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

Certificate No.: IECEx CML 15.0063X

Issue No: 1

Certificate history:
Issue No. 1 (2017-10-13)
Issue No. 0 (2017-01-30)

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Status: **Current**

Date of Issue: **2017-10-13**

Applicant: **Braun GmbH**
Esslinger Straße 26
DE 71334 Waiblingen
Germany

Equipment: **Isolating Amplifier D461**

Optional accessory:

Type of Protection: **Intrinsic safety**

Marking:

[Ex ia Ga] IIC
Tamb: -20 °C to +50°C

Approved for issue on behalf of the IECEx Certification Body: A Snowdon

Position: Certification Officer

Signature:
(for printed version)

Date: October 13, 2017

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.

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** 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"

*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/ExTR15.0067/00 GB/CML/ExTR17.0173/00

Quality Assessment Report:

DE/TPS/QAR12.0006/04

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Isolating Amplifier D461 is an intrinsic safety associated apparatus for use in a safe area that provide power to external speed sensors from an isolating switching transformer and conditions the associated speed signals for electronic measurements, alarms, totalizators, or controllers using an opto-coupler circuit.

See Annex for full description and Conditions of Manufacture

SPECIFIC CONDITIONS OF USE: YES as shown below:

See Annex for Specific Conditions of Use

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1

This variation introduces the following modifications:

1. Repositioning of fuses F1 and F2 in the circuit
2. Removal of fuse F4
3. Change of thyristor package
4. Change of capacitor values
5. Addition of a capacitor
6. Addition of 2 ferrite inductors
7. Addition of coating to 230V version
8. Modification to the PCB tracking

Annex:

Certificate Annex IECEx 15.0063X Iss 1.pdf

Annexe to:	IECEx CML 15.0063X Issue 1
Applicant:	Braun GmbH
Apparatus:	Isolating Amplifier D461

Description

The Isolating Amplifier D461 is an intrinsic safety associated apparatus for use in a safe area. It provides power to external speed sensors from an isolating switching transformer and conditions the associated speed signals for electronic measurements, alarms, totalizators, or controllers using an opto-coupler circuit.

The non-intrinsically safe circuity is powered by an isolating switching transformer and monitors the speed sensor supply circuit for lead faults and annunciated by an alarm relay. The enclosure of the Isolating Amplifier D461 is designed to be installed on a DIN rail and meets the requirements of environmental protection IP 20.

Nomenclature:

D461	R1	.	**	U	*
A	B		C		D
Where					
A =	D461	Type of Device			
B =	R1	Release 1			
C =	11	Device one signal channel input, one signal channel output.			
	12	Device one signal channel input, two signal channel output parallel.			
	21	Device two signal channel input, two signal channel output			
D =	1	Supply Voltage 18 to 40 Vac/dc			
	2	Supply Voltage 85 to 250 Vac			

Ratings:

IS Sensor Outputs:

Terminals:	S1/4	22	Signal 2
	S1/3	23	Signal 1
	S1/2	24	+Sensor Feed
	S1/1	25	GND/Sensor Feed
Uo:	8.7 V		
Io:	64 mA		
Po:	384 mW		
Lo:	IIC	7.9 mH	
	IIB	38 mH	
Co:	IIC	5.9 µF	
	IIB	50 µF	
Note: Combined Lo and Co for Signal 1 and Signal 2			

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Power Supply:

Terminals	S3/1	1	L
	S3/2	2	N
Um (U1):	60 V		
Um (U2):	250 V		

Signal Outputs

Terminals:	S2/1	10	Output reference
	S2/2	11	Signal Output 1
	S2/3	12	Signal Output 2
	S2/4	13	Logic Alarm Output
Um:	60 V		

Signal Outputs

Terminals:	S3/3	6	Relay Alarm Output
	S3/4	8	Relay Alarm Output
Um: Relay Contacts:	60 V 30 Vdc, 2 A		

Conditions of Certification

The following conditions relate to safe installation and/or use of the equipment.

1. The values of Co and Lo apply when one of the two conditions below is given:

   - The total Li of the external circuit (excluding the cable) is < 1% of the Lo value, or
   - The total Ci of the external circuit (excluding the cable) is < 1% of the Co value.

   The above parameters are reduced to 50% when both of the two conditions below are given:

   - The total Li of the external circuit (excluding the cable) > 1% of the Lo, and
   - The total Ci of the external circuit (excluding the cable) > 1% of the Co.

   Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1 uF for IIB and 600 nF for IIC.

Conditions of manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

1. Where the product incorporates certified parts or safety critical components, the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.

2. IEC 60079-11:2011 CL 11.2 Routine Tests for Infallible Transformers All transformers are shall subjected to following routine verification and test voltages:

   - 2,500 V, between input and output windings;
   - 1,000 V between all the windings and the core;
   - 1,500 V between each winding which supplies an intrinsically safe circuit and any other output winding;

   The test voltage shall be applied for a period of at least 60 s.

   Alternatively, the test may be carried out at 1,2 times the test voltage, but with reduced duration of at least 1 s.

   The applied voltage shall remain constant during the test. The current flowing during the test shall not increase above that which is expected from the design of the circuit and shall not exceed 5 mA r.m.s. at any time. During these tests, there shall be no breakdown of the insulation between windings or between any winding and the core or the screen.