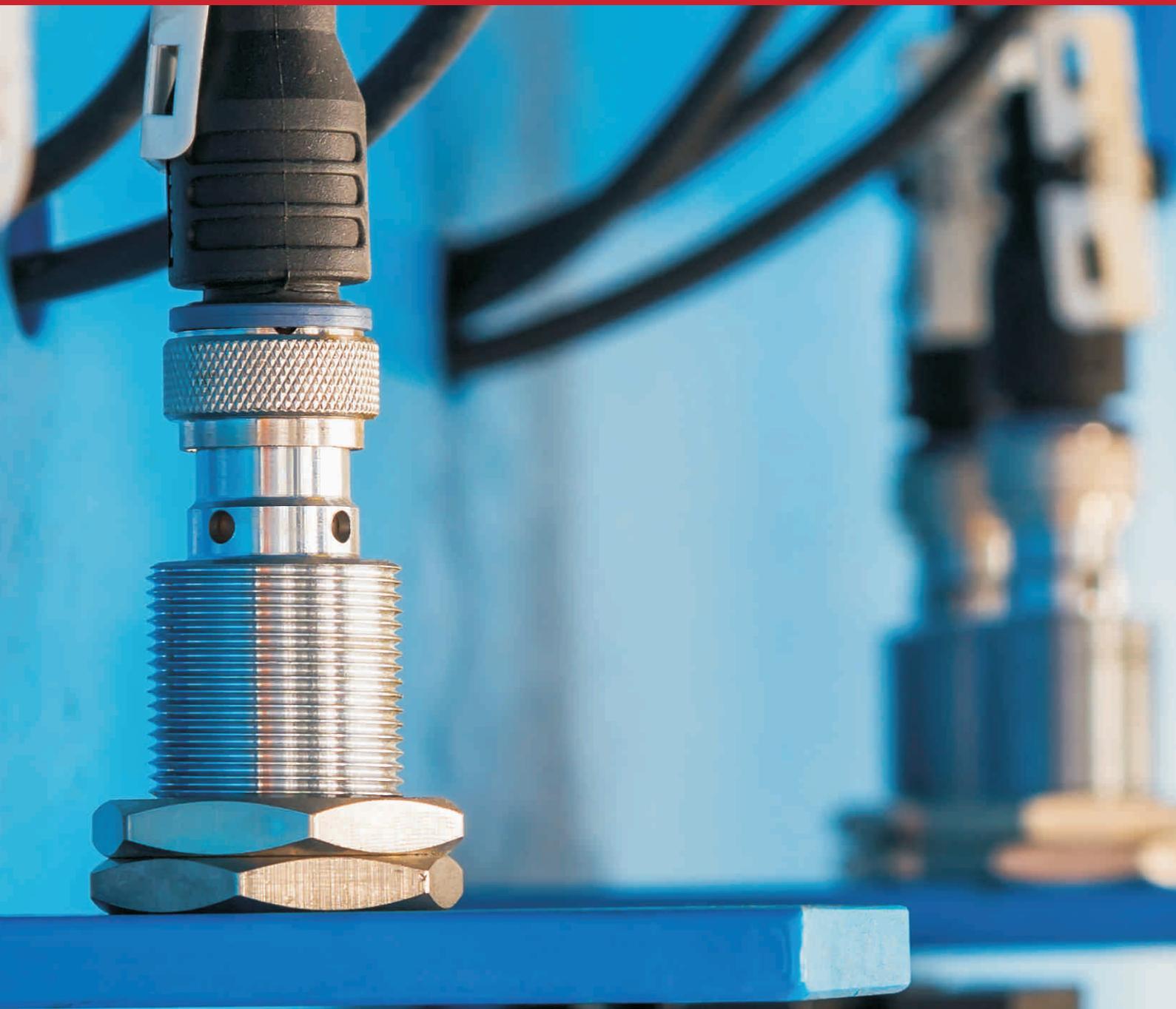




# 接近传感器系列

Proximity sensor series



# 接近传感器简介

Introduction of proximity sensor

## ► 接近传感器的定义Definition

接近传感器，是代替限位开关，行程开关等接触式检测方式，以无需接触检测对象进行监测为目的的传感器的总称。它能将检测对象的移动信息和存在信息转换为电气信号。转换为电气信号的检测方式，包括利用电磁感应引起的检测对象的金属体中产生的涡电流的方式，捕捉检测体的接近引起的电气信号的容量变化的方式，利用磁石和引导开关的方式。

在开关中，能以非接触方式检测到物体的接近传感器和判断检测对象有无的产品总称为“接近传感器”，由电磁感应，静电容量型，超声波型，光电型，磁力型，位移传感器等构成。

Proximity sensor is a general term of sensors that adopts non-contact way to detect the approaching information or presentation information of the object .It is an advanced replacement to limit switch, travel switch .The movement information and presence information of objects can be converted into electric signal by a proximity sensor.

Proximity sensors can be divided into several types, including Inductive type, Capacitive type, Photoelectric type, Ultrasonic type, Magnetic type, Displacement type.

## ► 接近开关的原理(示例)Operating Principle

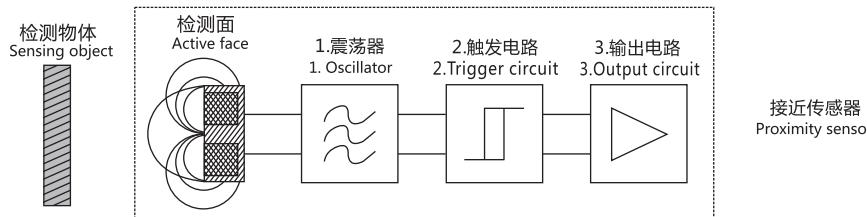
### •电感式接近传感器Inductive proximity sensor

这种传感器是利用导电物体在接近这个能产生电磁场的接近传感器时，使物体内部产生涡流。为了便于解释，我们可以把接近传感器看作是由三个部分组成：一个振荡器，一个触发电路，一个输出电路。开关接通电源，振荡器的线圈在开关的工作表面产生一个交变磁场，当金属物体接近开关的工作表面时，金属产生涡流而吸收了振荡器的能量，使振荡减弱，以至停振。当金属物体离开后，振荡重新产生。振荡器的振荡及停振这两个信号由触发电路转换成开关信号，从而起到“通”和“断”的控制作用。

When the conductor is approaching a proximity sensor that can generate electromagnetic field, there will be formation of eddy current inside the conductor.

Usually, a proximity sensor is made up of 3 parts as below:1:an oscillator 2:a trigger circuit 3:an output circuit

The coil of the oscillator will generate alternating magnetic field on the surface of the sensor after power on. When a metal object is approaching the sensing surface , it will generate eddy current inside the object. Then energy emitted from the oscillator will be weakened. Finally it will stop vibrating. When the metal object is getting away from the active face, the oscillator start vibrating again. The actions of starting vibration and stopping vibration will be converted into switching signals(ON/OFF)by trigger circuit.



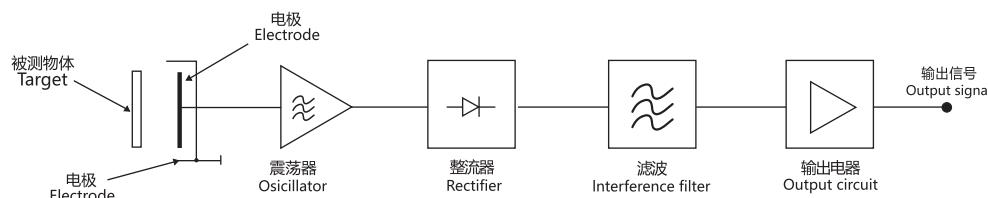
### •电容式接近传感器Capacitive proximity sensor

这种开关的检测物通常是构成电容器的一个极板，而另一个极板是传感器的外壳。这个外壳在测量过程中通常是接地或者与设备级机壳相连接。当有物体移向接近传感器时，不论它是否为导体，由于他的接近，总要使电容的介电常数发生变化，使振荡电路开始振荡，振荡电路的输出电压经过整流，滤波。最后经触发电路形成信号，在输出端输出，由此便可控制开关的接通或断开。这种接近传感器检测的对象，不限导体，可以是绝缘的液体或粉状物等，检测距离根据检测对象的介电常数不同而会有所变化。

The active component of capacitive sensor is a disk shaped sensor electrode inside a screening can. These two electrodes form a capacitor with a basic capacitance  $C_0$ . When a target approaches upon the sensor area, the capacitance alters by the value

$C = C_0 + \epsilon_r \cdot A / d$  where  $\epsilon_r$  is the dielectric constant of the medium between the sensor electrode and the screen

Potential. The oscillator output voltage is rectified, filtered and the interference pulses suppressed. This forms a switching signal which is converted to an output signal in the output stage.



### •模拟量输出型接近传感器Inductive analogue output sensor

带模拟量输出的电感式接近与普通电感式接近传感器的工作原理相同。当一金属物体靠近接近传感器的感应面时，振荡器系统的能量减小，能量减小的程度是物体和接近开关之间距离的尺寸标志。在一个附加电路中能量耗损被转换成测量信号，经线性化处理后被放大。在输出端提供一个标准模拟信号 (0~10V或0~20mA)。

Inductive sensors with analogue output work in the same way as standard inductive sensors. When a metal target approaches the active face of the sensor, energy is drawn from the oscillator. The ratio of the energy loss is proportional to the distance between the target and the sensor. The energy loss is converted to an analogue signal which is made linear and amplified. A standard analogue signal is available at the output(0 ~ 10V and/or 0 ~ 20mA).

旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

## ► 接近传感器术语(示例)Basic terms of proximity sensor

### ●输出功能Output Function

常开 ( N.O. ) :开状态开关无输出，关状态有输出

常闭 ( N.C. ) :开状态开关有输出，关状态无输出

一开一闭双输出：当开关不检测到物体时，一个常开，一个闭合；当开关检测到物体时，常开的信号闭合，闭合的信号转为常开，形成交互输出。

### N. O.:

Normally open. When there is no object approaching , no signal output; When there is an object approaching output a signal.

### N. C.:

Normally closed . When there is no object approaching , there are continuous output signals; When there is an object approaching ,no output signal

### N.O.+N.C.:

Normally open +Normally closed. When there is an object approaching the circuit that doesn't have output signals before will have output signals.

旋转变码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

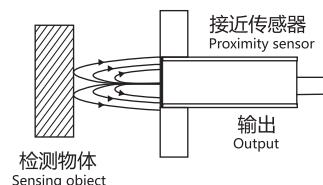
### ●埋入Shield

该型号磁通集中在接近开关的前部，检测线圈的侧面用金属覆盖。

作为接近开关的安装方式，检测面可齐平埋入金属中。

Magnetic' flux concentrate on the front part of the sensor .

Side part of the coil is covered by metal in this mounting method .



### ●非埋入Unshield

该型号磁通广泛发生在接近开关的前部，

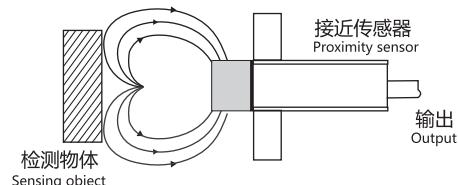
检测线圈的侧面未被金属覆盖。

由于容易受周围金属（磁体性）的影响，  
所以在选择安装声所时需多加注意。

Magnetic' flux spread on the front part of the sensor .

Side part of the coil is not covered by metal .

In this mounting method ,  
the detection might be influenced by surrounding metals.



## ► 接近传感器注意事项Notice of proximity sensor

### 电源电压Voltage of power

使用时请不要超过使用电压范围。

如在使用电压范围以上施加电压，或者在直流电源型的开关上施加交流电压 ( AC100V以上 )，则可能引起破裂或烧毁。

Please don not use voltage which exceed rating voltage . If exceed the rating voltage or use the AC power (above AC100)on the sensor which work with DC power that will cause damage .

### 负载短路Shorted load

请避免使用负载短路。否则可能引起开关破裂或烧毁。

负载短路保护功能在电源为正确极性，额定电压内使用时才能有效。

Only when the power supply is right connected and the voltage is in rating voltage , the short load protection is valid .

### 误布线Wiring error

需考虑电源的极性等，以避免错误布线。否则可能引起开关破裂或烧毁

Please confirm the load is connected to the sensor correctly . Or it might cause damage to the sensor .

### 无负载连接Connection without load

因为无负载情况下直接连接电源，会引起内部元件的破裂或烧毁，所以请务必在有负载的情况下进行布线

If the sensor is connected to the power supply directly, the inner components might be burned.

# 圆柱形电感式接近传感器SI04系列

Cylindrical inductive proximity sensor SI04 series

**HNC**  
SENSOR



## 用途与特点 Application and features

适用于多种用途，产品性能与品质良好  
金属外壳，便于安装保护，  
配有醒目的指示灯，便于查看工作状态

Ideal for a variety of applications

With a metal connector that can be tightened security

With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

## ▶ 型号说明 Model Explanation

S	I	04	-1	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: I:常规圆柱形 电感式 Cylindrical inductive proximity sensor	直径OD: 04:4mm	检测距离 Sensing distance : 1:1mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	输出状态 Operation mode: K:常开 B:常闭	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

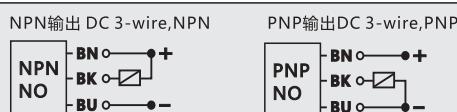
## ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SI04-01NK-Z	埋入 Shielded	■ 1mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	K:常开 NO B:常闭 NC	导线引出/航插

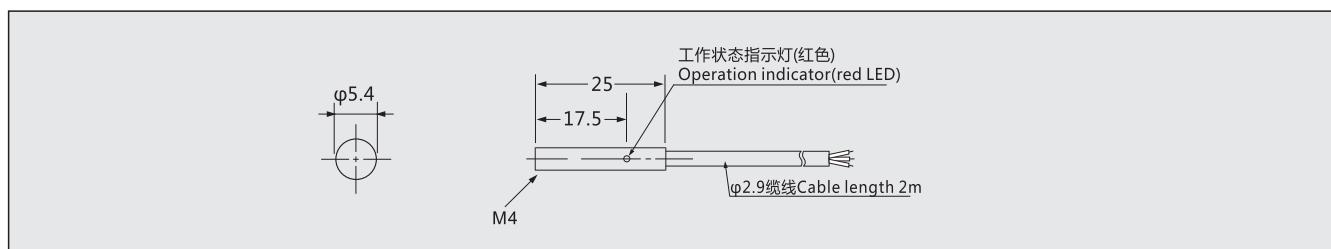
## ▶ 技术规格 Specification

型号Type	SI04-01N/P
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	1mm
消耗电流 Leakage current	10mA max.
负载电流 Load current	100mA max.
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
漏电流 Load current	<0.1mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳Case	镍铜合金 Brass-nicke plated

## ▶ 电路输出方式(示例) Example for output circuit



## ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

# 圆柱形电感式接近传感器SI05系列

Cylindrical inductive proximity sensor SI05 series

**HNC**  
SENSOR



## 用途与特点 Application and features

适用于多种用途，产品性能与品质良好

金属外壳，便于安装保护，

配有醒目的指示灯，便于查看工作状态

Ideal for a variety of applications

With a metal connector that can be tightened security

With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

## ▶ 型号说明 Model Explanation

S	I	05	-1	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: I:常规圆柱形 电感式 Cylindrical inductive proximity sensor	直径OD: 05:5mm	检测距离 Sensing distance: 1:1mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	输出状态 Operation mode: K:常开 B:常闭	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

## ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SI05-01NK-Z	埋入 Shielded		1mm N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	K:常开 NO B:常闭 NC	导线引出/航插

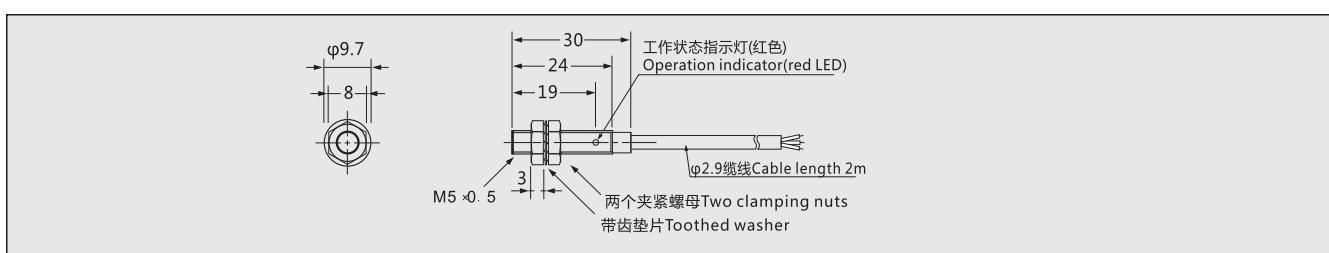
## ▶ 技术规格 Specification

型号Type	SI05-01N/P
电源电压 Voltage	直流NPN/PNP 10~30VDC
检测距离 Sensing distance	1mm
消耗电流 Leakage current	10mA max.
负载电流 Load current	100mA max.
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V) 充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
漏电流 Load current	<0.1mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX, Y, Z各方向2h double amplitude for 2 hours each in X, Y and Z directions
冲击(耐久) Shock resistance	500m/s²X, Y, Z各方向10次 500m/s² 10 times each X, Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

## ▶ 电路输出方式(示例) Example for output circuit



## ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



## 圆柱形电感式接近传感器SI08系列 Cylindrical inductive proximity sensor SI08 series



### 用途与特点 Application and features

适用于多种用途，产品性能与品质良好  
金属外壳，便于安装保护，  
配有醒目的指示灯，便于查看工作状态

Ideal for a variety of applications

With a metal connector that can be tightened security

With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

### ▶ 型号说明 Model Explanation

S	I	08	-02	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S: 特殊型号定义 Special definition	传感器类别: I:常规柱形 电感式 Cylindrical inductive proximity sensor	直径OD: 08:8mm	检测距离 Sensing distance: 1.5:1.5mm 02:2mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SI08-02NK-Z	非埋入 Unshielded	2mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug
SI08-1.5NK-Z	埋入 Shielded	1.5mm			

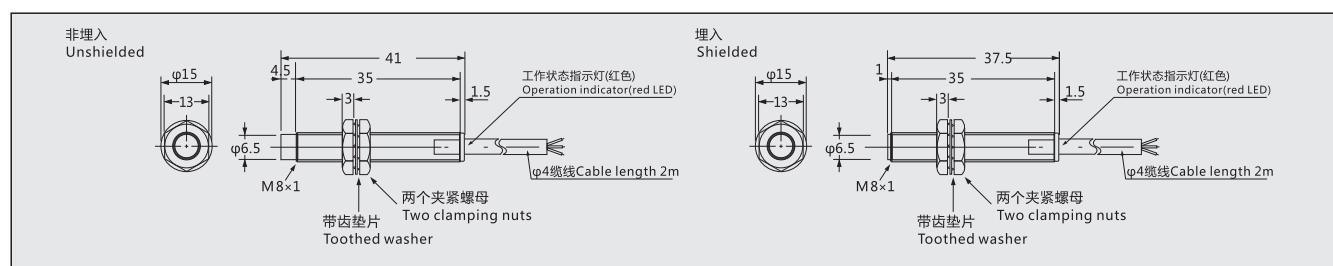
### ▶ 技术规格 Specification

型号Type	SI08-02/1.5N/P/D/A
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC
检测距离 Sensing distance	2mm/1.5mm
消耗电流 Leakage current	<10mA/ <10mA/ <1mA
极性保护 Polarity protection	Yes/Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度Repeat precision	<3%
负载电流 Load current	<150mA/<150mA/<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V/<2.5V/<6V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX, Y, Z各方向2h double amplitude for 2 hours each in X, Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X, Y, Z各方向10次 500m/s <sup>2</sup> 10 times each X, Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



# 圆柱形电感式接近传感器SI12系列

Cylindrical inductive proximity sensor SI12 series

**HNC**  
SENSOR



## 用途与特点 Application and features

适用于多种用途，产品性能与品质良好  
金属外壳，便于安装保护，  
配有醒目的指示灯，便于查看工作状态

Ideal for a variety of applications

With a metal connector that can be tightened security

With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

## ▶ 型号说明 Model Explanation

S	I	12	-04	N	K	-Z	-□	-□
基本型号Model S: 型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: I:常规圆柱形电感式 Cylindrical inductive proximity sensor	直径OD: 12:12mm	检测距离 Sensing distance: 04:4mm 02:2mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

## ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SI12-04NK-Z	非埋入 Unshielded	4mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC KB:常开+常闭 NO+NC	导线引出/航插 Cable line/Plug
SI12-02NK-Z	埋入 Shielded	2mm			

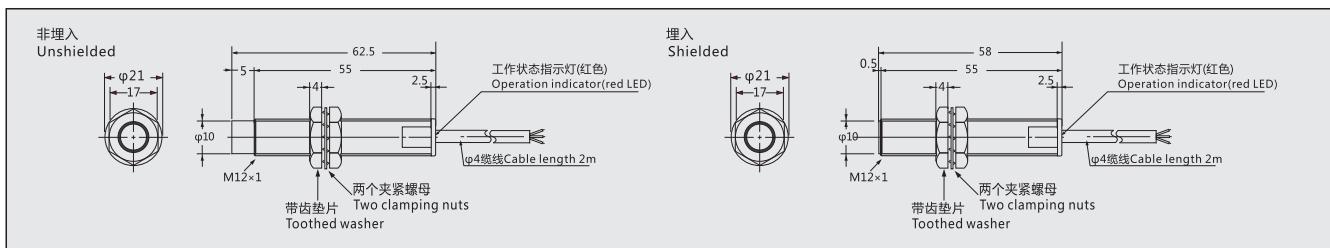
## ▶ 技术规格 Specification

型号 Type	SI12-04/02N/P/D/A
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC
检测距离 Sensing distance	4mm/2mm
消耗电流 Leakage current	<15mA / <15mA / <1mA
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C不结冰with no icing
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<200mA/<200mA/<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V/<2.5V/<6V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

## ▶ 电路输出方式(示例) Example for output circuit



## ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)





## 圆柱形电感式接近传感器SI18系列

Cylindrical inductive proximity sensor SI18 series

**HNC**  
S  
ENSOR

### 用途与特点 Application and features

适用于多种用途，产品性能与品质良好  
金属外壳，便于安装保护，  
配有醒目的指示灯，便于查看工作状态

Ideal for a variety of applications

With a metal connector that can be tightened security

With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

### ▶ 型号说明 Model Explanation

S	I	18	-08	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: I:常规圆柱形 电感式 Cylindrical inductive proximity sensor	直径OD: 18:18mm	检测距离 Sensing distance: 08:8mm 05:5mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SI18-08NK-Z	非埋入 Unshielded	8MM	N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug
SI18-05NK-Z	埋入 Shielded	5MM		KB:常开+常闭 NO+NC	

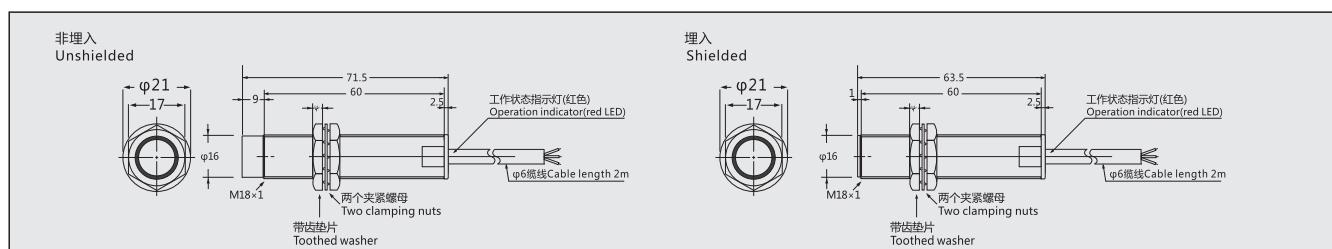
### ▶ 技术规格 Specification

型号Type	SI18-0805N/P/D/A
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC
检测距离 Sensing distance	8mm/5mm
消耗电流 Leakage current	<15mA/ <15mA/<1mA
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<200mA/<200mA/<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V/<2.5V/<6V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

# 圆柱形电感式接近传感器SI30系列

Cylindrical inductive proximity sensor SI30 series

**HNC**  
SENSOR



## 用途与特点 Application and features

适用于多种用途，产品性能与品质良好  
金属外壳，便于安装保护，  
配有醒目的指示灯，便于查看工作状态

Ideal for a variety of applications  
With a metal connector that can be tightened security  
With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

## ▶ 型号说明 Model Explanation

S	I	30	-15	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: I:常规圆柱形电感式 Cylindrical inductive proximity sensor	直径OD: 30:30mm	检测距离 Sensing distance : 15:15mm 10:10mm	输出方式Output configuration : N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

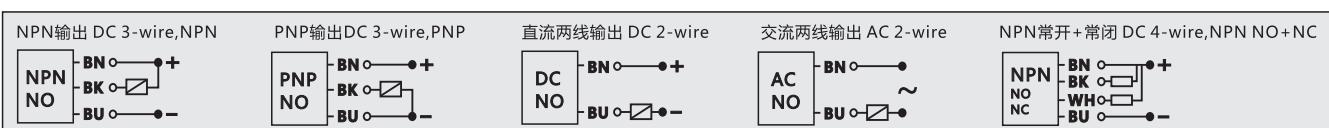
## ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SI30-15NK-Z	非埋入 Unshielded	15mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC KB:常开+常闭 NO+NC	导线引出/航插 Cable line/Plug
SI30-10NK-Z	埋入 Shielded	10mm			

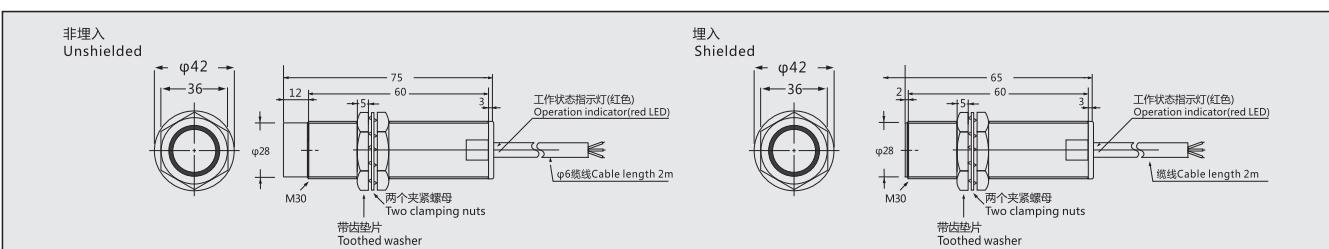
## ▶ 技术规格 Specification

型号 Type	SI30-15/10N/P/D/A
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC
检测距离 Sensing distance	15mm/10mm
消耗电流 Leakage current	<15mA/ <15mA/ <1mA
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<200mA/<200mA/<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V/<2.5V/<6V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

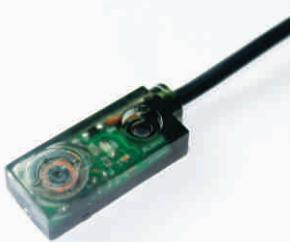
## ▶ 电路输出方式(示例) Example for output circuit



## ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



## 方形电感式接近传感器SFW3系列 Rectangular proximity sensor SFW3 series



### 用途与特点 Application and features

种类丰富,适用于各种安装  
安装简单,无需支架  
配有醒目的指示灯

In many different variations for various purposes.  
Easy to install, without special mounting bracket.  
With an easy-to-see indicator

### ▶ 型号说明 Model Explanation

S	F	-W3	N	K	-Z	-□	-□	
基本型号Model S :型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别 category: F:方形电感式 Rectangular Inductive proximity sensor	边长 size: 12*6*30 mm	检测距离 Sensing distance: 3:3mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SF-W3NK-Z	非埋入 Unshielded	3mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

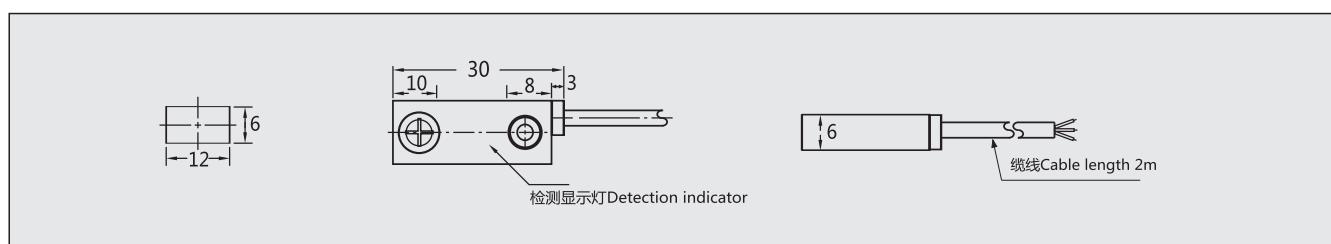
### ▶ 技术规格 Specification

型号Type	SF-W3N/P
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	3mm
消耗电流 Leakage current	<10mA
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	PAR

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



# 方形电感式接近传感器SFW5系列

## Rectangular proximity sensor SFW5 series

**HNC**  
SENSOR



### 用途与特点 Application and features

品种丰富可适用于各种限位控制,计数控制等方面  
安装方便,可用于高速脉冲发生器,高速旋转控制等

A wealth of models ideal for limit control, Counting control, and other applications.  
Easy installation, high-speed pulse generator, high-speed rotation control and more.

### ▶ 型号说明 Model Explanation

S	F	-W5	N	K	-Z	-□	-□	
基本型号Model S:型号代码 Model code S : 特殊型号定义 Special definition	传感器类别 category: F:方形电感式 Rectangular Inductive proximity sensor	边长 size: 18*10*30.5 mm	检测距离 Sensing distance: 5:5mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米) Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SF-W5NK-Z	非埋入 Unshielded	5mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

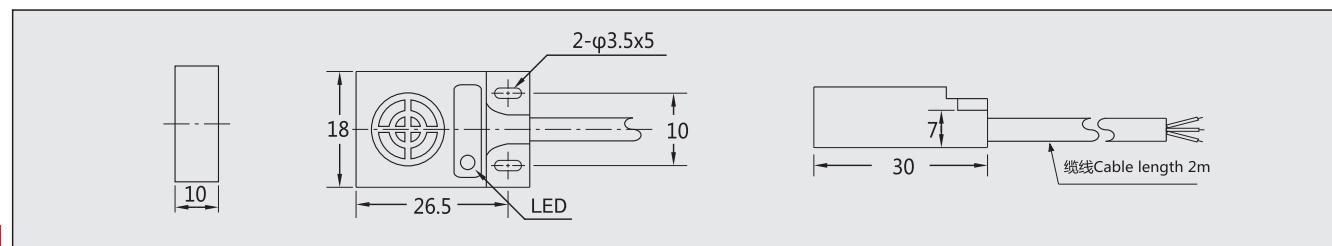
### ▶ 技术规格 Specification

型号Type	SF-W5N/P/D/A	
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC	交流AC:220VAC
检测距离 Sensing distance	5mm	
消耗电流 Leakage current	<10mA/ <10mA/ <1mA	<3mA
极性保护 Polarity protection	Yes/Yes	
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)	
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)	
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH	
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case	
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case	AC2000V max.
重复精度 Repeat precision	<3%	
负载电流 Load current	<200mA/<200mA/<100mA	<200mA
回差范围 Backlash	1-20%	
压降 Drop	<2.5V/<2.5V/<6V	<10V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions	
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions	
防护等级 Degree of protection	IEC IP67	
外壳 Case	PBT	

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



# 方形电感式接近传感器SF04系列

## Rectangular proximity sensor SF04 series

**HNC**  
S  
ENSOR



### 用途与特点 Application and features

品种丰富可适用于各种限位控制,计数控制等方面  
安装方便 , 可用于高速脉冲发生器,高速旋转控制等

A wealth of models ideal for limit control, Counting control, and other applications.  
Easy installation, high-speed pulse generator, high-speed rotation control and more.

### ▶ 型号说明 Model Explanation

S	F	-04	N	K	-Z	-□	-□	
基本型号Model S: 型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别 category: F:方形电感式 Rectangular Inductive proximity sensor	边长 size : 18*18*34 mm	检测距离 Sensing distance : 0.4mm	输出方式Output configuration : N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

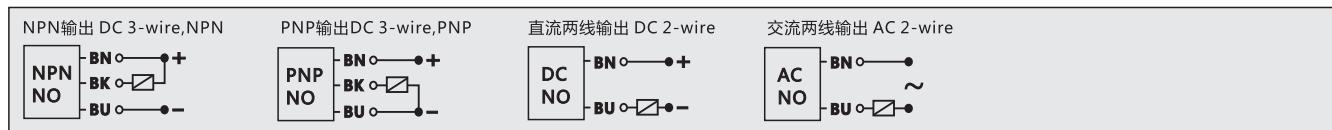
### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SF-04NK-Z	非埋入 Unshielded	4mm	N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

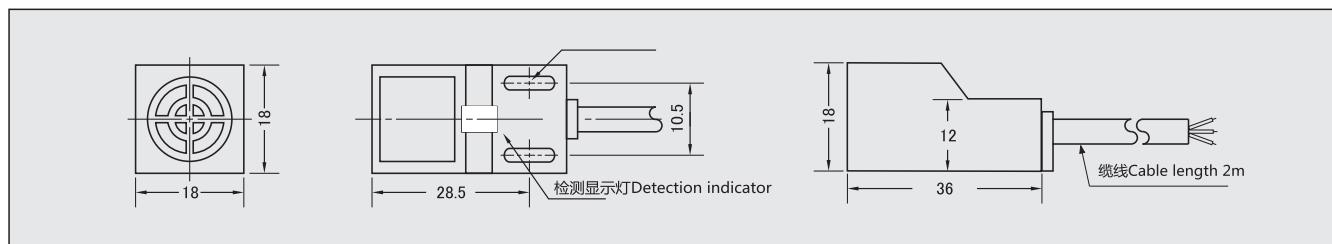
### ▶ 技术规格 Specification

型号Type	SF-04N/P/D/A	
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC	交流AC:220VAC
检测距离 Sensing distance	5mm	
消耗电流 Leakage current	<10mA / <10mA / <1mA	<3mA
极性保护 Polarity protection	Yes/Yes	
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)	
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)	
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH	
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case	
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case	AC2000V max.
重复精度 Repeat precision	<3%	
负载电流 Load current	<200mA / <200mA / <100mA	<200mA
回差范围 Backlash	1-20%	
压降 Drop	<2.5V / <2.5V / <6V	<10V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions	
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions	
防护等级 Degree of protection	IEC IP67	
外壳 Case	PBT	

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

# 方形电感式接近传感器SF25系列

## Rectangular proximity sensor SF25 series

**HNC**  
SENSOR



### 用途与特点 Application and features

品种丰富可适用于各种限位控制,计数控制等方面  
安装方便,可用于高速脉冲发生器,高速旋转控制等

A wealth of models ideal for limit control, Counting control, and other applications.  
Easy installation, high-speed pulse generator, high-speed rotation control and more.

### ▶ 型号说明 Model Explanation

S	F	-25	N	K	-Z	-□	-□	
基本型号Model S:型号代码 Model code F:方形电感式 Rectangular S:特殊型号定义 Special definition	传感器类别 category: F:方形电感式 Rectangular Inductive proximity sensor	边长 size: 25*25*38 mm	检测距离 Sensing distance: 5:5mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SF-25NK-Z	非埋入 Unshielded	5mm	N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

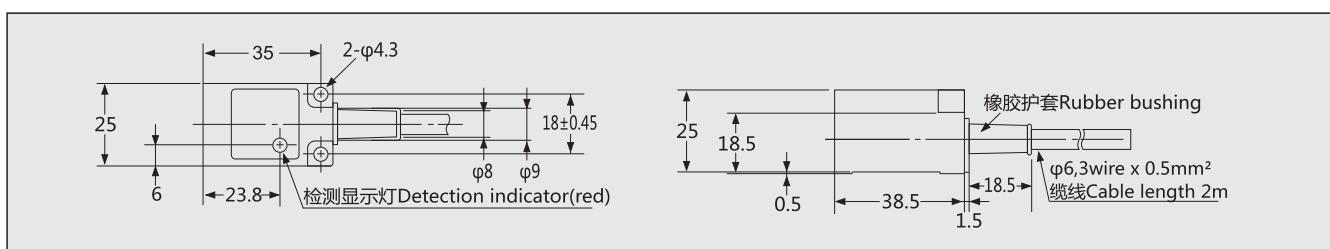
### ▶ 技术规格 Specification

型号Type	SF-25N/P/D/A
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC
检测距离 Sensing distance	5mm
消耗电流 Leakage current	<10mA/ <10mA/ <1mA
极性/短路保护 Polarity protection	Yes/Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V/<2.5V/<6V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	PBT

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



# 方形电感式接近传感器SF30系列

## Rectangular proximity sensor SF30 series

**HNC**  
SENSOR



### 用途与特点 Application and features

品种丰富可适用于各种限位控制,计数控制等方面  
安装方便,可用于高速脉冲发生器,高速旋转控制等

A wealth of models ideal for limit control, Counting control, and other applications.  
Easy installation, high-speed pulse generator, high-speed rotation control and more.

### ▶ 型号说明 Model Explanation

S	F	-30	N	K	-Z	-□	-□	
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别 category: F:方形电感式 Rectangular Inductive proximity sensor	边长 size: 30*30*48.5 mm	检测距离 Sensing distance: 10:10mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SF-30NK-Z	非埋入 Unshielded	10mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

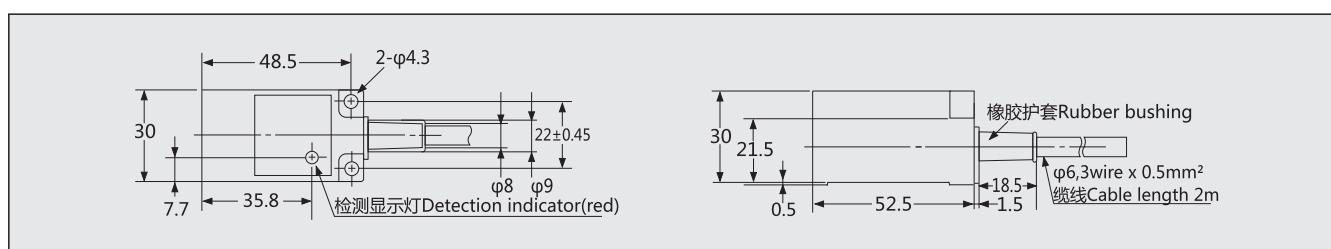
### ▶ 技术规格 Specification

型号Type	SF-30N/P/D/A
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC
检测距离 Sensing distance	10mm
消耗电流 Leakage current	<10mA/ <10mA/ <1mA
极性/短路保护 Polarity protection	Yes/Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<200mA<200mA<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V/<2.5V/<6V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	PBT

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor



## 方形电感式接近传感器SF40系列 Rectangular proximity sensor SF40 series

**HNC**  
SENSOR

### 用途与特点 Application and features

品种丰富可适用于各种限位控制,计数控制等方面  
安装方便,可用于高速脉冲发生器,高速旋转控制等

A wealth of models ideal for limit control, Counting control, and other applications.  
Easy installation, high-speed pulse generator, high-speed rotation control and more.

### ▶ 型号说明 Model Explanation

S	F	-40	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别 category: F:方形电感式 Rectangular Inductive proximity sensor	边长 size: 40*40*47 mm	检测距离 Sensing distance: 15:15mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SF-40NK-Z	非埋入 Unshielded	15mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP D:直流两线输出 DC 2-wire A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

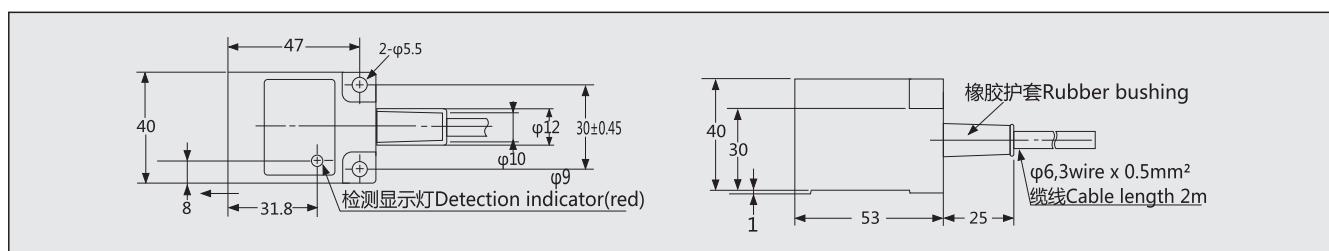
### ▶ 技术规格 Specification

型号Type	SF-40N/P/D/A	
电源电压 Voltage	直流NPN/PNP/DC:10-30VDC	交流AC:220VAC
检测距离 Sensing distance	15mm	
消耗电流 Leakage current	<10mA / <10mA / <1mA	<3mA
极性/短路保护 Polarity protection	Yes/Yes	
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)	
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)	
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH	
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case	
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case	AC2000V max.
重复精度 Repeat precision	<3%	
负载电流 Load current	<200mA<200mA<100mA	<300mA
回差范围 Backlash	1-20%	
压降 Drop	<2.5V / <2.5V / <6V	<10V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions	
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions	
防护等级 Degree of protection	IEC IP67	
外壳 Case	PBT	

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)





### 用途与特点 Application and features

可以检测磁铁  
单极性,双极性可选  
可以安装在金属上

Magnets can be detected  
It can detect the N pole of the magnet, or N, S pole  
It can be installed on the metal

### ▶ 型号说明 Model Explanation

S	H	08	-10	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: H:霍尔 Hall proximity sensor	直径OD: 08.8mm	检测距离 Sensing distance: 10:10mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

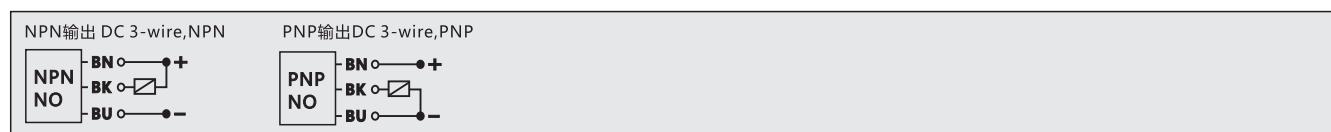
### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SH08-10NK-Z	埋入 Shielded	10mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

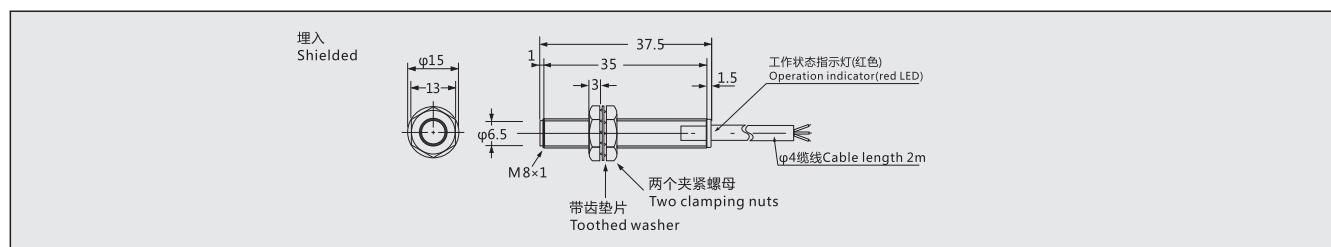
### ▶ 技术规格 Specification

型号Type	SH08-10N/P
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	10mm
消耗电流 Leakage current	<10mA
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<150mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX, Y, Z各方向2h double amplitude for 2 hours each in X, Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X, Y, Z各方向10次 500m/s <sup>2</sup> 10 times each X, Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



# 霍尔接近传感器SH12系列

## Hall sensor SH12 series

**HNC**  
SENSOR



### 用途与特点 Application and features

可以检测磁铁  
单极性,双极性可选  
可以安装在金属上

Magnets can be detected  
It can detect the N pole of the magnet, or N, S pole  
It can be installed on the metal

### ▶ 型号说明Model Explanation

S	H	12	-10	N	K	-Z	-□	-□
基本型号Model S: 型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: H:霍尔 Hall proximity sensor	直径OD: 12:12mm	检测距离 Sensing distance: 10:10mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

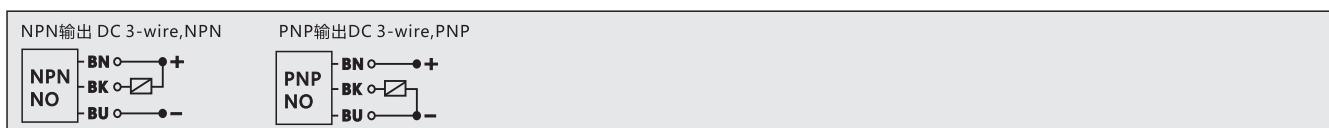
### ▶ 产品种类Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SH12-10NK-Z	埋入 Shielded	10mm	N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

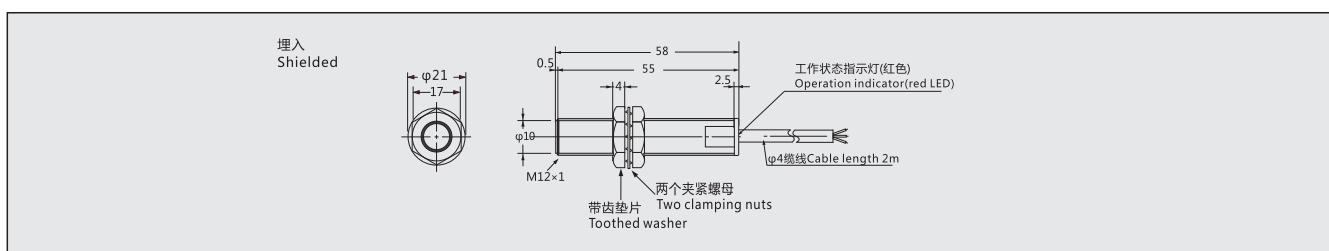
### ▶ 技术规格Specification

型号Type	SH12-10N/P
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	10mm
消耗电流 Leakage current	<10mA
极性保护 Polarity protection	Yes/Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度Repeat precision	<3%
负载电流Load current	<150mA
回差范围Backlash	1-20%
压降Drop	<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



## 霍尔接近传感器SH18系列

Hall sensor SH18 series

### 用途与特点 Application and features

可以检测磁铁  
单极性,双极性可选  
可以安装在金属上

Magnets can be detected  
It can detect the N pole of the magnet, or N, S pole  
It can be installed on the metal

### ▶ 型号说明 Model Explanation

S	H	18	-10	N	K	-Z	-□	-□
基本型号Model S :型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: H:霍尔 Hall proximity sensor	直径OD: 18:18mm	检测距离 Sensing distance: 10:10mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized information

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SH18-10NK-Z	埋入 Shielded	10mm	N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug

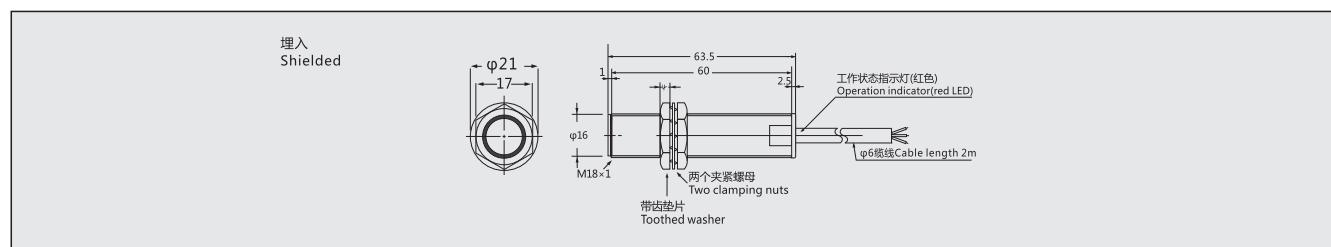
### ▶ 技术规格 Specification

型号Type	SH18-10N/P
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	10mm
消耗电流 Leakage current	<10mA
极性保护 Polarity protection	Yes/Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<150mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX, Y, Z各方向2h double amplitude for 2 hours each in X, Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X, Y, Z各方向10次 500m/s <sup>2</sup> 10 times each X, Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor



## 电容式接近传感器SC18系列 Capacitive proximity SC18 series

**HNC**  
S  
ensor

### 用途与特点 Application and features

除了金属以外也可以检测水,塑料等非金属  
适用于多种用途 , 产品性能与品质良好.

Non-contact detection of metallic and nonmetallic objects including water,oil,  
glass,plastic and wood.  
Ideal for a variety of applications .

### ▶ 型号说明Model Explanation

S	C	18	-08	N	K	-Z	-□	-□
基本型号Model S 型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别 category: C:电容式 Capacitive proximity sensor	直径OD: 18:18mm	检测距离 Sensing distance : 08:8mm	输出方式Output configuration : N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

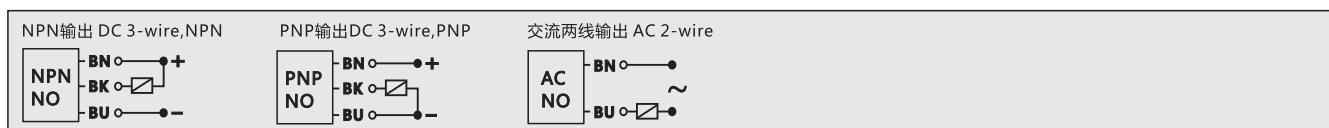
### ▶ 产品种类Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SC18-08NK-Z	非埋入 Unshielded	1-8mm	N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC KB:常开+常闭 NO+NC	导线引出/航插 Cable line/Plug

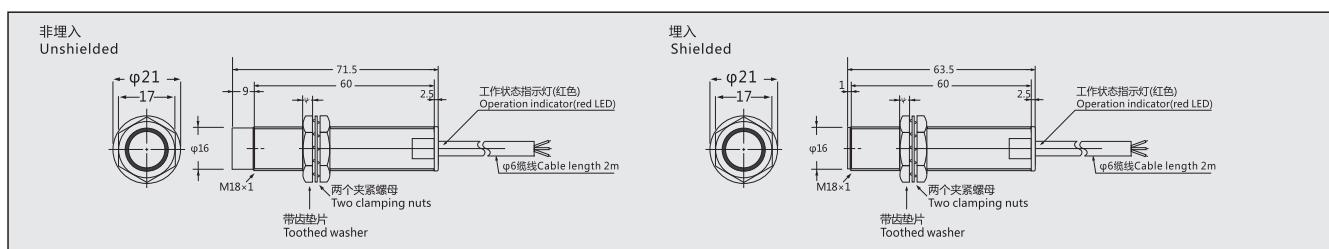
### ▶ 技术规格Specification

型号Type	SC18-08N/P/A
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	1-8mm
可检测物体 Sensing object	导体和电介质Conductors and dielectrics
消耗电流 Leakage current	<15mA
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<200mA/<200mA/<100mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V/<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)





## 电容式接近传感器SC30系列 Capacitive proximity SC30 series

**HNC**  
S  
ENSOR

### 用途与特点 Application and features

除了金属以外也可以检测水,塑料等非金属  
适用于多种用途 , 产品性能与品质良好.

Non-contact detection of metallic and nonmetallic objects including water,oil,  
glass,plastic and wood.  
Ideal for a variety of applications .

### ▶ 型号说明Model Explanation

S	C	30	-15	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别 category: C:电容式 Capacitive proximity sensor	直径OD: 30:30mm	检测距离 Sensing distance : 15:15mm	输出方式Output configuration : N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SC30-15NK-Z	非埋入 Unshielded	1-15mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC KB:常开+常闭 NO+NC	导线引出/航插 Cable line/Plug

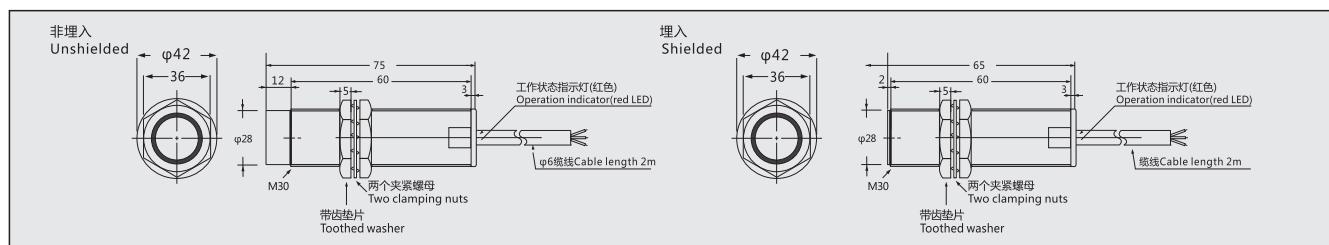
### ▶ 技术规格Specification

型号Type	SC30-15N/P/A
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	1-15mm
可检测物体 Sensing object	导体和介电物质Conductors and dielectrics
消耗电流 Leakage current	<15mA
开关容量 Load current	200mA max.
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度Repeat precision	<3%
负载电流Load current	<200mA/<200mA/<100mA
回差范围Backlash	1-20%
压降Drop	<2.5V/<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP66
外壳Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

# 模拟量接近传感器SA18系列

## Analog sensor SA18 series

**HNC**  
Sensor

### 用途与特点 Application and features

模拟量输出  
抗干扰能力强

Analog output  
Strong anti-interference ability

### ▶ 型号说明 Model Explanation

S	A	18	-08	-5V	-Z	-□	-□
基本型号Model S:型号代码 Model code S: 模拟量 特殊型号定义 Special definition	传感器类别: A:模拟量 Analog proximity sensor	直径OD: 18:18mm	检测距离: Sensing distance: 08:8mm	输出方式Output configuration: 5V:0-5V 10V:0-10V 0A:0-20mA 4A:4-20mA	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

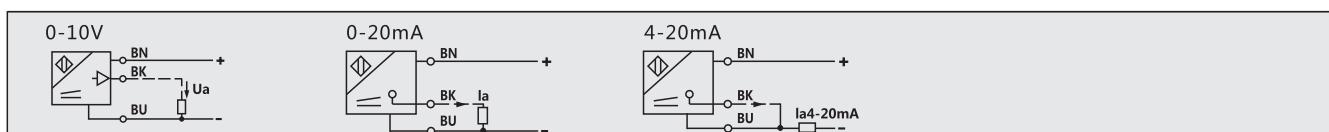
### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	连接方式 Connection mode
SH18-08NK-Z	非埋入 Unshielded	8mm	5V:0-5V 10V:0-10V 0A:0-20mA 4A:4-20mA	导线引出/航插 Cable line/Plug
SH18-5NK-Z	埋入 Shielded	5mm		

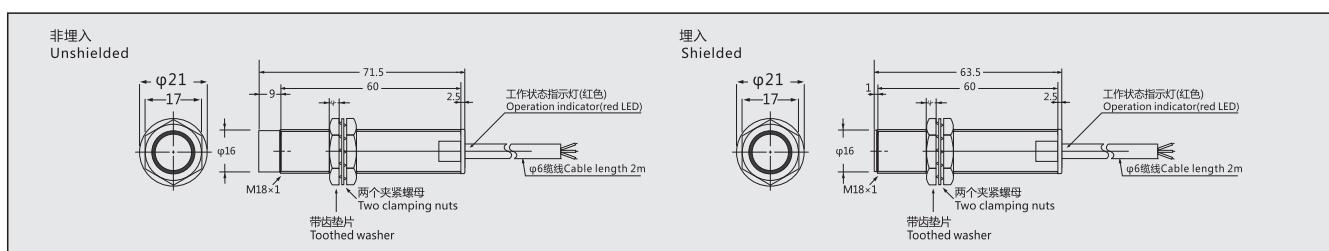
### ▶ 技术规格 Specification

型号 Type	SA18-08/05-5V/0A/4A
电源电压 Voltage	直流DC:15-30VDC
检测距离 Sensing distance	8mm/5mm
开关点偏移 Switch point offset	<±10%Sr
线性度 Linearity	<±5%
负载电流 Load current	电压输出RL≥4.7KΩ,电流输出RL≤470Ω
频率 Frequency	200Hz
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<5%
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)





## 用途与特点 Application and features

模拟量输出  
抗干扰能力强

Analog output  
Strong anti-interference ability

### ▶ 型号说明 Model Explanation

S	A	30	-15	-5V	-Z	-□	-□
基本型号Model S: 型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: A:模拟量 Analog proximity sensor	直径OD: 30:30mm	检测距离 Sensing distance : 15:15mm	输出方式Output configuration : 5V:0-5V 10V:0-10V 0A:0-20mA 4A:4-20mA	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

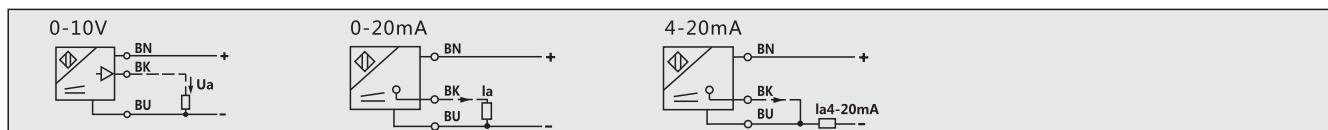
### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	连接方式 Connection mode
SA30-15NK-Z	非埋入 Unshielded	15mm	5V:0-5V 10V:0-10V 0A:0-20mA 4A:4-20mA	导线引出/航插 Cable line/Plug
SA30-10NK-Z	埋入 Shielded	10mm	4A:4-20mA	

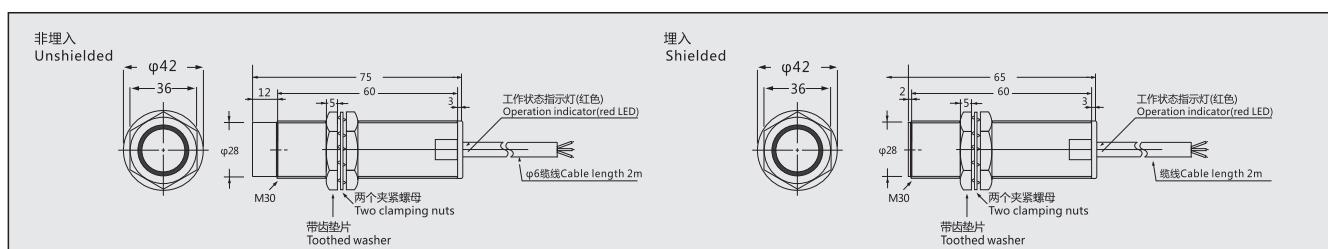
### ▶ 技术规格 Specification

型号 Type	SA30-10/15-5V/0A/4A
电源电压 Voltage	直流DC:15-30VDC
检测距离 Sensing distance	15mm/10mm
开关点偏移 Switch point offset	<±10%Sr
线性度 Linearity	<±5%
负载电流 Load current	电压输出RL≥4.7KΩ, 电流输出RL≤470Ω
频率 Frequency	200Hz
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC1000V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<5%
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX, Y, Z各方向2h double amplitude for 2 hours each in X, Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X, Y, Z各方向10次 500m/s <sup>2</sup> 10 times each X, Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



## 温度扩展型传感器ST30系列

Heat resistant sensor ST30 series

**HNC**  
SENSOR



### 用途与特点 Application and features

适用于高温环境  
金属外壳，便于安装保护，  
配有醒目的指示灯，便于查看工作状态

Applied to high temperature environment  
With a metal connector that can be tightened security  
With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

### ▶ 型号说明 Model Explanation

S	T	30	-10	N	K	-Z	-□	-□
基本型号Model S:型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: T:温度扩展型 Heat resistant sensor	直径OD: 30:30mm	检测距离 Sensing distance: 15:15mm 10:10mm	输出方式Output configuration: N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SI30-15NK-Z	非埋入 Unshielded	15mm	N:NPN输出 DC 3-wire,NPN P:PNP输出 DC 3-wire,PNP	K:常开 NO B:常闭 NC KB:常开+常闭 NO+NC	导线引出/航插 Cable line/Plug
SI30-10NK-Z	埋入 Shielded	10mm			

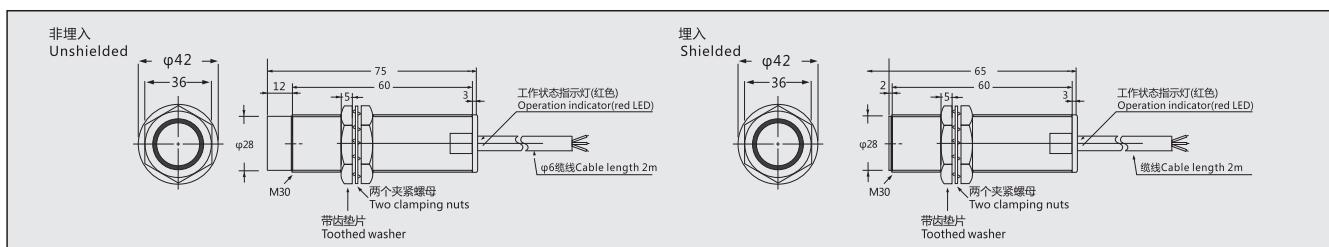
### ▶ 技术规格 Specification

型号 Type	SI30-15/10N/P
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	15mm/10mm
消耗电流 Leakage current	<15mA
开关容量 Load current	200mA max.
极性保护 Polarity protection	Yes
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+110°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<200mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX , Y , Z各方向2h double amplitude for 2 hours each in X , Y and Z directions
冲击(耐久) Shock resistance	500m/s <sup>2</sup> X , Y , Z各方向10次 500m/s <sup>2</sup> 10 times each X , Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳 Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)





## 转速监测型传感器SS18系列 Speed monitoring sensor SS18 series

### 用途与特点 Application and features

应用于转速监测

金属外壳，便于安装保护，

配有醒目的指示灯，便于查看工作状态

Applied to speed monitoring

With a metal connector that can be tightened security

With an easy-to-see indicator, deeper mounting holes, and tightening flats for wrenches.

### ▶ 型号说明 Model Explanation

S	S	18	-08	N	K	-Z	-□	-□
基本型号Model S-型号代码 Model code S □: 特殊型号定义 Special definition	传感器类别: S:转速检测型 Speed monitoring sensor	直径OD: 18:18mm	检测距离 Sensing distance : 05:5mm 08:8mm	输出方式Output configuration : N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP A:交流两线输出 AC 2-wire	输出状态 Operation mode: K:常开 NO B:常闭 NC	产品等级 Product grade: Z:Z级	线缆长度 Cable length (标配2米 Standard Cable length is 2m) 5 : 5m	客户定制 Customized informat

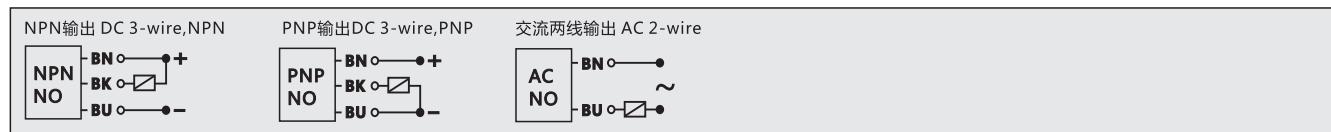
### ▶ 产品种类 Product Category

型号 Model	形状 Appearance	检测距离 Sensing distance	输出规格 Output configuration	动作状态 Operation mode	连接方式 Connection mode
SS18-08NK-Z	非埋入 Unshielded	8mm	N:NPN输出 DC 3-wire,NPN P:PNP输出DC 3-wire,PNP A:交流两线输出 AC 2-wire	K:常开 NO B:常闭 NC	导线引出/航插 Cable line/Plug
SS18-05NK-Z	埋入 Shielded	5mm			

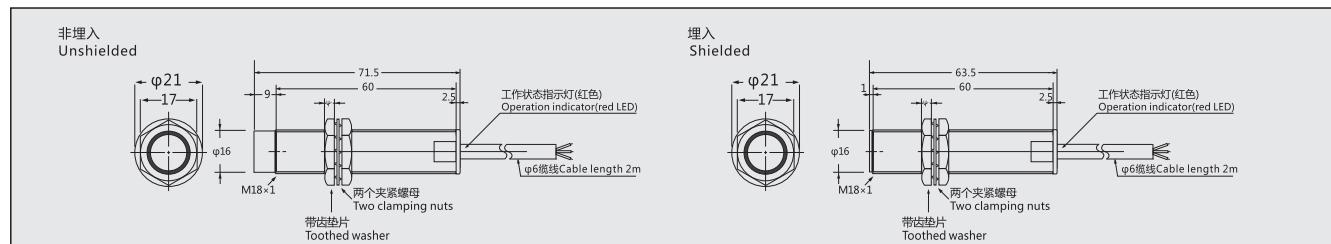
### ▶ 技术规格 Specification

型号Type	SS18-08/05N/P/A
电源电压 Voltage	直流NPN/PNP 10-30VDC
检测距离 Sensing distance	8mm/5mm
消耗电流 Leakage current	<15mA / <15mA
开关容量 Load current	200mA max.
极性保护 Polarity protection	Yes
监测脉冲 Monitoring pulse	3-3000次/分
工作状态指示灯 Indicator	动作显示(红色LED) Operation indicator(Red LED)
环境温度 Ambient temperature	-25~+70°C(不结冰with no icing)
环境湿度 Ambient humidity	工作时/保存时 Operating/Storage:35~95%RH
绝缘电阻 Insulation resistance	50MΩ max. (DC500V)充电部总体与外壳间Between current -carrying parts and case
耐电压 Dielectric strength	AC500V max. 50~60Hz 1min 充电部总体与外壳间Between current -carrying parts and case
重复精度 Repeat precision	<3%
负载电流 Load current	<200mA / <200mA
回差范围 Backlash	1-20%
压降 Drop	<2.5V / <2.5V
振动(耐久) Vibration resistance	10~55Hz复振幅1.5mmX, Y, Z各方向2h double amplitude for 2 hours each in X, Y and Z directions
冲击(耐久) Shock resistance	500m/s²X, Y, Z各方向10次 500m/s² 10 times each X, Y and Z directions
防护等级 Degree of protection	IEC IP67
外壳Case	镍铜合金 Brass-nicke plated

### ▶ 电路输出方式(示例) Example for output circuit



### ▶ 安装尺寸图 Mounting Dimensions(单位Unit:mm)



旋转编码器  
Rotary encoder

接近传感器  
Proximity sensor

光电传感器  
Photoelectric sensor

区域传感器  
Area Sensor

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Sensor

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