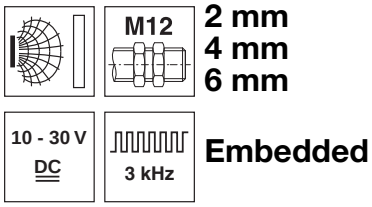
IS 212

Inductive switches

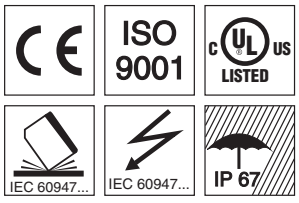
en 02-2010/03 50110220



2 mm
4 mm
6 mm

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°



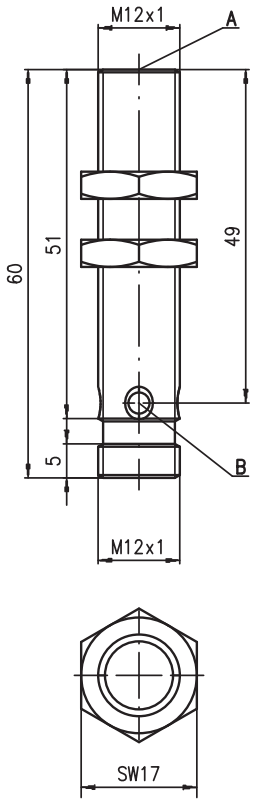
Accessories:

(available separately)

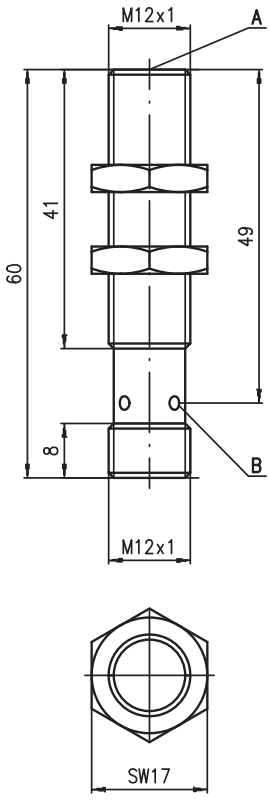
- M12 connectors (KD …)
- Ready-made cables (K-D …)
- Mounting clamp (MC 012…)

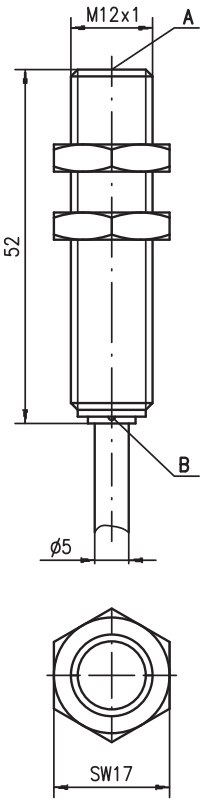
Dimensioned drawing

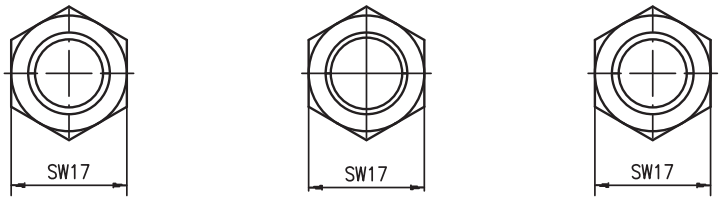
IS 212…-2E0-S12
IS 212…-4E0-S12



IS 212…-6E0-S12





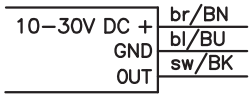


Tightening torque of the fastening nuts < 10 Nm !

A Active surface
B Yellow indicator diode

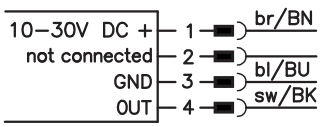
Electrical connection

Cable

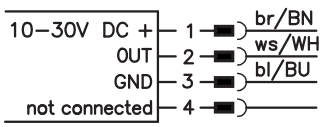


M12 connector

…NO… (normally open)



…NC… (normally closed)



…NO…-S12 (normally open): 3-pin **or** 4-pin M12 connection cables can be used.
…NC…-S12 (normally closed): **only** 4-pin M12 connection cables can be used.

Specifications

General specifications	IS 212…-2E0…	IS 212…-4E0…	IS 212…-6E0…
Type of installation	embedded installation		
Typ. operating range limit S_n	2.0mm	4.0mm	6.0mm
Operating range S_a	0 … 1.6mm	0 … 3.2mm	0 … 4.8mm
Electrical data			
Operating voltage U_B [1]	10 … 30VDC		
Residual ripple σ	≤ 20% of U_B		
Output current I_L	≤ 200mA		
Open-circuit current I_0	≤ 10mA		
Residual current I_r	≤ 100µA		
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	≤ 2V		
Hysteresis H of S_r	≤ 10%	≤ 15%	≤ 10%
Temperature drift of S_r	≤ 10% [2]		
Repeatability	≤ 5% [3]		
Timing			
Switching frequency f	3kHz	2kHz	800Hz
Delay before start-up	≤ 10ms	≤ 300ms	≤ 50ms
Indicators			
Yellow LED (visible from 360°)	switching state		
Mechanical data			
Housing	chromium-plated brass		
Standard surface plate	12 x 12mm², Fe360	12 x 12mm², Fe360	18 x 18mm², Fe360
Active surface	PBTP		
Weight (M12 plug/cable)	approx. 25g/ approx. 95g		
Connection type	M12 connector 4-pin or cable: 2m, PVC, 3 x 0.34mm², Ø 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	
	IEC 61000-4-2	Level 3 air 8kV (ESD)	
	IEC 61000-4-3	Level 3 10V/m (RFI)	
	IEC 61000-4-4	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 … 30VDC, ambient temperature T_a = 23°C ± 5°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.

	Designation	Part No.
S_n = 2mm	IS 212 MM/4NO-2E0	50109664
	IS 212 MM/4NO-2E0-S12	50109665
	IS 212 MM/4NC-2E0-S12	50111870
	IS 212 MM/2NO-2E0	50109666
S_n = 4mm	IS 212 MM/4NO-4E0	50109672
	IS 212 MM/4NO-4E0-S12	50109673
	IS 212 MM/4NC-4E0-S12	50109674
	IS 212 MM/2NO-4E0	50109675
S_n = 6mm	IS 212 MM/4NO-6E0	50109678
	IS 212 MM/2NO-6E0	50109682

Tables

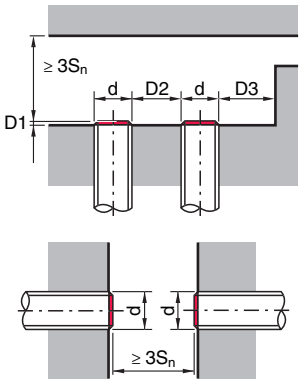
Reduction factors:

for S_n = 2.0mm		for S_n = 4.0mm	
Steel Fe360	1	Steel Fe360	1
Copper	0.20	Copper	0.40
Aluminum	0.30	Aluminum	0.44
Brass	0.40	Brass	0.54
Stainless steel	0.85	Stainless steel	0.80

for S_n = 6.0mm	
Steel Fe360	1
Copper	0.25
Aluminum	0.30
Brass	0.40
Stainless steel	0.70

Mounting

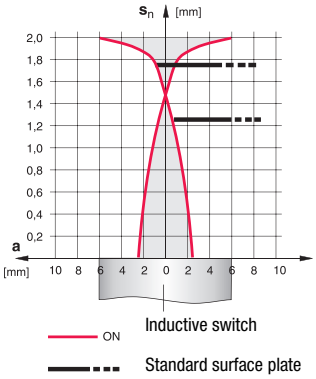
Embedded installation:



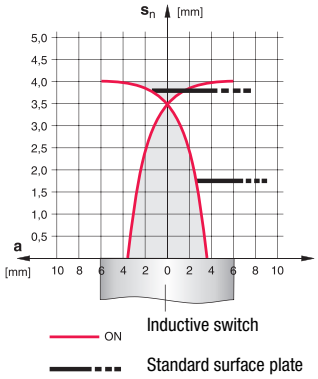
Ferromagnetic and non-ferromagnetic materials			
S_n [mm]	D1 [mm]	D2 [mm]	D3 [mm]
2.0	0	6.0	2.0
4.0	0	12.0	4.0
6.0	2.0	18.0	6.0

Diagrams

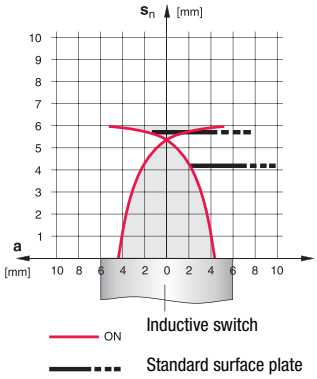
Models with S_n = 2.0 mm



Models with S_n = 4.0 mm



Models with S_n = 6.0 mm



Type key

I	S		2	1	2		M	M	/	4	N	O	-	4	E	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

2E0	Typ. scan range limit 2.0 mm / embedded installation
4E0	Typ. scan range limit 4.0 mm / embedded installation
6E0	Typ. scan range limit 6.0 mm / embedded installation

Electrical connection

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