



Mining And Surface Certification (Pty) Ltd

2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE MINE HEALTH AND SAFETY ACT, ACT NO 29 OF 1996 (AND REGULATIONS), THE OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993) AND REGULATION 17 OF THE ELECTRICAL MACHINERY REGULATIONS

IA CERTIFICATE	MASC MS/17-0885X	Issue	4
Issue Date	27 March 2023	Expiry Date	27 March 2026
** Based on Certificate No	IECEx PTB 11.0091X	Issue / Variations / Amendment	4
Requested by	Pepperl+Fuchs (Pty) Ltd, 8 Glen Eagle Office Park, Koorsboom Ave, Glen Marais, Kempton Park, 1619, South Africa		
Manufacturer	Pepperl+Fuchs SE Lilienthalstrasse 200, 68307 Mannheim, Germany		
Description	The slot-type proximity sensors of types SJ... and SC... are used to convert mechanical displacements into an electrical signal. The sensors are supplied from an intrinsically safe circuit, and they are suitable to be used in hazardous areas of group I, II and group III. The area classification of the slot-type sensors depends on the level of protection of the intrinsically safe circuit the sensors are connected to. For further information, refer to the base certificate.		
Equipment	Slot-type proximity sensors	Type	SJ... and SC...
MARKING: Original marking as per certificate ** remains applicable. IA number must be added.	Type: Ex Marking:	Slot-type proximity sensors, types SJ... and SC... Ex ia IIC T6...T1 Ga or Ex ia IIC T6...T1 Gb or Ex ia IIIC T200 T135°C Da or Ex ia I Mb	
	IA Number: Warnings:	MASC MS/17-0885X (To be additionally marked on equipment) See Base Certificate ** (original marking must be applied)	
Quality Assurance report (QAR) / Notification (QAN) Expiry date:	US/UL/QAR07.0005/17 & DE/PTB/QAR06.0008/16		
Compliance: The equipment as described above has been allocated the rating <u>Explosion Protected 'as above'</u> utilizing the SANS/IEC Standards: <ul style="list-style-type: none"> SANS (IEC) 60079-0: 2019 Equipment – General requirements SANS (IEC) 60079-11: 2012 Equipment – Protection by intrinsic safety “i”. <i>Note: This certificate covers only the listed standards and does not imply compliance to any other standard, related or inferred. It is up to the manufacturer to ensure that the product complies to all relevant standards for the application.</i>			
Special conditions of safe use “X”:	<ul style="list-style-type: none"> Refer to Annex A below for more details. 		
Conditions of manufacture:	<ul style="list-style-type: none"> Refer to Annex A below for more details. 		
C. WELTHAGEN TECHNICAL SPECIALIST		S. JORDAAN TECHNICAL OFFICER	
<small>This certificate covers all units sold as long as the QAR/QAN remains valid. According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory).</small>			

Apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:

- SANS 10086 requirements;
- Any conditions mentioned in the above certificate;
- Any relevant requirements of the MHS Act;
- Any restrictions and conditions enforced by the chief inspector of mines, principal inspector (Group I equipment) or chief inspector of factories (Group II equipment).

This certificate may only be reproduced in full
The certificate is not transferable and remains the property of the issuing body.

IA CERTIFICATE: MASC MS/17-0885X
Equipment: Slot-type proximity sensors, Types SJ... and SC...
(Expiry date: 27 March 2026)

ANNEX A

This document is based on and must be read in conjunction with certificate IECEx PTB 11.0091X	
Description (According to Base Certificate) **	
"Refer to description in Base Certificate ** (and any applicable schedules/issues/variations)."	
Standard compliance	See Base Certificate **
Special conditions of safe use ("X")	<ul style="list-style-type: none"> See Base Certificate **
Conditions of manufacture	<ul style="list-style-type: none"> None.
Conditions of Certification	<ul style="list-style-type: none"> This IA Certificate covers all units sold from the date of this document to the expiry date of this certificate. As per ARP 0108 a maximum three yearly review is required on this IA Certificate (expiry is determined as per the QAR/QAN/QMS expiry date). The apparatus must be additionally marked with the MASC marking details above. This approval only covers the equipment as certified above and does not include any scheduled additions or variations / amendments / new issues to the certificate(s), made after the above date. The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by the certificate on which this IA Certificate is based and any other conditions in this IA Certificate. The certification on which this IA Certificate is based must remain valid. The extent of the requirements in the ARP 0108 (or regulations), SANS 10108 and any other applicable regulations on the certification of the equipment must remain unchanged. The Ex-quality assurance notification/report for the equipment must remain valid.
Conclusion:	<ul style="list-style-type: none"> From the above and the selective examination of the documentation, nothing contrary to the requirements of the applicable standards was found, provided that the equipment / component is used as described in the above document / certificate and according to the MASC conditions below. A MASC IA certificate is issued based on the work done as per the Base Certificate **. The routine tests for production units according to the Base Certificate ** must be complied with (if applicable).

This document is issued based on Mining And Surface Certification's Standard Contract terms and conditions available on request.

While every endeavour is made to ensure that a test / assessment / inspection is representative and accurately performed, and that a report / certificate is accurate in the quoted results and conclusions drawn from the test / assessment / inspection, MASC or its directors/employees shall in no way be liable for any error made in carrying out the test / assessment or for any erroneous statement, whether in fact or in opinion, contained in a report / certificate issued pursuant to a test / assessment / inspection.

MASC takes no responsibility for any non-conformances, exclusions, or any results / assessments / inspections not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer / applicant attests on his own responsibility that the equipment / installation has been designed and constructed in accordance with the applicable requirements of the relevant standards and documentation, that the routine verifications / routine tests have been correctly completed and the equipment / installation complies with the documentation and standard(s).

This document is only for use and application in South Africa. It is issued based on National interpretations and accepted practices.

This document may only be reproduced in full.
This certificate is not transferable and remains the property of the issuing body.
This document will not be supported by MASC for certification purposes outside the borders of South Africa.

Mining And Surface Certification (Pty) Ltd Reg No: 2015/021934/07
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IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX PTB 11.0091X**

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Certificate history:

Status: **Current**

Issue No: 4

Issue 3 (2022-02-10)

Issue 2 (2021-05-26)

Issue 1 (2017-05-29)

Issue 0 (2011-11-17)

Date of Issue: 2022-06-03

Applicant: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
Germany

Equipment: **Slot-type proximity sensors**

Optional accessory: Types SJ... and SC...

Type of Protection: **Intrinsic Safety**

Marking: Ex ia IIC T6...T1 Ga
or
Ex ia IIC T6...T1 Gb
or
Ex ia IIIC T₂₀₀ 135°C Da
or
Ex ia I Mb

Approved for issue on behalf of the IECEx
Certification Body:

Dr.-Ing. Martin Thedens

Position:

**Head of Department "Explosion Protection in Sensor Technology
and Instrumentation"**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany





IECEX Certificate of Conformity

Certificate No.: **IECEX PTB 11.0091X**

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Date of issue: 2022-06-03

Issue No: 4

Manufacturer: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
Germany

Manufacturing locations: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
Germany

Pepperl+Fuchs Asia Pte. Ltd.
18 Ayer Rajah Crescent
Singapore 139942
Singapore

Pepperl+Fuchs Manufacturing, Inc.,
502 Cane Island Parkway,
Katy, TX 7494
United States of America

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEX Quality system requirements. This certificate is granted subject to the conditions as set out in IECEX Scheme Rules, IECEX 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[DE/PTB/ExTR11.0101/01](#)
[DE/PTB/ExTR11.0101/04](#)

[DE/PTB/ExTR11.0101/02](#)

[DE/PTB/ExTR11.0101/03](#)

Quality Assessment Reports:

[DE/PTB/QAR06.0008/16](#)

[US/UL/QAR07.0005/17](#)



IECEX Certificate of Conformity

Certificate No.: **IECEX PTB 11.0091X**

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Date of issue: 2022-06-03

Issue No: 4

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The slot-type proximity sensors of types SJ... and SC... are used to convert mechanical displacements into an electrical signal.

The sensors are supplied from an intrinsically safe circuit and they are suitable to be used in hazardous areas of group I, II and group III.

The area classification of the slot-type sensors depends on the level of protection of the intrinsically safe circuit the sensors are connected to.

For further information, reference is made to the annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

For special conditions, reference is made to the annex.



IECEX Certificate of Conformity

Certificate No.: **IECEX PTB 11.0091X**

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Date of issue: 2022-06-03

Issue No: 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Changes of resins without change in safety relevant behaviour.



IECEX Certificate of Conformity

Certificate No.: **IECEX PTB 11.0091X**

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Date of issue: 2022-06-03

Issue No: 4

Additional information:

For thermal and electrical specifications as well as the Special Conditions for safe use, reference is made to the annex.

Annex:

[IECEX_PTB_110091_4_attachment.pdf](#)



Applicant: Pepperl+Fuchs SE
Lilienthalstrasse 200
68307 Mannheim
Germany

Electrical Apparatus: Slot-type proximity sensors
types SJ... and SC...

Electrical data

Evaluation and supply circuit Only for connection to a certified intrinsically safe circuit

resp. Ex ia IIC/IIB for EPL Ga
resp. Ex ia IIIC for EPL Da
resp. Ex ia IIC/IIB or Ex ib IIC/IIB for EPL Gb
resp. Ex ia IIIC or Ex ib IIIC for EPL Db

Maximum values:

	Type 1	Type 2	Type 3	Type 4
U_i	16 V	16 V	16 V	16 V
I_i	25 mA	25 mA	52 mA	76 mA
P_i	34 mW	64 mW	169 mW	242 mW

Table 1

For relationship between type of the connected circuit, maximum permissible ambient temperature for group II (EPL Ga/Gb), group III (EPL Da) resp. group I (EPL Mb) equipment and temperature class as well as the effective internal reactances for the individual types of slot-type proximity sensors, reference is made to the following tables:

Table 2: Application as Group I equipment, EPL Mb:

type	Ci	Li	type 1	type 2	type 3	type 4
			Ui = 16V li = 25 mA Pi = 34 mW	Ui = 16V li = 25 mA Pi = 64 mW	Ui = 16V li = 52 mA Pi = 169 mW	Ui = 16V li = 76 mA Pi = 242 mW
maximum permissible ambient temperature in °C						
	[nF]	[µH]	T	T	T	T
SC2-N0...	150	150	100	100	75	54
SC3,5-N0-Y...	150	150	100	100	75	54
SC3,5...-N0...	150	150	100	100	89	74
SJ1,8-N-Y...	30	100	100	100	78	57
SJ2,2-N...	30	100	100	100	78	57
SJ2-N...	30	100	100	100	78	57
SJ3,5...-N...	50	250	100	100	89	74
SJ3,5-H...	50	250	100	100	89	74
SJ5...-N...	50	250	100	100	89	74
SJ5-K...	50	550	100	100	82	63
SJ10-N...	50	1000	100	100	82	63
SJ15-N...	150	1200	100	100	82	63
SJ30-N...	150	1250	100	100	82	63

Table 3: Application as Group II equipment, EPL Ga/Gb:

Type	EPL	Ci / nF	Li / µH	maximum permissible ambient temperature in °C for application in temperature class											
				T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
SC2-N0...	Ga/Gb	150	150	72	87	100	65	80	100	40	55	75	23	38	54
SC3,5-N0-Y...	Ga/Gb	150	150	72	87	100	65	80	100	40	55	75	23	38	54
SC3,5...-N0...	Ga/Gb	150	150	73	88	100	66	81	100	45	60	89	30	45	74
SJ1,8-N-Y...	Gb	30	100	73	88	100	67	82	100	45	60	78	30	45	57
SJ2,2-N...	Gb	30	100	73	88	100	67	82	100	45	60	78	30	45	57
SJ2-N...	Ga/Gb	30	100	73	88	100	67	82	100	45	60	78	30	45	57
SJ3,5...-N...	Ga/Gb	50	250	73	88	100	66	81	100	45	60	89	30	45	74
SJ3,5-H...	Gb	50	250	73	88	100	66	81	100	45	60	89	30	45	74
SJ5...-N...	Ga/Gb	50	250	73	88	100	66	81	100	45	60	89	30	45	74
SJ5-K...	Ga/Gb	50	550	72	87	100	66	81	100	42	57	82	26	41	63
SJ10-N...	Ga/Gb	50	1000	72	87	100	66	81	100	42	57	82	26	41	63
SJ15-N...	Ga/Gb	150	1200	72	87	100	66	81	100	42	57	82	26	41	63
SJ30-N...	Ga/Gb	150	1250	72	87	100	66	81	100	42	57	82	26	41	63

Table 4: Application as Group III equipment, EPL Da:

type	Ci [nF]	Li [μH]	type 1	type 2	type 3	type 4
			Ui = 16V Ii = 25 mA Pi = 34 mW	Ui = 16V Ii = 25 mA Pi = 64 mW	Ui = 16V Ii = 52 mA Pi = 169 mW	Ui = 16V Ii = 76 mA Pi = 242 mW
maximum permissible ambient temperature in °C						
			T	T	T	T
SC2-N0...	150	150	100	99	57	not permitted
SC3,5-N0-Y...	150	150	100	99	57	not permitted
SC3,5...-N0...	150	150	100	100	71	not permitted
SJ1,8-N-Y...	30	100	100	100	59	not permitted
SJ2,2-N...	30	100	100	100	59	not permitted
SJ2-N...	30	100	100	100	59	not permitted
SJ3,5...-N...	50	250	100	100	71	not permitted
SJ3,5-H...	50	250	100	100	71	not permitted
SJ5...-N...	50	250	100	100	71	not permitted
SJ5-K...	50	550	100	100	63	not permitted
SJ10-N...	50	1000	100	100	63	not permitted
SJ15-N...	150	1200	100	100	63	not permitted
SJ30-N...	150	1250	100	100	63	not permitted

The dots in the labelling represent free definable parameters. This free definable parameters can be omitted or replaced by letters or digits.

When assigning the actual sensor to the table use the model description which describes the sensor best. Letters and digits describe the different types according to the model description key.

The sum of all capacitances and inductances, including tolerance and a 10 m cable, result to the given values for Ci and Li shown above.

Special conditions for safe use:

1. For relationship between type of the connected circuit, maximum permissible ambient temperature and temperature class as well as the effective internal reactances for the individual types of Slot-type proximity sensors, reference is made to tables 2 to 4 given in this attachment to IECEx PTB 11.0091X Issue 4 and in the operating instructions manual.
2. Appropriate measures need to be taken to protect the Slot-type proximity sensors against mechanical damage due to impact if they are used within an ambient temperature range between – 60 °C and – 20 °C. An ambient temperature below – 60 °C is not permissible.
3. The connection facilities of the Slot-type proximity sensors shall be installed as such that a minimum degree of protection of IP20 according IEC 60529 is complied with.
4. Inadmissible electrostatic charge of the plastic enclosures shall be avoided for the application of the following types of Slot-type proximity sensors according to the explosion groups and EPL specified in the following Table 5. When the respective types of Slot-type proximity sensors are applied

in potentially explosive gas atmospheres a corresponding warning note shall be affixed on the Slot-type proximity sensors or near the Slot-type proximity sensors respectively.

When these are applied in potentially explosive gas or dust atmospheres the corresponding notes given in the operating instructions manual shall be considered.

Table 5:

Type	Group I	Group II (EPL Ga)	Group II (EPL Gb)	Group III
SC2-N0...	-	-	-	-
SC3,5-N0-Y...	-	-	-	III
SC3,5...-N0...	-	-	-	III
SJ1,8-N-Y...	-	not permitted	-	III
SJ2,2-N...	-	not permitted	-	-
SJ2-N...	-	-	-	-
SJ3,5...-N...	-	-	-	III
SJ3,5-H...	-	not permitted	-	-
SJ5...-N...	-	-	-	III
SJ5-K...	-	IIC	-	III
SJ10-N...	-	IIC	-	III
SJ15-N...	-	IIC	-	III
SJ30-N...	-	IIA/IIB/IIC	IIC	III

Slot-type proximity sensors which are marked (IIC or IIB or IIA or III) in column "Group ..." need to be protected against dangerous electrostatic charges.

- For the application of the following Slot-type proximity sensors in hazardous areas of group I, II and III appropriate measures need to be taken to protect the free resin surface against mechanical damage if the free resin surface is accessible after installation:

Type

SC2-N0...
 SC3,5-N0-Y...
 SC3,5...-N0...
 SJ1,8-N-Y...
 SJ2-N-Y34361
 SJ2-N-Y43896
 SJ2-N-Y43897
 SJ3,5...-N...
 SJ3,5-H...
 SJ5...-N...
 SJ5-K...
 SJ10-N...
 SJ15-N...
 SJ30-N...