



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx CML 14.0030X Issue No: 0 Certificate history:  
Status: Current Page 1 of 3 Issue No. 0 (2014-11-13)  
Date of Issue: 2014-11-13  
Applicant: Braun GmbH Industrie-Elektronik  
Esslinger Straße 26  
DE 71334  
Waiblingen  
Germany  
Electrical Apparatus: A5S1 Series Hall-Effect Sensors  
Optional accessory:  
Type of Protection: Intrinsic Safety and Non-sparking  
Marking: Ex ia IIC T\* Ga or Ex nA IIC T\* Gc  
(T\* = T4 or T6 depending on supply power and ambient temperature, see Conditions of Safe Use included in the Annex)

Approved for issue on behalf of the IECEx  
Certification Body:

D R Stubbings MIET

Position:

Technical Director

Signature:  
(for printed version)

Date:

2014-11-13

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 the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

Certification Management Limited  
Unit 1, Newport Business Park  
New Port Road  
Ellesmere Port  
CH65 4LZ  
United Kingdom





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Manufacturer: **Braun GmbH Industrie-Elektronik**  
Esslinger Straße 26  
DE 71334  
Waiblingen  
Germany

Additional Manufacturing  
location(s):

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 electrical apparatus 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 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15 : 2010 Edition:4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-26 : 2006 Edition:2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga

*This Certificate **does not** indicate compliance with electrical 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 Report:

GB/CML/ExTR14.0019/00

### Quality Assessment Report:

DE/TPS/QAR12.0006/01



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The A5S1 Series Hall-effect Sensors are non-contact measuring head sensors used to detect the movement of rotating ferromagnetic parts with profiling, eg rotating cog wheels.

See Annex for full description and Conditions of Manufacture

CONDITIONS OF CERTIFICATION: YES as shown below:

See Annex for Conditions of Certification

### Annex:

[Certificate Annex IECEx CML 14.0030X Iss 0.pdf](#)

**Annexe to:** IECEx CML 14.0030X Issue 0  
**Applicant:** Braun GmbH Industrie-Elektronik  
**Apparatus:** A5S1 Series Hall-effect Sensor



## Description

The A5S1 Series Hall-effect Sensors are non-contact measuring head sensors used to detect the movement of rotating ferromagnetic parts with profiling, eg rotating cog wheels. The measuring head contains a hall-effect sensor, magnet and amplifier circuit encapsulated in a cylindrical stainless steel enclosure with end cap. The power supply and signal output connections are made using either an attached cable or plug and socket connector depending on the model. The measuring head is supplied either as an intrinsically safe version (Ex ia) or a non-sparking version (Ex nA). The design and construction of both versions are identical.

The A5S1 Series sensor has a number of options defined by the full model number,

### A5S1 Db c d eeee f ggg h iii jj k

Db	=	static/dynamic and speed/frequency range (up to 25kHz)
c	=	frequency and output type
d	=	mechanical configuration
eeee	=	mechanical thread
f	=	cable/connector
ggg	=	sensor length
h	=	cable termination
iii	=	cable length
jj	=	protection type (ia or nA)
k	=	encapsulant type

Alternative model coding may be used in line with specific customer orders

### I.S Versions (Ex ia):

The I.S versions are supplied from an intrinsically safe power source and connect to monitoring equipment located outside the hazardous area. The I.S versions have the following safety description,

Ui	=	17V
Ii	=	100mA
Pi	=	125mW/250mW/500mW
Ci	=	0.131µF (including cable capacitance for up to 100m of attached cable)
Li	=	0

### Non-sparking Versions (Ex nA):

The Ex nA versions have the following ratings,

Rated voltage	=	32Vdc
Rated current	=	40mA/60mA/120mA





### Conditions of Manufacture

1. The equipment shall be subjected to an electric strength test using a test voltage of 500 Vac or a 40% higher d.c voltage may be applied between the circuit and earth for 60 s. Alternatively, a voltage of 20% higher may be applied for 1 s. There shall be no evidence of flashover or breakdown and the maximum current flowing shall not exceed 5 mA.
2. When alternative model coding is used in line with specific customer orders, details of the specific construction shall be provided.

### Conditions of Safe Use

1. The following ambient temperature and supply input limits are to be applied to the sensor arrangement as applicable:

#### a. Intrinsically safe modules:

Connection /Type	Temperature class	Minimum ambient temperature	Maximum ambient temperature	Maximum temperature at end cap	Pi
PTFE cable	T4	-40 °C	125 °C	125 °C	125mW
			115 °C		250mW
			100 °C		500mW
PTFE cable with plug/socket	T4	-40 °C	85 °C	125 °C	500mW
PVC cable	T4	-5 °C if cable flexed -30 °C if cable fixed	70 °C if cable flexed 80 °C if cable fixed	125 °C	500mW
All I.S types	T6	≥-5 °C	60 °C	80 °C	500mW
	T6	≥-5 °C	70 °C	80 °C	250mW
<b>Note: The worst-case limitation of power and ambient shall always apply if more than one limiting factor is present in the sensor arrangement</b>					

#### b. Ex nA modules:

Connection /Type	Temperature class	Minimum ambient temperature	Maximum ambient temperature	Maximum temperature at end cap	Ratings
PTFE cable	T4	-40 °C	125 °C	125 °C	32Vdc 40mA
			115 °C		32Vdc 60mA
			100 °C		32Vdc 120mA

Connection /Type	Temperature class	Minimum ambient temperature	Maximum ambient temperature	Maximum temperature at end cap	Ratings
PTFE cable with plug/socket	T4	-40 °C	85 °C	125 °C	32Vdc 120mA
PVC cable	T4	-5 °C if cable flexed	70 °C if cable flexed	125 °C	32Vdc 60mA
		-30 °C if cable fixed	80 °C if cable fixed		
All Ex nA types	T6	$\geq -5$ °C	70 °C	80 °C	32Vdc 60mA
	T6	$\geq -5$ °C	60 °C		32Vdc 120mA
<b>Note: The worst case input limitation and ambient shall always apply if more than one limiting factor present in the sensor arrangement</b>					

3. If a charge-generating mechanism is present, the exposed unearthed/ungrounded metallic enclosure is capable of storing a level of charge that could become incensive for IIC gases. Therefore, the user/installer shall implement precautions to prevent the build-up of electrostatic charge, e.g. earthing the metallic part. This is particularly important if the equipment is installed in a zone 0 location.