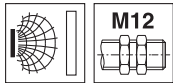
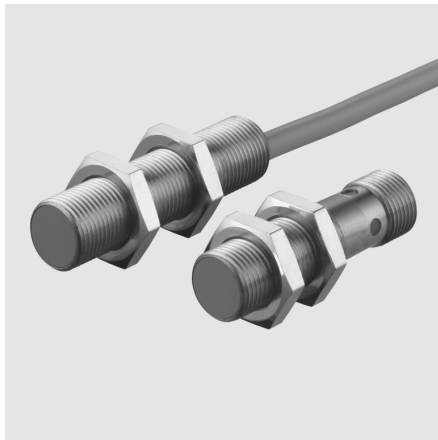


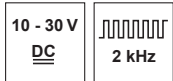
IS 212

Inductive switches

en 02-2010/03 50110219



M12
4 mm
8 mm
10 mm



non-embedded

- Slim and short cylindrical metal housing M12
- Chromium-plated brass housing
- Built-in short circuit protection, inductive protection and polarity reversal protection
- LED for switching state visible from 360°



Accessories:

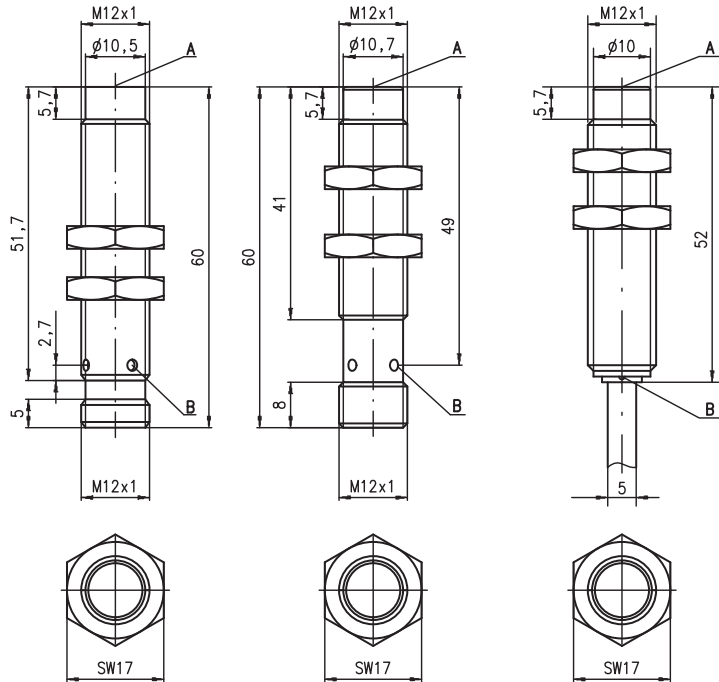
(available separately)

- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Mounting clamp (MC 012...)

Dimensioned drawing

IS 212...-4NO-S12
IS 212...-8NO-S12

IS 212...-10N-S12



Tightening torque of the fastening nuts < 10Nm !

- A Active surface
- B Yellow indicator diode

Electrical connection

Cable

10-30V DC +	br/BN
GND	bl/BU
OUT	sw/BK

M12 connector

...NO... (normally open)

10-30V DC +	1	br/BN
not connected	2	
GND	3	bl/BU
OUT	4	sw/BK

...NC... (normally closed)

10-30V DC +	1	br/BN
OUT	2	ws/WH
GND	3	bl/BU
not connected	4	



...NO...-S12 (normally open):
...NC...-S12 (normally closed):

3-pin or 4-pin M12 connection cables can be used.
only 4-pin M12 connection cables can be used.

Specifications

General specifications	IS 212...-4NO...	IS 212...-8NO...	IS 212...-10N...
Type of installation	non-embedded installation		
Typ. operating range limit S_n	4.0mm	8.0mm	10.0mm
Operating range S_a	0 ... 3.2mm	0 ... 6.4mm	0 ... 8.1mm
Electrical data			
Operating voltage U_B ¹⁾	10 ... 30VDC		
Residual ripple σ	$\leq 20\%$ of U_B		
Output current I_L	≤ 200 mA		
Open-circuit current I_0	≤ 10 mA		
Residual current I_r	≤ 100 μ A		
Switching output/function	.../4NO...	PNP transistor, make-contact (NO)	
	.../4NC...	PNP transistor, break-contact (NC)	
	.../2NO...	NPN transistor, make-contact (NO)	
	.../2NC...	NPN transistor, break-contact (NC)	
Voltage drop U_d	≤ 2 V		
Hysteresis H of S_r	$\leq 10\%$		
Temperature drift of S_r	$\leq 10\%$ ²⁾		
Repeatability	$\leq 5\%$ ³⁾	$\leq 5\%$ ³⁾	$\leq 3\%$ ³⁾
Timing			
Switching frequency f	2kHz	1.5kHz	400Hz
Delay before start-up	≤ 10 ms	≤ 10 ms	≤ 50 ms
Indicators			
Yellow LED (visible from 360°)	switching state		
Mechanical data			
Housing	chromium-plated brass		
Standard surface plate	12 x 12mm ² , Fe360	24 x 24mm ² , Fe360	30 x 30mm ² , Fe360
Active surface	PBTP		
Weight (M12 plug/cable)	approx. 30g/ approx. 95g		
Connection type	M12 connector 4-pin or cable: 2m, PVC, 3 x 0.34mm ² , \varnothing 5.0mm		
Environmental data			
Ambient temperature	-25°C ... +70°C		
Protection class	IP 67		
Protective circuit ⁴⁾	1, 2, 3		
Standards applied	IEC/EN 60947-5-2		
Electromagnetic compatibility	IEC 60255-5	1kV	1kV
	IEC 61000-4-2	Level 3 air 8kV (ESD)	Level 3 air 8kV (ESD)
	IEC 61000-4-3	Level 3 10V/m (RFI)	Level 3 10V/m (RFI)
	IEC 61000-4-4	Level 3 2kV (Burst)	Level 3 2kV (Burst)

- 1) Observe the safety regulations and installation instructions regarding power supply and wiring; for UL applications: only for use in "Class 2" circuits acc. to NEC
- 2) Over the entire operating temperature range
- 3) For $U_B = 20 \dots 30$ VDC, ambient temperature $T_a = 23^\circ\text{C} \pm 5^\circ\text{C}$
- 4) 1=polarity reversal protection, 2=short circuit protection, 3=inductive protection for all outputs

Order guide

The sensors listed here are preferred types; current information at www.leuze.com.

S_n	Designation	Part No.
$S_n = 4$ mm	IS 212 MM/4NO-4NO	50109668
	IS 212 MM/4NO-4NO-S12	50109669
	IS 212 MM/2NO-4NO	50109670
$S_n = 8$ mm	IS 212 MM/4NO-8NO	50112807
	IS 212 MM/4NO-8NO-S12	50112808
$S_n = 10$ mm	IS 212 MM/4NO-10N	50109689
	IS 212 MM/2NO-10N	50111952

Tables

Reduction factors:

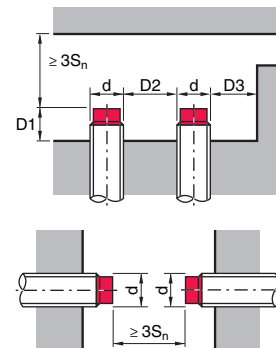
for $S_n = 4.0$ mm		for $S_n = 8.0$ mm	
Steel Fe360	1	Steel Fe360	1
Copper	0.50	Copper	0.45
Aluminum	0.50	Aluminum	0.7
Brass	0.60	Brass	0.55
Stainless steel	0.90	Stainless steel	0.75

for $S_n = 10.0$ mm

Steel Fe360	1
Copper	0.41
Aluminum	0.46
Brass	0.52
Stainless steel	0.74

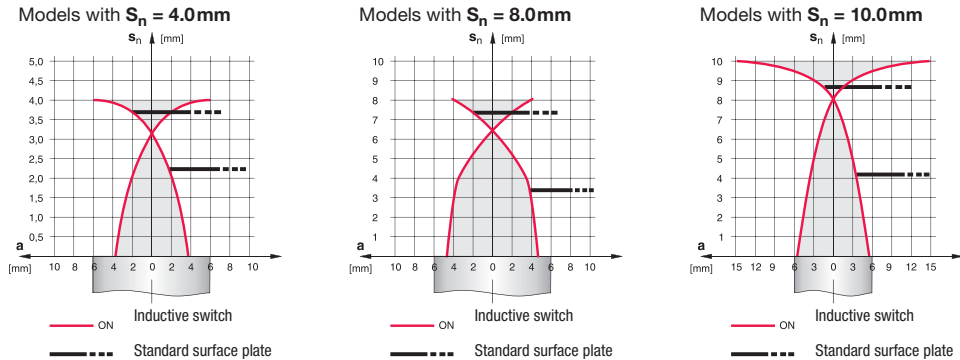
Mounting

Non-embedded installation:



Ferromagnetic and non-ferromagnetic materials				
S_n [mm]	D1 [mm]	D2 [mm]	D3 [mm]	
4.0	6.0	16.0	6.0	
8.0	9.0	33.0	14.0	
10.0	13.0	30.0	10.0	

Diagrams



Type key

I S 2 1 2 M M / 4 N 0 - 4 N 0 - S 1 2

Operating principle / construction

IS Inductive switch / Standard

Series

212 Series with M12 x 1 external thread

Housing / thread

MM Metal housing (active surface: plastic) / metric thread

Output function

- 4NO** PNP transistor, make-contact (NO)
- 4NC** PNP transistor, break-contact (NC)
- 2NO** NPN transistor, make-contact (NO)
- 2NC** NPN transistor, break-contact (NC)

Measurement range / type of installation

- 4NO** Typ. scan range limit 4.0mm / non-embedded installation
- 8NO** Typ. scan range limit 8.0mm / non-embedded installation
- 10N** Typ. scan range limit 10.0mm / non-embedded installation

Electrical connection

- N/A** Cable, PVC, standard length 2000mm
- S12** M12 connector, 4-pin, axial
- 200-S12** Cable, PVC, length 200mm with M12 connector, 4-pin, axial

Remarks

- **Approved purpose:**
The inductive switches are electronic sensors for the inductive, contactless detection of objects. This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not to be used for the protection of persons.

