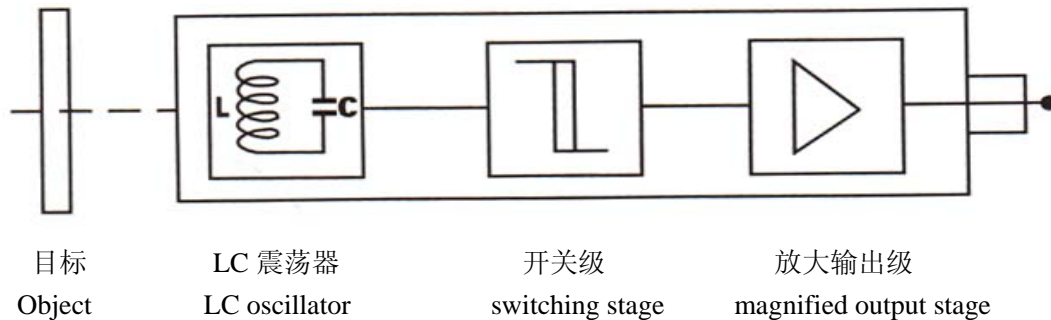


## 电感式接近开关工作原理

Working principle of inductive proximity switch

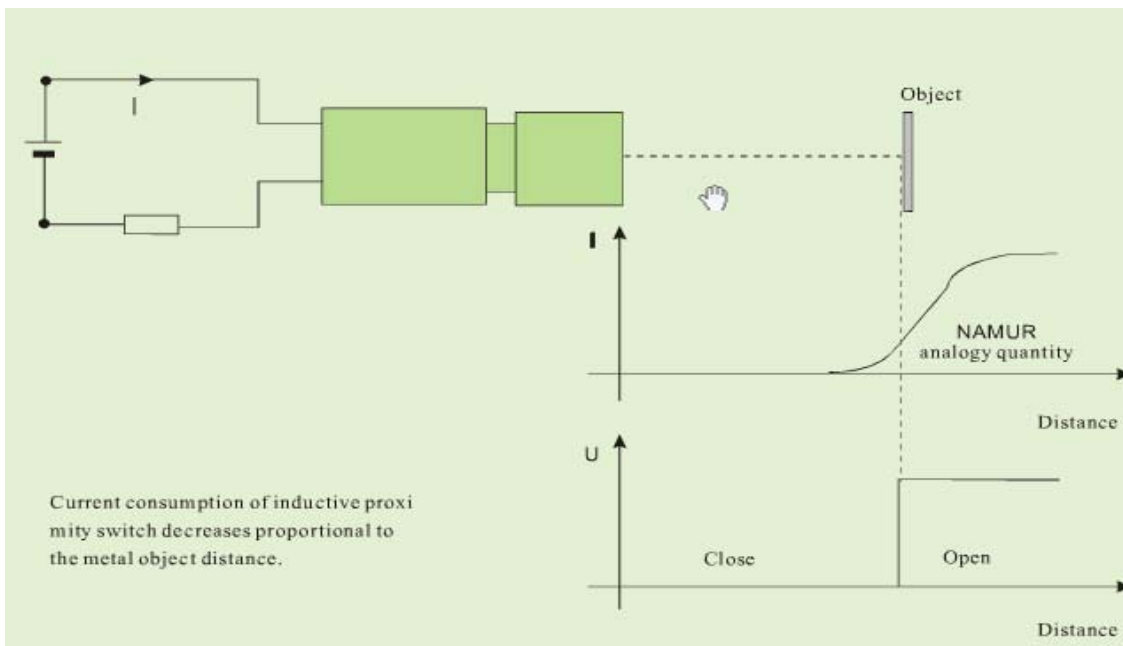


电感式接近开关由三大部分组成：振荡器、开关电路及放大输出电路。振荡器产生一个变交磁场，并达到感应距离时，在金属目标内产生涡流，从而导致振荡衰减，以至停振。

振荡器振荡及停振的变化被后级放大电路处理并转换成开关信号，触发驱动控制器件，从而达到非接触式之检测目的。

目标离传感器越近，线圈内的阻尼就越大，阻尼越大，传感器振荡器的电流越小。

Inductive proximity switch is composed of three parts: oscillator, switch circuit and magnified output circuit. The oscillator will generate an alternating electric field. When the metal object approaches this electric field and reaches the induction distance, whirlpool will generate in metal object, resulting in attenuation of vibrati on and then stop. The change of vibration and stop of oscillator is treated by behind stage magnified circuit and converted to switching sign, triggering driving control for non-contact detection.



## 接近开关型号说明 Model explanation of proximity switch

**LM 18 - 30 05 N A □**

1 2 3 4 5 6 7

编号 No	构成 composition	代码及含义 Code and definition
1	开关类别 Switch category	LM: 电感式 CM: 电容式 SM: 霍尔式 AM: 安全防爆式 XM: 模拟线性式 HM: 舌簧式
2	外形代号 Outward appearance code	□: 圆柱型 □: 角柱型及平面安装型
3	工作电压 Working voltage	30: 6-36VDC 310: 5-24DVC 320: 12-60VDC 20: 90-250VAC 210: 24-250VAC 220: 380VAC 40: 12-240VDC/24-240AC 50: 特殊电压: Special voltage
4	检测距离 Detection distance	01:1mm 05:5mm 10:10mm
5	输出形式 Output form	N:三线直流 NPN 负逻辑 输出 P:三线直流 PNP 正逻辑 输出 L:二线直流输出 □: 交流二线输出 W: 交流三线输出 AC therr-wire output J:继电器触点输出 Relay contact output NP:NPN+PNP 双输出 NPN+PNP double output
6	输出状态 Output state	A:常开(NO)Normally open(NO) B:常闭(NC) Normally close(NC) C: 一开一闭(NO+NC)normally open+normally close(NO+NC) MU:模拟电压 Mimic voltage MI 模拟电流 Mimice current
7	附属功能 Subsidiary functions	T:带航空插座 with aviation connector Y: 防水, 防油 water proof,oil proof I:特殊要求 special requirement H:耐高温 high temp resistane R:环型 ring type

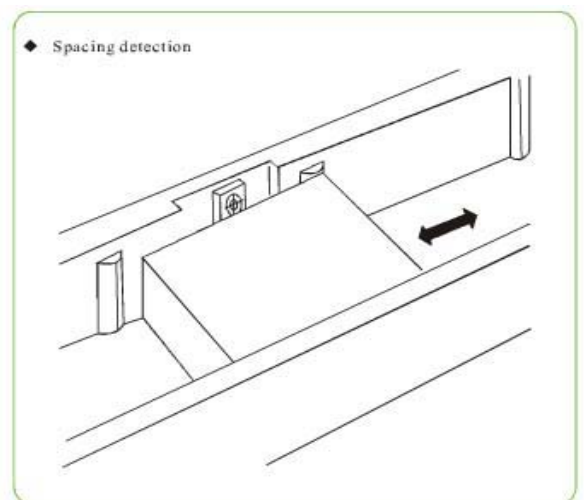
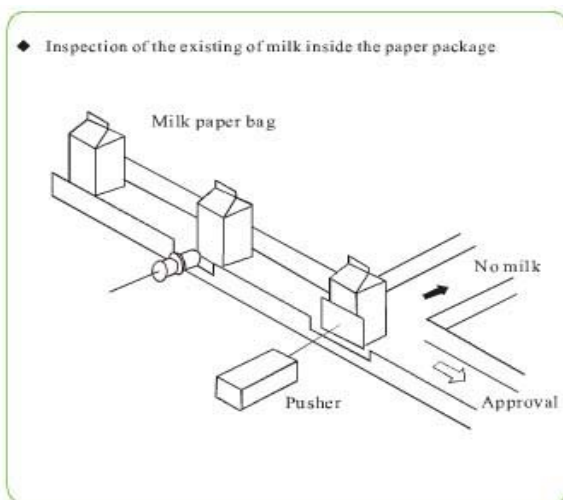
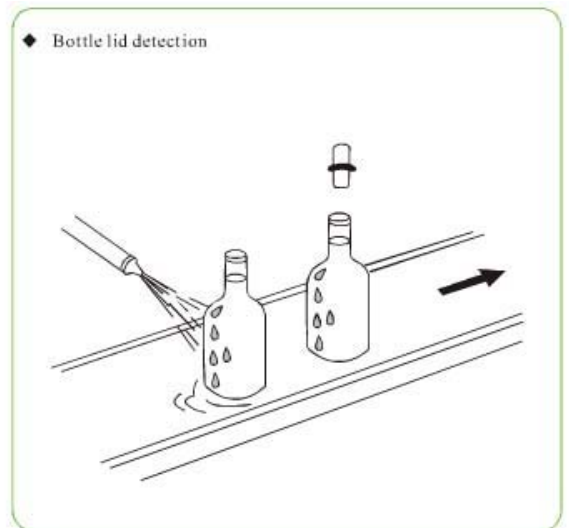
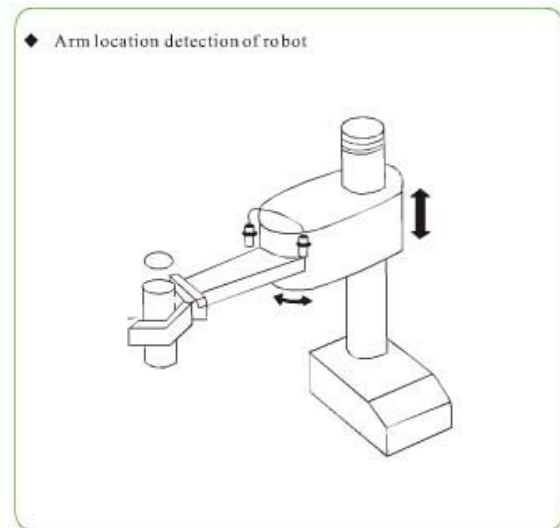
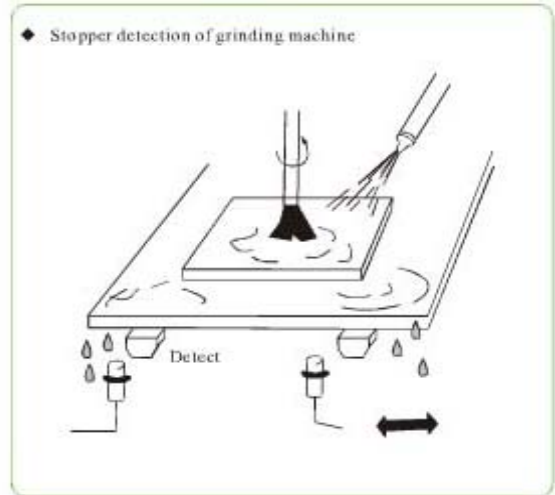
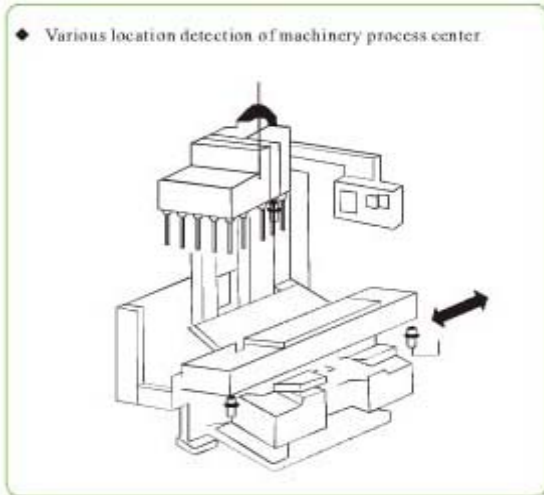
**■主要特征**

- ◆ 体积小
- ◆ 重复定位精度高
- ◆ 外形结构多样
- ◆ 抗干扰性能好
- ◆ 输出形式多
- ◆ 开关频率高
- ◆ 电压范围宽
- ◆ 防尘、防震、防水、防油
- ◆ 具备短路保护, 反击接保护
- ◆ 使用寿命长

**■Main features**

- ◆ Compact volume
- ◆ High precision of repeated location
- ◆ Diversified exterior
- ◆ Good performance of anti-interference
- ◆ Many output forms
- ◆ High on-off frequency
- ◆ Wide voltage range
- ◆ Dust proof,vibration proof,water proof and oil proof
- ◆ With short-circuit protection and inverted connecting protection
- ◆ Long service life

■ 接近开关应用图例 Application illustration of proximity switch



■ 接近开关的特征 Features of proximity switch

◆ 主要特征 Main features

◆ 以高频振荡接近传感器(前面检测器)为代表例,概略说明接近传感器的一般特征.

Take high frequency oscillation type proximity sensor(front detector)as representative example to briefly explain general features of proximity switch

项目 Item	说明 Explanation	特性 Features	
检测物体的大小和检测距离 The size of detected object and detection distance	<p>◎检测物体为正方形金属板,厚度恒定(t=1mm),改变其边长 dmm 时的检测距离 X 进行测定.</p> <p>If the detected object is square metal sheet with constant thickness (t=1mm), detect at detection distance X when change its side length dmm</p> <p>检测距离 X(mm)</p>	<p>检测物体为大于标准检测物体时,检测距离基本上恒定.根据机种的不同,有时和左边的特性不同.贯通型等,以圆柱状的金属棒为检测物体</p> <p>When the detected object is bigger than standard detection distance is constant. According to different Machine type, sometimes the features will that mentioned on the left. To through type, the detection object is like cylinder metal bar</p>	<p>◆ 关于检测物体 About detected object</p> <p>检测物体的材料是非磁性金属时,动作的距离要下降.但厚度为大于0.01mm左右的箔材料时,会获得和磁性物体相同的检测距离,而镀膜等级其薄时及无导电性时,则不能检测.</p> <p>When the material of detected object is non magnetic metal, the distance of action should decrease. But when the foil material is approximately thicker than 0.01mm, the detection distance will be the same as that of magnetic object. If the film plating is extremely thin or non-conductive, detection cannot be conducted. The effect of cladding material, take note of the changing of detection distance.</p> <p>◆ 关于环境气候 About ambient weather</p> <p>为保护动作的可靠和寿命长,请避免有关规定以外的温度外界(户外)条件下,接近传感器虽为防水结构,若装上罩使用,勿使水和水性切削油等淋到,则可更好地提高可靠性及寿命.还请在有化学药剂,特别是在强碱酸,硝酸,铬酸,热浓硫酸等气候中使用.</p>
检测物体的厚度和检测距离 The thickness of detected object and detection distance	<p>测定改变指定的标准检测物体形状的厚 1mm 时的检测距离 Xmm (前面检测型)</p> <p>Detect at detection distance Xmm (front detector) when change the thickness of the assigned standard detected object 1mm.</p>	<p>磁性金属(铁等)时,厚度在 1mm 以上时,检测距离基本上没有变化.</p> <p>For more than 1mm thick magnetic metal like iron on the main, the detection distance will not change.</p>	<p>In order to maintain reliable action and long service life, please avoid the (outdoor) occasion beyond the stipulated ambient temperature. Do not drench it with Water or water-soluble cutting lubricant when it is used with cover, although the proximity sensor is waterproof. Do not use in the occasions with chemical agents, especially strong base acid, nitric acid, hot strong sulfuric acid and so on.</p>
检测物体材料和镀层等造成的影响 The effects resulted from the Thickness of detected object and cladding material	<p>标准检测物体由于形状,尺寸,材料,或各种镀层引起的影响,用检测距离 Xmm 的测定加以确认.</p> <p>Because the detection to standard detected object will be effected by its shape, size, material, and various cladding material, confirm through detection distance Xmm measurement.</p>	<p>铁以外的金属造成的检测距离及镀层的影响,根据不同的机种而不同.</p> <p>检测所有金属的机种时,基本上不受镀层的影响.</p> <p>The effects resulted from detection distance and cladding material of the metal excluded iron will be different according to different machine type</p> <p>On the main, the machine type which detects all the metals will not be effected by cladding material.</p>	<p>◆ 关于维护检修 About maintenance and overhaul</p> <p>为使接近传感器长期稳定工作,和一般的控制器一样请进行下列定期检查.</p> <ol style="list-style-type: none"> <li>1. 被测物体及接近传感器的安装位置,偏移,松动,变型的有无.</li> <li>2. 配线,连接部位有无松动,接触,不良,断线.</li> <li>3. 有无粘金属粉末等积物.</li> <li>4. 使用温度条件,周围环境条件有无异常.</li> <li>5. 检测距离有无异常.</li> </ol> <p>In order to keep the proximity sensor to work stably for long time, the following regular examinations should be performed just like general control.</p> <ol style="list-style-type: none"> <li>1. Check the installation position of detected object and proximity sensor if any deviation, loosening or deformation exists.</li> <li>2. Check the attached wires and connecting parts if any loosening bad contact or wire breaking off exists</li> <li>3. Check if there is any metallic powder accumulation or not</li> <li>4. Check if the temperature condition and surrounding environment condition are normal or not</li> <li>5. Check if the detection distance is normal or not</li> </ol>

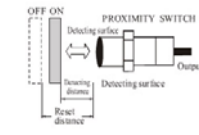
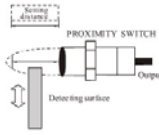
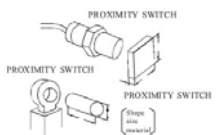
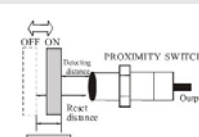
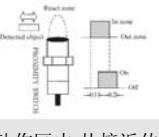
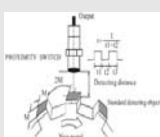
■ 接近开关的特征 Features of proximity switch

◆ 主要特征 Main features

◆ 以高频振荡接近传感器(前面检测器)为代表例,概略说明接近传感器的一般特征.

Take high frequency oscillation type proximity sensor(front detector)as representative example to briefly explain general features of proximity switch

■ 技术用词的说明 Explanation of technical terms

<p>检测距离 Detection distance</p>  <p>按指定方法移动检测物体,从基准位置(基准面到测定动作复位的距离</p> <p>Move the detected object according to assigned method,the distance from the reference position (reference plane)to the detecting action(resetting)</p>	<p>设定距离 Setting distance</p>  <p>包括温度,电压影响在内,没有误动作从能实用的检测面到检测物体通过位置的距离.</p> <p>Including zhe effects like temperature and voltage,without error action the distance passed through from the practical detection surface to the objected object.</p>	<p>标准检测物体 Standerd detected object</p>  <p>为测定基本性能作为标准的检测物体,形状,尺寸,材料已决定的</p> <p>Take as standard detected object to detect the basic performance,the shape,size and material have been determined.</p>
<p>差动距离 Differential distance</p>  <p>到动作的距离个到复位的距离之差的绝对值.</p> <p>The absolute value of the distance difference between the distance to action and the distance To resetting</p>	<p>响应时间 Response time</p>  <p>T1:检测物体进入动作区内,从接近传感器成为动作状态到出现输出的时间.</p> <p>T2:从离开动作区到输出消失为止的时间.</p> <p>T1:when the objected object enters the action zone, the time from proximity sensor being in action state to output appearance.</p> <p>T2:the time from leaving action zone to output disappearance.</p>	<p>响应频率 Response frequency</p>  <p>反复接近检测物体时,能得出跟踪它的输出的每秒次数.测定方法概略如上图.</p> <p>Work out the tracking output times per second by repeatedly approaching zhe detected object</p> <p>Brief detection method sees the above diagram</p>

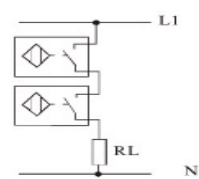
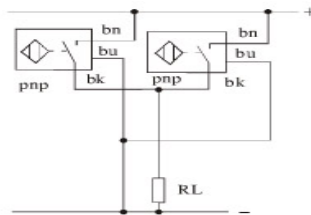
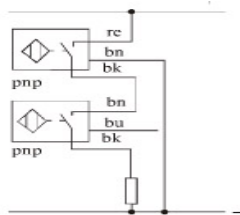
■ 串联, 并联 Series connection and parallel connection

◆ 三线直流与三线直流传感器的串联

◆ 三线直流与三线直流传感器的并联

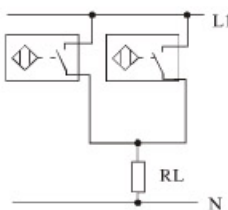
◆ 两线交流传感器的串联

Series connection of three-wire DC and three-wrie DC sensor Parallel connection of three-wire DC and three-wire DC sensor Series connection of two\_wire AC sensor



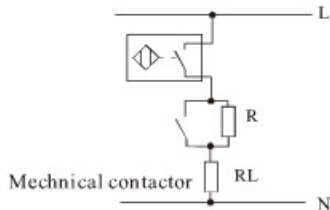
◆ 两线交流传感器的并联

Parallel connection of two-wireACsensor



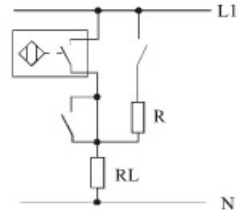
◆ 机械开关与交流传感器的串联

Series connection of machinery switch and AC sensor

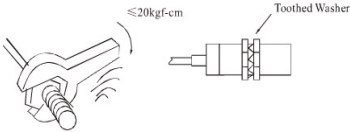
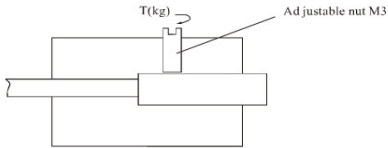
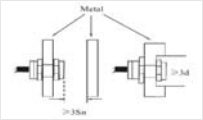
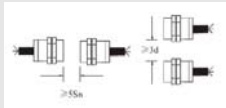

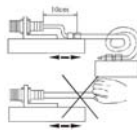


◆ 机械开关与交流传感器的并联

Parallel connection of machinery switch and AC sensor



■ 正确使用和安装及注意事项: Correct use, installation and cautions

<p>◆ 螺旋式开关的安装 Mounting screw switch</p> <p>安装开关时不可采用大力距紧固, 紧固时请务必采用齿垫圈</p> <p>◆ Do not tighten with over-torque when mounting the switch. Adopt toothed washer when tightening</p> 	<p>◆ 无螺旋式柱型开关的安装 Mounting non screw type pillar switch</p> <p>采用调节螺钉时, 紧固力矩请用 2-4kgf-cm 以下安装:</p> <p>◆ When adopt adjusting screw, the tightening torque should be within 2-4kgf-cm</p> 
<p>◆ 防止非检测物体的干扰 Protection against the interference of non detected object</p> <p>在金属件上按装接近开关时, 请务必参照下图, 所示预留一定空间, 以避免开关产生误动作</p> <p>◆ When mounting the proximity switch on the metal part, do refer to the following diagram. Reman a certain space in advance according to the shown diagram so as to prevent the switch from error action</p> 	<p>◆ 防止开关之间的相互干扰 Protection against mutual interference between switches</p> <p>当开关对置或并列按装时, 请大于下图的尺寸按装, 以免相互干扰而产生误动作。</p> <p>◆ Mount according to the size which is bigger than that in the following diagram to prevent the switch from error action resulted from mutual interference if mout the switches contra-positively or in parallel</p> 
<p>◆ 开关动作距离 (灵敏度) 可调节 Adjustable switch action distance (sensitivity)</p> <p>接近开关可通过微调电位器调节动作距离 (灵敏度)。顺时针动作距离增大 (灵敏度减低)。逆时针, 反之, 切忌在动作距离最大临界状态下使用。</p> <p>◆ The action distance (sensitivity) of proximity switch can be adjusted by the means of trimming potentiometer. Increase the action distance and reduce sensitivity when turn clockwise. Vice versa. Do not use in the critical state of max. action distance.</p> 	<p>◆ 开关引线的防护 Guard of switch lead-wire</p> <p>按装开关时, 请将离开开关 10cm 左右引线位置用线夹固定, 防止开关引线受外力的作用损坏。</p> <p>◆ When mount switch, fix the lead-wire at a distance about 10cm from the switch with wire clip so as to prevent the switch lead-wire from damage from outer force</p> 

■ 注意事项 Cautions





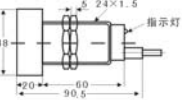
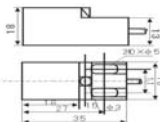

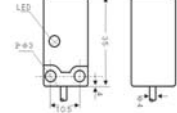
- ◆ 直流开关应使用绝缘变压器, 并确保稳压电源纹波
- ◆ 如有电力线动力线通过开关引线周围时, 防止开关损坏或误动作, 将金属管套在开关引线上并接地
- ◆ 开关使用距离请设定在额定距离以内, 以免受温度和电压影响
- ◆ 严禁通电接线, 应严格按接线图输出回路原理图接线
- ◆ 用户如需要防水、防油、耐酸、碱、耐高温开关等特殊要求或其他规格应在定货时说明, 并给予定做
- ◆ DC switch should adopt insulation transformer and ensure stable voltage mains corrugation.
- ◆ IF any electric power line or dynamic line passes through the surrounding of switch lead-wire, in order to prevent the switch from damage or error action, cover the metal bushing on the switch lead-wire and ground it to the earth
- ◆ Set the switch use distance within the rated distance to avoid the effects from temperature and voltage
- ◆ Wiring while power-on is strictly prohibited. Connecting the wires strictly according to the wiring diagram and output return elementary diagram.
- ◆ If there are any special requirements to the switch like water proof, oil proof, acid proof, base proof, high temperature proof or with any other specifications, the users are required to give clear indication when placing an order. We can produce according to the requirements of the use.

结构分类 Structural category		圆柱型 Cylinder type					
外形编号 Outward appearance code		LM6	LM8	LM12	LM14		
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance		1mm	1mm	2mm	3mm	
	直流 DC 6~36 VDC	NPN	NO	LM6-3001NA	LM8-3001NA	LM12-3002NA	LM14-3003NA
			NC	LM6-3001NB	LM8-3001NB	LM12-3002NB	LM14-3003NB
			NO+NC			LM12-3002NC	LM14-3003NC
	二 线 制 Two wire system	PNP	NO	LM6-3001PA	LM8-3001PA	LM12-3002PA	LM14-3003PA
			NC	LM6-3001PB	LM8-3001PB	LM12-3002PB	LM14-3003PB
			NO+NC			LM12-3002PC	LM14-3003PC
	交 流 AC 90~250 VAC	SCR 可挂硅	NO	LM6-2001A	LM8-2001A	LM12-2002A	LM14-2003A
			NC	LM6-2001B	LM8-2001B	LM12-2002B	LM14-2003B
			NO+NC				
继电器输出 Relay output							
非埋入式 Non-Flush	检测距离 Detection distance		1.5mm	1.5mm	4mm	5mm	
	直流 DC 6~36 VDC	NPN	NO	LM6-3002NA	LM8-3002NA	LM12-3004NA	LM14-3005NA
			NC	LM6-3002NB	LM8-3002NB	LM12-3004NB	LM14-3005NB
			NO+NC			LM12-3004NC	LM14-3005NC
	二 线 制 Two wire system	PNP	NO	LM6-3002PA	LM8-3002PA	LM12-3004PA	LM14-3005PA
			NC	LM6-3002PB	LM8-3002PB	LM12-3004PB	LM14-3005PB
			NO+NC			LM12-3004PC	LM14-3005PC
	交 流 AC 90~250 VAC	SCR 可挂硅	NO	LM6-2002A	LM8-2002A	LM12-2004A	LM14-2005A
			NC	LM6-2002B	LM8-2002B	LM12-2004B	LM14-2005B
			NO+NC				
继电器输出 Relay output							
输出电流	DC	150mA	150mA	200mA	200mA		
	SCR/继电器 Relay			300mA	300mA		
输出电压降		直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下					
消耗电流		直流(NPN、PNP)型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下					
标准检测物体		6×6×1(A3 铁)	8×8×1(A3 铁)	15×15×1(A3 铁)	15×15×1(A3 铁)		
重复精度		0.01	0.01	0.01	0.02		
响应频率		500Hz	500Hz/25Hz	400Hz/25Hz	300Hz/25Hz		
工作环境温度		-25℃ ~+75℃	-25℃ ~+75℃	-25℃ ~+75℃	-25℃ ~+75℃		
绝缘电阻		≥30MΩ	≥50MΩ	≥50MΩ	≥50MΩ		
外壳材料		不锈钢	金属	金属	金属		
防护等级		IP67	IP67	IP67	IP67		
可替代国内型号			E2E-X1R5□□	E2E-X5M□	LJ14A3-□□		






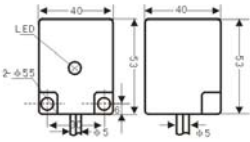
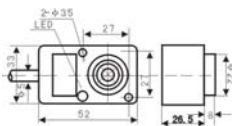
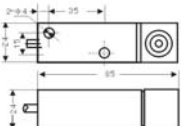
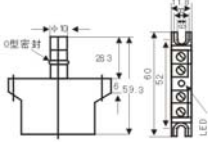
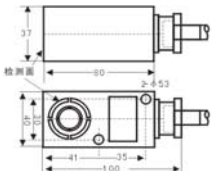
圆柱型 Cylinder type				
LM18	LM22	LM24	LM30	LM20
5mm	7mm	8mm	10mm	
LM18-3005NA	LM22-3007NA	LM24-3008NA	LM30-3010NA	
LM18-3005NB	LM22-3007NB	LM24-3008NB	LM30-3010NB	
LM18-3005NC	LM22-3007NC	LM24-3008NC	LM30-3010NC	
LM18-3005PA	LM22-3007PA	LM24-3008PA	LM30-3010PA	
LM18-3005PB	LM22-3007PB	LM24-3008PB	LM30-3010PB	
LM18-3005PC	LM22-3007PC	LM24-3008PC	LM30-3010PC	
LM18-3005LA	LM22-3007LA	LM24-3008LA	LM30-3010LA	
LM18-3005LB	LM22-3007LB	LM24-3008LB	LM30-3010LB	
LM18-2005A	LM22-2007A	LM24-2008A	LM30-2010A	
LM18-2005B	LM22-2007B	LM24-2008B	LM30-2010B	
LM18-2005C	LM22-2007C	LM24-2008C	LM30-2010C	
8mm	10mm	10mm	15mm	10mm
LM18-3008NA	LM22-3010NA	LM24-3010NA	LM30-3015NA	LM20-3010NA
LM18-3008NB	LM22-3010NB	LM24-3010NB	LM30-3015NB	LM20-3010NB
LM18-3008NC	LM22-3010NC	LM24-3010NC	LM30-3015NC	LM20-3010NC
LM18-3008PA	LM22-3010PA	LM24-3010PA	LM30-3015PA	LM20-3010PA
LM18-3008PB	LM22-3010PB	LM24-3010PB	LM30-3015PB	LM20-3010PB
LM18-3008PC	LM22-3010PC	LM24-3010PC	LM30-3015PC	LM20-3010PC
LM18-3008LA	LM22-3010LA	LM24-3010LA	LM30-3015LA	LM20-3010LA
LM18-3008LB	LM22-3010LB	LM24-3010LB	LM30-3015LB	LM20-3010LB
LM18-2008A	LM22-2010A	LM24-2010A	LM30-2015A	LM20-2010A
LM18-2008B	LM22-2010B	LM24-2010B	LM30-2015B	LM20-2010B
LM18-2008C	LM22-2010C	LM24-2010C	LM30-2015C	LM20-2010C
200mA	200mA	200mA	200mA	200mA
300mA	300mA	300mA	300mA	300mA
直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下				
直流(NPN、PNP)型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下				
18×18×1 (A3 铁)				
0.02				
200Hz/25Hz	200Hz/25Hz	200Hz/25Hz	200Hz/25Hz	200Hz/25Hz
-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃
50MΩ	50MΩ	50MΩ	50MΩ	50MΩ
金属	金属	金属	金属	金属
IP67	IP67	IP67	IP67	IP67
E2E-X10M□	LJ22A□-□-□□	LJ24A4-10-□□	E2E-X18M□	





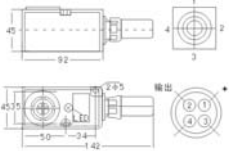
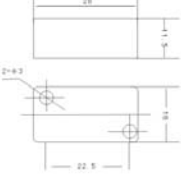
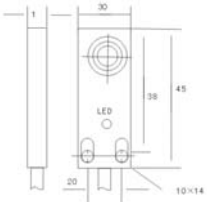
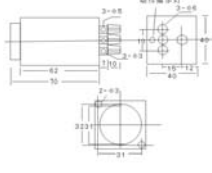







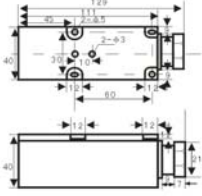
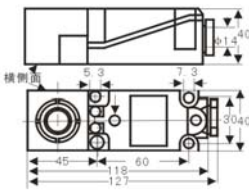
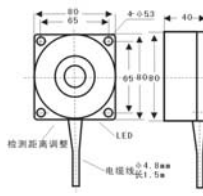
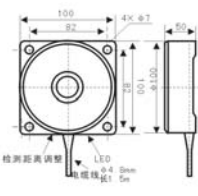
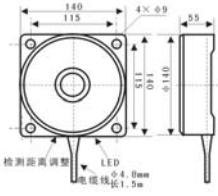
结构分类 Structural category			圆柱型 Cylinder type				
外形编号 Outward appearance code			LM34	LM35	LM38	LM40	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance				12mm		
	直流 DC 6~36 VDC	NPN	NO			LM38-3012NA	
			NC			LM38-3012NB	
			NO+NC			LM38-3012NC	
	PNP	NO			LM38-3012PA		
		NC			LM38-3012PB		
		NO+NC			LM38-3012PC		
	二线制 Two wire system	NO			LM38-3012LA		
		NC			LM38-3012LB		
		继电器输出 Relay output					
交流 AC 90~	SCR 可挂硅	NO			LM38-2012A		
		NC			LM38-2012B		
		NO+NC			LM38-2012C		
非埋入式 Non-Flush	检测距离 Detection distance		17mm	17mm	18mm	20mm	
	直流 DC 6~36 VDC	NPN	NO	LM34-3017NA	LM35-3017NA	LM38-3018NA	LM40-3020NA
			NC	LM34-3017NB	LM35-3017NB	LM38-3018NB	LM40-3020NB
			NO+NC	LM34-3017NC	LM35-3017NC	LM38-3018NC	LM40-3020NC
	PNP	NO	LM34-3017PA	LM35-3017PA	LM38-3018PA	LM40-3020PA	
		NC	LM34-3017PB	LM35-3017PB	LM38-3018PB	LM40-3020PB	
		NO+NC	LM34-3017PC	LM35-3017PC	LM38-3018PC	LM40-3020PC	
	二线制 Two wire system	NO	LM34-3017LA	LM35-3017LA	LM38-3018LA	LM40-3020LA	
		NC	LM34-3017LB	LM35-3017LB	LM38-3018LB	LM40-3020LB	
		继电器输出 Relay					
	交流 AC 90~250 VAC	SCR 可挂硅	NO	LM34-2017A	LM35-2017A	LM38-2018A	LM40-3020B
			NC	LM34-2017B	LM35-2017B	LM38-2018B	LM14-2005B
			NO+NC	LM34-2017C	LM35-2017C	LM38-2018C	LM40-3020C
输出电流	DC	200mA	200mA	200mA	200mA		
	SCR/继电器 Relay	300mA/1A					
输出电压降			直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下				
消耗电流			直流(NPN、PNP)型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下				
标准检测物体			34×34×1(A3 铁)	40×40×1(A3 铁)	38×38×1(A3 铁)	40×40×1(A3 铁)	
重复精度			0.1				
响应频率			100Hz/20Hz				
工作环境温度			-25℃ ~+75℃	-25℃ ~+75℃	-25℃ ~+75℃	-25℃ ~+75℃	
绝缘电阻			50MΩ				
外壳材料			ABS 树脂			金属	
防护等级			IP67				
可替代国内型号					LJ38A4-18-□□	SC-□□	

圆柱型 Cylinder type	角柱型 Angular column type		
LM480	LMF1	LMF2	LMF3
			
			
	5mm	5mm	5mm
	LMF1-3005NA	LMF2-3005NA	LMF3-3005NA
	LMF1-3005NB	LMF2-3005NB	LMF3-3005NB
	LMF1-3005PA	LMF2-3005PA	LMF3-3005PA
	LMF1-3005PB	LMF2-3005PB	LMF3-3005PB
	LMF1-3005LA	LMF2-3005LA	LMF3-3005LA
	LMF1-3005LB	LMF2-3005LB	LMF3-3005LB
25mm			
LM480-3025NA			
LM480-3025NB			
LM480-3025NC			
LM480-3025PA			
LM480-3025PB			
LM480-3025PC			
LM480-3025A	LMF1-2005A	LMF2-2005A	LMF3-2005A
LM480-3025B	LMF1-2005B		LMF3-2005B
LM480-3025C			
200mA			
300mA			
直流 (NPN、PNP) 型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下			
直流 (NPN、PNP) 型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下			
50×50×1 (A3 铁)	20×20×1 (A3 铁)		
0.1	0.02		
100Hz/25Hz	400Hz/25Hz		
-25℃ ~ +75℃			
50MΩ			
金属	ABS 树脂		
IP67	IP67		
SFE-□□	SN04-N	TL-Q5MC1	PS17-□

结构分类 Structural category			角柱型 Angular column type				
外形编号 Outward appearance code			LMF5	LMF6	LMF7	LMF8	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance		2mm	8mm	10mm	10mm	
	直 流 DC 6~ 36 VDC	NPN	NO	LMF5-3002NA	LMF6-3008NA	LMF7-3010NA	LMF8-3010NA
			NC	LMF5-3002NB	LMF6-3008NB	LMF7-3010NB	LMF8-3010NB
			NO+NC	LMF5-3002NC	LMF6-3008NC	LMF7-3010NC	LMF8-3010NC
		PNP	NO	LMF5-3002PA	LMF6-3008PA	LMF7-3010PA	LMF8-3010PA
			NC	LMF5-3002PB	LMF6-3008PB	LMF7-3010PB	LMF8-3010PB
			NO+NC	LMF5-3002PC	LMF6-3008PC	LMF7-3010PC	LMF8-3010PC
	二线制 Two wire system		NO	LMF5-3002LA	LMF6-3008LA	LMF7-3010LA	LMF8-3010LA
			NC	LMF5-3002LB	LMF6-3008LB	LMF7-3010LB	LMF8-3010LB
	交流 AC 90~ 250 VAC	SCR 可挂硅	NO		LMF6-2008A	LMF7-2010A	LMF8-2010A
			NC		LMF6-2008B	LMF7-2010B	LMF8-2010B
			NO+NC				
	继电器输出 Relay output						
非埋入式 Non-Flush	检测距离 Detection distance		4mm	10mm	15mm	15mm	
	直 流 DC 6~ 36 VDC	NPN	NO	LMF5-3004NA	LMF6-3010NA	LMF7-3015NA	LMF8-3015NA
			NC	LMF5-3004NB	LMF6-3010NB	LMF7-3015NB	LMF8-3015NB
			NO+NC	LMF5-3004NC	LMF6-3010NC	LMF7-3015NC	LMF8-3015NC
		PNP	NO	LMF5-3004PA	LMF6-3010PA	LMF7-3015PA	LMF8-3015PA
			NC	LMF5-3004PB	LMF6-3010PB	LMF7-3015PB	LMF8-3015PB
			NO+NC	LMF5-3004PC	LMF6-3010PC	LMF7-3015PC	LMF8-3015PC
	二线制 Two wire system		NO	LMF5-3004LA	LMF6-3010LA	LMF7-3015LA	LMF8-3015LA
			NC	LMF5-3004LB	LMF6-3010LB	LMF7-3015LB	LMF8-3015LB
	交流 AC 90~ 250 VAC	SCR 可挂硅	NO		LMF6-2010A	LMF7-2015A	LMF8-2015A
			NC		LMF6-2010B	LMF7-2015B	LMF8-2015B
			NO+NC				
	继电器输出 Relay output						
输出电流	DC	200mA					
	SCR/继电器 Relay	300mA	300mA				
输出电压降		直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下					
消耗电流		直流(NPN、PNP)型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下					
标准检测物体		15×15×1(A3 铁)	30×30×1(A3 铁)	35×35×1(A3 铁)	40×40×1(A3 铁)		
重复精度		0.03		0.05			
响应频率		400Hz		200Hz/25Hz			
工作环境温度		-25℃ ~ +75℃					
绝缘电阻		50MΩ					
外壳材料		ABS 树脂					
防护等级		IP67					
可替代国内型号		TL-N5ME□□			TL-N10M□		

角柱型 Angular column type				
LMF10	LMF12	LMF13	LMF15	LMF16
				
				
15mm			2mm	
LMF10-3015NA			LMF15-3002NA	
LMF10-3015NB			LMF15-3002NB	
LMF10-3015NC			LMF15-3002NC	
LMF10-3015PA			LMF15-3002PA	
LMF10-3015PB			LMF15-3002PB	
LMF10-3015PC			LMF15-3002PC	
LMF10-3015LA			LMF15-3002LA	
LMF10-3015LB			LMF15-3002LB	
LMF10-2015A			LMF15-2002A	
LMF10-2015B			LMF15-2002B	
LMF10-2015C				
20mm	8mm	8mm	4mm	15mm
LMF10-3020NA	LMF12-3008NA	LMF13-3008NA	LMF15-3004NA	LMF16-3015NA
LMF10-3020NB	LMF12-3008NB	LMF13-3008NB	LMF15-3004NB	LMF16-3015NB
LMF10-3020NC	LMF12-3008NC	LMF13-3008NC	LMF15-3004NC	LMF16-3015NC
LMF10-3020PA	LMF12-3008PA	LMF13-3008PA	LMF15-3004PA	LMF16-3015PA
LMF10-3020PB	LMF12-3008PB	LMF13-3008PB	LMF15-3004PB	LMF16-3015PB
LMF10-3020PC	LMF12-3008PC	LMF13-3008PC	LMF15-3004PC	LMF16-3015PC
LMF10-3020LA	LMF12-3008LA	LMF13-3008LA	LMF15-3004LA	LMF16-3015LA
LMF10-3020LB	LMF12-3008LB	LMF13-3008LB	LMF15-3004LB	LMF16-3015LB
LMF10-2020A	LMF12-2008A	LMF13-2008A	LMF15-2004A	LMF16-2015A
LMF10-2020B	LMF12-2008B	LMF13-2008B	LMF15-2004B	LMF16-2015B
LMF10-2020C	LMF12-2008C	LMF13-2008C		LMF16-2015C
				LMF16-2015JC
300mA	300mA	300mA	200mA	300mA
500mA	500mA	500mA	300mA/1A	500mA/2A
直流 (NPN、PNP) 型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下				
直流 (NPN、PNP) 型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下				
45×45×1(A3 铁 iron)	25×25×1(A3 铁 iron)	25×25×1(A3 铁 iron)	15×15×F(A3 铁)	45×45×F(A3 铁 iron)
0.05	0.04	0.04	0.02	0.05
100Hz/25Hz	200Hz/25Hz			100Hz/25Hz
-25℃ ~ +75℃				
50MΩ	50MΩ			
ABC 树脂 Resin				
IP67				
TL-N20M□	LJ1A-24	LJD-□□	ST-F-□	LJ2-□□/□□□

结构分类 Structural category			角柱型 Angular column type				
外形编号 Outward appearance code			LMF17	LMF22	LMF29	LMF35	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance			2mm	5mm		
	直流 DC 6~36 VDC	NPN	NO	LMF22-3002NA	LMF29-3005NA		
			NC	LMF22-3002NB	LMF29-3005NB		
			NO+NC	LMF22-3002NC	LMF29-3005NC		
	二 线 制 Two wire system	PNP	NO	LMF22-3002PA	LMF29-3005PA		
			NC	LMF22-3002PB	LMF29-3005PB		
			NO+NC	LMF22-3002PC	LMF29-3005PC		
	交 流 AC 90~250 VAC	可 挂 硅 SCR	NO	LMF22-3002A	LMF29-3005A		
			NC	LMF22-3002B	LMF29-3005B		
			NO+NC				
继电器输出 Relay output							
非埋入式 Non-Flush	检测距离 Detection distance		20mm	4mm	8mm	15mm	
	直流 DC 6~36 VDC	NPN	NO	LMF17-3020NA	LMF22-3004NA	LMF29-3008NA	LMF35-3015NA
			NC	LMF17-3020NB	LMF22-3004NB	LMF29-3008NB	LMF35-3015NB
			NO+NC	LMF17-3020NC		LMF29-3008NC	
	二 线 制 Two wire system	PNP	NO	LMF17-3020PA	LMF22-3004PA	LMF29-3008PA	LMF35-3015PA
			NC	LMF17-3020PB	LMF22-3004PB	LMF29-3008PB	LMF35-3015PB
			NO+NC	LMF17-3020PC		LMF29-3008PC	
	交 流 AC 90~250 VAC	可 挂 硅 SCR	NO	LMF17-2020A			LMF35-2015A
			NC	LMF17-2020B			LMF35-2015C
			NO+NC	LMF17-2020C			
继电器输出 Relay output		LMF17-2020JC					
输出电流	DC		200mA				
	SCR/继电器 Relay		300mA				
输出电压降			直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下				
消耗电流			直流(NPN、PNP)型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下				
标准检测物体			50×50×1(A3 铁)	8×8×1(A3 铁)	15×15×1(A3 铁)	15×15×1(A3 铁)	
重复精度			0.05	0.01	0.01	0.02	
响应频率			200Hz/25Hz	500Hz/25Hz	400Hz/25Hz	300Hz/25Hz	
工作环境温度			-25℃ ~+70℃	-25℃ ~+75℃	-25℃ ~+75℃	-25℃ ~+75℃	
绝缘电阻			≥50MΩ	≥50MΩ	≥50MΩ	≥50MΩ	
外壳材料			ABS 树脂	ABS 树脂	ABS 树脂	ABS 树脂	
防护等级			IP67	IP67	IP67	IP65	
可替代国内型号						JDK-1.2 正负	

角柱型 Angular column type			平面安装型 plane installation type	
LMF36	LMF37	LMF38	LMF39	LMF40
				
				
	15mm			
	LMF37-3015NA			
	LMF37-3015NB			
	LMF37-3015NC			
	LMF37-3015PA			
	LMF37-3015PB			
	LMF37-3015PC			
	LMF37-3015LA			
	LMF37-3015LB			
	LMF37-2015A			
	LMF37-2015B			
	LMF37-2015C			
	LMF37-2015JC			
1-20mm	20mm	1-40mm	1-50mm	80mm
LMF36-3020NA	LMF37-3020NA	LMF38-3040NA	LMF39-3050NA	LMF40-3080NA
LMF36-3020NB	LMF37-3020NB	LMF38-3040NB	LMF39-3050NB	LMF40-3080NB
LMF36-3020NC	LMF37-3020NC	LMF38-3040NC	LMF39-3050NC	LMF40-3080NC
LMF36-3020PA	LMF37-3020PA	LMF38-3040PA	LMF39-3050PA	LMF40-3080PA
LMF36-3020PB	LMF37-3020PB	LMF38-3040PB	LMF39-3050PB	LMF40-3080PB
LMF36-3020PC	LMF37-3020PC	LMF38-3040PC	LMF39-3050PC	LMF40-3080PC
LMF36-3020LA	LMF37-3020LA	LMF38-3040LA	LMF39-3050LA	LMF40-3080LA
LMF36-3020LB	LMF37-3020LB	LMF38-3040LB	LMF39-3050LB	LMF40-3080LB
LMF36-2020A	LMF37-2020A	LMF38-2040A	LMF39-2050A	LMF40-2080A
LMF36-2020B	LMF37-2020B	LMF38-2040B	LMF39-2050B	LMF40-2080B
LMF36-2020C	LMF37-2020C	LMF38-2040C	LMF39-2050C	LMF40-2080C
LMF36-2020JC	LMF37-2020JC	LMF38-2040JC	LMF39-2050JC	LMF40-2080JC
200mA	200mA	200mA	200mA	200mA
300mA/2A	300mA/2A	300mA/2A/10A	300mA/2A/10A	300mA/2A/10A
直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下				
直流(NPN、PNP)型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下				
50×50×1(A3 铁)	50×50×1(A3 铁)	100×100×1(A3 铁)	120×120×1(A3 铁)	160×160×1(A3
0.05	0.05	0.5	0.5	0.5
200Hz/25Hz	200Hz/25Hz	50Hz/10Hz	50Hz/10Hz	10Hz/5Hz
-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃
50MΩ	50MΩ	50MΩ	50MΩ	50MΩ
ABS 树脂	ABS 树脂	ABS 树脂·玻璃钢	ABS 树脂·玻璃钢	ABS 树脂·玻璃
IP67	IP67	IP65	IP65	IP65

	HY-A20□	TCD-2040□	TCA-2050□	TCB-2080□
--	---------	-----------	-----------	-----------

结构分类 Structural category		平面安装型 plane installation type			角柱型 Angular column type		
外形编号 Outward appearance code		LMF41	LMF42	LMF43	LMF50		
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance						
	直 流 DC	NPN	NO				
			NC				
			NO+NC				
	6~ 36 VDC	PNP	NO				
			NC				
			NO+NC				
	二线制 Two wire	NO					
		NC					
	交流 AC 90~ 250 VAC	SCR 可挂硅	NO				
NC							
NO+NC							
继电器输出 Relay output							
非埋入式 Non-Flush	检测距离 Detection distance		0-120mm	0-25mm	40mm	20mm	
	直 流 DC	NPN	NO	LMF41-30120NA	LMF42-3025NA	LMF43-3040NA	LMF50-3020NA
			NC	LMF41-30120NB	LMF42-3025NB	LMF43-3040NB	LMF50-3020NB
			NO+NC	LMF41-30120NC	LMF42-3025NC	LMF43-3040NC	LMF50-3020NC
	6~ 36 VDC	PNP	NO	LMF41-30120PA	LMF42-3025PA	LMF43-3040PA	LMF50-3020PA
			NC	LMF41-30120PB	LMF42-3025PB	LMF43-3040PB	LMF50-3020PB
			NO+NC	LMF41-30120PC	LMF42-3025PC	LMF43-3040PC	LMF50-3020PC
	二线制 Two wire	NO					
		NC					
	交流 AC 90~ 250 VAC	SCR 可挂硅	NO	LMF41-20120A	LMF42-2025A	LMF43-2040A	LMF50-2020A
NC			LMF41-20120B	LMF42-2025B	LMF43-2040B	LMF50-2020B	
NO+NC			LMF41-20120C	LMF42-2025C	LMF43-2040C	LMF50-2020C	
继电器输出 Relay output		LMF41-20120JC	LMF42-2025JC	LMF43-2040JC	LMF50-2020JC		
输出电流	DC	200mA	200mA	200mA	200mA		
	SCR/继电器 Relay	300mA/2A/10A	300mA/2A	300mA/2A	300mA/2A		
输出电压降		直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下					
消耗电流		直流(NPN、PNP)型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下					
标准检测物体		250×250×1(A3 铁)	80×80×1(A3 铁)	100×100×1(A3 铁)	60×60×1(A3 铁)		
重复精度		0.5	0.05	0.05	0.05		
响应频率		10Hz/5Hz	50Hz/10Hz	30Hz/10Hz	200Hz/25Hz		
工作环境温度		-25℃ ~+75℃	-25℃ ~+75℃	-25℃ ~+75℃	-25℃ ~+75℃		
绝缘电阻		50MΩ	50MΩ	50MΩ	50MΩ		
外壳材料		玻璃钢	ABS 树脂	ABS 树脂	ABS 树脂		
防护等级		IP65	IP65	IP65	IP65		

可替代国内型号

TCC-2120□

HD-2020□

平面安装型 plane installation type

LMP55	LM36	LM42	LM48	LM55
				
				
25mm	15mm	20mm	20mm	25mm
LMF55-3025NA	LM36-3015NA	LM42-3020NA	LM48-3020NA	LM55-3025NA
LMF55-3025NB	LM36-3015NB	LM42-3020NB	LM48-3020NB	LM55-3025NB
LMF55-3025NC	LM36-3015NC	LM42-3020NC	LM48-3020NC	LM55-3025NC
LMF55-3025PA	LM36-3015PA	LM42-3020PA	LM48-3020PA	LM55-3025PA
LMF55-3025PB	LM36-3015PB	LM42-3020PB	LM48-3020PB	LM55-3025PB
LMF55-3025PC	LM36-3015PC	LM42-3020PC	LM48-3020PC	LM55-3025PC
	LM36-3015LA	LM42-3020LA	LM48-3020LA	LM55-3025LA
	LM36-3015LB	LM42-3020LB	LM48-3020LB	LM55-3025LB
LMF55-2025A	LM36-3015A	LM42-2020A	LM48-2020A	LM55-2025A
LMF55-2025B	LM36-3015B	LM42-2020B	LM48-2020B	LM55-2025B
LMF55-2025C			LM48-2020C	LM55-2025C
LMF55-2025JC				
300mA	300mA	300mA	300mA	300mA
500mA/2A	300mA	500mA/2A	500mA	500mA
直流 (NPN、PNP) 型 3V 以下、二线型：3.9V 以下、交流 AC 10V 以下				
直流 (NPN、PNP) 型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下				
70×70×1 (A3 铁)	45×45×1 (A3 铁)	25×25×1 (A3 铁)	60×60×1 (A3 铁)	55×55×1 (A3 铁)
0.05	0.05	0.01	0.05	0.05
200Hz/25Hz	200Hz/10Hz	200Hz/25Hz	200Hz/10Hz	200Hz/10Hz
-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃	-25℃ ~ +75℃
50MΩ	50MΩ	50MΩ	50MΩ	50MΩ
ABS 树脂	ABS 树脂	ABS 树脂	ABS 树脂	ABS 树脂
IP67	IP67	IP67	IP67	IP67
			SD-□□	SE-□□



结构分类 Structural category		平面安装型 plane installation type		角柱型 Angular column type		接插件型 Connector type			
外形编号 Outward appearance code		LMF45		LM370		LM8-□□T			
外形图例 Outward appearance illustration									
外形尺寸 Overall dimensions									
埋入式 Flush	检测距离 Detection distance				1mm		1mm		
	直 流 DC 6~ 36 VDC	NPN	NO			LM8-3001NAT	LM8-3001NAT3		
			NC			LM8-3001NBT	LM8-3001NBT3		
			NO+NC						
	PNP	NO			LM8-3001PAT	LM8-3001PAT3			
		NC			LM8-3001PBT	LM8-3001PBT3			
		NO+NC							
	二线制 Two wire		NO			LM8-3001LAT	LM8-3001LAT3		
	NC								
	交流 AC 90~ 250 VAC	SCR 可挂硅	NO						
NC									
NO+NC									
继电器输出 Relay output									
非埋入式 Non-Flush	检测距离 Detection distance		0-50mm		40mm		2mm		
	直 流 DC 6~ 36 VDC	NPN	NO	LMF45-3050NA	LMF370-3040NA	LM8-3002NAT	LM8-3002NAT3		
			NC	LMF45-3050NB	LMF370-3040NB	LM8-3002NBT	LM8-3002NBT3		
			NO+NC	LMF45-3050NC	LMF370-3040NC				
	PNP	NO	LMF45-3050PA	LMF370-3040PA	LM8-3002PAT	LM8-3002PAT3			
		NC	LMF45-3050PB	LMF370-3040PB	LM8-3002PBT	LM8-3002PBT3			
		NO+NC	LMF45-3050PC	LMF370-3040PC					
	二线制 Two wire system		NO	LMF45-3050LA	LMF370-3040LA	LM8-3002LAT	LM8-3002LAT3		
	NC		LMF45-3050LB	LMF370-3040LB					
	交流 AC 90~ 250 VAC	SCR 可挂硅	NO	LMF45-2050A	LMF370-2040A	LM8-2002AT	LM8-2002AT3		
NC			LMF45-2050B	LMF370-2040B	LM8-2002BT	LM8-2002BT3			
NO+NC									
继电器输出 Relay output									
输出电流	DC		200mA		200mA		150mA		
	SCR/继电器 Relay		500mA		500mA				
输出电压降		直流 (NPN、PNP) 型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下							
消耗电流		直流 (NPN、PNP) 型 DC 12V 时 8mA、24V 时 15mA、交流 AC 10mA 以下							
标准检测物体		80×80×1 (A3 铁)		55×55×1 (A3 铁)		8×8×1 (A3 铁)		8×8×1 (A3 铁)	
重复精度		0.05		0.05		0.01		0.01	
响应频率		200Hz/5Hz		200Hz/10Hz		500Hz/10Hz		500Hz/25Hz	
工作环境温度		-25℃ ~ +75℃		-25℃ ~ +75℃		-25℃ ~ +75℃		-25℃ ~ +75℃	
绝缘电阻		≥30MΩ		≥50MΩ		≥50MΩ		≥50MΩ	
外壳材料		塑料		塑料		金属		金属	
防护等级		IP67		IP67		IP67		IP67	
可替代国内型号						E2E-X1R5-M1		E2E-X2ME1-M1	

## 接插件型 Connector type

LM12-□T	LM12-□T3	LM18-□T	LM18-□T3	LM22-□T
2mm	2mm	5mm	5mm	7mm
LM12-3002NAT	LM12-3002NAT3	LM18-3005NAT	LM18-3005NAT3	LM22-3007NAT
LM12-3002NBT	LM12-3002NBT3	LM18-3005NBT	LM18-3005NBT3	LM22-3007NBT
LM12-3002NCT	LM12-3002NCT3	LM18-3005NCT	LM18-3005NCT3	LM22-3007NCT
LM12-3002PAT	LM12-3002PAT3	LM18-3005PAT	LM18-3005PAT3	LM22-3007PAT
LM12-3002PBT	LM12-3002PBT3	LM18-3005PBT	LM18-3005PBT3	LM22-3007PBT
LM12-3002PCT	LM12-3002PCT3	LM18-3005PCT	LM18-3005PCT3	LM22-3007PCT
LM12-3002LAT	LM12-3002LAT3	LM18-3005LAT	LM18-3005LAT3	LM22-3007LAT
LM12-3002LBT	LM12-3002LBT3	LM18-3005LBT	LM18-3005LBT3	LM22-3007LBT
LM12-2002AT	LM12-2002AT3	LM18-2005AT	LM18-2005AT3	LM22-2007AT
LM12-2002BT	LM12-2002BT3	LM18-2005BT	LM18-2005BT3	LM22-2007BT
4mm	5mm	15mm	20mm	4mm
LM12-3004NAT	LM12-3004NAT3	LM18-3008NAT	LM18-3008NAT3	LM22-3010NAT
LM12-3004NBT	LM12-3004NBT3	LM18-3008NBT	LM18-3008NBT3	LM22-3010NBT
LM12-3004NCT	LM12-3004NCT3	LM18-3008NCT	LM18-3008NCT3	LM22-3010NCT
LM12-3004PAT	LM12-3004PAT3	LM18-3008PAT	LM18-3008PAT3	LM22-3010PAT
LM12-3004PBT	LM12-3004PBT3	LM18-3008PBT	LM18-3008PBT3	LM22-3010PBT
LM12-3004PCT	LM12-3004PCT3	LM18-3008PCT	LM18-3008PCT3	LM22-3010PCT
LM12-3004LAT	LM12-3004LAT3	LM18-3008LAT	LM18-3008LAT3	LM22-3010LAT
LM12-3004LBT	LM12-3004LBT3	LM18-3008LBT	LM18-3008LBT3	LM22-3010LBT
LM12-2004AT	LM12-2004AT3	LM18-2008AT	LM18-2008AT3	LM22-2010AT
LM12-2004BT	LM12-2004BT3	LM18-2008BT	LM18-2008BT3	LM22-2010BT
200mA	200mA	200mA	200mA	200mA
		300mA	300mA	300mA
直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下 DC<3V AC<10V				
直流(NPN、PNP)型 DC 12V 时 8 mA、24V 时 15 mA、交流 AC 10 mA 以下 DC: <15mA AC: <10mA				
12×12×1(A3 铁 iron)	12×12×1(A3 铁 iron)	18×18×1(A3 铁 iron)	18×18×1(A3 铁 iron)	25×25×1(A3 铁 iron)
0.01	0.01	0.02	0.02	0.036
400Hz/10Hz	400Hz/10Hz	200Hz/10Hz	200Hz/10Hz	200Hz/5Hz
-25℃~+70℃	-25℃~+70℃	-25℃~+65℃	-25℃~+65℃	-25℃~+65℃
50MΩ	50MΩ	50MΩ	50MΩ	
金属 Metal				



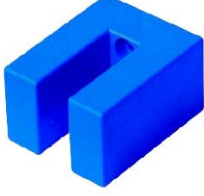


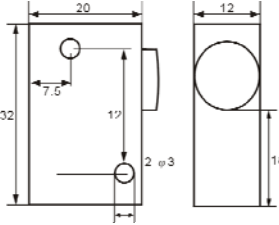
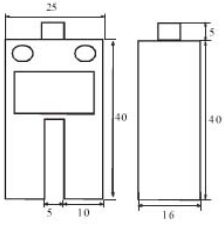
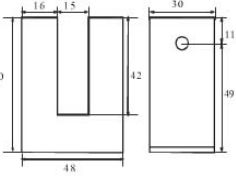
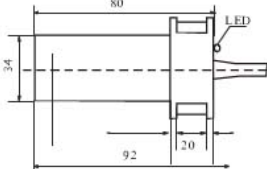
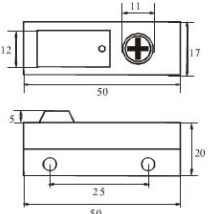
IP67	IP67	IP67	IP67	IP67
------	------	------	------	------





结构分类 Structural category			接插件型 Connector type				
外形编号 Outward appearance code			LM22-□T3	LM30-□T	LM30-□T3	LMF16-□T	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance		0.7mm	0.7mm	5mm	5mm	
	直流 DC 6-36 VD C	NPN	NO	LM05-3001NA	LM06-3001NA	LMF4-3005NA	LMF11-3005NA
			NC			LMF4-3005NB	LMF11-3005NB
			NO+NC				LMF1-3005NC
	二 线 制 Two wire system	PNP	NO	LM05-3001PA	LM06-3001PA	LMF4-3005PA	LMF1-3005PA
			NC			LMF4-3005PB	LMF11-3005PB
			NO+NC				LMF11-3005PC
	交流 AC 90~ 250 VVA	SCR 可 挂 硅 Control- able silicon	NO			LMF4-3005LA	LMF1-3005LA
			NC			LMF4-3005LB	LMF11-3005LB
			NO+NC				
	继电器输出 Relay output						
非埋入式 Non-flush	检测距离 Detection distance						
	直流 DC 6-36 VD C	NPN	NO				
			NC				
			NO+NC				
	二 线 制 Two wire system	PNP	NO				
			NC				
			NO+NC				
	交流 AC 90~ 250 VVA	SCR 可 挂 硅 Control- able silicon	NO				
			NC				
			NO+NC				
	继电器输出 Relay						
输出电流 Control output		DC	100mA	100mA	200mA		
		SCR/继电器 Relay					
输出电压降 output voltage drop		直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下 DC<3V AC<10V					
消耗电流 DC/AC Consumption		直流(NPN、PNP)型 DC 12V 时 8 mA、24V 时 15 mA、交流 AC 10 mA 以下 DC: <15mA AC: <10mA					
标准检测物体 Standard detected		8×8×1(A3 铁 iron)		20×20×1(A3 铁 iron)			
重复精度 Repeated precision		0.01		0.03			
响应频率 DC/AC Response		500Hz		300Hz			
工作环境温度 Working environment		-25℃~+70℃		-25℃~+70℃			
绝缘电阻 Insulation resistance		50MΩ		50MΩ			
外壳材料 Shell material		金属 Metal		ABS 树脂 Resin			
防护等级 Protection grade		IP67		IP67			

可替代国内型号 Alternative model			PS05-N、PS05-P	PL-05N PL-05P
---------------------------	--	--	---------------	---------------




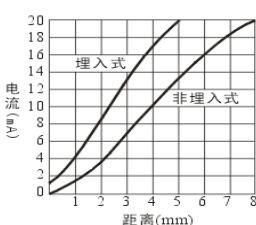
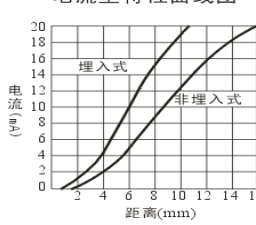
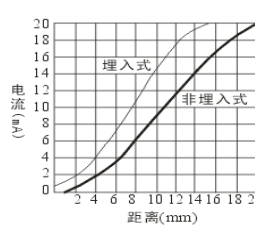
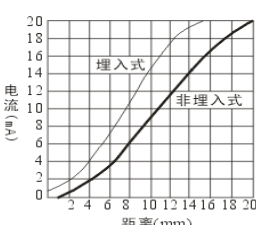
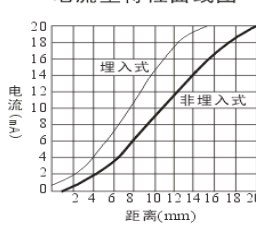
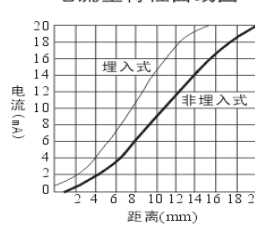
结构分类 Structural category			圆柱型 Cylinder type		角柱型 Angular column type		
外形编号 Outward appearance code			LM05	LM06	LMF4	LMF11	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance		0.7mm	0.7mm	5mm	5mm	
	直流 DC 6-36 VD C	NPN	NO	LM05-3001NA	LM06-3001NA	LMF4-3005NA	LMF11-3005NA
			NC			LMF4-3005NB	LMF11-3005NB
			NO+NC				LMF1-3005NC
		PNP	NO	LM05-3001PA	LM06-3001PA	LMF4-3005PA	LMF1-3005PA
			NC			LMF4-3005PB	LMF11-3005PB
			NO+NC				LMF11-3005PC
	二线制 Twowire system	NO			LMF4-3005LA	LMF1-3005LA	
		NC			LMF4-3005LB	LMF11-3005LB	
	交流 AC 90~250 VA	SCR 可挂硅 Control- able silicon	NO				
			NC				
NO+NC							
继电器输出 Relay output							
非埋入式 Non-Flush	检测距离 Detection distance						
	直流 D C 6-36 V D	NPN	NO				
			NC				
			NO+NC				
		PNP	NO				
			NC				
			NO+NC				
	二线制 Two wire system	NO					
		NC					
	交流 A C 90	SCR 可挂硅 Control- able silicon	NO				
			NC				
NO+NC							
继电器输出 Relay output							
输出电流 Controloutp ut	DC		100mA	100mA	200mA		
	SCR/继电器 Relay						
输出电压降 output voltage drop			直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下 DC<3V AC<10V				
消耗电流 DC/AC Consumption			直流(NPN、PNP)型 DC 12V 时 8 mA、24V 时 15 mA、交流 AC 10 mA 以下 DC: <15mA AC: <10mA				
标准检测物体 Standard detected			8×8×1(A3 铁 iron)	8×8×1(A3 铁 iron)	20×20×1(A3 铁 iron)	20×20×1(A3 铁 iron)	
重复精度 Repeated precision			0.01	0.01	0.03	0.05	
响应频率 DC/AC Response			500Hz	500Hz	300Hz	500Hz	
工作环境温度 Working environment			-25℃~+70℃	-25℃~+70℃	-25℃~+70℃	-25℃~+70℃	
绝缘电阻 Insulation resistance			50MΩ	50MΩ	50MΩ	50MΩ	
外壳材料 Shell material			金属 Metal		ABS 树脂 Resin		
防护等级 Protection grade			IP67	IP67	IP67	IP67	

## 角柱型 Angular column type




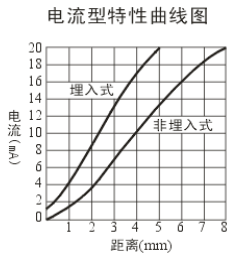
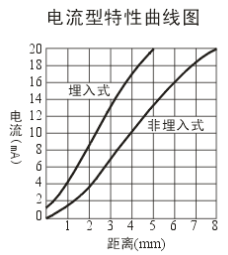
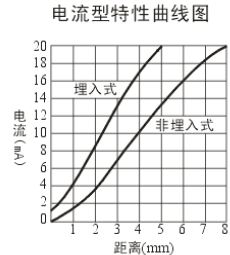
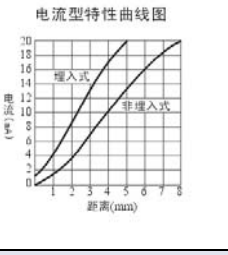
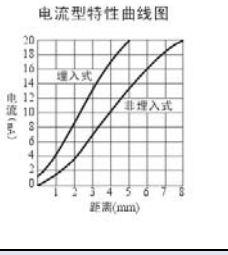
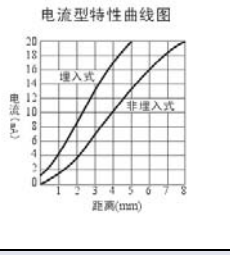
LMF21	LMF14	LMF27	LMF340	LMF30
				
				
4mm				
LMF21				
4mm	5mm	15mm	20mm	4mm
LMF21-3004NA	LMF14-3005NA	LMF27-3015NA	LMF340-3020NA	LMF30-3004NA
LMF21-3004NB	LMF14-3005NB	LMF27-3015NB	LMF340-3020NB	LMF30-3004NB
	LMF14-3005NC	LMF27-3015NC	LMF340-3020NC	LMF30-3004NC
LMF21-3004PA	LMF14-3005PA	LMF27-3015PA	LMF340-3020PA	LMF30-3004PA
LMF21-3004PB	LMF14-3005PB	LMF27-3015PB	LMF340-3020PB	LMF30-3004PB
	LMF14-3005PC	LMF27-3015PC	LMF340-3020PC	LMF30-3004PC
LMF21-3004LC	LMF14-3005LA	LMF27-3015LA	LMF340-3020LA	LMF30-3004LA
	LMF14-3005LB	LMF27-3015LB	LMF340-3020LB	
	LMF14-2005A	LMF27-2015A	LMF340-2020A	LMF30-2004A
	LMF14-2005B	LMF27-2015B	LMF340-2020B	LMF30-2004B
200mA	200mA	200mA	200mA	200mA
	300mA	300mA	300mA	300mA
直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下 DC<3V AC<10V				
直流(NPN、PNP)型 DC 12V 时 8 mA、24V 时 15 mA、交流 AC 10 mA 以下 DC: <15mA AC: <10mA				
12×12×1(A3 铁 iron)	18×18×1(A3 铁 iron)	30×30×1(A3 铁 iron)	35×35×1(A3 铁 iron)	15×15×1(A3 铁 iron)
0.01	0.05	0.05	0.05	0.01
500Hz/5Hz	500Hz/10Hz	300Hz/10Hz	300Hz/10Hz	500Hz/5Hz
-25℃~+70℃	-25℃~+70℃	-25℃~+70℃	-25℃~+70℃	
50MΩ	50MΩ	50MΩ	50MΩ	
ABC 塑料 Plastic				
IP67	IP67	IP67	IP67	IP67

结构分类 Structural category			角柱型 Angular column type				
外形编号 Outward appearance code			LMF380	LMF23	LMF24	LMF25	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance				4mm	5mm	
	直流 DC 6-36 VDC	NPN	NO			LMF21-3004NA	LMF11-3005NA
			NC			LMF21-3004NB	LMF11-3005NB
			NO+NC				LMF1-3005NC
		PNP	NO			LMF21-3004PA	LMF1-3005PA
			NC			LMF21-3004PB	LMF11-3005PB
			NO+NC				LMF11-3005PC
	二线制 Two wire system	NO			LMF21-3004LA	LMF1-3005LA	
		NC				LMF11-3005LB	
		继电器输出 Relay					
	交流 AC 90~250 VAC	SCR 可挂硅 Control- able silicon	NO				
			NC				
			NO+NC				
	继电器输出 Relay						
非埋入式 Non-Flush	检测距离 Detection distance		40mm	5mm	5mm	5mm	
	直流 DC 6-36 VDC	NPN	NO	LMF380-3040NA	LMF23-3005NA	LMF24-3005NA	LMF25-3005NA
			NC	LMF380-3040NB	LMF23-3005NB	LMF24-3005NB	LMF25-3005NB
			NO+NC	LMF380-3040NC			LMF25-3005NC
		PNP	NO	LMF380-3040PA	LMF23-3005PA	LMF24-3005PA	LMF25-3005PA
			NC	LMF380-3040PB	LMF23-3005PB	LMF24-3005PB	LMF25-3005PB
			NO+NC	LMF380-3040PC			LMF25-3005PC
	二线制 Two wire system	NO	LMF380-3040LA	LMF23-3005LA		LMF25-3005LA	
		NC	LMF380-3040LB			LMF25-3005LB	
		继电器输出 Relay					
	交流 AC 90~250 VAC	SCR 可挂硅 Control- able silicon	NO	LMF380-2040A			LMF25-2005A
			NC	LMF380-2040B			LMF25-2005B
			NO+NC				
	继电器输出 Relay						
输出电流 Control output		DC	200mA	200mA	200mA	200mA	
		SCR/继电器 Relay	500mA			500mA	
输出电压降 output voltage drop			直流(NPN、PNP)型 3V 以下、二线型: 3.9V 以下、交流 AC 10V 以下 DC<3V AC<10V				
消耗电流 DC/AC Consumption			直流(NPN、PNP)型 DC 12V 时 8 mA、24V 时 15 mA、交流 AC 10 mA 以下 DC: <15mA AC: <10mA				
标准检测物体 Standard detected			50×50×1(A3 铁 iron)	20×20×1(A3 铁 iron)	12×12×1(A3 铁 iron)	18×18×1(A3 铁 iron)	
重复精度 Repeated precision			0.05	0.05	0.05	0.05	
响应频率 DC/AC Response frequency			500Hz/10Hz	500Hz	500Hz/5Hz	500Hz/10Hz	
工作环境温度 Working environment			-25℃~+70℃	-25℃~+70℃	-25℃~+70℃	-25℃~+70℃	
绝缘电阻 Insulation resistance			50MΩ	50MΩ	50MΩ	50MΩ	
外壳材料 Shell material			ABC 塑料 Plastic				
防护等级 Protection grade			IP67	IP67	IP67	IP67	

可替代国内型号 Alternative model at	NJ40P-FP-A2-P1			
------------------------------	----------------	--	--	--

分类 Category		电感式位移量线性传感器 induction displacement volume linear sensor					
外形编号 Outward appearance code		XM18		XM24		XM30	
外形尺寸 Overall dimensions							
可检测物体 Detectable object		金属		金属		金属	
检测距离 Detection distance		埋入式: 5mm 非埋入式: 8mm		埋入式: 10mm 非埋入式: 15mm		埋入式: 15mm 非埋入式: 20mm	
具备型号 Model available	电流型 current type	XM18-3005PMI	XM18-3008PMI	XM24-308PMI	XM24-3010PMI	XM30-3015PMI	XM30-3020PMI
	电压型 voltage type	XM18-3005PMU	XM18-3008PMU	XM24-308PMU	XM24-3010PMU	XM30-3015PMU	XM30-3020PMU
电压范围 Voltage range		15~30VDC					
功耗 Consumption	检测时 at the time of detection	$\leq 200\text{mA} \cdots < 4\text{mA}$					
	无检测时 at the time of non-detection	$\leq 20\text{mA}$					
负载电阻 Loading resistance	电流型 current type	$0 \sim 300 \Omega$					
	电压型 voltage type	$\geq 2.2\text{K} \Omega$					
输出 Output	电流型 current type	$4 \sim 20\text{mA}$					
	电压型 voltage type	0-5V/0-10V					
输出特殊图 Output characteristic diagram		电流型特性曲线图 		电流型特性曲线图 		电流型特性曲线图 	
		电流型特性曲线图 		电流型特性曲线图 		电流型特性曲线图 	
允许电压波动 Allowable voltage undulation		$\leq 5\%$					
输出信号 output signal		PNP 模拟 PNP imitation					
线性误差 linear error		$\pm 5\%$					
工作环境温度 Working environment		$-10^{\circ}\text{C} \sim +70^{\circ}\text{C}$					
外壳材料 Shell material		塑料、金属 Plastic, Metal					
防护等级 Protection grade		Ip54					



分类 Category		电感式位移量线性传感器 induction displacement volume linear sensor					
外形编号 Outward appearance code		XMF10		XMF37		XMF38	
外形尺寸 Overall dimensions							
可检测物体 Detectable object		金属		金属		金属	
检测距离 Detection distance		埋入式: 15mm 非埋入式: 15mm		埋入式: 15mm 非埋入式: 20mm		埋入式: 40mm 非埋入式: 50mm	
具备型号 Model available	电流型 current type	XMF10-3015PMI	XMF10-3020PMI	XMF37-3015PMI	XMF37-3020PMI	XMF38-3040PMI	XMF38-3050PMI
	电压型 voltage type	XMF10-3015PMU	XMF10-3020PMU	XMF37-3015PMU	XMF37-3020PMU	XMF38-3040PMU	XMF38-3050PMU
电压范围 Voltage range		15~30VDC					
功耗 Consumption	检测时 at the time of detection	$\leq 200\text{mA} \cdots < 4\text{mA}$					
	无检测时 at the time of non-detection	$\leq 20\text{mA}$					
负载电阻 Loading resistance	电流型 current type	0~300 $\Omega$					
	电压型 voltage type	$\geq 2.2\text{K} \Omega$					
输出 Output	电流型 current type	4~20mA					
	电压型 voltage type	0-5V/0-10V					
输出特殊图 Output characteristic diagram		电流型特性曲线图 		电流型特性曲线图 		电流型特性曲线图 	
		电流型特性曲线图 		电流型特性曲线图 		电流型特性曲线图 	
允许电压波动 Allowable voltage undulation		$\leq 5\%$					
输出信号 output signal		PNP 模拟 PNP imitation					
线性误差 linear error		$\pm 5\%$					
工作环境温度 Working environment		$-10^{\circ}\text{C} \sim +70^{\circ}\text{C}$					
外壳材料 Shell material		塑料、金属 Plastic, Metal					
防护等级 Protection grade		Ip54					

电容式接近开关 Capacitance proximity switch							
外形编号 Outward appearance code	CM18		CM20	CM24	CM30		
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
埋入式 Flush	检测距离 Detection distance		0-5mm		0-8mm	0-10mm	
	直流 DC 6~ 36 VDC	NPN	NO	CM18-3005NA		CM24-3008NA	CM30-3010NA
			NC	CM18-3005NB		CM24-3008NB	CM30-3010NB
			NO+NC	CM18-3005NC		CM24-3008NC	CM30-3010NC
		PNP	NO	CM18-3005PA		CM24-3008PA	CM30-3010PA
			NC	CM18-3005PB		CM24-3008PB	CM30-3010PB
			NO+NC	CM18-3005PC		CM24-3008PC	CM30-3010PC
	交流 90-2 50 VAC	SCR 可挂 硅	NO	CM18-2005A		CM24-2008A	CM30-2010A
NC			CM18-2005B		CM24-2008B	CM30-2010B	
非埋入式 Non-flush	检测距离 Detection distance		0-8mm	0-10mm	0-12mm	0-15mm	
	直流 DC 6~ 36 VDC	NPN	NO	CM18-3008NA	CM20-3010NA	CM24-3012NA	CM30-3015NA
			NC	CM18-3008NB	CM20-3010NB	CM24-3012NB	CM30-3015NB
			NO+NC	CM18-3008NC	CM20-3010NC	CM24-3012NC	CM30-3015NC
		PNP	NO	CM18-3008PA	CM20-3010PA	CM24-3012PA	CM30-3015PA
			NC	CM18-3008PB	CM20-3010PB	CM24-3012PB	CM30-3015PB
			NO+NC	CM18-3008PC	CM20-3010PC	CM24-3012PC	CM30-3015PC
	交流 90-2 50 VAC	SCR 可挂 硅	NO	CM18-2008A	CM20-2010A	CM24-2012A	CM30-3015A
NC			CM18-2008B	CM20-2010B	CM24-2012B	CM30-3015B	
可检测体		导体及介电体 conductor and dielectric body					
消耗电流		直流 (NPN, PNP) 型 DC12V 时 8mA, 24V 时 15mA, 交流型: 10mA 以下、DC<15mA、AC<10mA					
输出电流		直流: 200mA, 交流型: 300mA、DC<3V、AC<7V					
输出电压降		直流 (NPN, PNP) 3V 以下, 交流型: 7V 以下					
响应频率		直流 50Hz, 交流型: 20Hz					
外壳材料		ABS 树脂/金属	ABS 树脂	金属	金属/ABS 树脂,		
工作环境温度		-25℃~70℃					
绝缘电阻		50MΩ					
防护结构		IEC 标准 IP65					
可替代国内型号		LJC18A3-□□		LJC24A3-□□	E2K-X15M□		

电容式接近开关 Capacitance proximity switch								
外形编号 Outward appearance code		CM34	CM35	CM48	CM12	CMF37		
外形图例 Outward appearance illustration								
外形尺寸 Overall dimensions								
埋入式 Flush	检测距离							
	直流 DC 6~ 36 VDC	NPN	NO					
			NC					
			NO+NC					
	PNP	NO						
		NC						
NO+NC								
交流 90-2 50 VAC	SCR 可挂 硅	NO						
		NC						
非埋入式 Non-flush	检测距离		0-20mm	0-25mm	0-20mm	0-4mm	0-25mm	
	直流 DC 6~ 36 VDC	NPN	NO	CM34-3020NA	CM35-3025NA	CM48-3020NA	CM12-3004NA	CMF37-3025N
			NC	CM34-3020NB	CM35-3025NB	CM48-3020NB	CM12-3004NB	CMF37-3025N
			NO+NC	CM34-3020NC	CM35-3025NC	CM48-3020NC	CM12-3004NC	CMF37-3025N
		PNP	NO	CM34-3020PA	CM35-3025PA	CM48-3020PA	CM12-3004PA	CMF37-3025PA
			NC	CM34-3020PB	CM35-3025PB	CM48-3020PB	CM12-3004PB	CMF37-3025PB
			NO+NC	CM34-3020PC	CM35-3025PC	CM48-3020PC	CM12-3004PC	CMF37-3025PC
	交流 90-2 50 VAC	SCR 可挂 硅	NO	CM34-2020A	CM35-2025A	CM48-2020A		CMF37-2025A
			NC	CM34-2020B	CM35-2025B	CM48-2020B		CMF37-2025B
	可检测体		导体及介电体					
消耗电流		直流 (NPN, PNP) 型 DC12V 时 8mA, 24V 时 15mA, 交流型: 10mA 以下 DC<15mA、AC<10mA						
输出电流		直流: 15mA, 交流型: 10mA						
输出电压降		直流 (NPN, PNP) 3V 以下, 交流型: 7V 以下						
响应频率		直流 (NPN-PNP) 50Hz, 交流型: 20Hz						
外壳材料		ABC 塑料			金属	ABC 塑料		
工作环境温度		-25℃~70℃						
绝缘电阻		50MΩ						
防护结构		IEC 标准 IP67						
可替代国内型号		E2K-C25□□						

## 一、简介 Brief Introduction

SM 系列霍尔传感器是由电压调整，霍尔电压发生器，差分放大器，施密特触发器和集电极开路的输出级组成的磁敏传感器，其输入为磁感应强度、输出是一个数字电压讯号。

SM series Hall sensor is a kind of magnet-sensitive sensor consisting of voltage regulator, Hall voltage generator, differential amplifier, Schmidt trigger and the output pole of collector open circuit. Its input is the magnetic flux density. The output is a digital voltage signal.

## 二、特点 Features

- 电源电压范围度 • 频率高 • 寿命长，体积小，安装方便 • 能直接和晶体管及 TTL、MOS 等逻辑电路接口
- Wide mains voltage range • High frequency • Long service life, compact volume, and convenient installation
- Directly connect to transistor and logic circuit port like, TTL、MOS

## 三、型号及参数 Model and parameters

外形编号 Outward appearance code	SM8	SM12	SM14	SM18	
外形图例 Outward appearance illustration					
外形尺寸 Overall dimensions					
检测距离	10mm	10mm	10mm	10mm	
电源电压	4.5~24VDC	4.5~24VDC	4.5~24VDC	4.5~24VDC	
可检测物体	永磁体 Permanent	永磁体 Permanent	永磁体 Permanent	永磁体 Permanent	
输出低电平电压	200mV	200mV	200mV	200mV	
输出高电平电流	0.1uA	0.1uA	0.1uA	0.1uA	
电源电流	8mA	8mA	8mA	8mA	
开关频率	320KHz				
工作点磁强度	22mT				
外壳材料	金属				
环境温度	~25℃~70℃				
防护等级	IEC 标准 IP67				
具备型号	NPN NO	SM8-3010NA	SM12-31010NA	SM14-3010NA	SM18-31010NA
	PNP NO	SM8-3010PA	SM12-31010PA	SM14-31010PA	SM18-31010PA
	NPN NC		SM12-31010NB	SM14-31010NB	SM18-31010NB
	PNP NC		SM12-31010PB	SM14-31010PB	SM18-31010PB

## ■ 交直流通用型接近开关

结构分类 Structural category		圆柱型 Cylinder type							
外形编号 Outward appearance code		LM12		LM18		LM24			
外形图例 Outward appearance illustration									
外形尺寸 Overall dimensions									
额定动作安装方式		齐平		非齐平		齐平		非齐平	
AD/DC	常开	LM12-4002A	LM12-4004A	LM18-4005A	LM18-4008A	LM24-4008A	LM24-4010A		
	常闭	LM12-4002B	LM12-4004B	LM18-4000B	LM18-4008B	LM24-4008B	LM24-4010B		
工作电压		20-230V AC/DC							
输出电流		100-300mA							
开关频率		15Hz							
工作温度		-25℃~+70℃							
防护等级		IP67							

## ■ 交直流通用型接近开关

结构分类 Structural category		圆柱型 Cylinder 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 Outward appearance illustration									
外形尺寸 Overall dimensions									
额定动作安装方式		齐平		非齐平		齐平		非齐平	
AD/DC	常开	LM12-4002A	LM12-4004A	LM18-4005A	LM18-4008A	LM24-4008A	LM24-4010A		
	常闭	LM12-4002B	LM12-4004B	LM18-4000B	LM18-4008B	LM24-4008B	LM24-4010B		
工作电压		20-230V AC/DC							
输出电流		100-300mA							
开关频率		15Hz							
工作温度		-25℃~+70℃							
防护等级		IP67							

**外型代号及几何尺寸**

NAMUR 传感器，亦称安全防爆型接近开关。是根据德国科技标准 NAMUR, NIN1923 技术文件数据生产，是相对于化学工业的标准，计量设计的。因 NAMUR 传感器为低电压供电，微电流输出，体积小等特点，所以在具有防爆要求的特殊场合应用。

NAMUR sensor, also called safety explosion proof proximity switch, is made according to NAMUR and NIN1923, measured and designed as per chemical industry standard.

结构分类 Structural category		传感器 Namur			
外形编号 Outward appearance code		AM8-3001LB	AM8-3002LB	AM18-3005LB	AM18-3008LB
外形图例 Outward appearance illustration					
		AM12-3002LB	AM12-3004LB	AM30-3010LB	AM30-3015LB
额定检测距离 SN: (mm)					
标准检测体 Q235 钢(mm) standard detecting object Q235		12×12×1t	12×12×1t	18×18×1t	30×30×1t
具备型号 Model	二线常闭 埋入 Embedded	AM8-3001LB	AM8-3002LB	AM18-3005LB	AM18-3008LB
	二线常闭 非埋 Non-embedded	AM12-3002LB	AM12-3004LB	AM30-3010LB	AM30-3015LB
技术参考	额定电压 Rated current	8.2V	8.2V	8.2V	8.2V
	振荡电流/停荡电流 oscillating current/stop	≥2.2mA/≤1mA	≥2.2mA/≤1mA	≥2.2mA/≤1mA	≥2.2mA/≤1mA
	负载电阻 Load resistance	1KΩ	1KΩ	1KΩ	1KΩ
	开关频率: 埋入/非埋 switch frequency,	1.5Hz/1KHz	1.5Hz/1KHz	1.5Hz/1KHz	1.5Hz/1KHz
	外壳材料 Shell material	黄铜镀镍	黄铜镀镍	黄铜镀镍	黄铜镀镍
	防护等级 Protection grade	IP67	IP67	IP67	IP67
	工作环境温度 Working environment	-20℃~70℃	-20℃~70℃	-20℃~70℃	-20℃~70℃
	外接线圈 external wiring diagram				

## ■ 舌簧传感器 reed sensor

舌簧传感器又称磁性开关，适用与气动、液动、气缸和活塞泵的位置测定亦可作限位开关用。当磁性目标接近时，舌簧闭合经放大输出开关信号。与电感式传感器比较有以下优点，能安装在金属中可排紧密安装，可穿过金属进行检测。其检测距离随检测体磁场的强弱的变化而变化。舌簧传感器不适合用于强烈震动的场合。

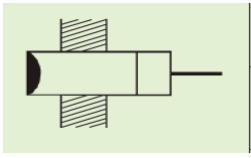
Also called magnetic switch, reed sensor is applicable for position determination of pneumatic and/or hydraulic cylinder and piston pump. It also can be used as limit switch. When the magnetic object approaches, the reed closes and sends out switch signal through magnification. Compared with inductive sensor, it has the following strong points: can be installed in metal closely and side by side and detect through metal object. Its detection distance subjects to the intensity of magnetic field of detected object. Reed sensor is not applicable in the occasion of severe vibration.

D-SM2C  34×9×7×10	CK3-J,CK-4  23×10×7×5	TAIY0-YR101  27×10×9
HWK23(GHI)  34×16×6	D-K59  33×15×12	D-A80  33×12×14
HL-30  30×12×12	TCS1-F  26×12×10	SR-401  40×32×20
TCS1-E  26×12×10	SR-402  34×35×1	

- 电感式接近开关 (E2E 系列) 防 ormmron 系列 inductive proximity switch(E2E series)anti-omron series
- 直流 3 线式 (E2E-X□E□) DC 3-line type (E2E-X□E□)

Withstand voltage 尺寸 屏蔽 Model 型号 项目 Item 检测距离 Detection distance	M8		M12		M18		M30	
	屏 蔽	非 屏 蔽	屏 蔽	非 屏 蔽	屏 蔽	非 屏 蔽	屏 蔽	非 屏 蔽
	E2E-X1R	E2E-X2ME	E2E-X2E	E2E-X5ME	E2E-X5E	E2E-X10ME	E2E-X10E	E2E-X18ME
	1.5mm±	2mm±10%	2mm ±	5 mm ±	5 mm ±	10 mm ±	10 mm ±	18 mm ±
电源电压*1、2 (使用电压范围) Voltage	DC12~24V 波动(P-P)10%以下(DC10~40)V DC12~24V (P-P) fluctuate at 10% less							
消耗电流 Consumption	13mA 以下 13mA less							
检 测 物 standard	磁性金属 magnetic metal							
标准检测物 Standard detected	铁 8×8×	铁 12×12	铁 12×	铁 15×15	铁 18×	铁 30×30×	铁 30×30	铁 54×54×
应差距离 tolerance	检测距离的 10% 以下 10% of detection distance less							
应差频率*3 tolerance	2.0kHz	0.8 kHz	1.5 kHz	0.4kHz	0.6 kHz	0.2 kHz	0.4 kHz	0.1 kHz
控制输出(开关容量)*2 Output control (switch capacity)*2	最大 200mA max 200mA							
温度影响 influence of	-25~+70°C 的范围+23°C 时检测距离的 ±10% 以内 within 10% of detection distance at +23 C in the rang							
电压影响 influence of	额定电源电压 ±15% 的范围内额定电源电压检测距离的 ±1% 以内							
残留电压 residual	2.0V 以下 (负荷电流 200mA、导线长 2m) (Load current of 200 mA and 2 m long conductor)							
绝缘电阻 insulation	50MΩ 以上 (DC500V) 充电部总体与外壳间 between the main body and crnst of charger							
材质 Material	外壳 Crust	黄铜 Cuzn						
	检测面 Detection surface	PBT						

## ● 交流 2 线式/导线式

形状	检测距离	输出形	形式
屏蔽 Shield 	M8	1.5mm	NO E2E-X1R5Y1
	M12	2mm	NO E2E-X2Y1 *1.2
			NC E2E-X2Y2
	M18	5mm	NO E2E-X5Y1 *1.2
			NC E2E-X5Y2
	M30	10mm	NO E2E-X10Y1 *1.2
			NC E2E-X10Y2
		M8	2mm
M12		5mm	NO E2E-X5MY1 *1.2
			NC E2E-X5MY2
M18		10mm	NO E2E-X10MY1 *1
			NC E2E-X10MY2
M30		18mm	NO E2E-X18MY1 *1
			NC E2E-X18MY2








## ■ 电感型接近开关 (PR 系列) 防奥托尼克斯系列 Inductance proximity switch.(Autonics kovea)

种类 Type	直流三线式 DC 3 wire switching type							
	嵌入型 Flush	外 露 型	嵌 入 型	外 露 型	嵌 入 型	外 露 型	嵌 入 型	外 露 型
型号 Model	PR08-1.5DN PR08-1.5DP PR08-1.5DN2 PR08-1.5DP2	PR08-2DN PR08-2DP PR08-2DN2 PR08-2DP	PR12-2DN PR12-2DP PR12-2DN2 PR12-2DP2 PRS12-2DN PRS12-2DP	PR12-4DN PR12-4DP PR12-4DN2 PR12-4DP2 PRS12-4DN PRS12-4DP	PR18-5DN PR18-5DP PR18-5DN2 PR18-5DP2 PRL18-5DN PRL18-5DP	PR18-8DN PR18-8DP PR18-8DN2 PR18-8DP2 PRL18-8DN PRL18-8DP	PR30-10DN PR30-10DP PR30-10DN2 PR30-10DP2 PRL30-10DN PRL30-10DP	PR30-15DN PR30-15DP PR30-15DN2 PR30-15DP2 PRL30-15DN PRL30-15DP
外型尺寸 Appearances & dimensions	 嵌入型 外露型 [M08×1, L=30mm]		 嵌入型 外露型 [12×1, L=43mm] (短型: 36, 加长型: 72mm)		 嵌入型 外露型 [M18×1, L=47(加长型:80)mm]		 嵌入型 外露型 [M30×1.5, L=58(加长型:80)mm]	
检测距离 Detecting distance	1.5mm±10%	2mm±10%	2mm±10%	4mm±10%	5mm±10%	8mm±10%	10mm±10%	15mm±10%
滞测距离 Hysteresis	不大于检测距离的 10%							
标准检测物 Standard target	8×8×1mm(铁)		12×12×1mm(铁)		18×18×1mm (铁)	25×25×1mm(铁)	30×30×1mm (铁 Iron)	45×45×1mm (铁 Iron)
设定距离 Setting distance	0 to 1.05mm	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm	
电源电压(使用电压范围) Power supply (Allowable operating)	DC12-240V (DC10-30V)							
消耗电压 Current consumption	10mA 以下 Max. 10mA							
响应频率 Response frequency	800Hz			400Hz	350Hz	200Hz	250Hz	100Hz
残留电压 residual voltage	2V 以下 Max. 2V			1.5V 以下 Max. 1.5V				
控制输出 Control	200mA							
保护电路 Protection	内置电压波动、电源逆连接、过流保护电路 (PR08、12 系列除外)							
保护结构 Protection	IP67 (IEC 规格 Standard)							

## ■ 电感型接近开关 (PR 系列)

种类 Type	直流三线式 DC 3 wire switching type					
	嵌入型 Flush	外 露 型	嵌入型 Flush	外露型 Non-flush	嵌入型 Flush	外露型 Non-flush
型号 Model	PR12-2AO PR12-2AC	PR12-4AO PR12-4AC	PR18-5AO PR18-5AC PRL18-5AO PRL18-5AC	PR18-8AO PR18-8AC PRL18-8AO PRL18-8AC	PR30-10AO PR30-10AC PRL30-10AO PRL30-10AC	PR30-15AO PR30-15AC PRL30-15AO PRL30-15AC
外型尺寸 Appearances & dimensions	 嵌入型 外露型 [M08×1, L=30mm]		 嵌入型 外露型 [M08×1, L=30mm]		 嵌入型 外露型 [M18×1, L=47(加长型:80)mm]	
检测距离 Detecting distance	2mm±10%	4mm±10%	5mm±10%	8mm±10%	10mm±10%	15mm±10%
滞测距离 Hysteresis	不大于检测距离的 10%					
标准检测物 Standard target	12×12×1mm(铁)		18×18×1mm(铁)	25×25×1mm(铁)	30×30×1mm(铁)	45×45×1mm(铁)
设定距离 Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
电源电压(使用电压范围) Power supply (Allowable operating voltage)	DC12-240V (85-264VAC)					
消耗电压 Current consumption	25mA 以下 Max.25mA					
响应频率 Response frequency	20Hz					
残留电压 residual voltage	10V 以下 Max. 10V					
控制输出 Control output	150mA			200mA		
保护电路 Protection circuit	内置电压波动保护电路 Surge protection circuit					
保护结构 Protection	IP67 (IEC 规格 Standard)					

结构分类 Structural category			光电开关 Photoelectric switch					
外形编号 Outward appearance code			G12	G13	G14	G15		
外形图例 Outward appearance illustration								
外形尺寸 Overall dimensions								
漫反射型 Diffuse type	检测距离 Detection distance		7cm	10cm	10cm	10cm		
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G12-3A07NA	G13-3A10NA	G14-3A10NA	G15-3A10NA	
			常闭 NC	G12-3A07NB	G13-3A10NB	G14-3A10NB	G15-3A10NB	
			一开一闭					
	交流 90~250 VAC	正逻辑 PNP	常开 NO	G12-3A07PA	G13-3A10PA	G14-3A10PA	G15-3A10PA	
			常闭 NC	G12-3A07PB	G13-3A10PB	G14-3A10PB	G15-3A10PB	
			一开一闭					
	继电器输出 Relay output							
	反馈反射型 Retroreflective	检测距离 Detection distance		1m	1m	1m	1m	
		直流 10-30 VDC	负逻辑 NPN	常开 NO	G12-3B1NA	G13-3B1NA	G14-3B1NA	G15-3B1NA
常闭 NC				G12-3B1NB	G13-3B1NB	G14-3B1NB	G15-3B1NB	
一开一闭								
交流 90~250 VAC		正逻辑 PNP	常开 NO	G12-3B1PA	G13-3 B1PA	G14-3 B1PA	G15-3 B1PA	
			常闭 NC	G12-3 B1PB	G13-3 B1PB	G14-3 B1PB	G15-3 B1PB	
			一开一闭					
继电器输出 Relay output								
对射型 Through beam		检测距离 Detection distance		3m	3m	3m	3m	
		直流 10-30 VDC	负逻辑 NPN	常开 NO	G12-3C3NA	G13-3 C3NA	G14-3 C3NA	G15-3 C3NA
	常闭 NC			G12-3 C3NB	G13-3 C3NB	G14-3 C3NB	G15-3 C3NB	
	一开一闭							
	交流 90~250 VAC	正逻辑 PNP	常开 NO	G12-3 C3PA	G13-3 C3PA	G14-3 C3PA	G15-3 C3PA	
			常闭 NC	G12-3 C3PB	G13-3 C3PB	G14-3 C3PB	G15-3 C3PB	
			一开一闭					
	继电器输出 Relay output							
	输出电流 DC/AC/继电器 Control output			DC:200mA				
	消耗电流 DC/AC Consumption current			DC<15Ma				
响应时间 DC/AC Response time			DC<2ms					
指向角 Directional angel			3° -10°					
检测物体 Detected object			透明或不透明 transparent or opaque body					
工作环境温度 Working environment			-25℃— +55℃					
工作环境照度 Intensity of illumination			太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under					
外壳材料 Shell material			金属 Metal	金属 Metal	金属 Metal	塑料.金属 Plastic.		
防护等级 Protection grade			IP54	IP54	IP54	IP54		

光电开关 Photoelectric switch				
G16	G17	G18	G23	G24
10cm	30cm	10cm	10cm-50cm	50cm
G16-3A10NA	G17-3A30NA	G18-3A10NA	G23-3A10NA	G24-3A50NA
G16-3A10NB	G17-3A30NB	G18-3A10NB	G23-3A10NB	G24-3A50NB
	G17-3A30NC	G18-3A10NC	G23-3A10NC	G24-3A50NC
G16-3A10PA	G17-3A30PA	G18-3A10PA	G23-3A10PA	G24-3A50PA
G16-3A10PB	G17-3A30PB	G18-3A10PB	G23-3A10PB	G24-3A50PB
	G17-3A30PC	G18-3A10PC	G23-3A10PC	G24-3A50PC
		G18-2A10LA		G24-2A50LA
		G18-2A10LB		G24-2A50LB
				G24-2A50JC
1m	2m	2m	2m	4m
G16-3B1NA	G17-3B2NA	G18-3B2NA	G23-3B2NA	G24-3B4NA
G16-3B1NB	G17-3B2NB	G18-3B2NB	G23-3B2NB	G24-3B4NB
	G17-3B2NC	G18-3B2NC	G23-3B2NC	G24-3B4NC
G16-3B1PA	G17-3B2PA	G18-3B2PA	G23-3B2PA	G24-3B4PA
G16-3B1PB	G17-3B2PB	G18-3B2PB	G23-3B2PB	G24-3B4PB
	G17-3B2PC	G18-3B2PC	G23-3B2PC	G24-3B4PC
		G18-2B2LA		G24-2B4PA
		G18-2B2LB		G24-2B4PB
				G24-2B4JC
	3m	5m	5m	5m
	G17-3C3NA	G18-3C5NA	G23-3 C5NA	G24-3 C5NA
	G17-3 C3NB	G18-3 C5NB	G23-3 C5NB	G24-3 C5NB
	G17-3 C3NC	G18-3 C5NC	G23-3 C5NC	G24-3 C5NC
	G17-3 C3PA	G18-3 C5PA	G23-3 C5PA	G24-3 C5PA
	G17-3 C3PB	G18-3 C5PB	G23-3 C5PB	G24-3 C5PB
	G17-3 C3PC	G18-3 C5PC	G23-3 C5PC	G24-3 C5PC
		G18-2 C5LA		G24-2 C5PA
		G18-2 C5LB		G24-2 C5PB
				G24-2 C5JC
		DC:200mA	AC:300mA	
		DC<15 mA	AC<10 mA	
		DC<2ms	AC<20ms	
3° -10°				
透明或不透明 transparent or opaque body				
-25℃— +55℃				
太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under 3000LX				
塑料 Plastic		金属 metal		金属 metal
IP54	IP66		IP54	

结构分类 Structural category			光电开关 Photoelectric switch					
外形编号 Outward appearance code			G25	G26	G28	G30		
外形图例 Outward appearance illustration								
外形尺寸 Overall dimensions								
漫反射型 Diffuse type	检测距离 Detection distance		70cm	70cm	50cm	20~100cm		
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G25-3A70NA	G26-3A70NA	G28-3A50NA	G30-3A70NA	
			常闭 NC	G25-3A70NB	G26-3A70NB	G28-3A50NB	G30-3A70NB	
			一开一闭	G25-3A70NC	G26-3A70NC	G28-3A50NC	G30-3A70NC	
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G25-2A70LA	G26-2A70LA	G28-2A50LA	G30-2A70LA	
			常闭 NC	G25-2A70LB	G26-2A70LB	G28-2A50LB	G30-2A70LB	
			继电器输出 Relay output	G25-2A70JC	G26-2A70JC	G28-2A50JC	G30-2A70JC	
	反馈反射型 Retroreflective	检测距离 Detection distance		4m	4m	3m	3~5cm	
		直流 10-30 VDC	负逻辑 NPN	常开 NO	G25-3B4NA	G26-3B4NA	G28-3B3NA	G30-3B3NA
				常闭 NC	G25-3B4NB	G26-3B4NB	G28-3B3NB	G30-3B3NB
一开一闭				G25-3B4NC	G26-3B4NC	G28-3B3NC	G30-3B3NC	
交流 90~250 VAC		SCR 可挂硅 Controllable silicon	常开 NO	G25-3B4PA	G26-3B4PA	G28-3B3PA	G30-3B3PA	
			常闭 NC	G25-3B4PB	G26-3B4PB	G28-3B3PB	G30-3B3PB	
			一开一闭	G25-3B4PC	G26-3B4PC	G28-3B3PC	G30-3B3PC	
交流 90~250 VAC		SCR 可挂硅 Controllable silicon	常开 NO	G25-2B4LA	G26-2B4LA	G28-2B3LA	G30-2B3LA	
			常闭 NC	G25-2B4LB	G26-2B4LB	G28-2B3LB	G30-2B3LB	
			继电器输出 Relay output	G25-2B4JC	G26-2B4JC	G28-2B3JC	G30-2B3JC	
对射型 Through beam	检测距离 Detection distance		7m	10m	10m	10m		
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G25-3C7NA	G26-3C101NA	G28-3C101NA	G30-3C101NA	
			常闭 NC	G25-3C7NB	G26-3C101NB	G28-3C101NB	G30-3C101NB	
			一开一闭	G25-3C7NC	G26-3C101NC	G28-3C101NC	G30-3C101NC	
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G25-3C7PA	G26-3C101PA	G28-3C101PA	G30-3C101PA	
			常闭 NC	G25-3C7PB	G26-3C101PB	G28-3C101PB	G30-3C101PB	
			一开一闭	G25-3C7PC	G26-3C101PC	G28-3C101PC	G30-3C101PC	
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G25-2C7LA	G26-2C101LA	G28-2C101LA	G30-2C101LA	
			常闭 NC	G25-2C7LB	G26-2C101LB	G28-2C101LB	G30-2C101LB	
			继电器输出 Relay output	G25-2C7JC	G26-2C101LC	G28-2C101LC	G30-2C101JC	
输出电流 DC/AC/继电器 Control output			DC: 200mA, AC:300mA, relay:2A					
消耗电流 DC/AC Consumption current			DC:<15mA, AC:<10mA					
响应时间 DC/AC Response time			DC<2mS AC<20mS					
指向角 Directional angel			3°-10°					
检测物体 Detected object			透明或不透明 transparent or opaque body					
工作环境温度 Working environment			-25℃— +55℃					
工作环境照度 Intensity of illumination			太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under					
外壳材料 Shell material			塑料 Plastic	金属 Metal	金属 Metal	塑料 Plastic		
防护等级 Protection grade			IP54	IP50	IP54	IP6		

## 光电开关 Photoelectric switch

G33	G35	G36	G40	G44
10cm	50cm	20cm	10cm-50cm	30cm
G33-3A10NA	G35-3A50NA	G36-3A20NA	G40-3A10NA	G44-3A30NA
G33-3A10NB	G35-3A50NB	G36-3A20NB	G40-3A10NB	G44-3A30NB
G33-3A10NC	G35-3A50NC	G36-3A20NC		
G33-3A10PA	G35-3A50PA	G36-3A20PA	G40-3A10PA	G44-3A30PA
G33-3A10PB	G35-3A50PB	G36-3A20PB	G40-3A10PB	G44-3A30PB
G33-3A10PC	G35-3A50PC	G36-3A20PC		
	G35-2A50LA			
	G35-2A50LB			
	G35-2A50JC			
1m	3m	2m	1m	3m
G33-3B1NA	G35-3B3NA	G36-3B2NA	G40-3B1NA	G44-3B3NA
G33-3B1NB	G35-3B3NB	G36-3B2NB	G40-3B1NB	G44-3B3NB
G33-3B1NC	G35-3B3NC	G36-3B2NC		
G33-3B1PA	G35-3B3PA	G36-3B2PA	G40-3B1PA	G44-3B3PA
G33-3B1PB	G35-3B3PB	G36-3B2PB	G40-3B1PB	G44-3B3PB
	G35-3B3PC	G36-3B2PC		
	G35-2B3LA			
	G35-2B3LB			
	G35-2B3JC			
3m	5m	5m	3m	5m
G33-3C3NA	G35-3C5NA	G36-3C5NA	G40-3C3NA	G44-3C5NA
G33-3C3NB	G35-3C5NB	G36-3C5NB	G40-3C3NB	G44-3C5NB
G33-3C3NC	G35-3C5NC	G36-3C5NC		
G33-3C3PA	G35-3C5PA	G36-3C5PA	G40-3C3PA	G44-3C5PA
G33-3C3PB	G35-3C5PB	G36-3C5PB	G40-3C3PB	G44-3C5PB
G33-3C3PC	G35-3C5PC	G36-3C5PC		
	G35-2C5LA			
	G35-2C5LB			
	G35-2C5JC			
DC:200mA		AC:300mA		
DC<15 mA		AC<10 mA		
DC<2ms		AC<20ms		
3°-10°				
透明或不透明 transparent or opaque body				
-25℃ — +55℃				
太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under 3000LX				
塑料 Plastic	金属 metal		塑料 Plastic	金属 metal
IP54	IP54	IP54	IP54	IP54

结构分类 Structural category			光电开关 Photoelectric switch				
外形编号 Outward appearance code			G50	G54	G55	G64	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
漫反射型 Diffuse type	检测距离 Detection distance		30cm 50cm	20cm	20cm	10cm	
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G50-3A30NA	G54-3A20NA	G55-3A20NA	G64-3A10NA
			常闭 NC	G50-3A30NB	G54-3A20NB	G55-3A20NB	G64-3A10NB
			一开一闭	G50-3A30NC	G54-3A20NC		G64-3A10NC
	正逻辑 PNP	常开 NO	G50-3A30PA	G54-3A20PA	G55-3A20PA	G64-3A10PA	
		常闭 NC	G50-3A30PB	G54-3A20PB	G55-3A20PB	G64-3A10PB	
		一开一闭	G50-3A30PC	G54-3A20PC		G64-3A10PC	
	交流 90~250 VAC	SCR 可挂硅 Controllabl	常开 NO				
			常闭 NC				
	继电器输出 Relay output		G50-2A30JC				
反馈反射型 Retroreflective	检测距离 Detection distance		4m	2m	2cm	1.5m	
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G50-3B4NA	G54-3B2NA	G55-3B2NA	G64-3B2NA
			常闭 NC	G50-3B4NB	G54-3B2NB	G55-3B2NB	G64-3B2NB
			一开一闭	G50-3B4NC	G54-3B2NC		G64-3B2NC
	正逻辑 PNP	常开 NO	G50-3B4PA	G54-3B2PA	G55-3B2PA	G64-3B2PA	
		常闭 NC	G50-3B4PB	G54-3B2PB	G55-3B2PB	G64-3B2PB	
		一开一闭	G50-3B4PC	G54-3B2PC		G64-3B2PC	
	交流 90~250 VAC	SCR 可挂硅 Controllabl	常开 NO	G50-2B4LA			
			常闭 NC	G50-2B4LB			
	继电器输出 Relay output		G50-2B4JC				
对射型 Through beam	检测距离 Detection distance		5m	5m	4cm	3m	
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G50-3C5NA	G54-3C5NA	G55-3C4NA	G64-3C3NA
			常闭 NC	G50-3C5NB	G54-3C5NB	G55-3C4NB	G64-3C3NB
			一开一闭	G50-3C5NC	G54-3C5NC		G64-3C3NC
	正逻辑 PNP	常开 NO	G50-3C5PA	G54-3C5PA	G55-3C4PA	G64-3C3PA	
		常闭 NC	G50-3C5PB	G54-3C5PB	G55-3C4PB	G64-3C3PB	
		一开一闭	G50-3C5PC	G54-3C5PC		G64-3C3PC	
	交流 90~250 VAC	SCR 可挂硅 Controllabl	常开 NO	G50-2C5LA			
			常闭 NC	G50-2C5LB			
	继电器输出 Relay output		G50-2C5JC				
输出电流 DC/AC/继电器 Control output			DC: 200mA、AC:300mA、relay:2A				
消耗电流 DC/AC Consumption current			DC:<15mA、AC:<10mA				
响应时间 DC/AC Response time			DC<2mS AC<20mS				
指向角 Directional angel			3°-10°				
检测物体 Detected object			透明或不透明 transparent or opaque body				
工作环境温度 Working environment			-25℃—+55℃				
工作环境照度 Intensity of illumination			太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under				
外壳材料 Shell material			塑料 Plastic		金属 Metal	塑料 Plastic	
防护等级 Protection grade			IP54	IP54	IP54	IP54	

光电开关 Photoelectric switch				
G68	G70	G71	G72	G180
	20~100cm	50cm	40cm	10cm
	G70-3A20NA	G71-3A50NA	G72-3A40NA	G180-3A10NA
	G70-3A20NB	G71-3A50NB	G72-3A40NB	G180-3A10NB
	G70-3A20NC	G71-3A50NC	G72-3A40NC	G180-3A10NC
	G70-3A20PA	G71-3A50PA	G72-3A40PA	G180-3A10PA
	G70-3A20PB	G71-3A50PB	G72-3A40PB	G180-3A10PB
	G70-3A20PC	G71-3A50PC	G72-3A40PC	G180-3A10PC
	G70-2A20LA	G71-2A50LA	G72-2A40LA	G180-2A10LA
	G70-2A20LB	G71-2A50LB	G72-2A40LB	G180-2A10LB
	2m	2m	3m	2m
	G70-3B2NA	G71-3B2NA	G72-3B3NA	G180-3B2NA
	G70-3B2NB	G71-3B2NB	G72-3B3NB	G180-3B2NB
	G70-3B2NC	G71-3B2NC	G72-3B3NC	G180-3B2NC
	G70-3B2PA	G71-3B2PA	G72-3B3PA	G180-3B2PA
	G70-3B2PB	G71-3B2PB	G72-3B3PB	G180-3B2PB
	G70-3B2PC	G71-3B2PC	G72-3B3PC	G180-3B2PC
	G70-2B2LA	G71-2B2LA	G72-2B3LA	G180-2B2LA
	G70-2B2LB	G71-2B2LB	G72-2B3LB	G180-2B2LB
	5m	5m	5m	5m
G68-3C5NA	G70-3C5NA	G71-3C5NA	G72-3C5NA	G180-3C5NA
G68-3C5NB	G70-3C5NB	G71-3C5NB	G72-3C5NB	G180-3 C5NB
G68-3C5NC	G70-3C5NC	G71-3C5NC	G72-3C5NC	G180-3 C5NC
G68-3C5PA	G70-3C5PA	G71-3C5PA	G72-3C5PA	G180-3 C5PA
G68-3C5PB	G70-3C5PB	G71-3C5PB	G72-3C5PB	G180-3 C5PB
G68-3C5PC	G70-3C5PC	G71-3C5PC	G72-3C5PC	G180-3 C5PC
	G70-2C5LA	G71-2C5LA	G72-2C5LA	G180-2 C5LA
	G70-2C5LB	G71-2C5LB	G72-2C5LB	G180-2 C5LB
DC:200mA		AC:300mA		
DC<15 mA		AC<10 mA		
DC<2ms		AC<20ms		
3° -10°				
透明或不透明 transparent or opaque body				
-25℃— +55℃				
太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under 3000LX				
塑料 Plastic			金属 metal	塑料 Plastic
IP54	IP66	IP54	IP54	IP66

结构分类 Structural category			光电开关 Photoelectric switch					
外形编号 Outward appearance code			G74	G75	G76	G77		
外形图例 Outward appearance illustration								
外形尺寸 Overall dimensions								
漫反射型 Diffuse type	检测距离 Detection distance		70cm	80cm		30cm		
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G74-3A70NA	G75-3A80NA		G77-3A30NA	
			常闭 NC	G74-3A70NB	G75-3A80NB		G77-3A30NB	
			一开一闭	G74-3A70NC	G75-3A80NC		G77-3A30NC	
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G74-2A70LA	G75-2A80LA		G77-2A30LA	
			常闭 NC	G74-2A70LB	G75-2A80LB		G77-2A30LB	
			继电器输出 Relay output	G74-2A70JC	G75-2A80JC			
	反馈反射型 Retroreflective	检测距离 Detection distance		4m	3m		3m	
		直流 10-30 VDC	负逻辑 NPN	常开 NO	G74-3B4NA	G75-3B3NA		G77-3B3NA
				常闭 NC	G74-3B4NB	G75-3B3NB		G77-3B3NB
一开一闭				G74-3B4NC	G75-3B3NC		G77-3B3NC	
交流 90~250 VAC		SCR 可挂硅 Controllable silicon	常开 NO	G74-2B4LA	G75-2B3LA		G77-2B3LA	
			常闭 NC	G74-2B4LB	G75-2B3LB		G77-2B3LB	
			继电器输出 Relay output	G74-2B4JC	G75-2B3JC			
对射型 Through beam		检测距离 Detection distance		8m	8m	10m-50m	5m	
		直流 10-30 VDC	负逻辑 NPN	常开 NO	G74-3C8NA	G75-3C8NA	G76-3C101NA	G77-3C5NA
				常闭 NC	G74-3C8NB	G75-3C8NB	G76-3C101NB	G77-3C5NB
	一开一闭			G74-3C8NC	G75-3C8NC	G76-3C101NC	G77-3C5NC	
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G74-2C8LA	G75-2C8LA	G76-2C101LA	G77-2C5LA	
			常闭 NC	G74-2C8LB	G75-2C8LB	G76-2C101LB	G77-2C5LB	
			继电器输出 Relay output	G74-2C8JC	G75-2C8JC	G76-2C101JC		
	输出电流 DC/AC/继电器 Control output			DC: 200mA、AC:300mA、relay:2A				
	消耗电流 DC/AC Consumption current			DC:<15mA、AC:<10mA				
	响应时间 DC/AC Response time			DC<2mS AC<20mS				
指向角 Directional angel			3°-10°					
检测物体 Detected object			透明或不透明 transparent or opaque body					
工作环境温度 Working environment			-25℃— +55℃					
工作环境照度 Intensity of illumination			太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under					
外壳材料 Shell material			塑料 Plastic	金属 Metal	塑料 Plastic			
防护等级 Protection grade			IP54	IP54	IP54			



## 光电开关 Photoelectric switch

G78	G80	G85	G86
40cm	80cm	1m	70cm
G78-3A40NA	G80-3A80NA	G85-3A1NA	G86-3A70NA
G78-3A40NB	G80-3A80NB	G85-3A1NB	G86-3A70NB
G78-3A40NC	G80-3A80NC	G85-3A1NC	G86-3A70NC
G78-3A40PA	G80-3A80PA	G85-3A1PA	G86-3A70PA
G78-3A40PB	G80-3A80PB	G85-3A1PB	G86-3A70PB
G78-3A40PC	G80-3A80PC	G85-3A1PC	G86-3A70PC
G78-2A40LA	G80-2A80LA	G85-2A1LA	G86-2A70LA
G78-2A40JC	G80-2A80JC	G85-2A1JC	G86-2A70JC
2m	3m	5m	4m
G78-3B2NA	G80-3B3NA	G85-3B5NA	G86-3B4NA
G78-3B2NB	G80-3B3NB	G85-3B5NB	G86-3B4NB
G78-3B2NC	G80-3B3NC	G85-3B5NC	G86-3B4NC
G78-3B2PA	G80-3B3PA	G85-3B5PA	G86-3B4PA
G78-3B2PB	G80-3B3PB	G85-3B5PB	G86-3B4PB
G78-3B2PC	G80-3B3PC	G85-3B5PC	G86-3B4PC
G78-2B2LA	G80-2B3LA	G85-2B5LA	G86-2B4LA
G78-2B2JC	G80-2B3JC	G85-2B5JC	G86-2B4JC
5m	5m	10m	10m
G78-3C5NA	G80-3C5NA	G85-3C101NA	G86-3C101NA
G78-3C5NB	G80-3C5NB	G85-3C101NB	G86-3C101NB
G78-3C5NC	G80-3C5NC	G85-3C101NC	G86-3C101NC
G78-3C5PA	G80-3C5PA	G85-3C101PA	G86-3C101PA
G78-3C5PB	G80-3C5PB	G85-3C101PB	G86-3C101PB
G78-3C5PC	G80-3C5PC	G85-3C101PC	G86-3C101PC
G78-2C5LA	G80-2C5LA	G85-2C101LA	G86-2C101LA
	G80-2C5JC	G85-2C101JC	G86-2C101JC
DC:200mA		AC:300mA	
DC<15 mA		AC<10 mA	
DC<2ms		AC<20ms	
3° -10°			
透明或不透明 transparent or opaque body			
-25℃— +55℃			
太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under 3000LX			
塑料 Plastic	塑料 Plastic	金属 metal	
IP54	IP54	IP54	

结构分类 Structural category			光电开关 Photoelectric switch				
外形编号 Outward appearance code			G90	G100	G110	G139	
外形图例 Outward appearance illustration							
外形尺寸 Overall dimensions							
漫反射型 Diffuse type	检测距离 Detection distance		70cm	1m		1m	
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G90-3A70NA	G100-3A1NA		G139-3A1NA
			常闭 NC	G90-3A70NB	G100-3A1NB		G139-3A1NB
			一开一闭	G90-3A70NC	G100-3A1NC		G139-3A1NC
		正逻辑 PNP	常开 NO	G90-3A70PA	G100-3A1PA		G139-3A1PA
			常闭 NC	G90-3A70PB	G100-3A1PB		G139-3A1PB
			一开一闭	G90-3A70PC	G100-3A1PC		G139-3A1PC
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G90-2A70LA	G100-3A1LA		G139-2A1LA
			常闭 NC				
	继电器输出 Relay output			G90-2A70JC	G100-3A1JC		G139-2A1JC
反馈反射型 Retroreflective	检测距离 Detection distance		5m	5m		5m	
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G90-3B5NA	G100-3B5NA		G139-3B5NA
			常闭 NC	G90-3B5NB	G100-3B5NB		G139-3B5NB
			一开一闭	G90-3B5NC	G100-3B5NC		G139-3B5NC
		正逻辑 PNP	常开 NO	G90-3B5PA	G100-3B5PA		G139-3B5PA
			常闭 NC	G90-3B5PB	G100-3B5PB		G139-3B5PB
			一开一闭	G90-3B5PC	G100-3B5PC		G139-3B5PC
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G90-2B5LA	G100-2B5LA		G139-2B5LA
			常闭 NC				
	继电器输出 Relay output			G90-2B5JC	G100-2B5JC		G139-2B5JC
对射型 Through beam	检测距离 Detection distance		10m	10m	5m	10m	
	直流 10-30 VDC	负逻辑 NPN	常开 NO	G90-3C101NA	G100-3C101NA	G110-3C5NA	G139-3C101NA
			常闭 NC	G90-3C101NB	G100-3C101NB	G110-3C5NB	G139-3C101NB
			一开一闭	G90-3C101NC	G100-3C101NC	G110-3C5NC	G139-3C101NC
		正逻辑 PNP	常开 NO	G90-3C101PA	G100-3C101PA	G110-3C5PA	G139-3C101PA
			常闭 NC	G90-3C101PB	G100-3C101PB	G110-3C5PB	G139-3C101PB
			一开一闭	G90-3C101PC	G100-3C101PC	G110-3C5PC	G139-3C101PC
	交流 90~250 VAC	SCR 可挂硅 Controllable silicon	常开 NO	G90-2C101LA	G100-2C101LA	G110-2C5LA	G139-2C101LA
			常闭 NC				
	继电器输出 Relay output			G90-2C101LC	G100-2C101JC		G139-2C101JC
输出电流 DC/AC/继电器 Control output			DC: 200mA、AC:300mA、relay:2A				
消耗电流 DC/AC Consumption current			DC:<15mA、 AC:<10mA				
响应时间 DC/AC Response time			DC<2mS AC<20mS				
指向角 Directional angel			3°-10°				
检测物体 Detected object			透明或不透明 transparent or opaque body				
工作环境温度 Working environment			-25℃— +55℃				
工作环境照度 Intensity of illumination			太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under				
外壳材料 Shell material			金属 Metal G39 有塑壳				
防护等级 Protection grade			IP54	IP54	TP66	IP54	

## 光电开关 Photoelectric switch

G56	G60	G63	G65	G57
17m	1cm	3cm	1cm	1.5cm
G56-3E01NA	G60-3E01NA	G63-3E03NA	G65-3E01NA	G57-3E02NA
G56-3E01NB	G60-3E01NB	G63-3E03NB	G65-3E01NB	G57-3E02NB
G56-3E01NC	G60-3E01NC	G63-3E03NC	G65-3E01NC	
G56-3E01PA	G60-3E01PA	G63-3E03PA	G65-3E01PA	G57-3E02PA
G56-3E01PB	G60-3E01PB	G63-3E03PB	G65-3E01PB	G57-3E02PB
G56-3E01PC	G60-3E01PC	G63-3E03PC	G65-3E01PC	
		DC:200mA	AC:300mA	
		DC<15 mA	AC<10 mA	
		DC<2ms	AC<20ms	
		3° -10°		
		透明或不透明 transparent or opaque body		
		-25℃— +55℃		
		太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under 3000LX		
塑料 Plastic	金属 metal	金属 metal 或塑料 Plastic	金属 metal	塑料 Plastic
IP54				

包装、纺织机械常用光电开关 Photoelectric switch commonly used in package and textile machinery			
外形图例 Outward appearance illustration			
外形尺寸 Overall dimensions			
工作电压 Working voltage	AC220V/110V	AC220V	AC220V
功耗 Consumption power	3W		
检测距离 Detection distance	500mm.1m.5m	500mm.3m.5m	70cm
可检测物体 Detected object	不透明体、半透明体 opaque body and semitransparent body		
延时时间 Delayed time	1-10s		
控制输出 Control output	AC220V 2A		
工作环境照度 Intensity of illumination working	太阳光 10000LX 以下 Sunlight under 10000LX 白炽灯 3000LX 以下 incandescent lamp under 3000LX		
工作环境温度 Working environment temperature	工作时 while working -15~+55℃, 保存时 while storing: -25~+70℃		
防护等级 Protection grade	IEC 标准 IP65 IEC standard IP65		
具备型号 Model available	GDN16-CF500W GDN16-CF1W	GDN15-CT5(10)W GDN15-CQ3W GDN15-CF500W	YT523B
适用范围 Applicable range	工业自动生产中的位置检测和料位控制, 纺织机械行业互换纺织部 YT523B 型产品, 烟草切丝机自动线 Applicable for position detection and level control, and replaceable for Model YT523 product in textile mechanical industry and tobacco cutter automatic line	本红外漫反射式光电开关是用以取代老式水银开关与各种型号的清开棉设备配套使用, 对棉箱内的棉层高度进行连续检测及自动控制, 也适用于其它类似场合的自控系统中, 作各种位置检测。 This infrared ray diffused type photoelectric switch can take the place of outdated mercury switch. It can be used together with various unmixed waste cotton openers to continuously check and automatic control the cotton height inside the cotton case. In addition, it applies to other automatic control system at similar occasions and conducts various position detections.	

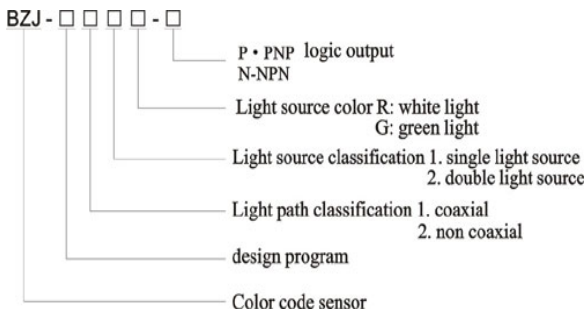
## 一、概述

BZJ 系列色标传感器采用光发射接收原理，发生调制光，接收补测物体的发射光，并根据接收信号的强弱来区分不同的颜色或判别物体的存在与否。早包装机械、印刷机械、纺织及造纸机械的自控系统中作为传感器与其他仪表配套使用，对色标或其他可作为标记的图案色块、线条、或物体的有无进行检测，可实现自动定位、辨色、纠偏、对版、计数等功能。本系列传感器采用光学技术、半导体电子技术、调制解调技术，具有灵敏度高，响应速度快，抗背景光能力强、结构紧凑，使用方便等特点。

### I. General introduction

BZJ Series Color Code Sensor applies the light emitting and receiving principle. It will send out modulating light, receive the reflecting lights from detected object, and distinguish the color or recognize the existence of objects according the intensity of the receiving signals. It can serve for sensor in the automatic control systems for packing machinery, printing machinery, texture and paper making machinery, etc and be used with other instruments to detect the existence of the object marked with color code, pattern code, line or others. It has the functions of self-locating, recognizing colors, rectifying deviation, pattern checking and countering. The sensor applies optical technique, semi-conductor electronic technique, and modulation demodulation, and has the features of high sensitivity, quick response speed, strong anti-background interference, compact structure and convenient operation, etc.

## 二、型号、技术参数 II. Model and technical parameters



	外形尺寸 mm Size (mm)	85×57×28	光点 Facula	回点 Circular
	供电电压 Supply Voltage	10-30VDC	响应时间 Response time	50uS
	使用温度环境 Ambient temperature	0-50℃	输出电流 Output current	<200mA
	检测方式 Detecting method	同轴的射式 Coaxial reflection	输出方式 Output type	NPN
	检测距离 Sensing distance	10mm±2mm	外壳材料 Shell material	金属 metal
	光源色谱 Chromatogram of light	红、绿、兰、白 Red、Green、Blue、White	引出线长度 Cable length	2m
		外形尺寸 mm Size (mm)	38×62×100	光点 Facula
供电电压 Supply Voltage		10-30VDC	响应时间 Response time	50uS
使用温度环境 Ambient temperature		0-50℃	输出电流 Output current	<200mA
检测方式 Detecting method		同轴的射式 Coaxial reflection	输出方式 Output type	NPN、模拟量输出
检测距离 Sensing distance		9mm	外壳材料 Shell material	金属 metal
光源色谱 Chromatogram of light		红、绿、兰、白 Red、Green、Blue、White	引出线长度 Cable length	2m
		外形尺寸 mm Size (mm)	23×40×56	光点 Facula
	供电电压 Supply Voltage	10-30VDC	响应时间 Response time	200uS/500uS
	使用温度环境 Ambient temperature	0-50℃	输出电流 Output current	<200mA
	检测方式 Detecting method	同轴的射式 Coaxial reflection	输出方式 Output type	NPN
	检测距离 Sensing distance	9mm	外壳材料 Shell material	金属 metal
	光源色谱 Chromatogram of light	红、绿、兰、白 Red、Green、Blue、White	引出线长度 Cable length	2m

	外形尺寸 mm Size (mm)	28×48×80	光点 Facula	回点 Circular
	供电电压 Supply Voltage	10-30VDC	响应时间 Response time	0.1-1ms
	使用温度环境 Ambient temperature	-15℃~65℃	输出电流 Output current	<200mA
	检测方式 Detecting method	同轴的射式 Coaxial reflection	输出方式 Output type	NPN 或 PNP
	检测距离 Sensing distance	10mm±2mm	外壳材料 Shell material	金属 metal
	光源色谱 Chromatogram of light	红、绿、兰、白 Red、Green、Blue、White	引出线长度 Cable length	2m

■ 安全可靠的光幕传感器

- 适用于自动化流水线、电梯、危险禁区、锻压机、冲剪机床、切纸机等安全检测，起保护作用。
- 采用同步扫描技术，光路密集，无工作盲区，抗干扰能力强，安装方便。
- 具备抗相互干扰功能，可以2套以上紧贴安装。
- 具有故障自检功能、掉电停止、内部器件失灵停止、连接失灵停止、物体入侵停止信号输出。
- 配套专用控制器，提供强大的控制功能。
- 可与SICK、STI、KEYENCE、Honeywell等公司同类产品互换。

■ Safe and reliable optic screen sensor

- Applicable for the safety detection of automatic assembly line, elevator, danger restricted zone, metal forming machine, punching & shearing machine tool, paper cutter and so on and has protection function.
- Adopting synchronism scanning technology, concentrated beam path, non working blind area, strong anti-interference ability, and convenient installation.
- Resistance to mutual interference function. It is possible to closely mount more than 2 sets of devices.
- Fault self-check, function, power failure stop, inner component fault stop, connection fault stop, object invading stop signal output.
- Attached with specific control supplying powerful control function.
- Replaceable for similar products made by SICK, STI, KEYENCE, Honeywell Corp.



检测方式 Detection way	型号 Model	检测距离 Detection distance	光轴距 Optic axis distance	光轴数 Optic axis number	检测幅宽 Detection width	最小可检出物体 Min detectable object
对射式 Trough-beam	GM40-4	≤3m	40mm	4	120mm	φ50mm
	GM40-6			6	200mm	
	GM40-8			8	280mm	
	GM40-10			10	360mm	
	GM40-12			12	440mm	
	GM40-16			16	600mm	
	GM40-20			20	760mm	
	GM40-24			24	920mm	
	GM40-32			32	1240mm	
	GM40-40			40	1560mm	
	GM40-56			56	2220mm	
GM40-64	64	2520mm				
对射式 Trough-beam	GM20-4	≤3m	20mm	4	60mm	φ30mm
	GM20-6			6	100mm	
	GM20-8			8	140mm	
	GM20-10			10	180mm	
	GM20-12			12	220mm	
	GM20-16			16	300mm	
	GM20-20			20	380mm	
	GM20-24			24	460mm	
	GM20-32			32	620mm	
	GM20-40			40	780mm	
	GM20-56			56	1100mm	
GM20-64	64	1260mm				

## ■ GM 光幕传感器 GM optic screen sensor

## ● 性能 Performance

电源电压 Power voltage	12VDC±10%脉动 (P-P) 10%以下 Under 12 VDC ± pulsation(P-P)10%
消耗电流 Consumption current	100mA 以下 Under 100mA
响应时间 Response time	20mS 以下 Under 20mS
输出形式 Output form	集电极开路 NPN 型: 灌电流 100mA, 残余电压 1.6V Collector open circuit NPN type: current 100mA, residual voltage 1.6V
输出状态 Output state	所有光轴受光时 ON ON when all the optic axis is photic
光源 Optic source	红外线 LED Infrared ray LED
连接方式 Connection way	配专用电缆连接器 With specific cable connector
壳体材料 Shell material	外壳: 铝合金, 滤色罩: PMMA Shell: A1 alloy, color filter cover: PMMA
耐环境光 Environment-resisting light	白炽灯: 受光面照度 3000Lx, 太阳光: 受光面照度 10000Lx Incandescent lamp: intensity of illumination of photic surface 3000Lx, sunlight: intensity of illumination of photic surface 10000Lx.
环境温度 Ambient temperature	工作时: -10~50° (但不结冰), 存储时: -40~70°-10~55(do not freeze)while working -40~70 while storing
环境湿度 Environment humidity	工作时: 35~85%RH, 存储时: 35~95%RH 35~85%RH while working, 35~39%RH while storing
振动 Vibration	振动频率: 10~50Hz, 振动幅度: 1.5mm, X、Y、Z 方向各 2 小时 Vibration frequency: 10~55Hz, vibration range: 1.5mm, each direction of X、Y、Z 2 hours
冲击 Shock	加速度: 500/s <sup>2</sup> (约 50 克) X、Y、Z 方向各 3 次 Acceleration: 500/s <sup>2</sup> (about 50g) each direction of X、Y、Z for 3 times

## ● 控制器性能

型号 Type	GMK 光幕控制器
电源电压 Power voltage	200~220VAC±10%, 50/60Hz, 3.5V
消耗电流 Consumption current	100mA 以下
响应时间 Response time	200mS 以下
输出 Output	触点: COS φ=1, AC250V5A, 常开常闭
光源 Optic source	红外 LED
延时功能	0.01~5S 延时接通, 接通延时
指示灯	电源指示灯 (G), 动作指示灯 (R)
壳体材料 Shell material	ABS
环境温度 Ambient temperature	工作时: -10~50° (但不结冰), 存储时: -40~70°
环境湿度 Environment humidity	工作时: 35~85%RH, 存储时: 35~95%RH
振动 Vibration	振动频率: 10~50Hz, 振动幅度: 1.5mm, X、Y、Z 方向各 2 小时
冲击 Shock	加速度: 500/s <sup>2</sup> (约 50 克) X、Y、Z 方向各 3 次 Acceleration: 500/s <sup>2</sup> (about 50g) 3 times for X、Y、Z each

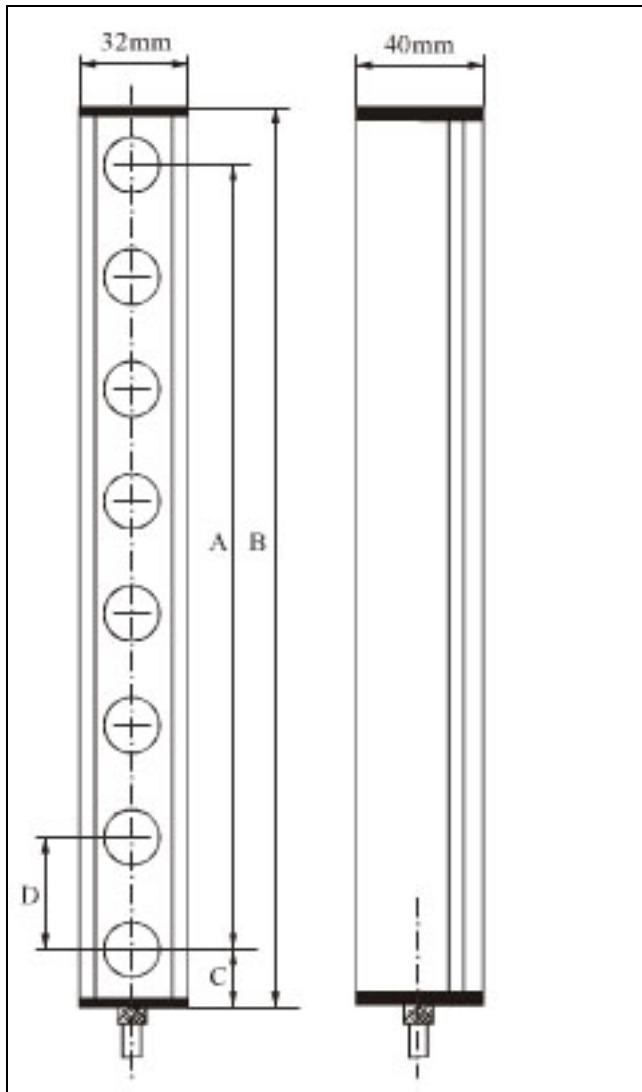
## ● 电缆连接器 cable connector

外形 Overall	型号 Type	长度	用途 Application
	◎GML-5-4	5m	四芯投光器使用 For four-core projector
	◎GML-5-5	5m	五芯投光器使用 For five-core projector



## ● 外形尺寸 Overall dimensions

单位 Unit: mm

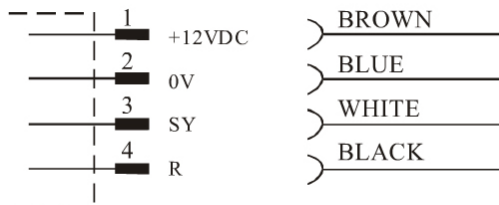


型号 TYPE	A	B	C	D
GM40-4	120	180	30	40
GM40-6	200	260	30	40
GM40-8	280	340	30	40
GM40-10	360	420	30	40
GM40-12	440	500	30	40
GM40-16	600	660	30	40
GM40-20	760	820	30	40
GM40-24	920	980	30	40
GM40-32	1240	1300	30	40
GM40-40	1560	1620	30	40
GM40-56	2220	2260	30	40
GM40-64	2520	2580	30	40
GM20-4	60	120	30	20
GM20-6	100	160	30	20
GM20-8	140	200	30	20
GM20-10	180	240	30	20
GM20-12	220	280	30	20
GM20-16	300	360	30	20
GM20-20	380	440	30	20
GM20-24	460	520	30	20
GM20-32	620	680	30	20
GM20-40	780	840	30	20
GM20-56	1100	1160	30	20
GM20-64	1260	1320	30	20

## ■ 接线示意图 Connector schematic

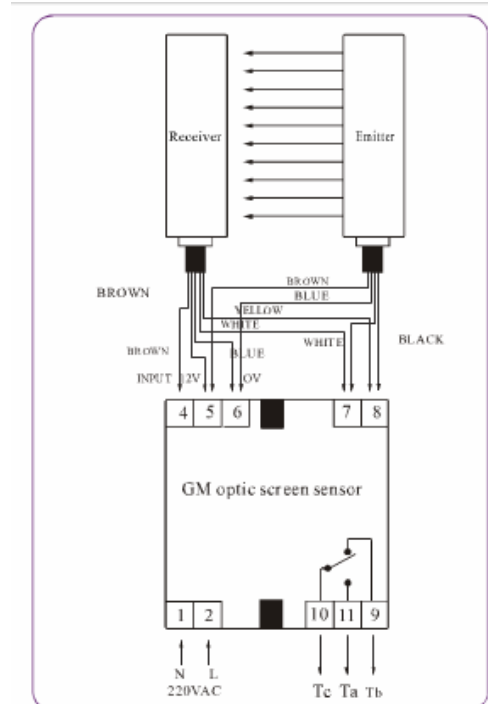
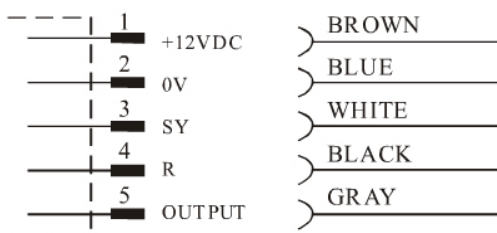
## ● GM 投光器

Projector



## ● GM 受光器

Light receiver



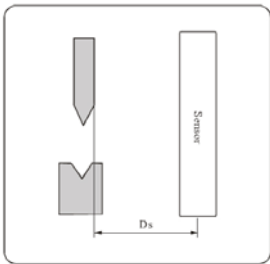
■ GM 光幕传感器 GM optic screen sensor

GMK 控制器底座端子 GMK light screen control	投光器电缆 light receiver cable	受光器电缆 Projector Cable
1: 220VAC (N) 输入 220VAC (N) Input		
2: 220VAC (L) 输入 220VAC (L) Input		
3: 空脚 empty pin		
4: 光幕信号输入 (IN) input of light screen signal (IN)		
5: 正极 Anode	棕色线 (1) BROWN	棕色线 (1) BROWN
6: 负极 Cathode	兰色线 (2) BLUE	兰色线 (2) BLUE
7: SY	白色线 (3) WHITE	白色线 (3) WHITE
8: R	黑色线 (4) BLACK	黑色线 (4) BLACK
9: 继电器常闭点 relay NC point		
10: 继电器公共点 relay common point		
11: 继电器常开点 relay NO point		

■ 正确使用 User correctly

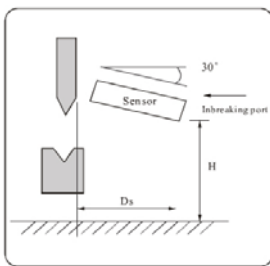
● 最小光幕安装安全距离 Ds

Min. safe installation distance of light screen Ds



● 水平安装光幕时最小安全距离: Ds

Min. safe distance for horizontally installing light screen: Ds



■ 注意事项 Notes:

- GM 系列光幕仅限于室内使用。
- 光幕与高压线、动力线要分别配线或单独配管，以免电感应产生误动作。
- 避免腐蚀性气体、灰尘较多、振动严重和水、油、药剂直接溅散的场所以及太阳光直射的场合。
- 同时检测光
- 本资料若有更改宽恕不另行通知。

GM series light screen is only for indoor use.

<http://www.estord.com>

$$Ds=KX(Ts+Tc+Tt+Tbm)+Ddf$$

Ds: 最小光幕安装安全距离，指光幕检测区到危险区最近一点的距离，单位: m。

Ds: Min. safe installation distance of light screen denotes the shortest distance from detection area of light screen to danger area in manual speed is usually set at 1.M.

K: 手速，一般取 1.6ms，实例中指操作者的手从常态启动向工作点移动的速度。

K: ms. In practical example, it denotes speed of operator's hand moving to work point from normal start state.

Ts: 机器停止下压所需的最大时间，单位: S。

Ts: Time for machine to stop depressing state.

Tc: 机器控制器到机器制动反应所需的时间，单位: S。

Tc: Time from control to braking reaction of machine in S

Tt: 光幕响应所需时间，单位: S。

Tt: Time for the light screen to react in S.

Tbm: 制动器所需的时间，单位: S。 Ddf

Tbm: Time that the brake needs in S.Ddf

$$Ds=KX(Ts+Tc+Tt+Tbm)+DH$$

$$Dh=1.2m-(0.4 \times H), Dh \text{ 最小取 } 0.8m.$$

H: 光幕检测区最底离地高度，单位: m。

注意: 光幕水平安装角度必须小于 30°。

H: Min. distance from light screen detection area to ground in m.

Note: Horizontal installation angle of light screen shall be less than 30°.

● 检验光幕 light screen

安装完毕后，用检测物体遮断光幕检测区域的中央、底部、边缘、和顶部，同时检测光幕输出是否正常。

After installation, shut off the center, bottom, edge and top of detection area

of the light screen

Light screen, high voltage wire and power line shall be connected or piped separately, to avoid wrong action due to high electric induction.

To avoid occasions such as full of corrosive gas, too much dust, severe vibration, directly sprayed by water, oil or medicament or direct sunlight.

with the detection object, and meanwhile detect that whether the output state of light screen is normal.

No separate notice for change of the information in the future.

## 一、概述

固态继电器英文名称为 Solid state relay, 简称 SSR, 我公司生产的 ZG3 系列 SSR 是采用国外先进技术和元器件制造的一种开关性能优良的新型无触点电子开关器件。它的输入端仅要求输入很小的控制电流, 能与 TTL、HTL、CMOS 等集成电器较好的兼容, 而输出回路则采用双向可控硅或大功率晶体管接通和断开负载电流。输入与输出之间采用光电耦合。

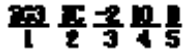
由于固态继电器是由固体元件组成的无触点开关元件, 所以它较之电磁继电器具有工作可靠, 寿命长, 对外界干扰小, 抗干扰能力强, 开关速度快, 使用方便等一系列优点。它有很广泛的应用领域, 有逐步取代传统的电磁继电器之势, 并且进一步扩展到传统的电磁继电器无法应用的领域, 如计算机和可编程控制器的输入输出接口, 电炉加热恒温设备, 数控机械, 遥控系统, 工业自动化装置, 信号灯, 交通灯, 照明舞台灯光控制设备, 仪器仪表, 医疗器械, 复印机, 彩扩机, 橡塑机械, 在一些要求耐潮、防爆防腐蚀的特殊装置和恶劣的工作环境中以及要求工作高可靠的场合中, SSR 都较之传统的电磁继电器有无可比拟的优越性。它是继电器家族 (EMR) 的理想更新换代产品。

## 1、DESCRIPTOPN

Solid state relay is called "SSR" for ZG3 series product made by our factory is the latest non-contact electronic switch device with good ON-OFF performance. Its input end only requires tinny control current and can be compatible with integrated circuit of TT land CMOS, etc. The output return circuit adopts two way controlled silicon or big powder transistor to cut on or cut off the loading current. The photoelectric coupler is adopted between the input and output.

Because solid state relay is a non-contact switch element made up of solid state elements. Compared with electromagnetic relay, it is more reliable. It has series advantages, such as long service life, little disturbance to surrounding and strong anti-interference performance, etc. it has wide application fields. And it tends to replace the traditional electromagnetic relay and further expands to the fields which traditional electromagnetic relay is not applicable for, like input/output interface of computer and program control, electric stove heating constant temperature equipment, digital control machine, remote control system., industrial automatic device, signal lamp, traffic lamp, stage lighting control equipment, instrument and meter, medical equipment, duplicator, color enlarger, and rubber & plastic machine, etc. in some special devices which require damp proof, fireproof and anti-corrosion, and under bad working environment, SSR has incomparable superiority in comparison with tradition with tradition electromagnetic relay. It is an ideal product to replace the older generations of products in relay family (EMR).

## 二、固态继电器、固态调压器型号及含义 Model explanation of solid state relay and solid state voltage regulator





编号 No.	构成 Composition	代码及含义 Code and definition
1	基本型号 Basic	ZG3: 固态继电器 solid state relay ZG1: 固态调压器 solid state voltage regulator ZG33: 三相固态继电器 three phase solid state relay
2	外形编号 Outward appearance code	NA、NC、M、T...
3	负载电压 Load voltage	2: 30-240VAC 3: 90-480VAC 4: 24VDC 5: 50VDC
4	负载电流 Load current	03: 3A 10: 10A 40: 40A
5	输入电压 Input voltage	B: 3-23VDC A: 90-250VAC C: 560KΩ/2W potentiometer 电位器 potentiometer D: 0-8.8VDC

## 供您参考的应用类型 Application installation for reference

彩扩、冲印设备、注塑机械、空调温控 Color enlarger, developing & printing equipment, injection machine and air conditioning temp control.	电脑绣花机、点钞机、邮政分检机 Computer embroidering machine, bank note counter and post sorting machine
各种类型的包装机械 All kinds of packing machines	矿井的防爆、防潮电器装置 Mine explosion-proof and damp-proof electric equipment
各种机床的数控、工控 Digital control and power control of all kinds of machine tools	霓虹灯、舞台灯光自动控制控制系统 Neon lamp, stage light automatic control system
各种电机的驱动 (正反转控制) Drive of all kinds of motors(reversible turn control)	无线电专用设备、冰箱、全自动洗衣机 Radio specific equipment, refrigerator and full automatic washing machine
自动化仪器仪表 Automatic instrument meter	计算机的功率接口 Power port of computer
工业自动化控制: 工业摄像, 炉窖自动化 Industrial automation control; industry photograph and stove cellar automation	自动化办公机械 Automatic office machine
交流电机控制 AC motor control	中间继电器, 电磁阀控制 Intermediate relay and electromagnetic valve control
复印 Copier	信号灯, 交通灯, 闪烁器等 Signal light, transport lamp, flasher
数控机械, 遥控系统 Digital control machine, remoter control system	工业自动化装置 Industrial automation equipment

## 使用注意事项 Cautions while using

- 过流和负载是造成 SSR 永久性损坏的主要原因。快速熔断器的过流保护方法之一。小容量也可选用保险丝。过压的保护除 SSR 内部有 RC 吸收回路外, 还可以采用并联金属氧化物压敏电阻 (MOV), MOV 面积大小决定吸收功率, MOV 的厚度决定保护电压值。一般 220V 系列 SSR 可选取 500-630VDC 的压敏电阻, 380V 系列 SSR 可选取 700-900ADC 的压敏电阻。
  - 环境温度过高时, SSR 的负载能力随之下降, 如使用环境温度较高或散热条件不佳时, 选用的 SSR 必须留有一定的余量。
  - 电阻性负载不能超过额定电流的 60%, 电感性负载不能超过额定电流的 40%。
- Over-current and loading short circuit result in SSR permanent damage. Quick fuse is one of the over-current protection methods. Small capacity may also adopt fuse. Over-voltage protection adopts parallel connection metal oxide varistor (MOV) as well as RC absorbing return inside SSR. The area size of MOV determines the absorbing power. The thickness of MOV determines protective voltage value. Generally, 220V series SSR may choose varistor of 500-630 VDC, 380V series S S R may choose varistor of 700-900VDC.
  - If ambient temperature is too high, the loading capacity of SSR will descend. If the ambient temperature is high or the heat radiation is bad, the chosen SSR should be kept a certain margin.
  - The resistance load should not surpass 60% of rated current. The inductance load should not surpass 40% of rated current.

类别 Category		卧式小型 Small horizontal type	直插式小型 Small card type	卧式微型 Subminiature horizontal type
型号 Type		ZG3T	ZG3M	ZG3V
外形及尺寸 (mm) Outline and dimension		 33×25×16	 42×26×13	 31×16×15.5
功能 Function		多种输入标准 SSR SSR Many kinds of input standards SSR		
Output 输出	绝缘 Insulation	光电双向可控硅 Photoelectrical two-way controlled silicon		
	负载电压 Load Voltage	30 至 240 伏交流电压/90 至 480 伏交流电压/12 至 65 伏直流电压 30~240VAC/90~480VAC/12-65VDC		
	负载电流 Load Current	1 至 3 安培 1~3A	1 至 8 安培 1~8A	1 至 3 安培 1~3A
	泄漏电流 Leakage current	5 毫安 5mA		
	VoRmVceo(伏)	500		
	di/dt(A/us)	100		
	dv/dt(v/us)	100		
	I <sup>2</sup> t(A <sup>2</sup> s)	18		
	Tj(°C)最高 Max.TJ(C)	90		
Input 输出	输入电压 Input Voltage	3 至 24 伏直流电压/3 至 36 伏直流电压 3-24VDC/3-36VDC		
	输入电流 Input Current	小于 40 毫安<40mA		
	关闭电压 Off Voltage	1 伏直流电压 1VDC		
	接通电压 On Voltage	3 伏直流电压 3VDC		
	关闭时间 Off time	直流电压为 0.5 毫秒/交流电压为 10 毫秒 0.5ms DC/10msAC		
	接通时间 On time	直流电压为 0.5 毫秒/交流电压为 10 毫秒 0.5ms DC/10msAC		
介电强度 Dielectric strength	1 分钟 50 赫兹, 2500 伏交流电压 50Hz, 60S 2500VAC			
环境温度 Ambient temperature	30°C 至 80°C(无结冰及结露状态下) -30°C~80°C(Under non-ice/dewfall condition)			
工作电流安全系数 Coefficient of safety of	阻性负载为 60%/感性负载为 40% Dissipative load is 60%/Inductive load is 40%			
接线安装图 Wiring installation diagram				

类别 Category		平面安装型 Plane installment type		三相交流固态继电器 3-phase AC solid state relay
型号 Type		SSR	ZG3NC	ZG33
外形及尺寸 (mm) Outline and dimension		 60×45×24	 58×44×32	 31×16×15.5
功能 Function	多种输入标准 SS SSR Many kinds of input standards SSR 具有操作显示 With operation display			
Output 输出	绝缘 Insulation	光电耦合器 Photoelectrical coupler		
	负载电压 Load Voltage	30 至 240 伏交流电压/90 至 480 伏交流电压/12 至 65 伏直流电压 30~240VAC/90~480VAC/12-65VDC		
	负载电流 Load Current	10 至 40 安培 10~40A	1 至 120 安培 1~120A	
	泄漏电流 Leakage current	·100 伏交流电压为 5mA 100VAC 5mA ·200 伏交流电压为 10mA 200VAC 10mA		
	VoRmVceo(伏)	1000		
	di/dt(A/us)	200		
	dv/dt(v/us)	400		
	I <sup>2</sup> t(A <sup>2</sup> s)	25 至 3000(电流越大功耗越大) 25-3000(Bigger current, bigger consumption)		
	Tj(°C)最高	100		
Input 输入	输入电压 Input Voltage	3 至 32 伏直流电压/90 至 250 伏交流电压 3-32VDC/90-250VAC		
	输入电流 Input Current	小于 40 毫安<40mA		
	关闭电压 Off	1 伏直流电压 1VDC		
	接通电压 On Voltage	3 伏直流电压 3VDC		
	关闭时间 Off time	直流电压为 0.5 毫秒/交流电压为 10 毫秒 0.5ms DC/10msAC		
	接通时间 On time	直流电压为 0.5 毫秒/交流电压为 10 毫秒 0.5ms DC/10msAC		
介电强度 Dielectric strength	1 分钟 50 赫兹, 2500 伏交流电压 50Hz, 60S 2500VAC			
环境温度 Ambient temperature	30°C 至 80°C(无结冰及结露状态下) -30°C~80°C(Under non-ice/dewfall condition)			
工作电流安全系数 Coefficient of safety of	阻性负载为 60%/感性负载为 40% Dissipative load is 60%/Inductive load is 40%			
接线安装图 Wiring installation diagram				