

UK Type Examination Certificate CML 21UKEX1071X Issue 0

United Kingdom Conformity Assessment

- 1 Product or Protective System Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended by UKSI 2019:696) – Schedule 3A, Part 1
- 2 Equipment **Type 55 Connection Head/Junction Box**
- 3 Manufacturer **H&B Sensors Ltd**
- 4 Address Odyssey House, Durban Road,
Bognor Regis, West Sussex,
PO22 9RH, UK
- 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 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended by UKSI 2019:696), 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.

The examination and test results are recorded in the confidential reports listed in Section 12.
- 7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe 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 60079-1:2014

EN 60079-31:2014

EN 60079-11:2012

- 10 The equipment shall be marked with the following:

 II 2 G D


Ex db IIC T* Gb

Ex tb IIIC T**°C Db

T6 - Ta = -40°C to +65°C

T5 - Ta = -40°C to +80°C

T4 - Ta = -40°C to +85°C

 II 1 G D

Ex ia IIC T4 Ga

Ex ia IIIC T135°C Da

Ta = -40°C to +85°C



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11 Description

The Type 55 Connection Head / Junction Box is a general purpose flameproof and dust protected enclosure intended for use as a standalone junction box or for use with temperature or level sensors including RTDs, Thermocouples, Thermistors, Temperature Fuses/Switches and Level Float Switches.

The Type 55 is a cylindrical enclosure manufactured from either ADC12 aluminium or 316 stainless steel and includes a threaded cover that may include an optional silicone cemented toughened soda lime glass window. The threaded cover is secured with an M5 grub screw and has a nitrile O-ring. The enclosure incorporates two M20 x 1.5 side entries and one 1/2" BSPP bottom entry. All enclosures have the 2 x M20 and 1 x 1/2 BSP, the sensor probe entry may occupy either a M20 or 1/2 BSP. User cable entries can only occupy M20. The base has both an internal and external M5 x 8mm earth connection as well as two external mounting holes.

The sensor elements are encapsulated within a fabricated protective sheath filled with magnesium or aluminium oxide powder and sealed with resin epoxy, alternatively they are constructed from mineral insulated cable. All sensors will be directly connected to the enclosure using a threaded fitting or via a flexible cable and cable gland arrangement.

The Type 55 enclosure can be fitted with either terminal blocks, temperature transmitters or temperature indicators or a combination thereof.

When the enclosure is being used within intrinsically safe environments it can be fitted with separately certified intrinsically safe devices or terminals and marked for 'Ex ia' applications. These applications are to be supplied by a separately certified barrier.

Electrical ratings:

Flameproof applications:

- Terminals - Maximum of 3W (combined total)
- Transmitter or indicator module – Input parameters as per device fitted, up to a maximum of 3W.

Intrinsically safe applications:

Maximum Entity Parameters.			
Single thermocouple circuit		2 or more thermocouple circuit (per circuit), combined total of 3W Max.	
Ui =	30Vdc	Ui =	30 Vdc
Ii =	100mA	Ii =	100 mA
Pi =	900mW	Pi =	900mW
Ci =	2 nF/m x length of sensor	Ci =	2 nF/m x length of sensor
Li =	20 µH/m x length of sensor	Li =	20 µH/m x length of sensor
Uo =	1.2 V	Uo =	1.2 V
Io =	50 mA	Io =	50 mA



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Po =	25 mW	Po =	25 mW
The capacitance and inductance or inductance/resistance ratio (L/R) of the hazardous area cables shall not exceed the values calculated from the C, L and L/R values permitted by the barrier, minus any Ci and Li of the sensor wiring.			

Maximum Entity Parameters			
Terminals/RTD's (per circuit), combined total of 3W Max.		Transmitter / Indicator (Max inputs as per certificate), 3W Max.	
Ui =	30V	Ui =	As per transmitter/indicator certificate
li =	100mA	li =	As per transmitter/indicator certificate
Pi =	900mW	Pi =	As per transmitter/indicator certificate
Ci =	2 nF/m x length of sensor	Ci =	As per transmitter/indicator certificate
Li =	20 µH/m x length of sensor	Li =	As per transmitter/indicator certificate
The capacitance and inductance or inductance/resistance ratio (L/R) of the hazardous area cables shall not exceed the values calculated from the C, L and L/R values permitted by the barrier, minus any Ci and Li of the transmitter and/or sensor wiring.			

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	15/03/2021	R13144B/00	Issue of prime certificate

Note: Drawings that describe the equipment are listed in the CML 20ATEX1109X Annex.

13 Conditions of Manufacture

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

General (All applications)

- 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. A copy of the separately certified transmitter/indicator certificate and instructions shall be provided with/make available for the equipment (if fitted).



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Intrinsically Safe Applications

- ii. The sensor circuit shall undergo an electric strength test at 500Vac test to earth for 1 minute in accordance with BS EN 60079-11, clause 6.3.13. Not applicable when galvanic isolation is used.

Flameproof Applications

- iii. A routine overpressure test at a minimum pressure of 18 bar shall be carried out on each cemented window/welded probe arrangement for at least 10 s in accordance with EN 60079-1:2014, clause 15.2.3. No damage or deformation of the enclosure shall be observed, and no leakage from the continuous welded or cemented joints shall be observed. . Additionally, where the welded construction of probe arrangements is not a solid weld, is outside the enclosure and is for retention only, then the testing is only required to ensure that the means of securing the probe arrangement is still in place after testing.

Note: These tests are not applicable for the solid cover, non-welded probe assemblies or welded probe assemblies which are primarily secured by other means, as these have met the exemption overpressure requirements. Where the weld is outside the enclosure and not continuous then only observation for damage / deformation needs apply.

14 Specific Conditions of Use (Special Conditions)

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

General (All applications)

- 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. A copy of the separately certified transmitter/indicator certificate and instructions shall be provided with/make available for the equipment (if fitted).

- ii. Although the probe sensor may be installed in a location outside the ambient temperature range, the installer/user shall ensure the enclosure is located in an area within the marked ambient temperature range.

- Cable entries and branching temperatures may reach 15°C above the ambient temperature, cable and entry devices shall be suitable for these temperatures. Cable glands shall be suitable for the application, e.g., Flameproof / Dust protected and have a minimum IP rating of IP64.
- iii.

- For dust applications, under certain extreme circumstances, the non-metallic paint incorporated on the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. This is particularly important if the equipment is installed in a Zone 20 location. In addition, the equipment shall only be cleaned with a damp cloth.
- iv.



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- v. H&B Sensors Ltd product certificates / instructions are available for download at www.hbsensors.com

Intrinsically Safe Applications

- vi. When equipment is provided with an aluminium enclosure and installed in a Zone 0, the equipment shall be installed such that the risk of impact or abrasion of the aluminium enclosure is avoided. The user shall check for damage to the exterior paint finish and replace should signs of damage be observed.
- vii. When marked for intrinsically safe applications, the capacitance and inductance or inductance/resistance ratio (L/R) of the hazardous area cables shall not exceed the values calculated from the C, L and L/R values permitted by the barrier, minus any Ci and Li of the transmitter and/or sensor wiring. Longer probe arrangements may incorporate a combination of the sensors and cable, when this is the case, the sensor Ci and Li shall be calculated as follows:
- $C_i = 2\text{nF/m} \times \text{length of sensor} + 200\text{pF/m} \times \text{length of wire}$
 - $L_i = 20 \mu\text{H/m} \times \text{length of sensor} + 1\mu\text{H/m} \times \text{length of wire}$

Flameproof Applications

- vi. When supplied as an empty enclosure for user connections, the internal layout and free volume shall comply with EN 60079-1, Annex D for the IIC applications (40% of each cross-sectional area remains free).

Certificate Annex

Certificate Number CML 21UKEX1071X
Equipment Type 55 Connection Head/Junction Box
Manufacturer H&B Sensors Ltd



The following documents describe the equipment defined in this certificate:

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Drawing No	Sheets	Rev	Approved date	Title
HBS-00-01536	1 of 1	A	15/03/2021	Label – Type 55