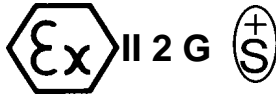


Safety Inductive Sensors



Operating Manual and Control Drawing No. OM-IS-01a

Series IS2-..AP-..



ISO 9001

- for Accident Prevention Level 4. BG-PRÜFZERT
- Ex protection method: Intrinsically Safe EEx ia IIC T6
- for use in Zone 0, 1, 2 / CL I, GR ABCD, CL II GR EFG, CL III HAZARDOUS LOCATIONS
- CLASSIFIED BY UNDERWRITER'S LABORATORIES INC. ASSIGNED CONTROL No. 24VL
- EU Ex Certification of Conformity: TÜV 97 ATEX 1154

Technical Data	Types Standard	IS2-DB30AP(-S)	IS2-KB40AP(-S)	IS2-KN40AP(-S)
	Types EEx ia IIC T6	IS2-DB30AP-IA(-S)	IS2-KB40AP-IA(-S)	IS2-KN40AP-IA(-S)
Housing		Aluminum	Makrolon (PC), glass fiber reinforced	
Mounting arrangement		flush mounted	flush mounted	free mounted
Operating distance s_n , (EN60947-2-5) (on Steel 37, $(s_n \times 3)^2 \times 1\text{mm}$)		nominal 30mm	nominal 40mm	nominal 40mm
Safe operating distance s_a		3mm ... 28mm	5mm ... 32mm	5mm ... 38mm
Switching hysteresis		2-4mm	2-6mm	2-6mm
Safety distance s_d ($s_n \times 3$)		90mm	120mm	120mm
System of protection		IP65 at EN 60529		
Supply voltage		12 - 28VDC / IS2-..IA 12 VDC from intrinsically safe power supply [EEx ia] IIC		
Current consumption		20mA		
max. Power dissipation		800mW		
Internal inductivity / capacity		$L_i = 2,64\mu\text{H} / C_i = 0$		
Circuit speed		50ms		
Outputs		2 x PNP / max. 100mA / short circuit protected		
Ambient temperature T_A		$-20^\circ\text{C} < T_A < +60^\circ\text{C}$		
Cable		4x AWG24(0,2mm ²) + Shield / L=5m, Ex devices blue covered		
Connector-devices, appendix..-S		Binder M12 Series 713 / 09-0431-81-04 / 4 terminals		
Function and LED display		 Object recognized, LED green	 No object recognized, LED red	
Connections and output characteristics		2 x PNP-Outputs, Transistors switched ON + brown Output 1 black Output 2 grey - blue	2 x PNP-Outputs, Transistors switched OFF + brown Output 1 black Output 2 grey - blue Safety Condition	

Mounting

IS2-KN-40-AP-.. (free mounting):

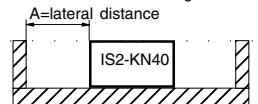
Sensors for free mounting arrangement have the highest operating distance, but a part of the parasitic lateral electromagnetic field can disturb the safe function. Lateral protection plates or other metallic objects must not influence the Sensor. For safe function a lateral free space around the sensor must be guaranteed. Lateral protection plates must not rise above the sensor. The minimal distances A for different materials is:

Steel 37: 40mm	Stainless Steel: 35mm	Copper: 20mm
Aluminum foil: 40mm	Aluminum: 20mm	Synthetics: 0mm

IS2-DB30 / IS2-KB40 (flush mounting):

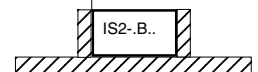
For flush mounting sensors no lateral free space is required (A=0). It's possible to realize a better mechanical protection and they have a higher immunity against spurious releasing. In a free mounting arrangement the sensors for flush mounting reach a lower level of operating distance (s_a) than sensors for free mounting.

Sensor for free mounting condition

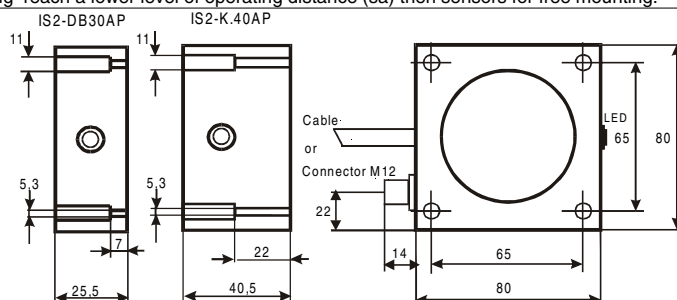


▨ = Metal

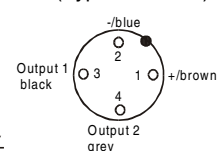
Sensor for flush mounting condition
A=0mm



Dimensions



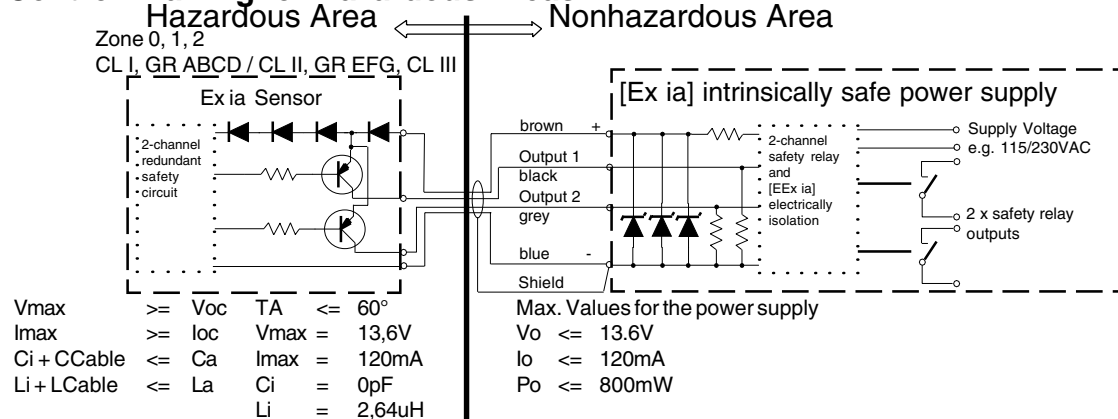
Connector layout:
(Types IS2-...-S)



Types:

Type	Accident Protection	Ex Protection Zone	Housing Color	Mounting arrangement	Supply voltage V DC	Cable Connector	Nominal operating distance sn	Safe operating distance sa
IS2-DB30-AP	Level 4	no protection	Al/yellow	flush mounting	12-28V	5m, Cable grey	30mm	3 to 28mm
IS2-DB30-AP-S	Level 4	no protection	Al/yellow	flush mounting	12-28V	Connector	30mm	3 to 28mm
IS2-DB30-AP-IA	Level 4	ia/Zone 0,1	Al/yellow	flush mounting	12V[EEx ia]	5m, Cable blue	30mm	3 to 28mm
IS2-DB30-AP-IA-S	Level 4	ia/Zone 0,1	Al/yellow	flush mounting	12V[EEx ia]	Connector	30mm	3 to 28mm
IS2-KB40-AP	Level 4	no protection	PC/black-red	flush mounting	12-28V	5m, Cable grey	40mm	5 to 32mm
IS2-KB40-AP-S	Level 4	no protection	PC/black-red	flush mounting	12-28V	Connector	40mm	5 to 32mm
IS2-KB40-AP-IA	Level 4	ia/Zone 0,1	PC/black-red	flush mounting	12V[EEx ia]	5m, Cable blue	40mm	5 to 32mm
IS2-KB40-AP-IA-S	Level 4	ia/Zone 0,1	PC/black-red	flush mounting	12V[EEx ia]	Connector	40mm	5 to 32mm
IS2-KN40-AP	Level 4	no protection	PC/black-red	free mounting	12-28V	5m, Cable grey	40mm	5 to 38mm
IS2-KN40-AP-S	Level 4	no protection	PC/black-red	free mounting	12-28V	Connector	40mm	5 to 38mm
IS2-KN40-AP-IA	Level 4	ia/Zone 0,1	PC/black-red	free mounting	12V[EEx ia]	5m, Cable blue	40mm	5 to 38mm
IS2-KN40-AP-IA-S	Level 4	ia/Zone 0,1	PC/black-red	free mounting	12V[EEx ia]	Connector	40mm	5 to 38mm

Control Drawing for Hazardous Areas:



Operating Manual, Short Form:

When installing and operating the sensor, it is necessary to take into consideration the complete operating manual.

Mounting description

For free mounting sensors the minimal lateral space around the sensor must keep free. All types of sensors can be mounted on a metallic ground-plate. Metallic protection plates must not rise above the sensor. Electrolytic fluids, graphitized greases or other magnetizable substances can disturb the correct function in a permanent ON state. The electrical connections must be exactly as shown in the control drawing for hazardous areas. In order to guarantee safety of a work installation, all the elements connected to the IS2-..AP sensor must also be tested or designed to conform with technical safety requirements level 4. Cable shields should be correctly connected to PE or Minus. The connection cable must not be installed parallel to high voltage cables. The sensor can not be driven with unloaded outputs.

Function

When a metallic object is entering the detection field, both outputs becomes active (switching ON). Is no object detected both outputs becomes inactiv (switching OFF). The proofed sensors of the series IS2-..AP-.. (AP=Accident Protection) are built in a 2-channel different redundancy. Failures and disturbances of any kind, result in the outputs switching OFF and the LED blinking red.

The faulty state is the same as no object is detected. (Outputs are switching OFF - Safety State)

Maintenance

If the sensor is jammed (LED flashes red), the sensor jam can only be cleared by disconnecting the supply voltage.

Maintenance

The sensor does not require any special maintenance. Magnetic precipitations must be cleared. Equipment must only be repaired or serviced by the manufacturer.

General notes

The nominal operating distance sn (EN60947-2-5) does not take into account production tolerances and influences of temperature or voltage. The safe operating distance sa is the minimal reachable operating distance on steel 37 (120mmx120mmx1mm) on all mounting arrangements. On other materials or smaller objects a reduction factor must be taken into account.

Material	Reduction factor
Steel 37	1
Stainless steel	0.8
Aluminum	0.4

Safety distance sd: An inductive sensor is safe switched OFF, when the distance between sensor and actuator plate is greater then 3 x nominal distance sn.

We reserve the right to modify our equipment. Our equipment is designed such way, that it has the least possible adverse effect on the environment. It neither emit or contain any damaging substances and use a minimum of energy and resources. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.

Safety information

When installing and operating with the IS2-..sensors, it is necessary to take into consideration the relevant international and other national regulations, in particular EuroNorms 50014 to 50020 and the relevant guidelines ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL, UL913, Intrinsically Safe Apparatus and Associated Apparatus for use in Class I,II,III Division 1, Hazardous (Classified) Locations.

Standards met:

EN 61496-1; prEN 61496-2/-3; EN 954; EN 50014, EN 50020; EN 50081-1/-2, EN 50082-1/-2, ATEX 100a (94/9/EG), UL 913 98/37/EG, 73/23/EWG, 89/336/EWG, 92/31/EWG, 93/68/EWG

Approvals

TÜV 97 ATEX 1154 / ASEV 97.1 10104 / UL 913, UL-classified, Control No. 24VL, E185916/ EU Certificate of Conformity BG-PRÜFZERT IS2_e2/NOV.20,00/HB

Tippekemper - Matrix GmbH

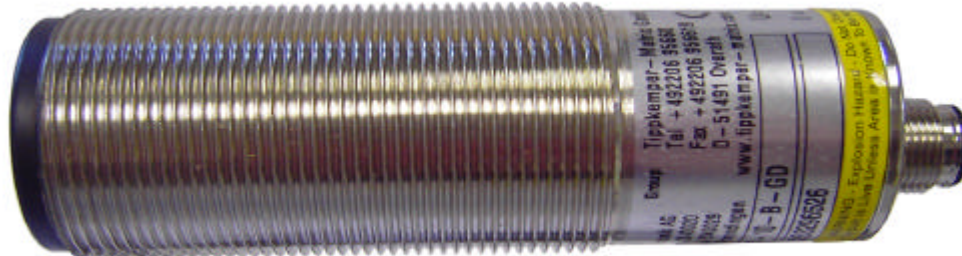
Meegener Str. 43 D-51491 Overath
Tel.:+49 (0) 2206/9566-0 Fax -19

Matrix Elektronik AG

Kirchweg 24 CH-5422 Oberehrendingen
Tel.:+41 (0) 56/2220-757 Fax -563

NOVELTY

Safety Inductive Sensor Casing M30



**Accident Prevention Category 4
ATEX-Category 3GD**



Inductive Sensors for Accident Prevention Category 4

Our safety inductive sensors in casing M30 or square housing are a perfect safety device for doors, tailboards, robots and other.

This safety inductive sensor is insensitive on dirt and can be used in every sector of industry.

The sensor detects e.g. metal St37. Consequently, it is not necessary to fix magnets or similar at the side standing opposite of the sensor as it is the case with magnetic switches. Due to its intelligent construction, the sensor is only wilfully bridgeable.

The downstream safety components are free selectable.
2 to 40 mm switching distance are possible.

Naturally, these sensors are in charge of the CE sign as well as the GS sign (tested safety; persons safety category 4) by the MMBG.

All types are also available with explosion protection guideline 94/9/EG (ATEX 100a) for the explosion protection categories 3GD.

For any questions, please feel free to contact us.

Tippkemper-Matrix GmbH
Meegener Strasse 43, D-51491 Overath
Tel.: +49(49) 2206/9566-0 Fax - 19

www.tippkemper-matrix.com

Matrix-Elektronik AG
Kirchweg 24, CH-5420 Ehrendingen
Tel.: +41 (0) 56 20400-20 Fax -29

info@tippkemper-matrix.com