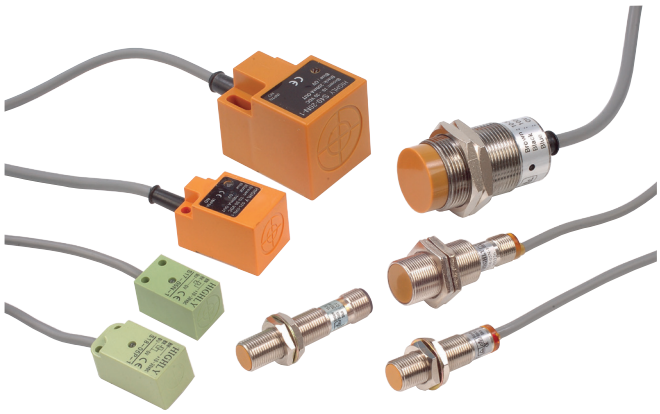
PROXIMITY SWITCH

Description

The sensors provide excellent results even with difficult-to-detect objects, e.g. small or thin parts, wires or bright metals.
A variety of types cover a wide range of individual requirements and installation situations. Thus, devices are available with N.C. or N.O. functions, with NPN or PNP switching outputs, and cable or plug connection.
The enclosure rating is IP66.



Features

- Easy-to-use and tough
- Wide range of models
- Wide operating voltage range
- Short circuit protected
- Ideal for a variety of applications
- With a metal connector that can be tightened securely and a cord protector
- Enclosure rating of IP66, water-proof and oil-drip proof
- Fast response

Specifications

Item	Standard
Differential travel	10% max. of sensing distance
Target	Ferrous metal (The sensing distance decreases with non-ferrous metal.)
Power supply voltage (operating voltage range)	12 ~ 24 VDC. Ripple (p~p): 10% max. (10 ~ 30 VDC)
Current consumption (DC 3-wire)	10 mA max.
Output type	See Product selection
Control output Load current (See note 1.)	200 mA max. (32 VDC max.)
Residual voltage	1 V max. (under load current of 200 mA with cable length of 2 m)
Operation mode (with sensing object approaching)	See Product selection
Protection circuit	Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection
Ambient air temperature	Operating: -40℃ to 70℃, Storage: -40℃ to 85℃(with no icing or condensation)
Temperature influence (See note 1.)	±10% max. of sensing distance at 23℃ within temperature range of -25℃ to 70℃ ±15% max. of sensing distance at 23℃ within temperature range of -40℃ to 70℃
Ambient humidity	Operating: 35% to 95%, Storage: 35% to 95%
Voltage influence	±1% max. of sensing distance in rated voltage range ±15%
Insulation resistance	50 MΩ min. (at 500 VDC) between current carry parts and case
Dielectric strength	1,000 VAC at 50/60 Hz for 1 min between current carry parts and case
Vibration resistance	10 to 55 Hz, 1.5mm double amplitude for 2 hours each in X, Y and Z directions
Shock resistance	1,000 m/s2, 10 times each in x, Y and Z directions
Standards and listings	IEC60529: IP67, Degree of protection EN60947-5-2: EMC

Note 1. When using any model at an ambient temperature between -40℃ and -25℃ and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.,

Design, specifications are subject to change without notice.

PROXIMITY SWITCH

Product selection

TS □-□□-□

1 2 3 4 5

1. Housing outline

TS: Inductive thread round
S: Inductive square
CS: Inductive thread round connector

2. Dimension of sensing face

TS CS type series
12: diameter 12mm
18: diameter 18mm
30: diameter 30mm

S type series
17: square 17mm x 17mm
18: square 18mm x 18mm
18L: square 18mm x 18mm
25: square 25mm x 25mm
30: square 30mm x 30mm
40: square 40mm x 40mm

3. Sensing distance

Numeral: Sensing distance:
E.g. 02=2 mm, 16=16mm

4. Output stage

N: NPN open collector DC mode
P: PNP open collector DC mode

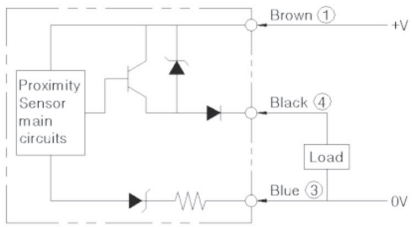
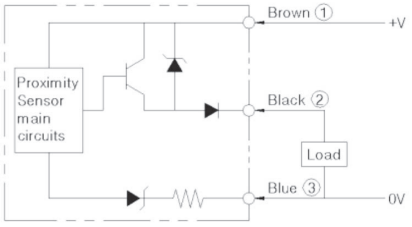
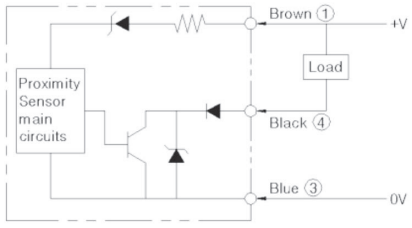
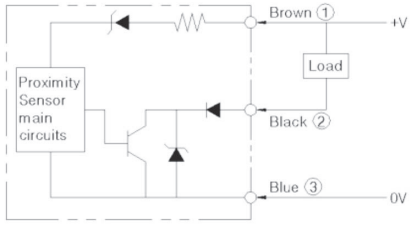
5. Output function

1: N.O. normally open
2: N.C. normally close

Example:

TS12-05N-1 Inductive thread round housing, M12, Sn=5mm, NPN-DC, normally open,
S18-05N-1 Inductive square 18x18 mm, Sn=5mm, NPN-DC, normally open.

Output stage diagram

	NO	NC
PNP	 M12 connector Pin Arrangement Terminal 2 of the M12 connector is not used.	 M12 connector Pin Arrangement Terminal 4 of the M12 connector is not used.
NPN	 M12 connector Pin Arrangement Terminal 2 of the M12 connector is not used.	 M12 connector Pin Arrangement Terminal 4 of the M12 connector is not used.

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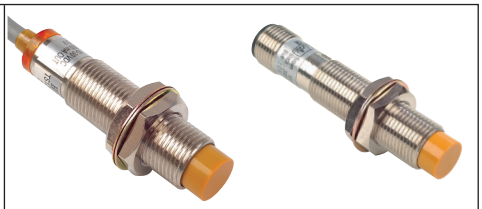
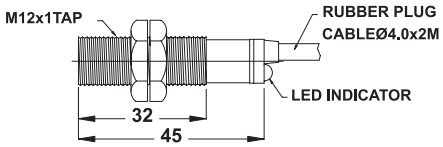
Ordering information

Inductive thread Round metal body type

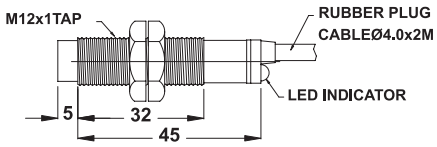
Appearance					
Item		**Shield**		**Non-Shield**	
		Cable type	Connector type	Cable type	Connector type
Output Function Output Stage	**NPN NO-output**	TS12-02N-1	CS12-02N-1	TS12-05N-1	CS12-05N-1
	NPN NC-output	TS12-02N-2	CS12-02N-2	TS12-05N-2	CS12-05N-2
	PNP NO-output	TS12-02P-1	CS-12-02P-1	TS12-05P-1	CS12-05P-1
	PNP NC-output	TS12-02P-2	CS12-02P-2	TS12-05P-2	CS12-05P-2
Sensing Distance		2 mm ± 10%		5 mm ± 10%	
Setting distance		0 to 1.6 mm		0 to 4.0mm	
Response frequency		1.5KHz			
Standard target		12x12x1mm			
Body Material		Brass Nickel plated			
Circuit Protection		Yes			
Reverse polarity protection of supply voltage		Yes			
Cable length		2 m			
Enclosure Protection		IP 67			

DIMENSIONS

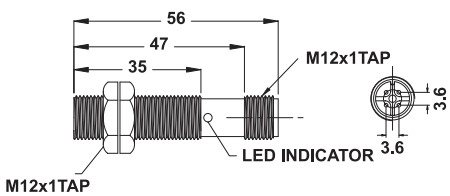
TS12 Shied



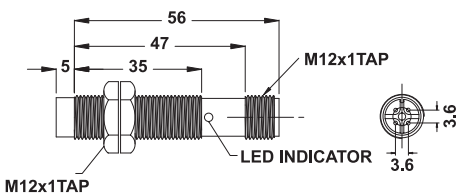
TS12 Non-Shied



CS12 Shied



CS12 Non-Shied



Design, specifications are subject to change without notice.

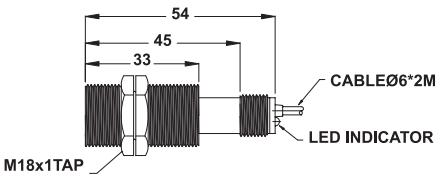
Ordering information

Inductive thread Round metal body type

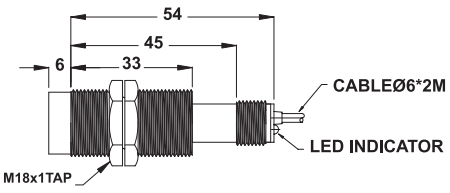
Appearance					
Item		**Shield**		**Non-Shield**	
		Cable type	Connector type	Cable type	Connector type
Output Function Output Stage	**NPN NO-output**	TS18-05N-1	CS18-05N-1	TS18-08N-1	CS18-08N-1
	NPN NC-output	TS18-05N-2	CS18-05N-2	TS18-08N-2	CS18-08N-2
	PNP NO-output	TS18-05P-1	CS18-05P-1	TS18-08P-1	CS18-08P-1
	PNP NC-output	TS18-05P-2	CS18-05P-2	TS18-08P-2	CS18-08P-2
Sensing Distance		5 mm ± 10%		8 mm ± 10%	
Setting distance		0 to 4.0 mm		0 to 6.4 mm	
Response frequency		1.5KHz			
Standard target		18x18x1mm			
Body Material		Brass Nickel plated			
Circuit Protection		Yes			
Reverse polarity protection of supply voltage		Yes			
Cable length		2 m			
Enclosure Protection		IP 67			

DIMENSIONS

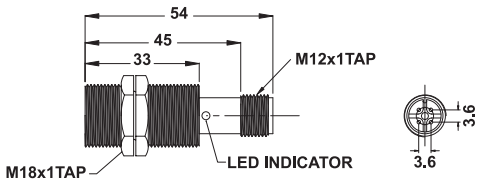
TS18 Shield



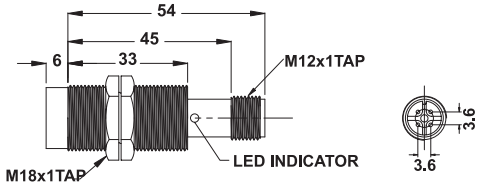
TS18 Non-Shield



CS18 Shield



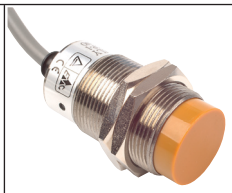
CS18 Non-Shield



Design, specifications are subject to change without notice.

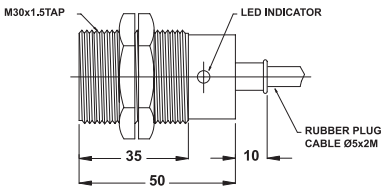
Ordering information

Inductive thread Round metal body type

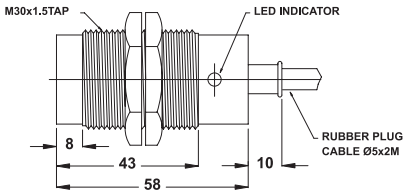
Appearance					
Item		**Shield**		**Non-Shield**	
		Cable type	Connector type	Cable type	Connector type
Output Function Output Stage	**NPN NO-output**	TS30-10N-1	CS30-10N-1	TS30-15N-1	CS30-15N-1
	NPN NC-output	TS30-10N-2	CS30-10N-2	TS30-15N-2	CS30-15N-2
	PNP NO-output	TS30-10P-1	CS30-10P-1	TS30-15P-1	CS30-15P-1
	PNP NC-output	TS30-10P-2	CS30-10P-2	TS30-15P-2	CS30-15P-2
Sensing Distance		10 mm ± 10%		15 mm ± 10%	
Setting distance		0 to 8.0 mm		0 to 12.0mm	
Response frequency		1.0KHz			
Standard target		30x30x1mm			
Body Material		Brass Nickel plated			
Circuit Protection		Yes			
Reverse polarity protection of supply voltage		Yes			
Cable length		2 m			
Enclosure Protection		IP 67			

DIMENSIONS

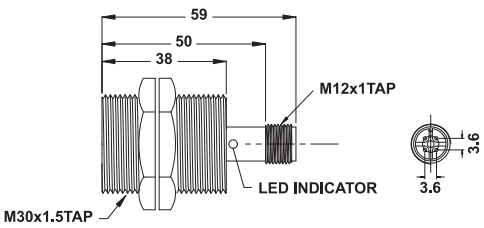
TS30 Shield



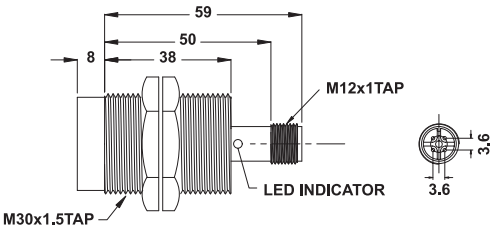
TS30 Non-Shield



CS30 Shield



CS30 Non-Shield



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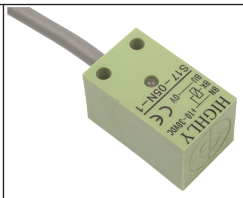
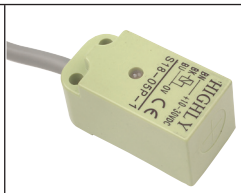
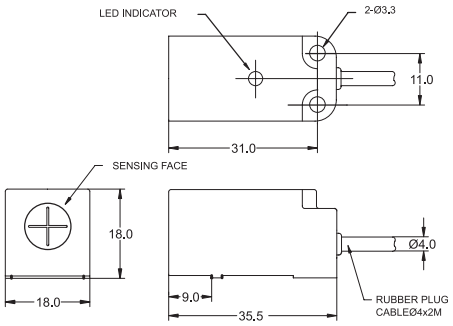
Ordering information

Inductive square

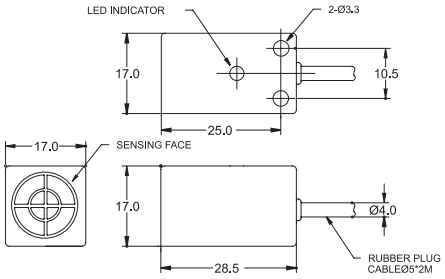
Appearance			
Item		S17 series	S18 series
Output Function Output Stage	**NPN NO-output**	S17-05N-1	S18-05N-1
	NPN NC-output	S17-05N-2	S18-05N-2
	PNP NO-output	S17-05P-1	S18-05P-1
	PNP NC-output	S17-05P-2	S18-05P-2
Sensing Distance		5 mm ± 10%	5 mm ± 10%
Setting distance		0 to 4.0 mm	0 to 4.0 mm
Response frequency		1.5KHz	
Standard target		17x17x1mm	18x18x1mm
Body Material		Plastic	
Circuit Protection		Yes	
Reverse polarity protection of supply voltage		Yes	
Cable length		2 m	
Enclosure Protection		IP 67	

DIMENSIONS

S18



S17



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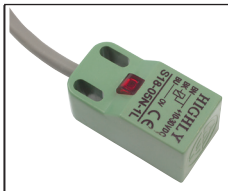
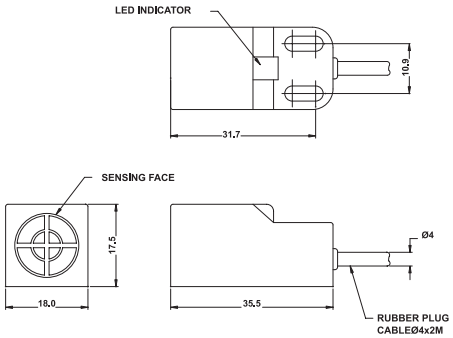
Ordering information

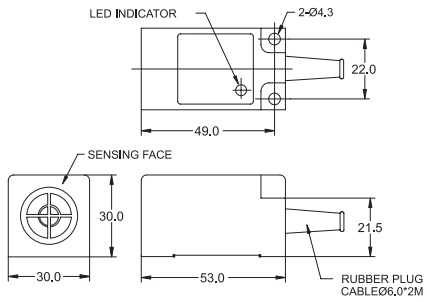
Inductive square

			
SL18 series	S25 series	S30 series	S40 series
SL18-05N-1	S25-07N-1	S30-10N-1	S40-20N-1
SL18-05N-2	S25-07N-2	S30-10N-2	S40-20N-2
SL18-05P-1	S25-07P-1	S30-10P-1	S40-20P-1
SL18-05P-2	S25-07P-2	S30-10P-2	S40-20P-2
5 mm ± 10%	7 mm ± 10%	10 mm ± 10%	20 mm ± 10%
0 to 4.0 mm	0 to 5.6 mm	0 to 8.0mm	0 to 16.0mm
1.5KHz	1.0KHz		600Hz
18x18x1mm	25x25x1mm	30x30x1mm	40x40x1mm
Plastic			
Yes			
Yes			
2 m			
IP 67			

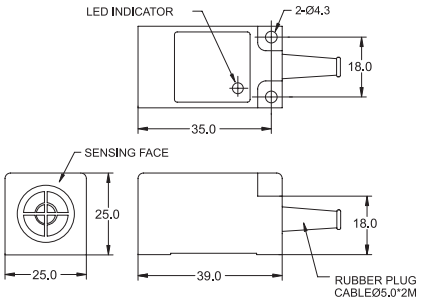
SL18



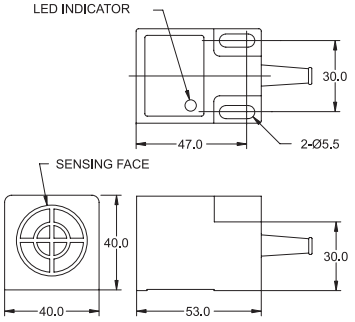
S30



S25



S40



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