

## 接近开关 PROXIMITY SWITCH

### 特点 Characteristic

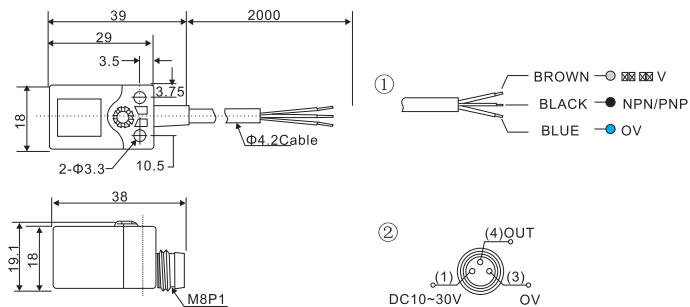
- 具有双LED，检测操作更方便  
Build-in twin LED, convenient for checking the operation
- 插入式接线，安装更换很容易  
Plug-in connector type is available, easy to connect, anyone can replace the new sensor in a minute.



### 规格表 Specifications

| 输出模式 Output method              | NPN N.O                       | RN05-N         | RN05-ND1 |
|---------------------------------|-------------------------------|----------------|----------|
|                                 | NPN N.C                       | RN05-N2        | —        |
|                                 | PNP N.O                       | RN05-P         | RN05-PD1 |
|                                 | PNP N.C                       | RN05-P2        | —        |
| 检测方向 Sensing Surface            | 前方 Top surface                |                |          |
| 标准检测物体 Standard detected object | Iron 18*18*1mm                |                |          |
| 检测距离 Sensing distance           | 5mm                           |                |          |
| 建议距离 Secure sensing distance    | 0 to 4mm                      |                |          |
| 迟滞 Hysteresis                   | ≤10% of sensing distance      |                |          |
| 反应时间 Response time              | 2ms Max                       |                |          |
| 工作电压 Operating voltage          | DC10~30V                      |                |          |
| 消耗电流 Current consumption        | ≤8mA no-load                  |                |          |
| 负载电流 Load current               | 100mA Max. at DC30V           |                |          |
| 漏电流 Leakage current             | ≤1.1mA no-load                |                |          |
| 残余电压 Residual voltage           | ≤DC1.5V                       |                |          |
| 隔离阻抗 Insulation resistance      | 20mΩ min. (DC500V)            |                |          |
| 绝缘耐压 Voltage withstandability   | AC1000V 60Hz for 60 secretary |                |          |
| 工作温度范围 Operating temperature    | -20°C~+60°C                   |                |          |
| 防水等级 Protection degree          | IP64/IP67(Option)             |                |          |
| 出线方式 Wiring method              | Φ4.2*2M/3wires                | M8接头 connector |          |
| 重量 Weight                       | Approx.60g                    | Approx. 12g    |          |

### 尺寸图 Dimensions



## 传感器插头线 SENSOR PLUG WIRE

| 类型<br>Structural category    | 直形孔座接插电缆<br>接插件M8×1 |          | 弯形孔座接插电缆<br>接插件M8×1 |          | 弯形孔座接插电缆<br>接插件M8×1 |            | 直形孔座接插电缆<br>接插件M12×1 |  |
|------------------------------|---------------------|----------|---------------------|----------|---------------------|------------|----------------------|--|
| 外形编号 Outward Appearance code | RK01-1-2            | RK01-1-3 | RK01-2-2            | RK01-2-3 | RK01-2-2-4          | RK01-2-3-4 | RK02-1-2             |  |

|   |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
| 外形图例<br>Outward appearance illustration |  |  |  |  |  |  |  |
| 外形尺寸<br>Overall dimensions              |  |  |  |  |  |  |  |

|   |                       |                  |                        |                  |                       |                  |                       |                          |
|---|-----------------------|------------------|------------------------|------------------|-----------------------|------------------|-----------------------|--------------------------|
| 接插外形<br>CONTACT VIEW                        |                       |                  |                        |                  |                       |                  |                       |                          |
| 应用<br>APPLICATION                           | DC二线<br>AC二线<br>NO/NC | NPN/PNP<br>NO/NC | DC二线<br>AC二线<br>NO/NC  | NPN/PNP<br>NO/NC | DC二线<br>AC二线<br>NO/NC | NPN/PNP<br>NO/NC | DC二线<br>AC二线<br>NO/NC |                          |
| 接插件 Connector                               | M8/M12                |                  |                        |                  |                       |                  |                       |                          |
| 外套颜色 Skind color                            | 黑Black                |                  |                        |                  |                       |                  |                       |                          |
| 连接螺母材料 Coupling nut material                | CuZn, nickel plated   |                  |                        |                  |                       |                  |                       |                          |
| 接触负载 Contact load                           | 黑Black                |                  |                        |                  |                       |                  |                       |                          |
| 过流值 Over-current value(A)                   | CuZn, nickel plated   |                  |                        |                  |                       |                  |                       |                          |
| 额定电压 Rated voltage(V)                       | 4.0                   |                  |                        |                  |                       |                  |                       |                          |
| 电缆 Wire 长度 Length                           | 250                   |                  |                        |                  |                       |                  |                       |                          |
| 电缆外皮材料 Cable jacket material                | 2m                    |                  |                        |                  |                       |                  |                       |                          |
| 绝缘体颜色 insulator color                       | PVC                   |                  |                        |                  |                       |                  |                       |                          |
| 输出显示 (LED) output diaplary (LED)            | bu, bu, bk<br>3×0.5   | bu, bu<br>2×0.5  | Black, bu, bu<br>2×0.5 | -                |                       |                  |                       | bu, bu, bk, wh<br>4×0.34 |
| 通电指示 power indicator                        | 1                     |                  |                        |                  |                       |                  |                       |                          |
| 一般数据 common data                            | -                     |                  |                        |                  |                       |                  |                       |                          |
| 绝缘电阻 insulation resistance                  | ≥10 <sup>9</sup> Ω    |                  |                        |                  |                       |                  |                       |                          |
| 环境温度范围接插件 environment temperature scope(°C) | -25...+80             |                  |                        |                  |                       |                  |                       |                          |
| 环境温度范围电缆 environment temperature scope(°C)  | -25...+80             |                  |                        |                  |                       |                  |                       |                          |
| 防护等级 (DIN 40 050) protection level          | IP67                  |                  |                        |                  |                       |                  |                       |                          |
| 电容量 Capacotance                             | 250VAC/300VDC, Gr.C   |                  |                        |                  |                       |                  |                       |                          |

## 传感器插头线 SENSOR PLUG WIRE

| 类型<br>Structural category                   | 直形孔座接插电缆<br>接插件M12×1          |                          |                       |              | 弯形孔座接插电缆<br>接插件M12×1 |              |              |                  |                  |
|---|-------------------------------|--------------------------|-----------------------|--------------|----------------------|--------------|--------------|------------------|------------------|
| 型号 Type                                     | RK02-1-3                      | RK02-1-4                 | RK02-2-2              | RK02-2-3-N   | RK02-2-3-P           | RK02-2-4-N   | RK02-2-4-P   | RK03-3           | RK03-4           |
| 外形图例<br>Outward appearance illustration     |                               |                          |                       |              |                      |              |              |                  |                  |
| 外形尺寸<br>Overall dimensions                  |                               |                          |                       |              |                      |              |              |                  |                  |
| 接插外形<br>CONTACT VIEW                        |                               |                          |                       |              |                      |              |              |                  |                  |
| 应用<br>APPLICATION                           | NPN/PNP<br>NO/NC              | NPN/PNP<br>NO/NC         | DC二线<br>AC二线<br>NO/NC | NPN<br>NO/NC | PNP<br>NO/NC         | NPN<br>NO/NC | PNP<br>NO/NC | NPN/PNP<br>NO/NC | NPN/PNP<br>NO/NC |
| 接插件 Connector                               |                               |                          |                       |              |                      |              |              |                  |                  |
| 外套颜色 Skind color                            |                               |                          |                       |              |                      |              |              |                  |                  |
| 连接螺母材料 Coupling nut material                |                               |                          |                       |              |                      |              |              |                  |                  |
| 接触负载 Contact load                           |                               |                          |                       |              |                      |              |              |                  |                  |
| 过流值 Over-current value(A)                   | 黑Black<br>Cuzn, nickel plated |                          |                       |              |                      |              |              |                  |                  |
| 额定电压 Rated voltage(V)                       | 4.0                           |                          |                       |              |                      |              |              |                  |                  |
| 电缆 Wire 长度 Length                           | 250                           |                          |                       |              |                      |              |              |                  |                  |
| 电缆外皮材料 Cable jacket material                | PVC                           |                          |                       |              |                      |              |              |                  |                  |
| 绝缘体颜色 insulator color                       |                               |                          |                       |              |                      |              |              |                  |                  |
| 输出显示 (LED) output diplay (LED)              | bu, bu, bk<br>3x0.5           | bu, bu, bk, wh<br>4x0.34 | YES                   | YES          | YES                  | YES          | YES          | YES              | YES              |
| 通电指示 power indicator                        |                               |                          |                       |              |                      |              |              |                  |                  |
| 一般数据 common data                            |                               |                          |                       |              |                      |              |              |                  |                  |
| 绝缘电阻 insulation resistance                  | ≥10 <sup>10</sup> Ω           |                          |                       |              |                      |              |              |                  |                  |
| 环境温度范围接插件 environment temperature scope(°C) | -25~+65                       |                          |                       |              |                      |              |              |                  |                  |
| 环境温度范围电缆 environment temperature scope(°C)  | -25~+65                       |                          |                       |              |                      |              |              |                  |                  |
| 防护等级 (DIN 40 050) protection level          | IP67                          |                          |                       |              |                      |              |              |                  |                  |
| 电容量 Capacotance                             | 250VAC/300VDC, Gr.C           |                          |                       |              |                      |              |              |                  |                  |

## 交直流通用型接近开关 AC-DC UNIVERSAL APPRIACH SWITCH

| 结构分类 Structural category                | 圆柱型 Cylinde type                |                                 |                                 |                                 |                                 |                                 |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 外形编号Outward Appearance code             | LM12                            |                                 | LM18                            |                                 | LM24                            |                                 |
| 外形图例<br>Outward appearance illustration |                                 |                                 |                                 |                                 |                                 |                                 |
| 外形尺寸<br>Overall dimensions              |                                 |                                 |                                 |                                 |                                 |                                 |
| 安装方式 installation                       | 2mm Flush                       | 4mm non-Flush                   | 5mm Flush                       | 8mm non-Flush                   | 8mm Flush                       | 10mm non-Flush                  |
| AC/DC                                   | 常开 normally open<br>LM12-4002A  | 常开 normally open<br>LM12-4004A  | 常开 normally open<br>LM18-4005A  | 常开 normally open<br>LM18-4008A  | 常开 normally open<br>LM24-4008A  | 常开 normally open<br>LM24-4010A  |
|   | 常闭 normally close<br>LM12-4002B | 常闭 normally close<br>LM12-4004B | 常闭 normally close<br>LM18-4005B | 常闭 normally close<br>LM18-4008B | 常闭 normally close<br>LM24-4008B | 常闭 normally close<br>LM24-4010B |
| 工作电压 working voltage                    | 30-240V DC/AC                   |                                 |                                 |                                 |                                 |                                 |
| 输出电流 output current                     | 100-300mA                       |                                 |                                 |                                 |                                 |                                 |
| 开关频率 switching frequency                | 15Hz                            |                                 |                                 |                                 |                                 |                                 |
| 工作温度 Working temperature                | -25°C~+70°C                     |                                 |                                 |                                 |                                 |                                 |
| 防护等级 Protection level                   | IP67                            |                                 |                                 |                                 |                                 |                                 |

| 结构分类 Structural category                | 圆柱型 Cylinde type                | 角柱型 Angular column type         | 平面安装型 Plane installation type    |
|---|---------------------------------|---------------------------------|----------------------------------|
| 外形编号Outward Appearance code             | LM30                            | LMF37                           | LMF38                            |
| 外形图例<br>Outward appearance illustration |                                 |                                 |                                  |
| 外形尺寸<br>Overall dimensions              |                                 |                                 |                                  |
| 安装方式 installation                       | 10mm Flush                      | 15mm non-Flush                  | 20mm non-Flush                   |
| AC/DC                                   | 常开 normally open<br>LM30-4010A  | 常开 normally open<br>LM30-4014A  | 常开 normally open<br>LMF37-4020A  |
|   | 常闭 normally close<br>LM30-4010B | 常闭 normally close<br>LM30-4014B | 常闭 normally close<br>LMF37-4020B |
| 工作电压 working voltage                    | 30-240V DC/AC                   |                                 |                                  |
| 输出电流 output current                     | 100-300mA                       |                                 |                                  |
| 开关频率 switching frequency                | 15Hz                            |                                 |                                  |
| 工作温度 Working temperature                | -25°C~+70°C                     |                                 |                                  |
| 防护等级 Protection level                   | IP67                            |                                 |                                  |

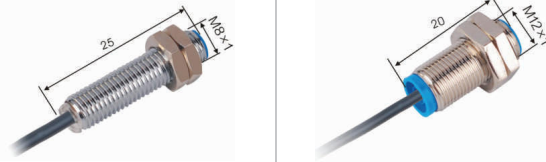
## 安全防爆型接近开关 SAFETY EXPLOSION-PROOF PROXIMITY SWITCH

结构分类 Structural category

防爆传感器 Namur sensor

外形编号 Outward Appearance code      AM8-3001LB      AM8-3002LB      AM8-3005LB      AM8-3008LB

外形图例  
Outward appearance illustration

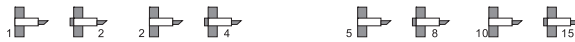


外形编号 Outward Appearance code      AM12-3002LB      AM12-3004LB      AM30-3010LB      AM30-3015LB

外形图例  
Outward appearance illustration



额定检测距离 Rated sensing distance



### 安全防爆型接近开关 Safety explosion-proof proximity switch

- 因NAMUR传感器为低电压供电，微电流输出，体积小等等，所以在具有防爆要求的特殊场合应用。
- With low-voltage power supply, micro-current output, small volume and other advantages, Namur sensors can be applied for special places with requirements of explosion proof.

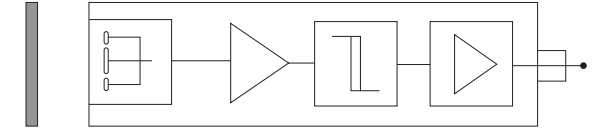
| 标准检测体Q235(mm)<br>standard detecting object Q235 steel(mm) |  | 12×12×1t                    | 12×12×1t                    | 18×18×1t                    | 30×30×1t                    |
|---|--|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| 具备型号<br>Model   | 二线常闭 埋入<br>Two-wire normally close                             | AM8-3001LB                  | AM12-3002LB                 | AM18-3005LB                 | AM30-3010LB                 |
|   | 二线常闭 非埋<br>Two-wire normally close                             | AM8-3002LB                  | AM12-3004LB                 | AM18-3008LB                 | AM30-3015LB                 |
| 技术参数<br>specifications                                    | 额定电压<br>rated voltage  | 8.2V                        | 8.2V                        | 8.2V                        | 8.2V                        |
|   | 振荡电流 / 停荡电流<br>oscillating current / stop psicillating current | ≥2.2mA/≤1mA                 | ≥2.2mA/≤1mA                 | ≥2.2mA/≤1mA                 | ≥2.2mA/≤1mA                 |
|   | 负载电阻<br>load resistance  | 1KΩ                         | 1KΩ                         | 1KΩ                         | 1KΩ                         |
|   | 开关频率: 埋入 / 非埋<br>switch frequency, flusn / non-flsh            | 1.5Hz/1KHz                  | 1.5Hz/1KHz                  | 1Hz/700KHz                  | 300Hz/200KHz                |
|   | 外壳材料<br>shell material   | 黄铜镀镍<br>Nickel-plated brass | 黄铜镀镍<br>Nickel-plated brass | 黄铜镀镍<br>Nickel-plated brass | 黄铜镀镍<br>Nickel-plated brass |
|   | 防护等级<br>protection level                                       | IP67                        | IP67                        | IP67                        | IP67                        |
|   | 工作环境温度<br>protection level                                     | -20°C~70°C                  | -20°C~70°C                  | -20°C~70°C                  | -20°C~70°C                  |
| 外接线圈<br>external wiring diagram                           |  |                             |                             |                             |                             |

## 电容式接近开关 CAPACITANCE PROXIMITY SWITCH

电容式接近开关的工作原理 Working principle of capacitance proximity switch

结构分类 Structural category      目标 Object      感应面 Inductive surface      RC振荡器 RC oscillator      开关级 switching stage      输出级 magnified output stage

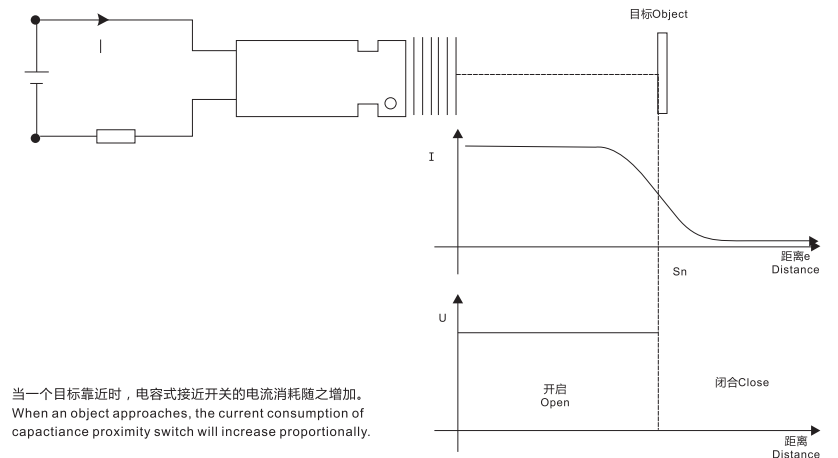
外形图例  
Outward appearance illustration



### 电容式接近开关 Capacitance proximity switch

- 电容式传感器的感应面由两个同轴金属电极构成，很象“打开”的电容电极，该两个电极构成一个电容，串接在RC振荡回路中。
- 电源接通时，RC振荡器不振荡，当一个目标朝着电容器的电极靠近时，电容器的容量增加，使振荡器开始振荡。通过后级电路的处理，将停振和振荡两种信号转换成开关信号，从而起到了检测有无物体存在的目的。该传感器能检测金属物体，也能检测非金属物体，对金属物体可以获得最大的动作距离，对非金属物体动作距离决定于材料的介电常数 $\epsilon$ ，材料的介电常数越大，可获得的动作距离越大。
- The induction surface of capacitance sensor is composed of two coaxial mental electctrodes, which from a capacitor and connected on RC oscillation circuit, just like an open capacitor electrode.
- When connecting to power supply, RC oscillator does not work. When an object is clos eto capacitor electrode, the capacitor capacity will increase, and the oscillator will vibrate. Through the treatment of behind stage circuit, both signals of stop oscillation and oscillation will be converted to switch signs for checking the existence of object. this distance can be obtained, but to nonmetal object, the action distance is d etermined by material dielectric constant, the more dielectric constant, the more action distance will be obtained.

### 外形图例 Outward appearance illustration



当一个目标靠近时，电容式接近开关的电流消耗随之增加。  
When an object approaches, the current consumption of capacitance proximity switch will increase proportionally.