122 Chart122 | 图123 Chart123             | 图124 Chart124             | 图125 Chart125             |                           |

### 规格型号(霍尔传感器) Type and Specification(Hall sensor-based)

图122 Chart122 NJK-8001□

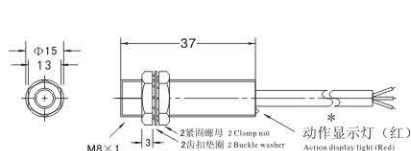


图123 Chart123 NJK-5002□

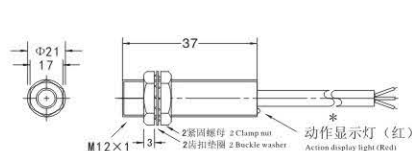


图124 Chart124 CHE/JS-10NA-H710

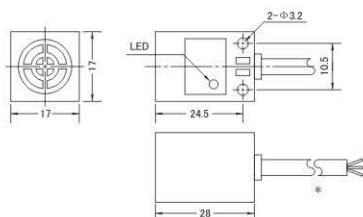
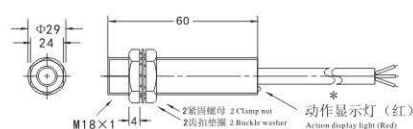


图125 Chart125 NJK-5003□





双向霍尔传感器

- 电源反接保护
- 长寿命和高可靠性
- 红色LED显示可以检测传感器工作状态
- 距离可调节的简单操作
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection  
Long service life, high reliability  
Red LED indicates that it's available to detect the sensor operating state  
Simple operation with adjustable distance  
IP67 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use

|                                                                                            |                  |      |         |       |       |
|--------------------------------------------------------------------------------------------|------------------|------|---------|-------|-------|
| <br>如图126 | 产品型号             | 输出形式 | 工作电压    | 输出电流  | 输出状态  |
|                                                                                            | CHE12-10N11-H710 | NPN  | 5-30VDC | 150mA | NO+NO |
| <br>如图127 | 产品型号             | 输出形式 | 工作电压    | 输出电流  | 输出状态  |
|                                                                                            | CHE18-15N11-H710 | NPN  | 5-30VDC | 150mA | NO+NO |

图126 Chart126 CHE12-10N11-H710

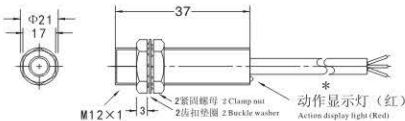
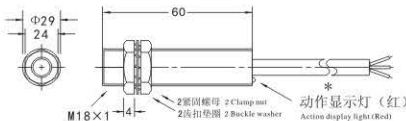


图127 Chart127 CHE18-15N11-H710



正反转传感器 Reversing sensor

CHE-ZF85125M型

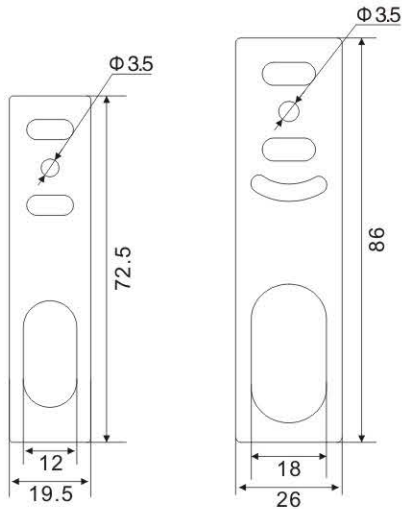
- 电源电压:16-30VDC
- 检测物体: 磁性金属
- 电源反接保护
- 长寿命和高可靠性
- 防水耐油抗高低温
- 使用前请先阅读产品说明书的“注意事项”

The power supply voltage: 16-30VDC  
Object detection: magnetic metal  
The power reverse protection  
Long life and high reliability  
Waterproof oil resistance, high and low temperature resistance  
Please read the product description " before use "

图128 Chart128



圆柱型开关安装支架 单位: mm



#### 磁感应式，能检测汽缸中活塞的位置 Magnetic induction type, can detect the position of the plunger in the cylinder

- 传感器可以安装在金属中
- 传感器并排安装没有任何要求
- 传感器感应面可以由金属制成
- 传感器可以穿过金属检测
- 传感器可以有更大的感应距离和更小的尺寸
- IP67防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

- Sensors can be mounted in the metal
- The parallel installation of the sensors hasn't any demand
- Sensor induction surface can be made of metal
- Sensors can undertake detection through metal
- Sensors can have larger induction distance and smaller dimension
- IP67 protection structure (IEC specification)
- Read the "Matters needing attention" of the Product Instruction before use



#### 规格型号 Type and Specification

| 尺寸 Dimension                   |                     |                     | M5×1×30       | M8×1×30       | M12×1×50      | 4.7×8×18       | 7.5×8×23      | 8×11×26       | 6.5×11×22.5   |       |
|--------------------------------|---------------------|---------------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|-------|
| 型号<br>Model                    | 磁式<br>Magnetic type | DC/AC二线<br>Two-wire | NO            | LG5A3-10-J/EZ | LG8A3-10-J/EZ | LG12A3-10-J/EZ | SD-1          | SD-2          | D-C73         | D-A73 |
|                                |                     |                     | NC            | LG5A3-10-J/DZ | LG8A3-10-J/DZ | LG12A3-10-J/DZ |               |               |               |       |
| 电源电压 Supply voltage            |                     |                     | DC/AC:5-220V  |               |               |                |               |               |               |       |
| 连续负载电流 Continuous load current |                     |                     | 50mA          | 50mA          | 200mA         | 50mA           | 50mA          | 100mA         | 100mA         |       |
| 图例 Illustration                |                     |                     | 图130 Chatr130 | 图131 Chatr131 | 图132 Chatr132 | 图133 Chatr133  | 图134 Chatr134 | 图135 Chatr135 | 图136 Chatr136 |       |

#### 规格型号 Type and Specification

| 尺寸 Dimension                      |                     |                     |    | 6.5×11×22.5   | 11×12×28      | 11×13×28      | 15×14×33.5    | 10×20×40      | 7.5×7×22      | 6×14×23       |
|-----------------------------------|---------------------|---------------------|----|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 型号<br>Model                       | 磁式<br>Magnetic type | DC/AC二线<br>Two-wire | NO | CS1-J         | CS1-U         | CS1-F         | CS1-S         | D-B54         | CS4H          | MS-1          |
|                                   |                     |                     | NC |               |               |               |               |               |               |               |
| 电源电压 Supply voltage               |                     |                     |    | DC/AC:5-220V  |               |               |               |               |               |               |
| 连续负载电流<br>Continuous load current |                     |                     |    | 100mA         | 100mA         | 100mA         | 100mA         | 100mA         | 100mA         | 100mA         |
| 图例 Illustration                   |                     |                     |    | 图137 Chatr137 | 图138 Chatr138 | 图139 Chatr139 | 图140 Chatr140 | 图141 Chatr141 | 图142 Chatr142 | 图143 Chatr143 |

#### 规格型号 Type and Specification

|                                   |                     |                     |    |               |               |               |               |               |               |               |               |
|-----------------------------------|---------------------|---------------------|----|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 尺寸 Dimension                      |                     |                     |    | 8×16.5×24     | 8×15×25       | 6.5×19×28.5   | 7×14.8×33     | 10×21×56      | 3×4.5×22.5    | 5.8×5×24.5    | 5.8×5×29      |
| 型号<br>Model                       | 磁式<br>Magnetic type | DC/AC二线<br>Two-wire | NO | MS-2          | MS-3          | MS-4          | MS-5          | MS-6          | SD-3          | SD-4          | SD-5          |
|                                   |                     |                     | NC |               |               |               |               |               |               |               |               |
| 电源电压 Supply voltage               |                     |                     |    | DC/AC:5-220V  |               |               |               |               |               |               |               |
| 连续负载电流<br>Continuous load current |                     |                     |    | 100mA         | 100mA         | 100mA         | 100mA         | 100mA         | 100mA         | 100mA         | 100mA         |
| 图例 Illustration                   |                     |                     |    | 图144 Chatr144 | 图145 Chatr145 | 图146 Chatr146 | 图147 Chatr147 | 图148 Chatr148 | 图149 Chatr149 | 图150 Chatr150 | 图151 Chatr151 |

#### 规格型号 Type and Specification

| 尺寸 Dimension                      |                     |                       | 6×5×29                                                                              | 12×36×36                                                                            | 10×34×40                                                                            | 28×80×94.5                                                                          | 13×19.5×43                                                                           | 28×80×94.5                                                                            | 78×60×27                                                                              | 13X19.5×43                                                                            |
|-----------------------------------|---------------------|-----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 型号<br>Type                        | 磁式<br>Magnetic type | DC/AC二线<br>Two-wire   | NO                                                                                  | D-Z73                                                                               | D-A93                                                                               | CS1-G                                                                               | SG-1                                                                                 | SG-2                                                                                  |                                                                                       |                                                                                       |
|                                   |                     | DC/AC三线<br>Three-wire | NO+NC                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       | YG-1                                                                                  | MS-01                                                                                 |
| 电源电压 Supply voltage               |                     |                       | DC/AC:5-220V                                                                        |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| 连续负载电流<br>Continuous load current |                     |                       | 100mA                                                                               | 100mA                                                                               | 100mA                                                                               | 100mA                                                                               | 100mA                                                                                | 300mA                                                                                 | 300mA                                                                                 | 100mA                                                                                 |
| 图例 Illustration                   |                     |                       |  |  |  |  |  |  |  |  |



外形尺寸(mm) External dimension(mm)

Chart 130 图130 LG5A3-10-J/EZ

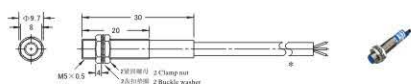


Chart 131 图131 LG8A3-10-J/EZ (GHG8-10A.A2)

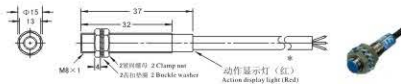


Chart 132 图132 LG12A3-10-J/EZ (GHG12-10A.A2)

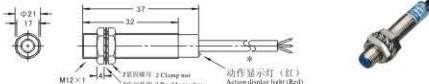


Chart 133 图133 SD-1-□



Chart 134 图134 SD-2-□

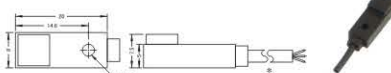


Chart 135 图135 D-C73

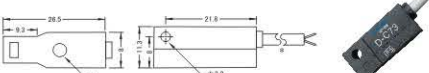


Chart 136 图136 D-A73

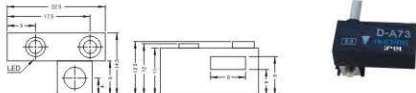


Chart 137 图137 CS1-J



Chart 138 图138 CS1-U

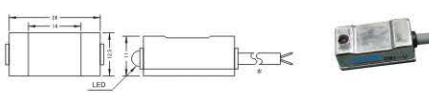


Chart 139 图139 CS1-F



Chart 140 图140 CS1-S

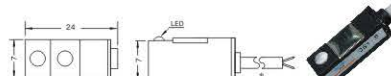


Chart 141 图141 D-B54

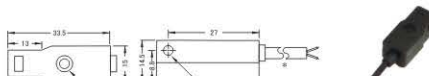


Chart 142 图142 CS4H

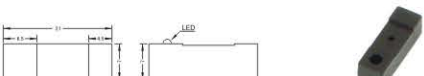


Chart 143 图143 MS-1



Chart 144 图144 MS-2



Chart 145 图145 MS-3

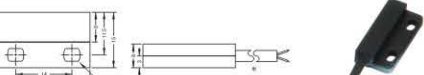


Chart 146 图146 MS-4



Chart 147 图147 MS-5



Chart 148 图148 MS-6



Chart 149 图149 SD-3



Chart 150 图150 SD-4



Chart 151 图151 SD-5

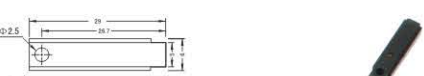


Chart 152 图152 D-Z73

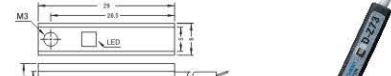


Chart 153 图153 D-A93



Chart 154 图154 CS1-G



Chart 155 图155 SG-1

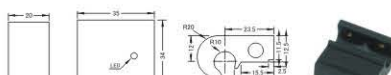


Chart 156 图156 SG-2

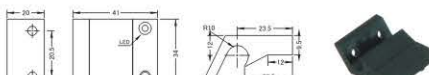


Chart 157 图157 YG-1

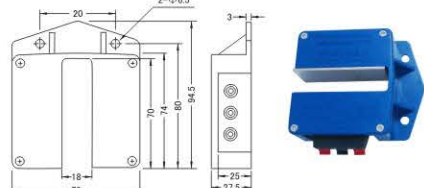


Chart 158 图158 MS-01

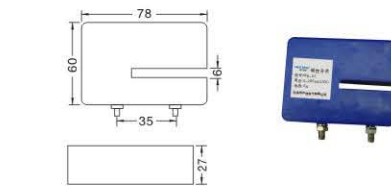
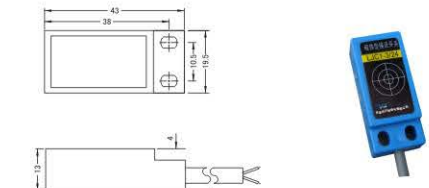


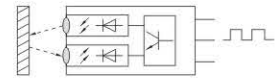
Chart 159 图159 LJC1-3/24



## 光电开关工作原理 Operation principle photoelectric switch

● 光电开关又称光电传感器，传感器分漫反射型、反馈反射型、对射型，传感器与PLC可编程控制器、单片机、非门电路、电子计数器、固态继电器、小型继电器等产品配磁使用。发射型对准目标不间断发射光束，接收器把接收到的光能量转换为电流传输给后面的检测线路，它能滤出有效信号和应用该信号。

Photoelectric switch say again photoelectric sensor, sensor points diffuse reflective type, feedback, DuiShe type, sensor and PLC and single-chip microcomputer, sr circuit, electronic counters, solid-state relay, small relays etc products with magnetic use. The transmitter aims at the target and generates light beam, and the receptor turns the light energy received into current and transmits it to the detection circuit backwards. It can filter out an effective signal and use it.

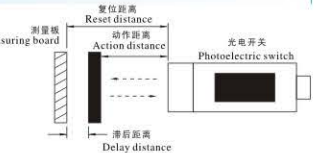


## 光电开关技术术语 Technical terms photoelectric switch

### ● 距离滞后 Distance delay

是指测量板靠近光电开关产生的动作距离和复位距离之差；滞后距离用开关的距离的百分比来表示。

It means the distance difference between the action distance and the reset distance produced when the measuring board approaches the photoelectric switch; the delay distance is shown as percent number of switch distance.



### ● 亮通/暗通 Light on / Dark on

| 类型 Type                                                     | 图例 Illustration | 暗通 Dark on (NO) | 亮通 Light on (NC) |
|-------------------------------------------------------------|-----------------|-----------------|------------------|
| 漫反射型光电开关<br>Diffuse reflection type<br>photoelectric switch |                 |                 |                  |
|                                                             |                 |                 |                  |
| 反射板型光电开关<br>Reflecting board type<br>photoelectric switch   |                 |                 |                  |
|                                                             |                 |                 |                  |
| 对射型光电开关<br>Correlation type<br>photoelectric switch         |                 |                 |                  |
|                                                             |                 |                 |                  |

### ● 指向角 Angle of spread

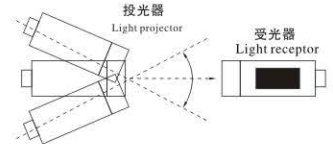
对射型、反射型能保证光电开关能稳定工作的角度范围。

Correlation type and reflection type can ensure the angle range for photoelectric switch to work steadily.

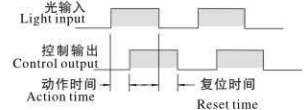
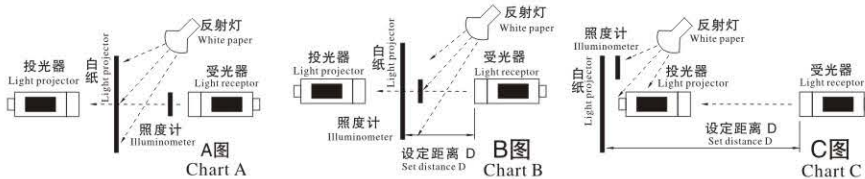
### ● 响应时间 Response time

指从光输入的上升、下降沿与相应的控制输出上升、下降沿距离间隔为动作或复位的迟后时间。(动作时间=复位时间)

It means the delay time when the distance difference is action distance or reset distance between the rise and fall edge of the light input, and the rise and fall edge of the relevant control output. (Action time = reset time).



### ● 工作环境照度 Illumination level of operational environment



(A图)当外部干扰受光器时给予影响，故将(A图)的测定作为外部干扰光照度的基准；在(B图)和(C图)，根据设定距离D及白板纸反射率等，对受光器的影响程度产生变化，基准变的不明确。

(Chart A) When surrounding environment interferes in the light receptor, it works, therefore, make the determination of Chart A as the criterion of the surrounding environment interference to the illumination level; in Chart B and Chart C, the interference degree of the light receptor changes in terms of the set distance D and white paper reflection ratio, therefore, the criterion becomes uncertain.

### ● 镜面抑制(MSR)功能 Mirror surface rejection function (MSR)

反馈反射型光电开关利用内装的偏光滤光器和回归反射的特点，只接收来自回归反射板光束的功能。通过投光部偏光滤光器的光束变为横向。

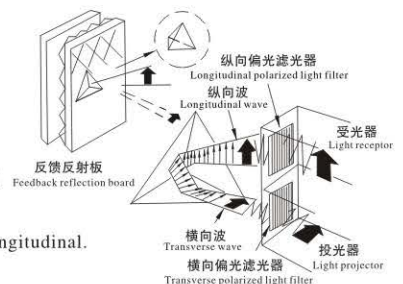
反射到回归反射板三角锥上的光束由横向变为纵向。

其反射光通过受光部的偏光滤光器到达受光元件。

Due to the built-in polarized light filter and the property of retro-reflection, the retro-reflection type photoelectric switch only accepts the light beam from the retro-reflection board. Through the light projection part, the light beam of polarized light filter becomes transverse.

The light beam reflected to the standard pyrometric cone of the retro-reflection board becomes from transverse to longitudinal.

The reflected light reaches the light receiving elements through the polarized light filter of the light receiving part.





● 反射板的盲区 Dead zone of reflection board

反射板在反射的过程中，有一段区域是反射板不能识别的区域，这段区域就是反射板的盲区。

During the reflection process, there is a part of area that the reflection board can't identify. This part of area is exactly the dead zone of reflection board.

● 恒定光 Constant light

是指辐射功率基本上是固定的光。

It means the light whose radiation power is basically constant.

● 检测范围 Detection range

是指光电开关与物体之间的最大可用距离。检测范围与发射光的强度、测量区域的环境状况、反射物体的情况有关。

It means the maximum available distance between the photoelectric switch and the object. Detection range is concerned with the reflection light in tensity, the environment state of measuring area and the reflection object condition.

● 红外线(IR或IRED) Infrared ray(IR or IRED)

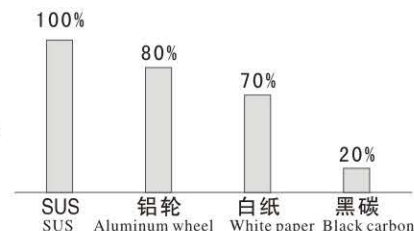
是指一种辐射波长很长的光( $\lambda=780\text{nm}$ 到 $1\text{mm}$ )

It's a kind of light whose radiation wavelength is very long. ( $\lambda=780\text{nm}$  to  $1\text{mm}$ )

● 反射性能 Reflection performance

是指目标的特性，它与目标表面构造和颜色、大小有着依赖关系；还与入射光是优或劣，定向的或漫反射的有关；无反射的部分是全吸收或者透射；反射型光电开关采用通用材料可以得到较好的反射距离。

It's the target's characteristic. It has dependency relationship with the surface structure, color and size of the target, in addition, whether the incident light is good or bad, whether it is directed or diffuse reflected and whether the non-reflection part is totally absorbed or transmitted do matter. The reflection type photoelectric switch that adopts general material can achieve better reflecting distance.



● 调节器 Adjuster

通过内置式电位器，在最小照度的情况下，使接收器能产生开关输出；由此可以在有效作用距离内将开关距离调节到最佳程度。

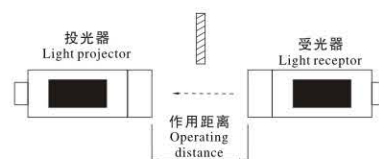
Through the built-in potential meter and under the circumstance of the minimum illumination level, it makes the receptor produce switch output, therefore, the switch distance can be adjusted to the best state inside the range of the effective distance.

光电开关分类 Photoelectric switch classification

● 对射型光电开关 Correlation type photoelectric switch

对射型光电开关由投光器、受光器组成，结构上两者是相互分离的；辨别不透明的反光物体；有效距离大，因为光束跨越感应距离的时间仅一次；不易受干扰；装置的费用高，两个单元都必须敷设电缆。

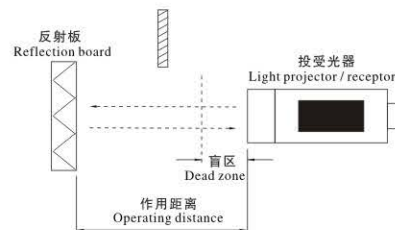
Correlation type photoelectric switch is made up of light projector and light receptor, and the both are respectively separated in structure; Distinguish the opaque reflective object; Large effective distance, for the light beam crosses the sensing distance only once; Not vulnerable to be interfered; The equipment has high consumption, so cables must be laid out on the two units.



● 反馈反射型光电开关 Feedback reflective photoelectric switch

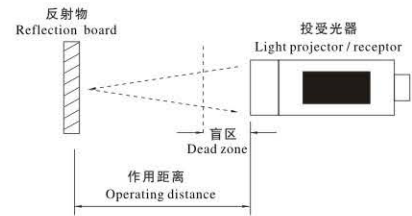
反馈反射型光电开关由投光器和受光器构成的情况是一种标准配置。从发送器来的光束，在对面反射镜被反射，既返回受光器。光的通过时间是两倍的信号持续时间；当光束被中断时产生一个开关变化。辨别不透明的反光物体；透明玻璃识别标志可以借助于特殊的传感器；当带有偏振滤光镜的传感器使用时，反射目标成为可靠的识别(可参见MSR功能)；借助反射镜部件，形成高的有效距离范围；不易受干扰。

Feedback reflective photoelectric switch is made up of light projector and light receptor, which is one of standard configurations. The light beam from the projector is reflected by the opposite mirror, and then goes back to the light receptor. The transit time is twice the signal's duration time; a switch change comes into being when the light beam breaks. Distinguish the opaque reflective object; Transparent glass identification mark can be made of special sensor; When the sensor with polaroid filter works, the reflective target becomes a reliable identification (See MSR function); High effective distance range is available with the help of reflective mirror parts; Not vulnerable to be interfered



### ● 漫反射型光电开关 Diffuse reflection type photoelectric switch

漫反射型光电开关由投光器和受光器构成的情况是一种标准配置。从发送器来的光速时，目标产品漫反射；当有足够的组合光返回受光器时，开关状态发生变化；有效作用距离是由目标的反射能力决定的，是由表面性质和颜色决定的。带有灵敏度调节器的变化能力可起到补偿作用；较小的装配开支，光传感器由单个元件组成时，通常可以达到粗定位；采用背景抑制功能调节测量距离；对目标上的灰尘敏感和对目标变化了的反射性能敏感。



Diffuse reflection type photoelectric switch is made up of light projector and light receptor, which is one of standard configurations. When the light beam comes from the projector, the target creates diffuse reflection; when there is enough combination light back to the light receptor, the switch state will change; Effective operating distance depends on the reflective capacity of the target, as well as the surface property and color. The change capacity with sensitivity adjuster can assume compensation action; The equipment has lower consumption. When the optical sensor is made up of a single element, rough location can usually be achieved; Adopts the function of background rejection to regulate the measuring distance; sensitive to the dust on the target and sensitive to the changed reflective performance of the target.

### ● 光纤传感器 Optical fiber sensor

检测微小物体(最小为0.5mm)；用高级合金钢为外包装，可以在高温环境中使用；对有约束的安装状况的适宜的。

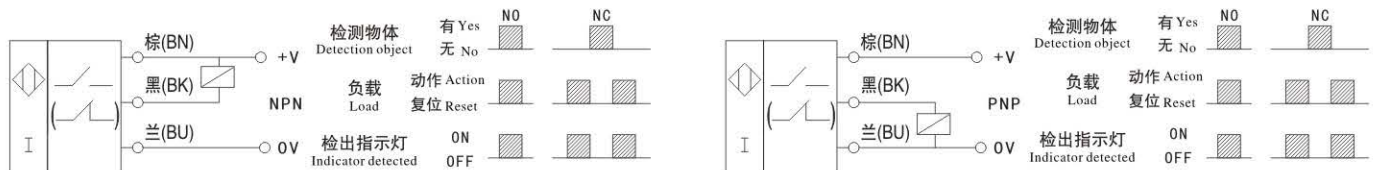
Detect micro-objects (Minimum 0.5mm); Use high-class alloy steel as external packing, which can work in the high temperature environment; Suitable to the installation condition which has restriction.

## 光电开关输出型式和电气特性 Electrical Characteristics & Output Form of Photoelectric Switch

### ● 直流三线制(N,P型)NO或NC DC three-wire system (N, P type) NO or NC

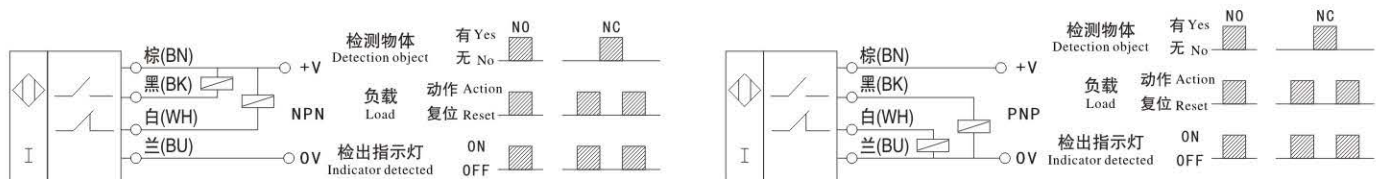
这些开关的负载和供电电源分开连接；有极性，短路和过载保护功能，剩余电流可以忽略。

The load of these switches connects separately with the power supply, owning the functions of polarity, short-circuit and over-load protection. The residual current can be neglected.



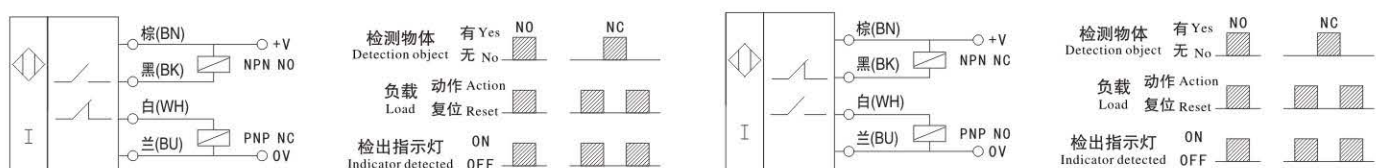
### ● 直流四线制(N,P型)NO加NC DC four-wire system (N, P type) NO plus NC

这些开关可提供常开，常闭两组输出。The switches can provide two groups of output NO and NC.



### ● 直流四线制(X型) DC four-wire system (X type)

NPN, PNP, NO, NC 四合种输出方式可转换 The four output modes can be converted among NPN, PNP, NO and NC

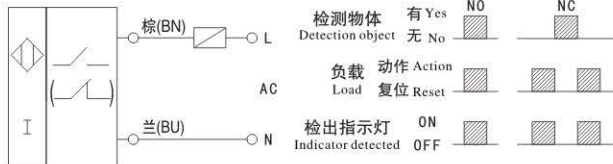




● 交流二线制NO或NC AC two-wire system NO or NC

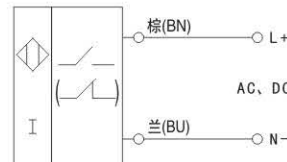
负载必须串联在传感器内进行工作在开路状态，在闭路状态，开关元件上有一个较小的电压降

The load must be series connected inside the sensor and work, and on closed-circuit state, there is a minor voltage drop on the switch elements.



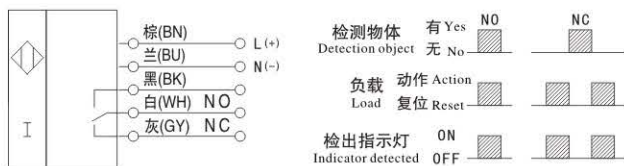
● 交流、直流(AC,DC型)二线制发射器

AC、DC(AC,DC type) Two-wire system reflector



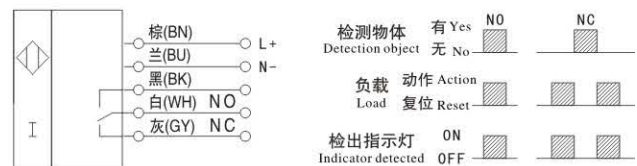
● 交流、直流五线制(AC、DC型)继电器输出

AC、DC five-wire system (AC, DC type) relay output



● 交直流五线制(AC加DC型)继电器输出

ACDC five-wire system (AC plus DC type) relay output



光电开关的并联、串联 (请参照接近开关的参数) Series and parallel connection of photoelectric switch (See the parameters of proximity switch)

光电开关注意事项 Matters Needing Attention when using photoelectric switch

● 防止相互干扰的方法 Ways to avoid mutual interference

光电开关接近设置时，另一个开关的光入射时造成的不稳定动作，叫做相互干扰；投光器、受光器相互交叉安装；反射式并列使用时，相互间隔须维持设定距离在检测距离的1.4倍以上；对射式并列使用时，相互间隔须维持设定距离在检测距离的0.4倍以上。

When the photoelectric switch approaches to the equipment, the light from another switch emits, causing unsteady action, which is called mutual interference; The light projector and the light receptor are cross-installed mutually; When the reflection type is used together, the distance between them must be kept, and the set distance is 1.4 times of detection distance; When the correlation type is used together, the distance between them must be kept, and the set distance is 0.4 times of detection distance.

● 其它注意事项 Other matters needing attention

光电开关的配线应单独配金属软管，请不要与电力线，动作线一起在同一金属软管内；电源电压请在电源电压范围内使用。

The Photoelectric switch must be equipped individually with metal flexible pipe, and don't make it with the electric line and power line in the same metal flexible pipe; The supply voltage must inside the supply voltage range.

● 下列安装场合使用时会造成误动作，请加以注意 Misoperation may be caused in the following installation locations and pay attention

灰尘较多的场合；腐蚀性气体较多的场合；水、油、药液直接溅散的场合；太阳光等强光直接照射的场合；使用时的环境温度湿度应在额定范围内。

Where there is more dust; Where there is more corrosive gas; Where water, oil and drugs are sprayed straightly; Where intense light such as sun light shines directly; When it's during the use, the ambient temperature and humidity must be inside the rated range.

● 关于维护检修 About maintenance and repair

检测物体及光电开关的安装位置有无偏移，松动；配线、连接部位有无松动，接触不良，断线；有无附粘灰尘等堆积物；使用温度条件，周围环境条件有无异常；检测距离有无异常。

Check whether there is any movement or looseness about the installation sites of the object and photoelectric switch; Check whether there is any looseness, bad contact or disconnection about the equipped line and connecting parts; Check whether there is any deposit adhered, such as dust; Check whether the operating temperature condition and ambient environment condition are abnormal; Check whether the detection distance is abnormal.

#### 圆柱型能与国内外各相同品种直接替换 The columned can with various domestic same species directly replaced

- 电源反接保护、短路保护，可直接与PLC相联接
- 新增电流过载保护
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- 新增金属外壳形，增大了安装强度
- 增加外壳强度和断线的对策
- M8对射已试制推出
- IP67防护结构（IEC规格）
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC  
 Newly added current over-load protection  
 Long service life, high reliability and strong resistance property to environment  
 Red LED indicates that it's available to detect the sensor operating state  
 Newly added metal housing to improve the installation intensity  
 Countermeasure to improve the housing intensity and to solve disconnection  
 M8 correlation has been trial-produced and promoted  
 IP67 protection structure (IEC specification)  
 Read the "Matters needing attention" of the Product Instruction before use



#### 型号规格 Type and Specification

| 尺寸 Dimension                         |                |                  |       | M8×1                                    |                        | M12×1                                   |                        | M18×1                                   |                                         |                                |                        |
|--------------------------------------|----------------|------------------|-------|-----------------------------------------|------------------------|-----------------------------------------|------------------------|-----------------------------------------|-----------------------------------------|--------------------------------|------------------------|
| 检测方式<br>Detection method             |                |                  |       | 漫反射式<br>Diffuse type                    | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflex                | 对射式<br>DuiShe type             |                        |
| 型号<br>Type                           | 直流型<br>DC type | NPN              | NO    | E3F2-DS3C4                              | E3F2-2DN1-2L           | E3F1-DS5C4                              | E3F1-3DN1-3L           | E3F-DS10C4                              | E3F-DS30C4                              | E3F-R2NK                       | E3F-5DN1-5L            |
|                                      |                |                  | NC    | E3F2-DS3B2                              | E3F2-2DN2-2L           | E3F1-DS5B2                              | E3F1-3DN2-3L           | E3F-DS10B2                              | E3F-DS30B2                              | E3F-R2N2                       | E3F-5DN2-5L            |
|                                      |                |                  | NO+NC |                                         |                        |                                         |                        | E3F-DS10C3                              | E3F-DS30C3                              | E3F-R2N3                       | E3F-5DN3-5L            |
|                                      |                | PNP              | NO    | E3F2-DS3P1                              | E3F2-2DP1-2L           | E3F1-DS5P1                              | E3F1-3DP1-3L           | E3F-DS10P1                              | E3F-DS30P1                              | E3F-R2PK                       | E3F-5DP1-5L            |
|                                      |                |                  | NC    | E3F2-DS3P2                              | E3F2-2DP2-2L           | E3F1-DS5P2                              | E3F1-3DP2-3L           | E3F-DS10P2                              | E3F-DS30P2                              | E3F-R2P2                       | E3F-5DP2-5L            |
|                                      |                |                  | NO+NC |                                         |                        |                                         |                        | E3F-DS10P3                              | E3F-DS30P3                              | E3F-R2P3                       | E3F-5DP3-5L            |
|                                      | NPN/PNP/NO/NC  |                  |       |                                         |                        |                                         |                        | E3F-DS10X                               | E3F-DS30X                               | E3F-R2X                        | E3F-5DX-5L             |
|                                      | 交流型<br>AC type | 二线<br>Two-wire   | NO    |                                         |                        |                                         |                        | E3F-DS10Y1                              | E3F-DS30Y1                              | E3F-R2Y1                       | E3F-5DY1-5LY           |
|                                      |                |                  | NC    |                                         |                        |                                         |                        | E3F-DS10Y2                              | E3F-DS30Y2                              | E3F-R2Y2                       | E3F-5DY2-5LY           |
|                                      |                | 三线<br>Three-wire |       | NO                                      |                        |                                         |                        |                                         |                                         |                                |                        |
| 继电器输出<br>Relay output                |                |                  |       |                                         |                        |                                         |                        |                                         |                                         |                                |                        |
| 检测范围<br>Detection range              |                |                  |       | 3cm±10%                                 | 2m±10%                 | 5cm±10%                                 | 3m±10%                 | 10cm±10%                                | 10-30cm±10%                             | 2m±10%                         | 5m±10%                 |
| 检测目标<br>Detection target             |                |                  |       | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object         | 不透明物体<br>Opaque object |
| 检测范围调节<br>Detection range regulation |                |                  |       | 固定 Fixed                                | 固定 Fixed               | 固定 Fixed                                | 固定 Fixed               | 固定 Fixed                                | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster | 固定 Fixed               |
| 响应时间<br>Response time                |                |                  |       | 1ms                                     | 1ms                    | 1ms                                     | 1ms                    | 1ms                                     | 1ms                                     | 1ms                            | 1ms                    |
| 图例<br>Illustration                   |                |                  |       | 图160 Chatr160                           |                        | 图161 Chatr161                           |                        | 图162 Chatr162                           |                                         |                                |                        |

#### 型号规格 Type and Specification

| 尺寸 Dimension                         |                |                       | M18×1                                   |                                         |                                |                        | M30×1.5                                 |                                |                        | M18×1                          |               |
|--------------------------------------|----------------|-----------------------|-----------------------------------------|-----------------------------------------|--------------------------------|------------------------|-----------------------------------------|--------------------------------|------------------------|--------------------------------|---------------|
| 检测方式<br>Detection method             |                |                       | 漫反射式<br>Diffuse type                    |                                         | 反馈反射式<br>Feedback reflex       | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflex       | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type           |               |
| 型号<br>Type                           | 直流型<br>DC type | NPN                   | NO                                      | E3F3-D11                                | E3F3-D12                       | E3F3-R11               | E3F3-T11                                | E3F3-DS70N1                    | E3F3-R4NK              | E3F3-10DN1-10L                 |               |
|                                      |                |                       | NC                                      | E3F3-D61                                | E3F3-D62                       | E3F3-R61               | E3F3-T61                                | E3F3-DS70N2                    | E3F3-R4N2              | E3F3-10DN2-10L                 |               |
|                                      |                |                       | NO+NC                                   |                                         |                                |                        |                                         | E3F3-DS70N3                    | E3F3-R4N3              | E3F3-10DN3-10L                 | CDD-11N(40N)  |
|                                      |                | PNP                   | NO                                      | E3F3-D31                                | E3F3-D32                       | E3F3-R31               | E3F3-T31                                | E3F3-DS70P1                    | E3F3-R4PK              | E3F3-10DP1-10L                 |               |
|                                      |                |                       | NC                                      | E3F3-D81                                | E3F3-D82                       | E3F3-R81               | E3F3-T81                                | E3F3-DS70P2                    | E3F3-R4P2              | E3F3-10DP2-10L                 |               |
|                                      |                |                       | NO+NC                                   |                                         |                                |                        |                                         | E3F3-DS70P3                    | E3F3-R4P3              | E3F3-10DP3-10L                 | CDD-11P(40P)  |
|                                      | NPN/PNP/NO/NC  |                       |                                         |                                         |                                |                        |                                         |                                |                        |                                |               |
|                                      | 交流型<br>AC type | 二线<br>Two-wire        | NO                                      |                                         |                                |                        |                                         | E3F-DS70Y1                     | E3F3-R4Y1              | E3F-10DY1-10LY                 |               |
|                                      |                |                       | NC                                      |                                         |                                |                        |                                         | E3F-DS70Y2                     | E3F3-R4Y2              | E3F-10DY2-10LY                 |               |
|                                      |                | 三线NO<br>Three-wire No |                                         |                                         |                                |                        |                                         |                                |                        |                                |               |
| 继电器输出<br>Relay output                |                |                       |                                         |                                         |                                |                        |                                         |                                |                        |                                |               |
| 检测范围<br>Detection range              |                |                       | 10cm±10%                                | 10-30cm±10%                             | 3m±10%                         | 5m±10%                 | 70cm±10%                                | 4m±10%                         | 10m±10%                | 10~30cm±10%                    |               |
| 检测目标<br>Detection target             |                |                       | 透明/不透明物体<br>Transparent / Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object         | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object         | 不透明物体<br>Opaque object | 不透明物体<br>Opaque object         |               |
| 检测范围调节<br>Detection range regulation |                |                       | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster |               |
| 响应时间<br>Response time                |                |                       | 1ms                                     | 1ms                                     | 1ms                            | 1ms                    | 1ms                                     | 1ms                            | 1ms                    | 1ms                            |               |
| 图例<br>Illustration                   |                |                       | 图163 Chatr163                           |                                         |                                |                        | 图164 Chatr164                           |                                |                        |                                | 图165 Chatr165 |



## 特性参数 Characteristic parameters

接通延时: 1.5ms  
光源: 红外光660nm  
电源电压: 直流型: DC12~24V(6~36V)脉动(p-p)10%以下,  
交流型: AC110~220V(90~250V)50/60Hz  
消耗电流: N.P型: 20mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, A型: 400mA以下, J型: 2A以下(触点寿命: 10万次)  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~65℃(不结冰、不结露),  
动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时、±10%检测距离以内  
保护构造: IP67(IEC规格)  
材质: (外壳: 黄铜镀镍 ABS) (检测面(透镜): PMMA)

Connection delay: 1.5ms.  
Light source: Infrared light 660nm.  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below,  
AC type: AC110~220V(90~250V) 50/60Hz.  
Consumption current: N.P type: 20mA below, A type: 1.7mA below.  
Control output: N.P type: 300mA below, A type: 400mA below, J type: 2A below  
(contact service life: 0.1 million times).  
Loop protection: N.P..D type: reversal connection protection, surge absorption,  
load short-circuit protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually  
-30~+65℃ (no freeze, no dew), During  
operation, storage: individually 35~95%RH.  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part  
and housing.  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection  
distance; temperature range -25~+60℃, at +23℃, ±10%  
detection distance.  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply  
voltage value, inside ±10% detection distance.  
Protection structure: IP67 (IEC specification).  
Material: Housing: Nickel plated brass (ABS)  
Detection surface (lens): PMMA.

## 外形尺寸(mm) External dimension

Chart 160 图160 E3F2 -□

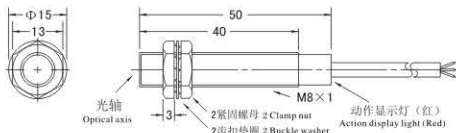


Chart 161 图161 E3F1-□

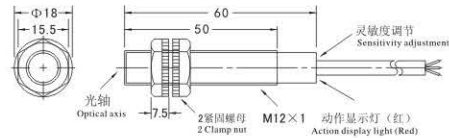


Chart 162 图162 E3F-□

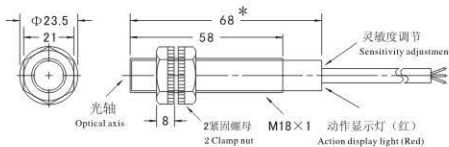


Chart 163 图163 E3F3-□ (进口型 Import type)

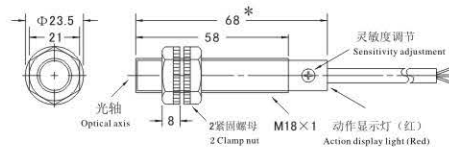


Chart 164 图164 E3F3-□

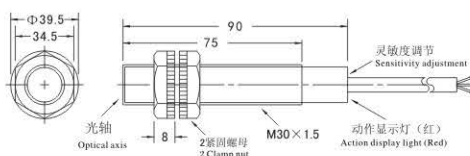
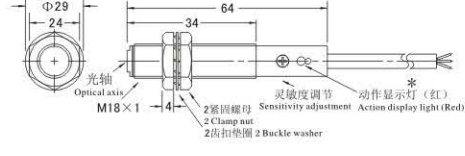


Chart 166 图165 CDD-□



#### 方型能与国内外各相同品种直接替换 Square model can with various domestic same species directly replaced

- 功能齐全，内置继电器，可驱动大电流负载 Multiple functions, built-in relay, can drive high current load
- 配线型及接线端子型 Cabling type and connection terminal type
- 长寿命和高可靠性，耐环境性强 Long service life, high reliability and strong resistance property to environment
- 红色LED显示可以检测传感器工作状态 Red LED indicates that it's available to detect the sensor operating state
- 可提供延时输出型 Countermeasure to improve the housing intensity and to solve disconnection
- 增加外壳强度和断线的对策 Can provide time-delay output type
- IP65防护结构(IEC规格) IP65 protection structure (IEC specification)
- 使用前请先阅读产品说明书的“注意事项” Read the "Matters needing attention" of the Product Instruction before use



#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                       | 18×50×50                                |                                   |                        | 25×65×75                                |                                   |                        | 20×43×60                                |                                   |                        |
|--------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|
| 检测方式<br>Detection method             |                       | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     |
| 型号<br>Type                           | 继电器输出<br>Relay output | 直流亮通DC illuminate                       | E3JK-DS30M1                       | E3JK-R4M1              | E3JK-5DM1-5L                            | E3JM-DS70M4                       | E3JM-R4M4              | E3JM-10DM4-10L                          | E3K60-DS70M1                      | E3K60-R4M1             |
|                                      |                       | 交流亮通AC illuminate                       | E3JK-DS30M1                       | E3JK-R4M1              | E3JK-5DM1-5L                            | E3JM-DS70M4                       | E3JM-R4M4              | E3JM-10DM4-10L                          | E3K60-DS70M1                      | E3K60-R4M1             |
|                                      |                       | 直流暗通DC non-illuminate                   | E3JK-DS30M2                       | E3JK-R4M2              | E3JK-5DM2-5L                            | E3JM-DS70M2                       | E3JM-R4M2              | E3JM-10DM2-10L                          | E3K60-DS70M2                      | E3K60-R4M2             |
|                                      |                       | 交流暗通AC non-illuminate                   | E3JK-DS30M2                       | E3JK-R4M2              | E3JK-5DM2-5L                            | E3JM-DS70M2                       | E3JM-R4M2              | E3JM-10DM2-10L                          | E3K60-DS70M2                      | E3K60-R4M2             |
| 检测范围 Detection range                 |                       | 30cm±10%                                | 4m±10%                            | 5m±10%                 | 70cm±10%                                | 4m±10%                            | 10m±10%                | 70cm±10%                                | 4m±10%                            | 5m±10%                 |
| 检测目标 Detection target                |                       | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object |
| 检测范围调节<br>Detection range regulation |                       | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               |
| 响应时间 Respnose time                   |                       | 30ms                                    | 30ms                              | 30ms                   | 30ms                                    | 30ms                              | 30ms                   | 30ms                                    | 30ms                              | 30ms                   |
| 图例 Illustration                      |                       | 图166 Chattr166                          |                                   |                        | 图167 Chattr167                          |                                   |                        | 图168 Chattr168                          |                                   |                        |

#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                       | 26×63×78                                |                                   |                        | 24×53.5×80                              |                                   |                        | 36×69×100                               |                                   |                        |
|--------------------------------------|-----------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|
| 检测方式<br>Detection method             |                       | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     |
| 型号<br>Type                           | 继电器输出<br>Relay output | 直流亮通DC illuminate                       | E3K78-DS80M1                      | E3K78-R4M1             | E3K78-5DM1-5L                           | E3K80-DS80M1                      | E3K80-R4M1             | E3K80-5DM1-5L                           | E3K100-DS100M1                    | E3K100-R4M1            |
|                                      |                       | 交流亮通AC illuminate                       | E3K78-DS80M1                      | E3K78-R4M1             | E3K78-5DM1-5L                           | E3K80-DS80M1                      | E3K80-R4M1             | E3K80-5DM1-5L                           | E3K100-DS100M1                    | E3K100-R4M1            |
|                                      |                       | 直流暗通DC non-illuminate                   | E3K78-DS80M2                      | E3K78-R4M2             | E3K78-5DM2-5L                           | E3K80-DS80M2                      | E3K80-R4M2             | E3K80-5DM2-5L                           | E3K100-DS100M2                    | E3K100-R4M2            |
|                                      |                       | 交流暗通AC non-illuminate                   | E3K78-DS80M2                      | E3K78-R4M2             | E3K78-5DM2-5L                           | E3K80-DS80M2                      | E3K80-R4M2             | E3K80-5DM2-5L                           | E3K100-DS100M2                    | E3K100-R4M2            |
| 检测范围 Detection range                 |                       | 80cm±10%                                | 4m±10%                            | 5m±10%                 | 80cm±10%                                | 4m±10%                            | 5m±10%                 | 100cm±10%                               | 4m±10%                            | 10m±10%                |
| 检测目标 Detection target                |                       | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object |
| 检测范围调节<br>Detection range regulation |                       | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               |
| 响应时间 Respnose time                   |                       | 30ms                                    | 30ms                              | 30ms                   | 30ms                                    | 30ms                              | 30ms                   | 30ms                                    | 30ms                              | 30ms                   |
| 图例 Illustration                      |                       | 图169 Chattr169                          |                                   |                        | 图170 Chattr170                          |                                   |                        | 图171 Chattr171                          |                                   |                        |

#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                                               | 18×50×50                                |                                   |                        |
|--------------------------------------|-----------------------------------------------|-----------------------------------------|-----------------------------------|------------------------|
| 检测方式<br>Detection method             |                                               | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     |
| 型号<br>Type                           | 交直流继电器输出 DC relay output                      | BEN300-DFR                              | BEN5M-MFR                         | BEN10M-TFR             |
|                                      | 亮通暗通可调 Adjustable light pass through the dark |                                         |                                   |                        |
| 检测范围 Detection range                 |                                               | 30cm±10%                                | 5m±10%                            | 10m±10%                |
| 检测目标 Detection target                |                                               | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object |
| 检测范围调节<br>Detection range regulation |                                               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               |
| 响应时间 Respnose time                   |                                               | 30ms                                    | 30ms                              | 30ms                   |
| 图例 Illustration                      |                                               | 图172 Chattr172                          |                                   |                        |



接通延时: 1.5ms  
光源: 红外光660nm  
电源电压: 直流型: DC12~24V脉动(p-p)10%以下,  
交流型: AC110~220V(90~250V)50/60Hz  
交直流型: DC12~240V/AC24~240V,50/60Hz  
功率电流: 3VA以下  
控制输出: 2A以下(触点寿命: 10万次)  
允许冲动和振动:  $B \leq 30g$ ,  $T \leq 11ms$ ,  $f \leq 55Hz$ ,  $a \leq 1mm$   
环境温、湿度: 动作时、保存时: 各-30~65℃(不结冰、不结露),  
动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时、±10%检测距离以内  
保护构造: IP65(IEC规格)  
材质: (外壳: 铝压铸 ABS) (检测面(透镜): PMMA)

Connection delay: 1.5ms.  
Light source: Infrared light 660nm.  
Supply voltage: DC type:DC12~24V(6~36V) Impulse (p-p) 10% below,  
AC type:AC110~220V(90~250V) 50/60Hz.  
DC&AC type:DC12~240V/AC24~240V,50/60Hz.  
Power current: 3V below  
Control output: 2A below(contact service life: 0.1 million times).  
Impulsion and vibration are allowed: B≤30g, T≤11ms, f≤55Hz, a≤1mm  
Ambient temperature & humidity: During operation, storage: individually  
-30~+65℃ (no freeze, no drew), During  
operation, storage: individually 35~95%RH.  
Insulation impedance: 50MΩabove (DC500 megameter) between charging part  
and housing.  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ± 15% detection  
distance; temperature range -25~+60℃, at +23℃, ± 10%  
detection distance.  
Voltage influence: Inside ± 15% rated supply voltage range, at rated supply  
voltage value, inside ± 10% detection distance.  
Protection structure: IP65 (IEC specification).  
Material: Housing: Nickel plated brass (ABS) Detection surface (lens): PMMA

## Chart 166 图166 E3JK-□

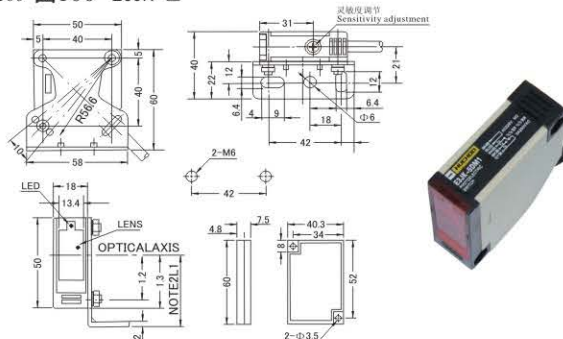


Chart 167 图167 E3JM-□

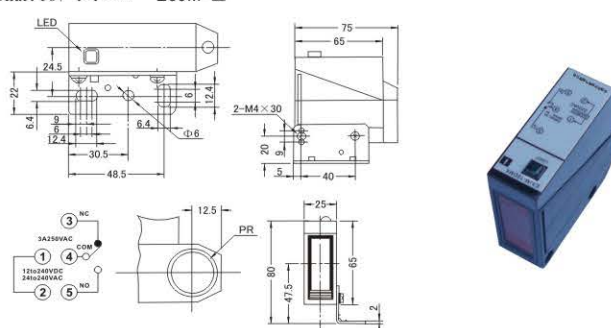


Chart 168 图168 E3K60-□

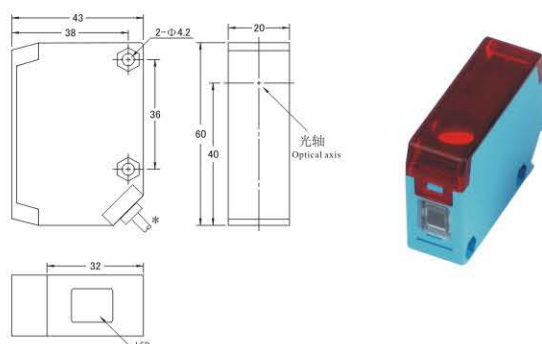


Chart 169 图169 E3K78-□

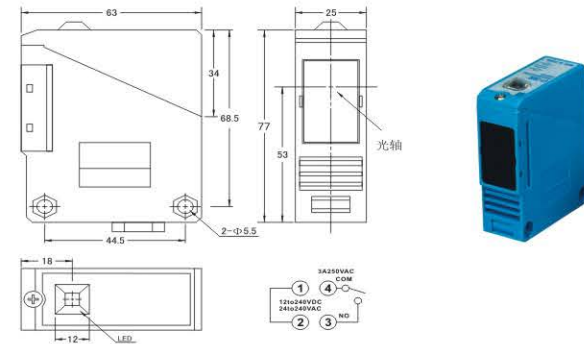


Chart 170 图170 E3K80-□

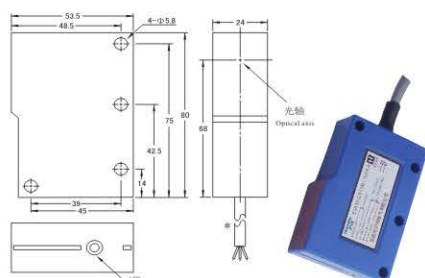


Chart 171 图171 E3K100-□

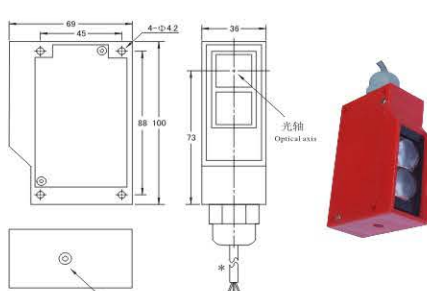
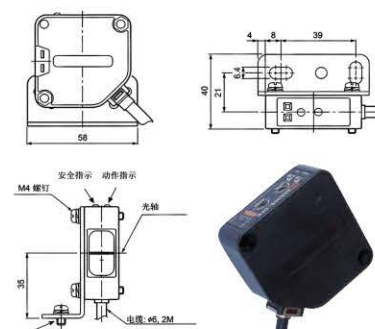


Chart 172 图172 BEN□-□



#### 方型能与国内外各相同品种直接替换 Square model can with various domestic same species directly replaced

- 电源反接保护、短路保护，可直接与PLC相联接
- 新增电流过载保护
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- 新增金属外壳形，增大了安装强度
- 增加外壳强度和断线的对策
- IP65防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC

Newly added current over-load protection

Long service life, high reliability and strong resistance property to environment

Red LED indicates that it's available to detect the sensor operating state

Newly added metal housing to improve the installation intensity

Countermeasure to improve the housing intensity and to solve disconnection

IP65 protection structure (IEC specification)

Read the "Matters needing attention" of the Product Instruction before use



#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                      | 26×56×76                                |                                   |                        | 27×60×85                                |                                   |                        | 51×76×73                                |                        |                        |
|--------------------------------------|----------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|------------------------|------------------------|
| 检测方式<br>Detection method             |                      | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 对射式<br>DuiShe type     |                        |
| 型号<br>Type                           | 直流亮通DCilluminate     | E3K76-DS60M1                            | E3K76-R2M1                        | E3K76-5DM1-5L          | E3K85-DS60M1                            | E3K85-R2M1                        | E3K85-5DM1-5L          | GKF-2                                   | GDK-5                  | GDK-50                 |
|                                      | 交流亮通ACilluminate     | E3K76-DS60M1                            | E3K76-R2M1                        | E3K76-5DM1-5L          | E3K85-DS60M1                            | E3K85-R2M1                        | E3K85-5DM1-5L          | GKF-2                                   | GDK-5                  | GDK-50                 |
|                                      | 直流暗通DCnon-illuminate | E3K76-DS60M2                            | E3K76-R2M2                        | E3K76-5DM2-5L          | E3K85-DS60M2                            | E3K85-R2M2                        | E3K85-5DM2-5L          |                                         |                        |                        |
|                                      | 交流暗通ACnon-illuminate | E3K76-DS60M2                            | E3K76-R2M2                        | E3K76-5DM2-5L          | E3K85-DS60M2                            | E3K85-R2M2                        | E3K85-5DM2-5L          |                                         |                        |                        |
| 检测范围<br>Detection range              |                      | 60cm±10%                                | 2m±10%                            | 5m±10%                 | 60cm±10%                                | 2m±10%                            | 5m±10%                 | 50cm±10%                                | 5m±10%                 | 50m±10%                |
| 检测目标<br>Detection target             |                      | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object | 不透明物体<br>Opaque object |
| 检测范围调节<br>Detection range regulation |                      | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 固定 Fixed               | 固定 Fixed               |
| 响应时间<br>Response time                |                      | 30ms                                    | 30ms                              | 30ms                   | 30ms                                    | 30ms                              | 30ms                   | 30ms                                    | 30ms                   | 30ms                   |
| 图例<br>Illustration                   |                      | 图173 Chatr173                           |                                   |                        | 图174 Chatr174                           |                                   |                        | 图175 Chatr175                           |                        |                        |

#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                | 13×35×40                                |                                   |                        | 13×43.5×50                              |                                   |                        | 17.5×32.5×75                            |                                   |                        |
|--------------------------------------|----------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|
| 检测方式<br>Detection method             |                | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     |
| 型号<br>Type                           | 直流型<br>DC type | N                                       | NO                                | E3K40-DS30N1           | E3K40-R2N1                              | E3K40-5DN1-5L                     | E3K50-DS30N1           | E3K50-R2N1                              | E3K50-5DN1-5L                     | E3K75-DS30N1           |
|                                      |                | P                                       | NC                                | E3K40-DS30N2           | E3K40-R2N2                              | E3K40-5DN2-5L                     | E3K50-DS30N2           | E3K50-R2N2                              | E3K50-5DN2-5L                     | E3K75-DS30N2           |
|                                      |                | N                                       | NO                                | E3K40-DS30P1           | E3K40-R2P1                              | E3K40-5DP1-5L                     | E3K50-DS30P1           | E3K50-R2P1                              | E3K50-5DP1-5L                     | E3K75-DS30P1           |
|                                      |                | P                                       | NC                                | E3K40-DS30P2           | E3K40-R2P2                              | E3K40-5DP2-5L                     | E3K50-DS30P2           | E3K50-R2P2                              | E3K50-5DP2-5L                     | E3K75-DS30P2           |
| 检测范围<br>Detection range              |                | 30cm±10%                                | 2m±10%                            | 5m±10%                 | 30cm±10%                                | 2m±10%                            | 5m±10%                 | 30cm±10%                                | 2m±10%                            | 5m±10%                 |
| 检测目标<br>Detection target             |                | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object |
| 检测范围调节<br>Detection range regulation |                | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               |
| 响应时间<br>Response time                |                | 1ms                                     | 1ms                               | 1ms                    | 1ms                                     | 1ms                               | 1ms                    | 1ms                                     | 1ms                               | 1ms                    |
| 图例<br>Illustration                   |                | 图176 Chatr176                           |                                   |                        | 图177 Chatr177                           |                                   |                        | 图178 Chatr178                           |                                   |                        |

#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                | 15.5×58.5×64                            |                                   |                        | 23×61×63                                |                                   |                        | 26×45.5×86                              |                                   |                        |
|--------------------------------------|----------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|
| 检测方式<br>Detection method             |                | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     |
| 型号<br>Type                           | 直流型<br>DC type | N                                       | NO                                | E3K64-DS30N1           | E3K64-R2N1                              | E3K64-5DN1-5L                     | E3K63-DS50N1           | E3K63-R2N1                              | E3K63-5DN1-5L                     | E3K86-DS30N1           |
|                                      |                | P                                       | NC                                | E3K64-DS30N2           | E3K64-R2N2                              | E3K64-5DN2-5L                     | E3K63-DS50N2           | E3K63-R2N2                              | E3K63-5DN2-5L                     | E3K86-DS30N2           |
|                                      |                | N                                       | NO                                | E3K64-DS30P1           | E3K64-R2P1                              | E3K64-5DP1-5L                     | E3K63-DS50P1           | E3K63-R2P1                              | E3K63-5DP1-5L                     | E3K86-DS30P1           |
|                                      |                | P                                       | NC                                | E3K64-DS30P2           | E3K64-R2P2                              | E3K64-5DP2-5L                     | E3K63-DS50P2           | E3K63-R2P2                              | E3K63-5DP2-5L                     | E3K86-DS30P2           |
| 检测范围<br>Detection range              |                | 30cm±10%                                | 2m±10%                            | 5m±10%                 | 50cm±10%                                | 2m±10%                            | 5m±10%                 | 30cm±10%                                | 2m±10%                            | 5m±10%                 |
| 检测目标<br>Detection target             |                | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object |
| 检测范围调节<br>Detection range regulation |                | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 灵敏度调节器<br>Sensitivity adjuster    | 固定 Fixed               |
| 响应时间<br>Response time                |                | 1ms                                     | 1ms                               | 1ms                    | 1ms                                     | 1ms                               | 1ms                    | 1ms                                     | 1ms                               | 1ms                    |
| 图例<br>Illustration                   |                | 图179 Chatr179                           |                                   |                        | 图180 Chatr180                           |                                   |                        | 图181 Chatr181                           |                                   |                        |



## 特性参数 Characteristic parameters

接通延时: 1.5ms  
光源: 红外光660nm  
电源电压: 直流型: DC12~24V(6~36V)脉动(p-p)10%以下,  
交流型: AC110~220V(90~250V)50/60Hz  
消耗电流: N.P型: 20mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, A型: 400mA以下, J型: 2A以下(触点寿命: 10万次)  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~65℃(不结冰、不结露),  
动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时, ±15%检测距离以内,  
温度范围-25~+60℃, +23℃时, ±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时, ±10%检测距离以内  
保护构造: IP65(IEC规格)  
材质: (外壳: 铝压铸 ABS) (检测面(透镜): PMMA)

Connection delay: 1.5ms.  
Light source: Infrared light 660nm.  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below,  
AC type: AC110~220V(90~250V) 50/60Hz.  
Consumption current: N.P type: 20mA below, A type: 1.7mA below.  
Control output: N.P type: 300mA below, A type: 400mA below, J type: 2A below  
(contact service life: 0.1 million times).  
Loop protection: N.P..D type: reversal connection protection, surge absorption,  
load short-circuit protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually  
-30~+65℃ (no freeze, no dew), During  
operation, storage: individually 35~95%RH.  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part  
and housing.  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection  
distance; temperature range -25~+60℃, at +23℃, ±10%  
detection distance.  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply  
voltage value, inside ±10% detection distance.  
Protection structure: IP65 (IEC specification).  
Material: Housing: Nickel plated brass (ABS)  
Detection surface (lens): PMMA.

## 特性参数 Characteristic parameters

Chart 173 图173 E3K76-□

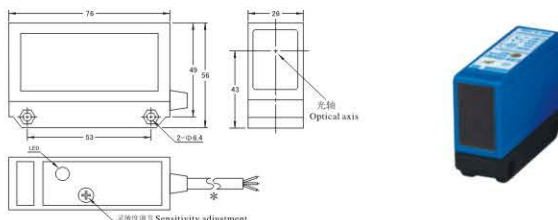


Chart 174 图174 E3K85-□

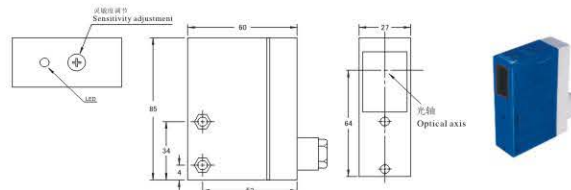


Chart 175 图175 GDK-□

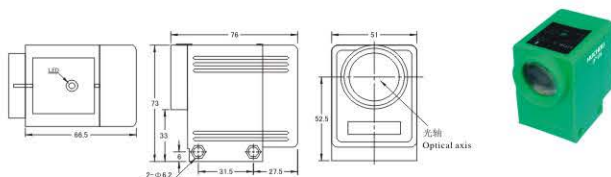


Chart 176 图176 E3K40-□

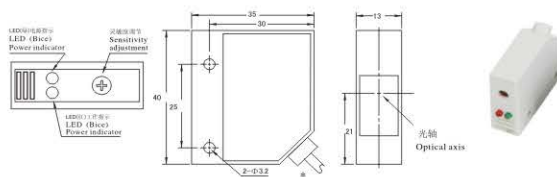


Chart 177 图177 E3K50-□

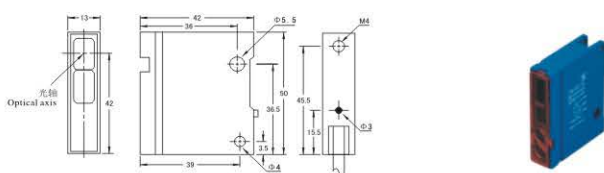


Chart 178 图178 E3K75-□

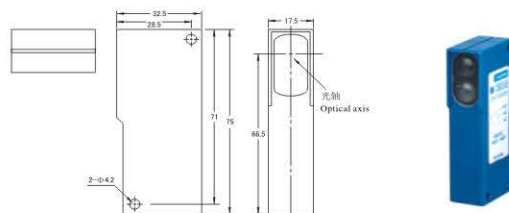


Chart 179 图179 E3K64-□

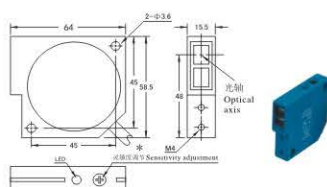


Chart 180 图180 E3K63-□

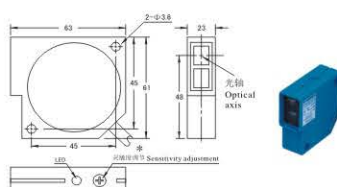
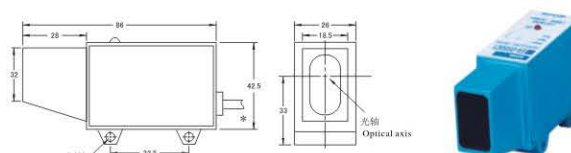


Chart 181 图181 E3K86-□



#### 方型能与国内外各相同品种直接替换 Square model can with various domestic same species directly replaced

- 电源反接保护、短路保护，可直接与PLC相联接
- 新增电流过载保护
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- 新增金属外壳形，增大了安装强度
- 增加外壳强度和断线的对策
- IP65防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; short-circuit protection, can directly connect with PLC

Newly added current over-load protection

Long service life, high reliability and strong resistance property to environment

Red LED indicates that it's available to detect the sensor operating state

Newly added metal housing to improve the installation intensity

Countermeasure to improve the housing intensity and to solve disconnection

Ip65 protection structure (IEC specification)

Read the "Matters needing attention" of the Product Instruction before use



#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                |                       | 12×25×30                                |                                   |                        | 15.5×21×41                              |                                   |                        | 20×20×64                                |                                   |                        |             |
|--------------------------------------|----------------|-----------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-------------|
| 检测方式<br>Detection method             |                |                       | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     |             |
| 型号<br>Type                           | 直流型<br>DC type | N                     | NO                                      | E3K30-DS10N1                      | E3K30-R2N1             | E3K30-3DN1-3L                           | E3K41-DS20N1                      | E3K41-R2N1             | E3K41-5DN1-5L                           | E3S-DS30N1                        | E3S-R2N1               | E3S-5DN1-5L |
|                                      |                | P                     | NC                                      | E3K30-DS10N2                      | E3K30-R2N2             | E3K30-3DN2-3L                           | E3K41-DS20N2                      | E3K41-R2N2             | E3K41-5DN2-5L                           | E3S-DS30N2                        | E3S-R2N2               | E3S-5DN2-5L |
|                                      |                | N                     | NO+NC                                   |                                   |                        |                                         |                                   |                        |                                         | E3S-DS30N3                        | E3S-R2N3               | E3S-5DN3-5L |
|                                      |                | P                     | NO                                      | E3K30-DS10P1                      | E3K30-R2P1             | E3K30-3DP1-3L                           | E3K41-DS20P1                      | E3K41-R2P1             | E3K41-5DP1-5L                           | E3S-DS30P1                        | E3S-R2P1               | E3S-5DP1-5L |
|                                      |                | N                     | NC                                      | E3K30-DS10P2                      | E3K30-R2P2             | E3K30-3DP2-3L                           | E3K41-DS20P2                      | E3K41-R2P2             | E3K41-5DP2-5L                           | E3S-DS30P2                        | E3S-R2P2               | E3S-5DP2-5L |
|                                      |                | P                     | NO+NC                                   |                                   |                        |                                         |                                   |                        |                                         | E3S-DS30P3                        | E3S-R2P3               | E3S-5DP3-5L |
|                                      | 交流型<br>AC type | NPN/PNP/NO/NC         |                                         |                                   |                        |                                         |                                   |                        |                                         | E3S-DS30X                         | E3S-R2X                | E3S-5X      |
|                                      |                | 二线<br>Two-wire        | NO                                      |                                   |                        |                                         |                                   |                        |                                         | E3S-DS30A1                        | E3S-R2A1               | E3S-5A1     |
|                                      |                |                       | NC                                      |                                   |                        |                                         |                                   |                        |                                         | E3S-DS30A2                        | E3S-R2A2               | E3S-5A2     |
|                                      |                | 三线NO<br>Three-wire No |                                         |                                   |                        |                                         |                                   |                        |                                         |                                   |                        |             |
| 继电器输出<br>Relay output                |                |                       |                                         |                                   |                        |                                         |                                   |                        |                                         |                                   |                        |             |
| 检测范围<br>Detection range              |                |                       | 10cm±10%                                | 2m±10%                            | 3m±10%                 | 20cm±10%                                | 2m±10%                            | 5m±10%                 | 30cm±10%                                | 2m±10%                            | 5m±10%                 |             |
| 检测目标<br>Detection target             |                |                       | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object |             |
| 检测范围调节<br>Detection range regulation |                |                       | 固定<br>Fixed                             | 固定<br>Fixed                       | 固定<br>Fixed            | 灵敏度调节器<br>Sensitivity adjuster          | 固定<br>Fixed                       | 固定<br>Fixed            | 灵敏度调节器<br>Sensitivity adjuster          | 固定<br>Fixed                       | 固定<br>Fixed            |             |
| 响应时间<br>Response time                |                |                       | 1ms                                     | 1ms                               | 1ms                    | 1ms                                     | 1ms                               | 1ms                    | DC:1ms AC:30ms                          | DC:1ms AC:30ms                    | DC:1ms AC:30ms         |             |
| 图例<br>Illustration                   |                |                       | 图182 Chatr182                           |                                   |                        | 图183 Chatr183                           |                                   |                        | 图184 Chatr184                           |                                   |                        |             |

#### 规格型号 Type and Specification

| 尺寸 Dimension                         |                |                       | 12×26×55                                |                                   |                        | 18×37×70                                |                                   |                        | 16×28×51                                |                                   |                        |               |
|--------------------------------------|----------------|-----------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|-----------------------------------------|-----------------------------------|------------------------|---------------|
| 检测方式<br>Detection method             |                |                       | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     | 漫反射式<br>Diffuse type                    | 反馈反射式<br>Feedback reflection type | 对射式<br>DuiShe type     |               |
| 型号<br>Type                           | 直流型<br>DC type | N                     | NO                                      | E3K55-DS30N1                      | E3K55-R2N1             | E3K55-5DN1-5L                           | E3K70-DS50N1                      | E3K70-R2N1             | E3K70-5DN1-5L                           | E3K51-DS30N1                      | E3K51-R2N1             | E3K51-5DN1-5L |
|                                      |                | P                     | NC                                      | E3K55-DS30N2                      | E3K55-R2N2             | E3K55-5DN2-5L                           | E3K70-DS50N2                      | E3K70-R2N2             | E3K70-5DN2-5L                           | E3K51-DS30N2                      | E3K51-R2N2             | E3K51-5DN2-5L |
|                                      |                | N                     | NO+NC                                   |                                   |                        |                                         |                                   |                        |                                         |                                   |                        |               |
|                                      |                | P                     | NO                                      | E3K55-DS30P1                      | E3K55-R2P1             | E3K55-5DP1-5L                           | E3K70-DS50P1                      | E3K70-R2P1             | E3K70-5DP1-5L                           | E3K51-DS30P1                      | E3K51-R2P1             | E3K51-5DP1-5L |
|                                      |                | N                     | NC                                      | E3K55-DS30P2                      | E3K55-R2P2             | E3K55-5DP2-5L                           | E3K70-DS50P2                      | E3K70-R2P2             | E3K70-5DP2-5L                           | E3K51-DS30P2                      | E3K51-R2P2             | E3K51-5DP2-5L |
|                                      |                | P                     | NO+NC                                   |                                   |                        |                                         |                                   |                        |                                         |                                   |                        |               |
|                                      | NPN/PNP/NO/NC  |                       |                                         |                                   |                        |                                         |                                   |                        |                                         |                                   |                        |               |
|                                      | 交流型<br>AC type | 二线<br>Two-wire        | NO                                      | E3K55-DS30A1                      | E3K55-R2A1             | E3K55-5A1                               | E3K70-DS50A1                      | E3K70-R2A1             | E3K70-5A1                               | E3K51-DS30A1                      | E3K51-R2A1             | E3K51-5DA1    |
|                                      |                |                       | NC                                      | E3K55-DS30A2                      | E3K55-R2A2             | E3K55-5A2                               | E3K70-DS50A2                      | E3K70-R2A2             | E3K70-5A2                               | E3K51-DS30A2                      | E3K51-R2A2             | E3K51-5DA2    |
|                                      |                | 三线NO<br>Three-wire No |                                         |                                   |                        |                                         |                                   |                        |                                         |                                   |                        |               |
| 继电器输出<br>Relay output                |                |                       |                                         |                                   |                        |                                         |                                   |                        |                                         |                                   |                        |               |
| 检测范围<br>Detection range              |                |                       | 30cm±10%                                | 2m±10%                            | 5m±10%                 | 50cm±10%                                | 2m±10%                            | 5m±10%                 | 30cm±10%                                | 2m±10%                            | 5m±10%                 |               |
| 检测目标<br>Detection target             |                |                       | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object | 透明/不透明物体<br>Transparent / Opaque object | 不透明物体<br>Opaque object            | 不透明物体<br>Opaque object |               |
| 检测范围调节<br>Detection range regulation |                |                       | 固定 Fixed                                | 固定 Fixed                          | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 固定 Fixed                          | 固定 Fixed               | 灵敏度调节器<br>Sensitivity adjuster          | 固定 Fixed                          | 固定 Fixed               |               |
| 响应时间<br>Response time                |                |                       | DC:1ms AC:30ms                          | DC:1ms AC:30ms                    | DC:1ms AC:30ms         | DC:1ms AC:30ms                          | DC:1ms AC:30ms                    | DC:1ms AC:30ms         | DC:1ms AC:30ms                          | DC:1ms AC:30ms                    | DC:1ms AC:30ms         |               |
| 图例<br>Illustration                   |                |                       | 图185 Chatr185                           |                                   |                        | 图186 Chatr186                           |                                   |                        | 图187 Chatr187                           |                                   |                        |               |



## 特性参数 Characteristic parameters

接通延时: 1.5ms  
光源: 红外光660nm  
电源电压: 直流型: DC12~24V(6~36V)脉动(p-p)10%以下,  
交流型: AC110~220V(90~250V)50/60Hz  
消耗电流: N.P型: 20mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, A型: 400mA以下, J型: 2A以下(触点寿命: 10万次)  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~65℃(不结冰、不结露),  
动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐电压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时、±10%检测距离以内  
保护构造: IP65(IEC规格)  
材质: (外壳: 铝压铸 ABS) (检测面(透镜): PMMA)

Connection delay: 1.5ms.  
Light source: Infrared light 660nm.  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below,  
AC type: AC110~220V(90~250V) 50/60Hz.  
Consumption current: N.P type: 20mA below, A type: 1.7mA below.  
Control output: N.P type: 300mA below, A type: 400mA below, J type: 2A below  
(contact service life: 0.1 million times).  
Loop protection: N.P..D type: reversal connection protection, surge absorption,  
load short-circuit protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually  
-30~+65℃ (no freeze, no dew), During  
operation, storage: individually 35~95% RH.  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part  
and housing.  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection  
distance; temperature range -25~+60℃, at +23℃, ±10%  
detection distance.  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply  
voltage value, inside ±10% detection distance.  
Protection structure: IP65 (IEC specification).  
Material: Housing: Nickel plated brass (ABS)  
Detection surface (lens): PMMA.

## 外形尺寸(mm) External dimension

Chart 182 图182 E3K30-□

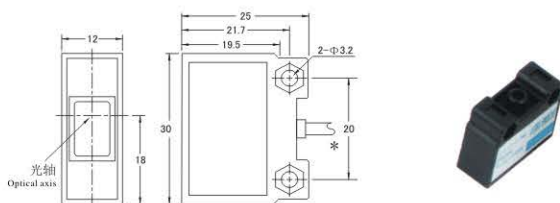


Chart 183 图183 E3K41-□

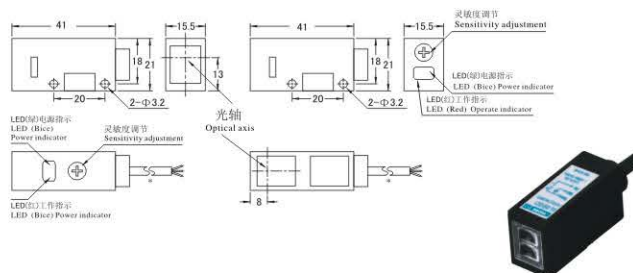


Chart 184 图184 E3S-□

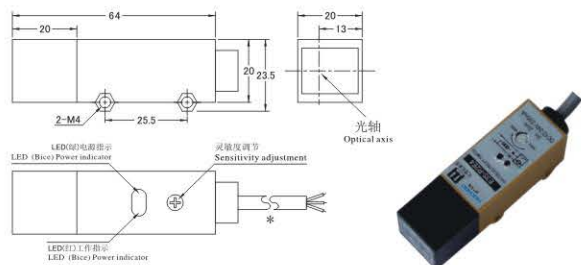


Chart 185 图185 E3K55-□

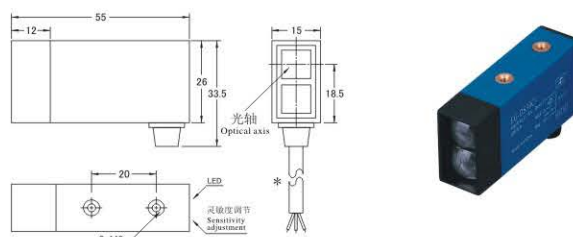


Chart 186 图186 E3K70-□

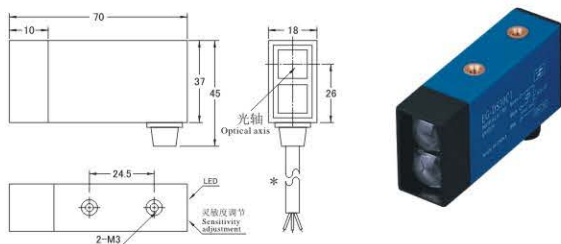
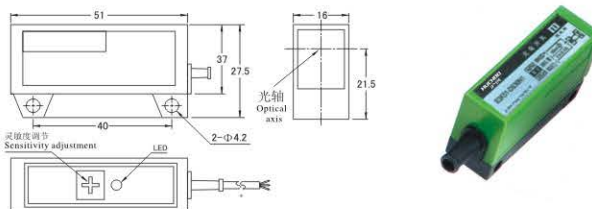


Chart 187 图187 E3K51-□



#### 色标、槽型能与国内外各相同品种直接替换 Color code, groove can with various domestic same species directly replaced

- 电源反接保护，可直接与PLC相连接
- 槽型无需调整光轴
- 长寿命和高可靠性，耐环境性强
- 红色LED显示可以检测传感器工作状态
- 新增金属外壳形，增大了安装强度
- 增加外壳强度和断线的对策
- IP65防护结构(IEC规格)
- 使用前请先阅读产品说明书的“注意事项”

Power supply reversal connection protection; can directly connect with PLC  
For slot type, there is no need to adjust the optical axis  
Long service life, high reliability and strong resistance property to environment  
Red LED indicates that it's available to detect the sensor operating state  
Newly added metal housing to improve the installation intensity  
Countermeasure to improve the housing intensity and to solve disconnection  
Ip65 protection structure (IEC specification)  
Read the "Matters needing attention" of the Product Instruction before use



#### 规格型号 Type and Specification

| 尺寸 Dimension                      |             |             |           | 16×25×55                       | 25.5×45.5×75                   | 16×35.5×40.5                   | 20×52×72                       | 20×52×72                       |
|-----------------------------------|-------------|-------------|-----------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 检测方式 Detection method             |             |             |           | 槽式 Slot type                   | 槽式 Slot type                   | 槽式 Slot type                   | 槽式 Slot type                   | 槽式 Slot type                   |
| 型号 Type                           | 直流型 DC type | N<br>P<br>N | NO        | E3S-GS7N                       | E3S-GS10N                      | E3S-GS15N                      | E3S-GS30E4                     | E3S-GS50E4                     |
|                                   |             |             | NC        | E3S-GS7N2                      | E3S-GS10N2                     | E3S-GS15N2                     | E3S-GS30E2                     | E3S-GS50E2                     |
|                                   |             |             | NO+NC     |                                |                                |                                | E3S-GS30E42                    | E3S-GS50E42                    |
|                                   | P<br>N<br>P | NO          | E3S-GS7P  | E3S-GS10P                      | E3S-GS15P                      | E3S-GS30P4                     | E3S-GS50P4                     |                                |
|                                   |             | NC          | E3S-GS7P2 | E3S-GS10P2                     | E3S-GS15P2                     | E3S-GS30P2                     | E3S-GS50P2                     |                                |
|                                   |             | NO+NC       |           |                                |                                | E3S-GS30P42                    | E3S-GS50P42                    |                                |
| 检测范围 Detection range              |             |             |           | 7mm                            | 10mm                           | 15mm                           | 30mm                           | 50mm                           |
| 检测目标 Detection target             |             |             |           | 不透明物体<br>Opaque object         | 不透明物体<br>Opaque object         | 不透明物体<br>Opaque object         | 不透明物体<br>Opaque object         | 不透明物体<br>Opaque object         |
| 检测范围调节 Detection range regulation |             |             |           | 灵敏度调节器<br>Sensitivity adjuster | 灵敏度调节器<br>Sensitivity adjuster | 灵敏度调节器<br>Sensitivity adjuster | 灵敏度调节器<br>Sensitivity adjuster | 灵敏度调节器<br>Sensitivity adjuster |
| 响应时间 Respnse time                 |             |             |           | 1ms                            | 1ms                            | 1ms                            | 1ms                            | 1ms                            |
| 图例 Illustration                   |             |             |           | 图188 Chatr188                  | 图189 Chatr189                  | 图190 Chatr190                  | 图191 Chatr191                  | 图192 Chatr192                  |

#### 规格型号(光电探边控制器) Type and Specification(Optical probe edge controller)

| 尺寸 Dimension                      |             | 32×70×120                   |
|-----------------------------------|-------------|-----------------------------|
| 检测方式 Detection method             |             | 槽式 Slot type                |
| 型号 Type                           | 交流型 AC type | NO+NC                       |
| 电源电压 Supply voltage               |             | AC12-24V±10%                |
| 探边控制精度                            |             | <8mm                        |
| 光电探测组数                            |             | 2组                          |
| 输出信号                              |             | 2组独立无触点输出AC12-24V           |
| 检测目标 Detection target             |             | 不透明物体 Opaque object         |
| 检测范围调节 Detection range regulation |             | 灵敏度调节器 Sensitivity adjuster |
| 响应时间 Response time                |             | 1-30ms                      |
| 图例 Illustration                   |             | 图193 Chatr193               |

#### 规格型号(色标传感器) Type and Specification (Color sensors)

| 尺寸 Dimension                      |             | 28×48×80                    | 22×63×89                    |
|-----------------------------------|-------------|-----------------------------|-----------------------------|
| 检测方式 Detection method             |             | 同轴反射式 Coaxial Reflective    | 同轴反射式 Coaxial Reflective    |
| 型号 Type                           | 交流型 AC type | NO+NC                       |                             |
| 电源电压 Supply voltage               |             | 红、绿、兰、白                     | 红、绿、兰、白                     |
| 探边控制精度                            |             | 圆点(绿色)                      | 圆点(绿色)                      |
| 光电探测组数                            |             | DC10-30V±10%                | DC10-30V±10%                |
| 输出信号                              |             | <200mA                      | <200mA                      |
| 检测目标 Detection target             |             | 10mm±2mm                    | 10mm±3mm                    |
| 检测范围调节 Detection range regulation |             | 灵敏度调节器 Sensitivity adjuster | 灵敏度调节器 Sensitivity adjuster |
| 响应时间 Response time                |             | 0.1-1mS                     | 0.25-1mS                    |
| 图例 Illustration                   |             | 图194 Chatr194               | 图195 Chatr195               |

#### 规格型号(色标传感器) Type and Specification (Color sensors)

| 尺寸 Dimension                      |             | 28×57×85                    | 38×62×100                   | 23×40×56                    |
|-----------------------------------|-------------|-----------------------------|-----------------------------|-----------------------------|
| 检测方式 Detection method             |             | 同轴反射式 Coaxial Reflective    | 同轴反射式 Coaxial Reflective    | 同轴反射式 Coaxial Reflective    |
| 型号 Type                           | 直流型 DC type | NPN                         | NO+NC                       |                             |
| 光源色谱                              |             | 红、绿、兰、白                     | 红、绿、兰、白                     | 红、绿、兰、白                     |
| 光点(颜色)                            |             | 圆点(绿色)                      | 圆点(绿色)                      | 圆点(绿色)                      |
| 电源电压 Supply voltage               |             | DC10-30V±10%                | DC10-30V±10%                | DC10-30V±10%                |
| 负载电流                              |             | <200mA                      | <200mA                      | <200mA                      |
| 检测距离 Detection distance           |             | 10mm±2mm                    | 9mm                         | 9mm                         |
| 检测范围调节 Detection range regulation |             | 灵敏度调节器 Sensitivity adjuster | 灵敏度调节器 Sensitivity adjuster | 灵敏度调节器 Sensitivity adjuster |
| 响应时间 Response time                |             | 50uS                        | 50uS                        | 20uS/500uS                  |
| 图例 Illustration                   |             | 图196 Chatr196               | 图197 Chatr197               | 图198 Chatr198               |



## 特性参数 Characteristic parameters

接通延时: 1.5ms  
光源: 红外光660nm  
电源电压: 直流型: DC12~24V(6~36V)脉动(p-p)10%以下,  
交流型: AC110~220V(90~250V)50/60Hz  
消耗电流: N.P型: 20mA以下, A型: 1.7mA以下  
控制输出: N.P型: 300mA以下, A型: 400mA以下, J型: 2A以下(触点寿命: 10万次)  
回路保护: N.P.D型: 逆连接保护、浪涌吸收、负载短路保护, A型: 浪涌吸收  
环境温、湿度: 动作时、保存时: 各-30~65℃(不结冰、不结露),  
动作时、保存时: 各35~95%RH  
绝缘阻抗: 50MΩ以上(DC500兆欧表)充电部分与外壳间  
耐压: AC1000V 50/60Hz 1min充电部分与外壳间  
温度的影响: 温度范围-30~+65℃, +23℃时、±15%检测距离以内,  
温度范围-25~+60℃, +23℃时、±10%检测距离以内  
电压的影响: 额定电源电压范围±15%以内、额定电源电压值时、±10%检测距离以内  
保护构造: IP66(IEC规格)  
材质: (外壳: 铝压铸 ABS) (检测面(透镜): PMMA)

Connection delay: 1.5ms.  
Light source: Infrared light 660nm.  
Supply voltage: DC type: DC12~24V(6~36V) Impulse (p-p) 10% below,  
AC type: AC110~220V(90~250V) 50/60Hz.  
Consumption current: N.P type: 20mA below, A type: 1.7mA below.  
Control output: N.P type: 300mA below, A type: 400mA below, J type: 2A below  
(contact service life: 0.1 million times).  
Loop protection: N.P..D type: reversal connection protection, surge absorption,  
load short-circuit protection, A type: surge absorption  
Ambient temperature & humidity: During operation, storage: individually  
-30~+65℃ (no freeze, no dew), During  
operation, storage: individually 35~95%RH.  
Insulation impedance: 50MΩ above (DC500 megameter) between charging part  
and housing.  
Withstand voltage: AC1000V 50/60Hz 1min between charging part and housing  
Temperature influence: Temperature range -30~+65℃, at +23℃, ±15% detection  
distance; temperature range -25~+60℃, at +23℃, ±10%  
detection distance.  
Voltage influence: Inside ±15% rated supply voltage range, at rated supply  
voltage value, inside ±10% detection distance.  
Protection structure: IP66 (IEC specification).  
Material: Housing: Nickel plated brass (ABS)  
Detection surface (lens): PMMA.

## 外形尺寸(mm) External dimension

Chart 188 图188 E3S-GS7□

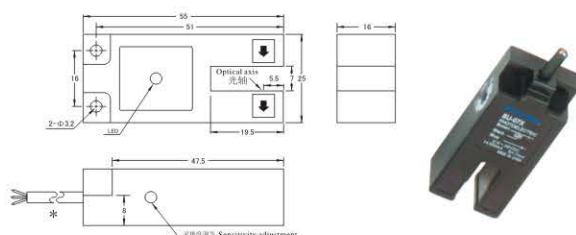


Chart 189 图189 E3S-GS10□

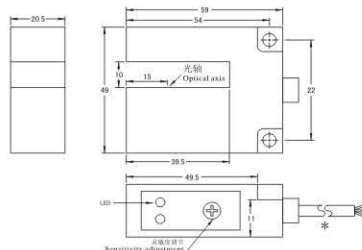


Chart 190 图190 E3S-GS15□

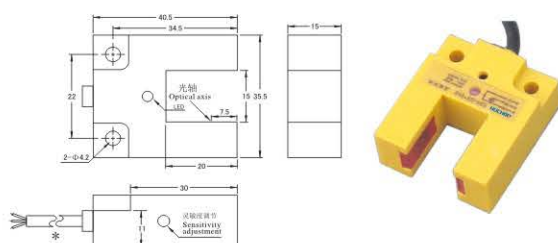


Chart 191 图191 E3S-GS30□

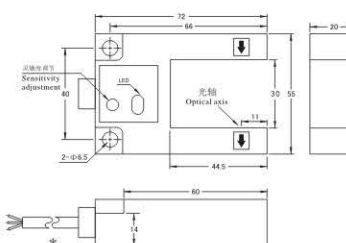


Chart 192 图192 E3S-GS50□

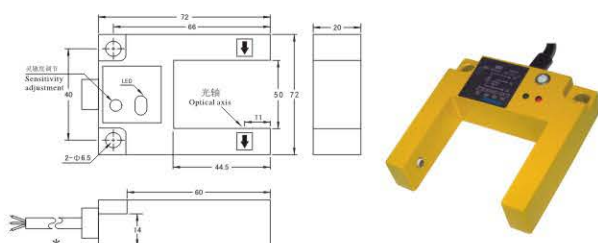


Chart 193 图193 HF-HJ03

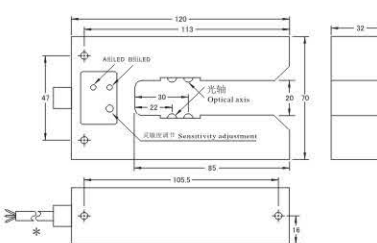


Chart 194 图194 Z3N



Chart 195 图195 KS-C2



Chart 196 图196 BZJ-211



Chart 197 图197 BZJ-311



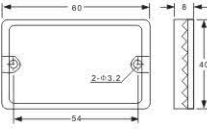
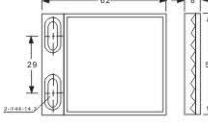
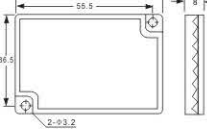
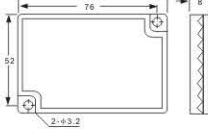
Chart 198 图198 BZJ-411



连接器系列 Connector Series

| 外形<br>Shape                                                                         | 螺扣<br>Screw<br>buckle | 型号<br>Type | 规格<br>Specification                      | 连接图 Connection diagram                                                              |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-----------------------|------------|------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                     |                       |            |                                          | NPN/PNP NO                                                                          | NPN/PNP NC                                                                          | NPN/PNP NO+NC                                                                        | AC/DC 二线 NO<br>AC/DC Two-wire NO                                                      | AC/DC 二线 NC<br>AC/DC Two-wire NC                                                      |
|    | M8                    | L1         | 三芯直型<br>Three-core straight type         |    |    |                                                                                      |    |    |
|                                                                                     | M8                    | L2         | 四芯直型<br>Four-core straight type          |    |    |                                                                                      |    |    |
|    | M8                    | L3         | 三芯弯型<br>Three-core bent type             |    |    |                                                                                      |    |    |
|                                                                                     | M8                    | L4         | 四芯弯型<br>Four-core bent type              |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|    | M8                    | L5         | 三芯中继<br>Three-core relay                 |    |    |                                                                                      |    |    |
|    | M12                   | L6         | 四芯直型<br>Four-core straight type          |  |  |  |  |  |
|   | M12                   | L7         | 四芯弯型带LED<br>Four-core bent type with LED |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|  | M12                   | L8         | 四芯中继<br>Four-core relay                  |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|  | M12                   | L9         | 四芯直型<br>Four-core straight type          |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|  | M12                   | L10        | 四芯直型<br>Four-core straight type          |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |

反光板系列 Reflection board Series

| 外形<br>Shape                    | CHE-FSB01                                                                           | CHE-FSB02                                                                           | CHE-FSB03                                                                           | CHE-FSB04                                                                            | CHE-FSB05                                                                             |
|--------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 安装尺寸<br>Installation dimension |  |  |  |  |  |



备忘录  
MEMORANDUM