

UK Type Examination Certificate CML 21UKEX2052X Issue 1


United Kingdom Conformity Assessment

- 1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1
- 2 Equipment **Isolating Amplifier D461**
- 3 Manufacturer **Braun GmbH Industrie Elektronik**
- 4 Address Esslinger Straße 26,
DE 71334, Waiblingen, Germany
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.
- 7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.
- 8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.
- 9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN IEC 60079-0:2018

EN 60079-11:2012

- 10 The equipment shall be marked with the following:

 II (1) G

[Ex ia Ga] IIC

Ta= -20°C to +60°C



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11 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, totalizers, or controllers using an opto-coupler circuit.

The non-intrinsically safe circuitry 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/Vdc
- 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:	60 V		
Relay Contacts:	30 Vdc, 2 A		

Variation 1

This variation introduces the following modifications:

- i. Increase the upper temperature range from +50°C to +60°C
- ii. Update applied standard- EN 60079-0:2012: A11:2013 Corr3 to EN IEC 60079-0:2018

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	22 Apr 2021	R13681C/00	Issue of prime certificate
1	03 Apr 2024	R17191A/00	Introduction of Variation 1

Note: Drawings that describe the equipment are listed in the Annex.

13 Conditions of Manufacture

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

- i. 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.



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- ii. IEC 60079-11:2011 CL 11.2 Routine Tests for Infallible Transformers All transformers are 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.

14 Special Conditions for Safe Use (Conditions of Certification)

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

- i. 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 μ F for IIB and 600 nF for IIC.

Certificate Annex

Certificate Number CML 21UKEX2052X
Equipment Isolating Amplifier D461
Applicant Braun GmbH Industrie Elektronik

The following documents describe the equipment defined in this certificate:

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
4HEX11 LP795v6	1 of 1	D	22 Apr 2021	4HEX11-Schematic
4HEX11-Layout (LP795v6)	1 of 8	D	22 Apr 2021	4HEX11-Layout
4HEX11SMD-BOM	1 to 2	D	22 Apr 2021	EX-20103-4HEX11SMD-BOM
4HEX11U1-BOM	1 of 1	D	22 Apr 2021	EX-20104-4HEX11U1-BOM
4HEX11U2-BOM	1 of 1	D	22 Apr 2021	EX-20105-4HEX11U1-BOM
411 00188 ET209	2 of 2	-	22 Apr 2021	ATEX - Certification Sectional view TOP-Switch ET209
411 00188 ET209	1 of 1	-	22 Apr 2021	ATEX - Certification Potted/ Unpotted/ Explosion
612045	1 of 2	-	22 Apr 2021	ET210 TopSwitch EF20
411 00186 ET210	2 of 2	-	22 Apr 2021	ATEX - Certification Sectional view TOP-Switch ET210
411 00186 ET210	1 of 1	-	22 Apr 2021	ATEX - Certification Potted/ Unpotted/ Explosion
612046	1 of 1	B	22 Apr 2021	ET209 TopSwitch EF20
Ex-20112-CD-D461R1.11	1 of 1	1.1	22 Apr 2021	Control Drawing D461R1.11U*
Ex-20112-CD-D461R1.12	1 of 1	1.1	22 Apr 2021	Control Drawing D461R1.12U*
Ex-20112-CD-D461R1.21	1 of 1	-	22 Apr 2021	Control Drawing D461R1.21U*
Ex-20111-Enclosure	1 of 1	B	22 Apr 2021	Enclosure of Braun D461R1
4HEX11-Coating-U2-Version	1 to 2	D	22 Apr 2021	EX-20106-4HEX11-LP795v2-Coating
-	1 of 1	-	22 Apr 2021	Type Plate Braun D461R1

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Drawing No	Sheets	Rev	Approved date	Title
Ex-20113 C Type plate D461R1	1 to 2	C	03 Apr 2024	Type label of Barrier D461R1



This certificate shall only be copied in its entirety and without change
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Assistant Certification Manager