

IS 218

Inductive switches

en 02-2010/03 50110213



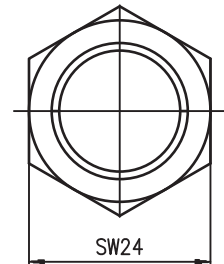
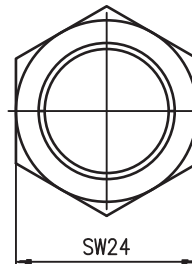
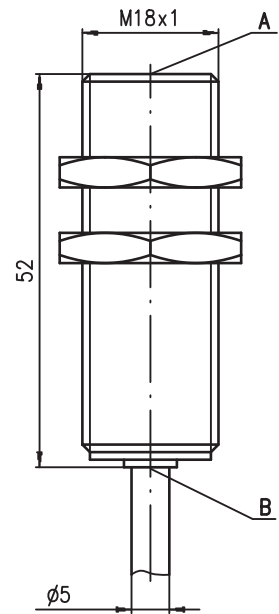
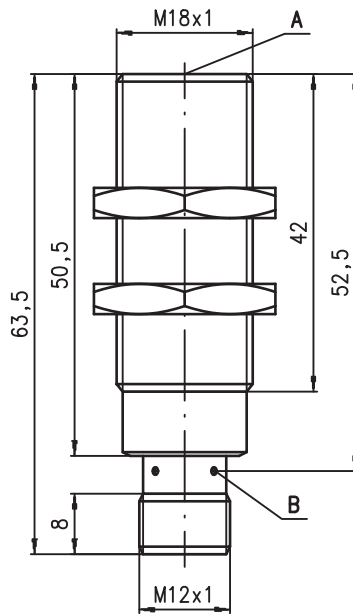
M18  
5 mm  
8 mm  
12 mm



Embedded

- Slim and short cylindrical metal housing M8
- Chromium-plated brass housing
- Built-in short circuit protection, inductive protection and polarity reversal protection
- LED for switching state visible from 360°

Dimensioned drawing

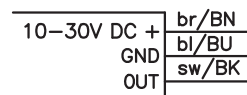


**Tightening torque of the fastening nuts**  
 IS 218...5E0..., IS 218...8E0... < 20Nm !  
 IS 218...12E... < 25Nm !

- A Active surface
- B Yellow indicator diode

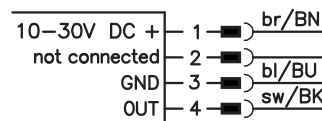
Electrical connection

Cable

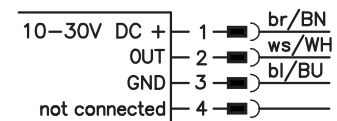


M12 connector

...NO... (normally open)



...NC... (normally closed)



...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.

We reserve the right to make changes • DS\_IS\_218\_E\_en.fm



Accessories:

(available separately)

- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Mounting clamp (MC 018...)

## Specifications

### General specifications

	IS 218...-5E0...	IS 218...-8E0...	IS 218...-12E...
Type of installation	embedded installation		
Typ. operating range limit $S_n$	5.0mm	8.0mm	12.0mm
Operating range $S_a$	0 ... 4.0mm	0 ... 6.5mm	0 ... 9.7mm

### Electrical data

Operating voltage $U_B$ 1)	10 ... 30VDC
Residual ripple $\sigma$	$\leq 20\%$ of $U_B$
Output current $I_L$	$\leq 200\text{mA}$
Open-circuit current $I_0$	$\leq 10\text{mA}$
Residual current $I_r$	$\leq 100\mu\text{A}$
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 $U_d$	$\leq 2\text{V}$
Hysteresis $H$ of $S_r$	$\leq 10\%$
Temperature drift of $S_r$	$\leq 10\%$ 2)
Repeatability	$\leq 5\%$ 3)

### Timing

Switching frequency $f$	2kHz	1.5kHz	500Hz
Delay before start-up	$\leq 40\text{ms}$	$\leq 70\text{ms}$	$\leq 50\text{ms}$

### Indicators

Yellow LED (visible from 360°)	switching state
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### Mechanical data

Housing	chromium-plated brass		
Standard surface plate	18 x 18mm <sup>2</sup> , Fe360	24 x 24mm <sup>2</sup> , Fe360	36 x 36mm <sup>2</sup> , Fe360
Active surface	PBTP		
Weight (M12 plug/cable)	approx. 50g/ approx. 165g		
Connection type	M12 connector 4-pin or cable: 2m, PVC, 3 x 0.34mm <sup>2</sup> , $\varnothing$ 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	
	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  $U_B = 20 \dots 30\text{VDC}$ , 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](http://www.leuze.com).

$S_n$	Designation	Part No.
$S_n = 5\text{mm}$	IS 218 MM/4NO-5E0	50109692
	IS 218 MM/4NO-5E0-S12	50109693
	IS 218 MM/2NO-5E0	50109694
$S_n = 8\text{mm}$	IS 218 MM/4NO-8E0	50109700
	IS 218 MM/4NO-8E0-S12	50109701
	IS 218 MM/4NC-8E0-S12	50109702
	IS 218 MM/2NO-8E0	50112104
	IS 218 MM/2NO-8E0-S12	50109704
$S_n = 12\text{mm}$	IS 218 MM/4NO-12E	50109706
	IS 218 MM/2NO-12E	50111954

## Tables

### Reduction factors:

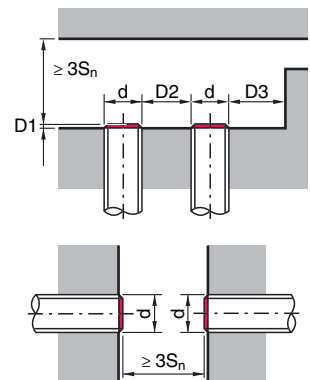
for $S_n = 5.0\text{mm}$		for $S_n = 8.0\text{mm}$	
Steel Fe360	1	Steel Fe360	1
Copper	0.40	Copper	0.30
Aluminum	0.40	Aluminum	0.35
Brass	0.50	Brass	0.40
Stainless steel	0.80	Stainless steel	0.70

### for $S_n = 12.0\text{mm}$

Steel Fe360	1
Copper	0.20
Aluminum	0.26
Brass	0.33
Stainless steel	0.63

## Mounting

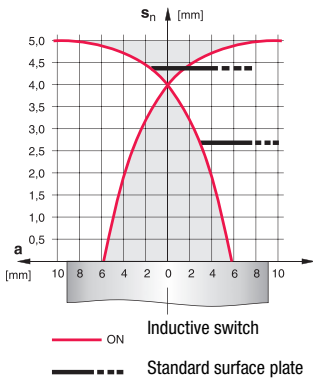
### Embedded installation:



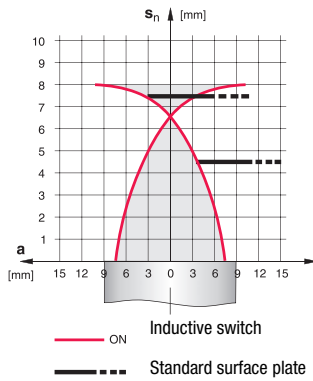
Ferromagnetic and non-ferromagnetic materials				
$S_n$ [mm]	D1 [mm]	D2 [mm]	D3 [mm]	
5.0	0	14.0	5.0	
8.0	0.75	22.0	9.0	
12.0	4.0	26.0	9.0	

**Diagrams**

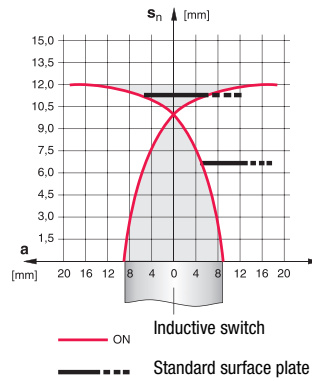
Models with  $S_n = 5.0\text{mm}$



Models with  $S_n = 8.0\text{mm}$



Models with  $S_n = 12.0\text{mm}$



**Type key**

I S 2 1 8 M M / 4 N O - 8 E 0 - S 1 2

**Operating principle / construction**

IS Inductive switch / Standard

**Series**

218 Series with M18 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**

- 5E0 Typ. scan range limit 5.0mm / embedded installation
- 8E0 Typ. scan range limit 8.0mm / embedded installation
- 12E Typ. scan range limit 12.0mm / 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.

