# SMART SENSOR BUSINESS

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Part no.: 50109672 IS 212MM/4NO-4E0 Inductive switch



Figure can vary

# Contents

- Technical data
- · Dimensioned drawings
- · Electrical connection
- · Diagrams
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# Part no.: 50109672 – IS 212MM/4NO-4E0 – Inductive switch

#### **Technical data**

Basic data	
Series	212
Typ. operating range limit S <sub>n</sub>	4 mm
Operating range Sa	0 3.2 mm
Characteristic parameters	
MTTF	910 years
Electrical data	
Protective circuit	Inductive protection Polarity reversal protection Short circuit protected
Performance data	
Supply voltage U <sub>B</sub>	10 30 V , DC
Residual ripple	0 20 % , From U <sub>B</sub>
Open-circuit current	0 10 mA
Temperature drift, max. (in % of Sr)	10 % , Over the entire operating temperature range
Repeatability, max. (in % of Sr)	5 % , For UB = 20 … 30 V DC, ambient temperature Ta = 23 °C $\pm$ 5 °C
Switching hysteresis	20 %
Outputs	
Number of digital switching outputs	1 Piece(s)
Switching outputs	
Voltage type	DC
Switching current, max.	200 mA
Residual current, max.	0.1 mA
Voltage drop	≤ 2 V
Switching output 1	
Switching element	Transistor , PNP
Switching principle	NO (normally open)
Timing	2.500.11-
Switching frequency	2,500 Hz
Readiness delay	60 ms
Connection	
Number of connections	1 Piece(s)
Connection 1	
Type of connection	Cable
Function	Signal OUT Voltage supply
Cable length	2,000 mm
Sheathing material	PVC
Cable color	Gray
Number of conductors	3 -wire
Wire cross section	0.34 mm²

Mechanical data

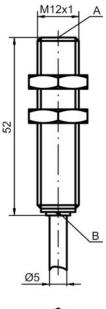
## Part no.: 50109672 – IS 212MM/4NO-4E0 – Inductive switch

Sensing face material     Plastic , Polybutylene (PBT)       Net weight     95 g       Housing color     Rad, RAL 3000       Silver     Silver       Type of fastening     Mounting thread       Standard measuring plate     12 x 12 mm <sup>2</sup> , Fa360       Operation and display       Type of display     LED       Number of LEDs     1 Piece(s)       Environmental data       Ambient temperature, operation       AT 0 °C       Ambient temperature, operation     -25 70 °C       Armbient temperature, storage     -25 70 °C       Certifications       Degree of protection       IP 67     Protection class       II     Certifications       Certifications     c UL US       Certifications       Certifications       Certifications       Certifications       Currotico class       II     EC 6 10000 4-2       IEC 6 10000 4-3     IEC 6 10000 4-2       IEC 8 10000 4-3     IEC 8 10000 4-2       IEC 8 10000 4-4     IEC 8 1000 4-2	Design	Cylindrical		
Type of installation       Embedded         Housing material       Metal, Nickel-plated brass         Sensing face material       Plastic, Polybutylene (PBT)         Net weight       99 g         Housing color       Red, RAL 3000 Silver         Standard measuring plate       12 x 12 mm², Fe360         Operation and display         UED         Number of LEDs         Number of LEDs         Protection         Protection         Protection         Protection         Protection         Protection class         US         Contributions         Contribution         Protection class         II Contribution         Protection class         II Contribution         Contribution         Protection for EMC in accordance with standard         IEC 61000.4:2.3         IEC 61000.4:2.3         IEC 61000.4:2.3         IEC 61000.4:2.3         Res	Thread size	M12 x 1 mm		
Housing material   Metal, Nickel-plated brass     Sensing face material   Plastic, Polybutylene (PBT)     Net weight   95 g     Housing color   Red, RAL 3000 Silver     Type of fastening   Mounting thread     Standard measuring plate   12 x 12 mm², Fe360     Operation and display     Type of display     Umber of LEDs   1 Piece(s)     Environmental data     Ambient temperature, operation     Ambient temperature, operation     Certifications     Certifications     Degree of protection     IP 67     Protection Class     II P 67     Protection Class     II C 61000-4-2     Ec 61000-4-3     IEC 61000-4-2     IEC 61000-4-2     IEC 61000-4-3     IEC 61000-4-2     IEC 61000-4-4     Standard applied     Operation factors     Out UIS     Carterio factors     IEC 61000-4-2     IEC 61000-4-2     IEC 61000-4-2     IEC 61000-4-2 <td>Dimension (Ø x L)</td> <td colspan="3">12 mm x 52 mm</td>	Dimension (Ø x L)	12 mm x 52 mm		
Sensing face material     Plastic , Polybutylene (PBT)       Net weight     95 g       Housing color     Red, RAL 3000       Silver     Silver       Type of fastening     Mounting thread       Standard measuring plate     12 x 12 mm², Fa360       Operation and display       Type of display     LED       Number of LEDs     1 Piece(s)       Environmental data       Ambient temperature, operation       A25 70 °C       Cartifications       Degree of protection       IP 67       Protection class     II       Certifications       Correction class       II     Cettifications       Correction factors       Aundruk applied       IEC 81000 4-2 IEC 81000 4-3 IEC 81000 4-4       Standards applied       Carection factors       Aundruk applied       Carection factors       Aundruk applied       Carection factors       Carection factors       Carection	Type of installation	Embedded		
Net weight   95 g     Housing color   Red, RAL 3000 Silver     Type of fastening   Mounting thread     Standard measuring plate   12 x 12 mm², Fe360     Operation and display     Type of display     LED     Number of LEDs     Environmental data     Ambient temperature, operation     25 70 °C     Certifications     Degree of protection     IP 67     Protection class     II     Certifications     Correction factors     Correction factors     Correction factors     Advancementation     Advancementation     Correction factors     Cartext colspan="2">Correction factors     Cartext colspan="2">Correction factors     Correction factors     Correction factors     Cartext colspan="2">Correction factors     Correction factors     Correction factors     Correction factors     Correction factors     Correction factors     Corection factors </td <td>Housing material</td> <td>Metal , Nickel-plated brass</td>	Housing material	Metal , Nickel-plated brass		
Housing color   Red, RAL 3000 Silver     Type of fastening   Mounting thread     Standard measuring plate   12 x 12 mm², Fe360     Operation and display     LED     Number of LEDs   1 Piece(s)     Commental data     Ambient temperature, operation     Ambient temperature, operation     Degree of protection     Protection class     II   Certifications     Certifications     Certifications     Certifications     Certifications     Certifications     Certifications     Correction factors     List procedure for EMC in accordance with standard     LISC 61000-4-2 LIEC 61000-4-3 LIEC 61000-4-3 LIEC 61000-4-3     Standards applied     List for colspan="2">Correction factors     Carection factors <td colspan<="" td=""><td>Sensing face material</td><td>Plastic , Polybutylene (PBT)</td></td>	<td>Sensing face material</td> <td>Plastic , Polybutylene (PBT)</td>	Sensing face material	Plastic , Polybutylene (PBT)	
Silver         Type of fastening       Mounting thread         Standard measuring plate       12 x 12 mm², Fe360         Operation and display         Type of display       LED         Number of LEDs       1 Piece(s)         Environmental data         Ambient temperature, operation         Ambient temperature, storage         Certifications         Degree of protection         IP 67         Protection class         II       II         Certifications         Cull US         Test procedure for EMC in accordance with standard         IEC 6 f1000-4-2       IEC 6 f1000-4-2         IEC 6 f1000-4-3       IEC 6 f1000-4-4         Standards applied         LEC 6 f1000-4-4         Standards applied         LEC 6 f1000-4-4         Standards applied         LEC 6 f1000-4-2         LEC 6 f1000-4-4         Standards applied         LEC 6 f1000-4-2         LEC 6 f1000-4-2 <td colsp<="" td=""><td>Net weight</td><td>95 g</td></td>	<td>Net weight</td> <td>95 g</td>	Net weight	95 g	
Standard measuring plate     12 x 12 mm², Fe360       Operation and display     LED       Type of display     LED       Number of LEDs     1 Piece(s)       Environmental data     -25 70 °C       Ambient temperature, operation     -25 70 °C       Ambient temperature, storage     -25 70 °C       Cartifications     -25 70 °C       Degree of protection     IP 67       Protection class     II       Certifications     c UL US       Test procedure for EMC in accordance with standard     IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-3 IEC 61000-4-4       Standards applied     IEC 60007-4.3 IEC 61000-4.4       Standards applied     0.44       Standards applied     0.8       Copper     0.4       Brass     0.54       Fe380 steel     1       Class fariff number     85365019       Customs tariff number     85365019       Culcigss 8.0     27270101       Cilcigss 8.0     27270101	Housing color			
Operation and display       Type of display     LED       Number of LEDs     1 Piece(s)       Environmental data     -25 70 °C       Ambient temperature, operation     -25 70 °C       Cartifications     -25 70 °C       Degree of protection     IP 67       Protection class     II       Certifications     c UL US       Test procedure for EMC in accordance with standard     IEC 61000-4.2 IEC 61000-4.3 IEC 61000-4.4       Standards applied     IEC 60947-5.2       Correction factors       Aluminum     0.44       Standards splied     0.8       Copper     0.4       Fease     0.54       Fease     1       Castification	Type of fastening	Mounting thread		
Type of display       LED         Number of LEDs       1 Piece(s)         Environmental data       -         Ambient temperature, operation       -25 70 °C         Ambient temperature, storage       -25 70 °C         Certifications       -25 70 °C         Degree of protection       IP 67         Protection class       II         Certifications       c UL US         Test procedure for EMC in accordance with standard       IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-2 IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-2 IEC 61000-4-4         Standards applied       IEC 6000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-3 IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-5 IEC 61000-4-5         Correction factors       IEC 6000-4-5         Aluminum       0.44         Stainless steel       0.8         Copper       0.4         Fass       0.54         Fass       0.54         Fass       0.54         Customs tariff number <td< td=""><td>Standard measuring plate</td><td>12 x 12 mm², Fe360</td></td<>	Standard measuring plate	12 x 12 mm², Fe360		
Type of display       LED         Number of LEDs       1 Piece(s)         Environmental data       -         Ambient temperature, operation       -25 70 °C         Ambient temperature, storage       -25 70 °C         Certifications       -25 70 °C         Degree of protection       IP 67         Protection class       II         Certifications       c UL US         Test procedure for EMC in accordance with standard       IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-2 IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-2 IEC 61000-4-4         Standards applied       IEC 6000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-3 IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 6000-4-5 IEC 61000-4-5         Correction factors       IEC 6000-4-5         Aluminum       0.44         Stainless steel       0.8         Copper       0.4         Fass       0.54         Fass       0.54         Fass       0.54         Customs tariff number <td< td=""><td>Operation and display</td><td></td></td<>	Operation and display			
Amber of LEDs     1 Piece(s)       Environmental data     -25 70 °C       Ambient temperature, operation     -25 70 °C       Ambient temperature, storage     -25 70 °C       Certifications     -25 70 °C       Degree of protection     IP 67       Protection class     II       Certifications     c UL US       Test procedure for EMC in accordance with standard     IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-3       Standards applied     IEC 6004-4-3       Aluminum     0.44       Stainless steel     0.8       Copper     0.4       Brass     0.54       Fe360 steel     1       Customs tariff number     85365019       CiQess 8.0     27270101       eCiQes 9.0     27270101		I ED		
Environmental data       Ambient temperature, operation     -25 70 °C       Ambient temperature, storage     -25 70 °C       Certifications     -25 70 °C       Degree of protection     IP 67       Protection class     II       Certifications     c UL US       Test procedure for EMC in accordance with standard     IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-3 IEC 61000-4-4       Standards applied     IEC 60004-7-5-2       Correction factors       Aluminum     0.44       Stainless steel     0.8       Copper     0.4       Brass     0.54       Fe360 steel     1       Classification       Classification     27270101       Classes 8.0       Calles 8.0       Calles 8.0       Calles 8.0       Correction factors				
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Ambient temperature, storage-25 70 °CCertificationsIP 67Degree of protectionIP 67Protection classIICertificationsc UL USTest procedure for EMC in accordance with standardIEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-3 IEC 61000-4-3Standards appliedIEC 60947-5-2Correction factorsAluminum0.44Stainless steel0.8Copper0.4Brass0.54Fe360 steel1ClassificationCustoms tariff numberCustoms tariff number85365019eCl@ss 8.027270101eCl@ss 9.027270101ETIM 5.0EC002714	Environmental data			
Certifications         Degree of protection       IP 67         Protection class       II         Certifications       c UL US         Test procedure for EMC in accordance with standard       IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 60947-5-2         Correction factors         Aluminum       0.44         Stainless steel       0.8         Copper       0.4         Brass       0.54         Fe360 steel       1         Customs tariff number       85365019         eCl@ss 8.0       27270101         eCl@ss 9.0       27270101         ETIM 5.0       EC002714	Ambient temperature, operation	-25 70 °C		
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Degree of protectionIP 67Protection classIICertificationsc UL USTest procedure for EMC in accordance with standardIEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-3 IEC 61000-4-4Standards appliedIEC 60947-5-2Correction factorsAluminum0.44Stanless steel0.8Copper0.44Brass0.54Fe360 steel1ClassificationCustoms tariff numberStandards ap.027270101eCl@ss 8.027270101ETIM 5.0EC002714	Certifications			
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Test procedure for EMC in accordance with standard     IEC 61000-4-2       IEC 61000-4-3     IEC 61000-4-3       Standards applied     IEC 60947-5-2       Correction factors       Aluminum     0.44       Stainless steel     0.8       Copper     0.4       Brass     0.54       Fe360 steel     1       Classification       Classification       Cl@ss 8.0     27270101       eCl@ss 9.0     27270101       ETIM 5.0     EC002714	Protection class	ll		
IEC 61000-4-3 IEC 61000-4-4         Standards applied       IEC 60947-5-2         Correction factors       0.44         Aluminum       0.44         Stainless steel       0.8         Copper       0.4         Brass       0.54         Fe360 steel       1         Customs tariff number       85365019         ecl@ss 8.0       27270101         ecl@ss 9.0       27270101         ETIM 5.0       EC002714	Certifications	c UL US		
Correction factors         Aluminum       0.44         Stainless steel       0.8         Copper       0.4         Brass       0.54         Fe360 steel       1         Classification         Customs tariff number       85365019         eCl@ss 8.0       27270101         eCl@ss 9.0       27270101         ETIM 5.0       EC002714	Test procedure for EMC in accordance with standard	IEC 61000-4-3		
Aluminum0.44Stainless steel0.8Copper0.4Brass0.54Fe360 steel1ClassificationCustoms tariff number85365019eCl@ss 8.027270101eCl@ss 9.027270101ETIM 5.0EC002714	Standards applied	IEC 60947-5-2		
Aluminum0.44Stainless steel0.8Copper0.4Brass0.54Fe360 steel1ClassificationCustoms tariff number85365019eCl@ss 8.027270101eCl@ss 9.027270101ETIM 5.0EC002714				
Stainless steel       0.8         Copper       0.4         Brass       0.54         Fe360 steel       1         Classification         Customs tariff number       85365019         eCl@ss 8.0       27270101         eCl@ss 9.0       27270101         ETIM 5.0       EC002714	Correction factors			
Copper       0.4         Brass       0.54         Fe360 steel       1         Classification         Customs tariff number       85365019         eCl@ss 8.0       27270101         eCl@ss 9.0       27270101         ETIM 5.0       EC002714	Aluminum	0.44		
Brass       0.54         Fe360 steel       1         Classification       5365019         Customs tariff number       85365019         eCl@ss 8.0       27270101         eCl@ss 9.0       27270101         ETIM 5.0       EC002714	Stainless steel	0.8		
Fe360 steel     1       Classification        Customs tariff number     85365019       eCl@ss 8.0     27270101       eCl@ss 9.0     27270101       ETIM 5.0     EC002714	Copper	0.4		
Classification       Customs tariff number     85365019       eCl@ss 8.0     27270101       eCl@ss 9.0     27270101       ETIM 5.0     EC002714	Brass	0.54		
Customs tariff number       85365019         eCl@ss 8.0       27270101         eCl@ss 9.0       27270101         ETIM 5.0       EC002714	Fe360 steel	1		
Customs tariff number       85365019         eCl@ss 8.0       27270101         eCl@ss 9.0       27270101         ETIM 5.0       EC002714	Classification			
eCl@ss 8.0     27270101       eCl@ss 9.0     27270101       ETIM 5.0     EC002714		85365019		
eCl@ss 9.0 27270101 ETIM 5.0 EC002714				
ETIM 5.0 EC002714				
	ETIM 6.0			

### **Dimensioned drawings**

All dimensions in millimeters

## Part no.: 50109672 - IS 212MM/4NO-4E0 - Inductive switch





A Active surface B Yellow LED

## **Electrical connection**

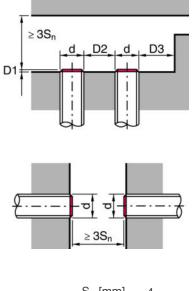
Connection 1	
Type of connection	Cable
Function	Signal OUT Voltage supply
Cable length	2,000 mm
Sheathing material	PVC
Cable color	Gray
Number of conductors	3 -wire
Wire cross section	0.34 mm <sup>2</sup>

Conductor color	Conductor assignment
Brown	V+
Blue	GND
Black	OUT 1

## Part no.: 50109672 - IS 212MM/4NO-4E0 - Inductive switch

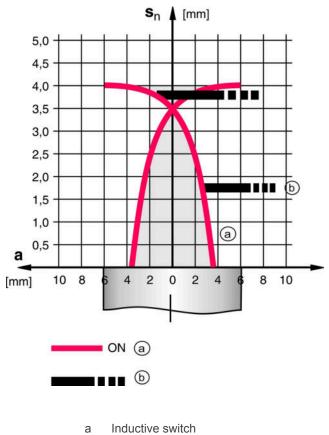
#### Diagrams

Embedded installation



Sn[	mm]	4
D1 [	mm]	0
D2 [	mm]	12
D3 [	mm]	4

#### Types with $S_n = 4.0 \text{ mm}$



b Standard measuring plate

# Part no.: 50109672 - IS 212MM/4NO-4E0 - Inductive switch

#### **Operation and display**

#### LEDs

LED	Display	Meaning	
1	Yellow, continuous light	Switching output/switching state	

#### Part number code

Part designation: ISX YYY ZZ/AAA.BB-CCC-DDD-DDD

ISX	Operating principle / construction: IS: inductive switch, standard design ISS: inductive switch, short construction
ΥΥΥ	Series: 203: series with Ø 3 mm 204: series with Ø 4 mm 205: series with M5 x 0.5 external thread 206: series with Ø 6.5 mm 208: series with M8 x 1 external thread 212: series with M12 x 1 external thread 218: series with M18 x 1 external thread 230: series with M30 x 1.5 external thread 240: series in cubic design 244: series in cubic design 255: series with 5 x 5 mm <sup>2</sup> cross section 288: series with 8 x 8 mm <sup>2</sup> cross section
ZZ	Housing / thread: MM: metal housing (active surface: plastic) / metric thread FM: full-metal housing (active surface: stainless steel AISI 316L) / metric thread MP: metal housing (active surface: plastic) / smooth (without thread)
ΑΑΑ	Output current / supply: 4NO: PNP transistor, NO contact 4NC: PNP transistor, NC contact 2NO: NPN transistor, NC contact 2NC: NPN transistor, NC contact 1NO: relay, NC contact / AC/DC 1NC: relay, NC contact / AC/DC 44: 2 PNP transistor switching outputs, antivalent (NO + NC) 22: 2 NPN transistor switching outputs, antivalent (NO + NC)
BB	Special equipment: n/a: no special equipment 5F: food version 5: housing material V2A (1.4305, AISI 303)
CCC	Measurement range / type of installation: 1E0: typ. range limit 1.0 mm / embedded installation 1E5: typ. range limit 1.5 mm / embedded installation 3E0: typ. range limit 2.0 mm / embedded installation 3E0: typ. range limit 3.0 mm / embedded installation 5E0: typ. range limit 5.0 mm / embedded installation 5E0: typ. range limit 6.0 mm / embedded installation 6E0: typ. range limit 6.0 mm / embedded installation 6E0: typ. range limit 10.0 mm / embedded installation 10E: typ. range limit 10.0 mm / embedded installation 12E: typ. range limit 10.0 mm / embedded installation 12E: typ. range limit 12.0 mm / embedded installation 12E: typ. range limit 12.0 mm / embedded installation 20E: typ. range limit 2.0 mm / on-embedded installation 20N: typ. range limit 2.0 mm / non-embedded installation 10N: typ. range limit 4.0 mm / non-embedded installation 12N: typ. range limit 1.0 mm / non-embedded installation 22N: typ. range limit 2.0 mm / non-em
DDD	Electrical connection: n/a: cable, standard length 2000 mm S12: M12 connector, 4-pin, axial 200-S12: cable, length 200 mm with M12 connector, 4-pin, axial 200-S8.3: cable, length 200 mm with M8 connector, 3-pin, axial S8.3: M8 connector, 3-pin, axial 005-S8.3: cable, length 500 mm with M8 connector, 3-pin, axial 050: cable, standard length 5000 mm, 3-wire

## Part no.: 50109672 – IS 212MM/4NO-4E0 – Inductive switch

#### Note

A list with all available device types can be found on the Leuze electronic website at www.leuze.com.

### Notes

#### Observe intended use!

- This product is not a safety sensor and is not intended as personnel protection.
- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

#### For UL applications:

• For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).

### Accessories

## Mounting technology - Other

	Part no.	Designation	Article	Description
MAR.	50132728	AC D12M-CS	Clamp	Contains: 2x M16 mounting nut Diameter, inner: 12 mm Design of mounting device: Mounting clamp Fastening, at system: Screw type, Through-hole mounting Mounting bracket, at device: insertable, Clampable with limit stop Type of mounting device: Clampable, With limit stop Material: Metal
	50111499	MC 012K	Clamp	Diameter, inner: 12 mm Design of mounting device: Mounting clamp Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Rigid Material: Plastic

Note
A list with all available accessories can be found on the Leuze electronic website in the Download tab of the article detailed page.