

EU Type Examination Certificate CML 19ATEX2240X Issue 3

- 1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
 - 2 Equipment **Pressure Transmitter types H455E, 455E, 452E & 454E (Intrinsic Safety)**
 - 3 Manufacturer **Barksdale, Inc.**
 - 4 Address **3211 Fruitland Ave,
Los Angeles,
California 90058
USA**
 - 5 The equipment is specified in the description of this certificate and the documents to which it refers.
 - 6 Eurofins CML B.V., Chamber of Commerce No 67386717, Koopvaardijweg 32, 4906CV Oosterhout, The Netherlands, Notified Body Number 2776, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 Annex II to the Directive.
- 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 EU Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Article 13 apply to the manufacture of the equipment or component and are separately certified.
 - 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 D

Ex ia IIC T4 Ga

Ex ia IIIC T135°C Da

IP66 & IP67

Ta= -40°C ≤ Tamb ≤ +80°C

11 Description

The Pressure Transmitter types H455E, 455E, 452E and 454E are intrinsically safe pressure transmitters suitable for use in environments requiring equipment protection level Ga or Da. The equipment comprises a pressure sensor and electronic assembly within a sealed stainless-steel enclosure. The equipment can either be supplied as a 2 wire 4-20mA with or without HART or as a three-wire version with a separate signal output. The signal output can either be Voltage or ratiometric output (by build options). The 2-wire version is connected to the safe area via a barrier whereas the 3 wire versions are connected to two barriers.

The equipment may be supplied with flying leads or with a variety of two-part connector types and there are numerous available options for different pressure ranges, units, and process connections.

Intrinsic safety is achieved by limiting energy storage and discharge, and by connecting to the non-hazardous area via an intrinsically safe interface device(s).

The equipment has the following safety description:

Model	Type	Ui	li	Ci	Li	Pi
H455E	HART 4-20 mA	30 VDC	100 mA	2.2 nF	30 μ H	750 mW
455E	Current Output	30 VDC	100 mA	27.384 nF	0 μ H	750 mW
452E	Voltage Output	30 VDC	100 mA	54.984 nF	0 μ H	750 mW
454E	Ratiometric Output	20 VDC	100 mA	46.320 nF	0 μ H	500 mW

Variation 1

- i. Addition of models 452E and 454E.
- ii. Introduction of an alternative New Digital Amplifier to 455E model.

Variation 2

- i. The addition of monolithic sensor option.

Variation 3

- i. Minor drawing changes.

11 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	02 Oct 2019	R21070A/01	Issue of Prime Certificate
1	02 Feb 2022	R14843A/00	Introduction of Variation 1
2	31 Jul 2024	R17738A/00	Introduction of Variation 2
3	05 Sep 2024	R17738A/01	Introduction of Variation 3

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

12 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 of the product defined on this certificate shall continually monitor these parts/components for any modifications introduced by the manufacturer(s) of these constituent parts. If the manufacturer of any constituent part introduces any changes which affect the compliance of the certified product that is the subject of this certificate, the manufacturer is required to have this certificate updated.

13 Specific Conditions of Use (Special Conditions)

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

- i. The equipment is not capable of withstanding the 500V insulation test required by Clause 6.3.13 of EN 60079-11:2011. This shall be taken into account when installing the equipment.

Certificate Annex

Certificate Number CML 19ATEX2240X
Equipment Pressure Transmitter types H455E, 455E, 452E & 454E
(Intrinsic Safety)
Manufacturer Barksdale, Inc.



The following documents describe the equipment or component defined in this certificate:

Issue 0

Drawing no.	Sheets	Rev	Approved date	Title
982434	1 to 3	B	02 Oct 2019	Assembly drawing, BiT I.S, silicon HART configuration,
982435	1 to 3	B	02 Oct 2019	Assembly drawing, BiT I.S., thin film HART configuration,
371PC131	1 of 1	B	02 Oct 2019	Circuit board assly, HART, I.S.
271PC132	1 of 1	B	02 Oct 2019	Drilled DWG., HART I.S. PCB
271PC132	1 of 10	B	02 Oct 2019	PCB, drill dwg, HART, intrinsic safety (with artwork files)
271PC133	1 of 1	B	02 Oct 2019	Circuit board assm, transfer pcb, I.S.
271PC133	1 to 10	A	02 Oct 2019	Transfer PCB artworks
455E-H-DE	1 to 2	B	02 Oct 2019	Schematic, HART, BiT, Intrinsic Safety
450E-DE	1 of 1	A	02 Oct 2019	Schematic, Transfer PCB, BiT, Intrinsic Safety
2501269	1 to 2	A	02 Oct 2019	Laser template, etch (label detail)
272471	1 to 4	A	02 Oct 2019	Control drawing

Issue 1

Drawing no.	Sheets	Rev	Approved date	Title
982434	1 to 3	C	02 Feb 2022	Assembly drawing, BiT I.S, silicon HART configuration,
982435	1 to 3	C	02 Feb 2022	Assembly drawing, BiT I.S., thin film HART configuration,
371PC131	1 of 1	C	02 Feb 2022	Circuit board assly, HART, Universal
2501269	1 to 2	C	02 Feb 2022	LASER ETCH (INTRINSIC SAFETY)
272471	1 to 4	B	02 Feb 2022	Control drawing
982720	1 to 3	A	02 Feb 2022	ASSEMBLY DRAWING, DIGITAL AMPLIFIER WITH SILICON CONFIGURATION, BiT Digi. Amp. I.S.
982721	1 to 3	A	02 Feb 2022	ASSEMBLY DRAWING, DIGITAL AMPLIFIER WITH THIN FILM CONFIGURATION, BiT Digi. Amp. I.S
371PC139	1 of 1	A	02 Feb 2022	CIRCUIT BOARD ASSM, DIGITAL AMPLIFIER, INTRINSIC SAFETY
271PC141	1 to 10	A	02 Feb 2022	PCB, DRILL DWG, DIGI. AMP., INTRINSIC SAFETY (ARTWORK)
450E-H-DE	1 to 3	A	02 Feb 2022	Schematic, Digital Amplifier, BiT, Intrinsic Safety

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Issue 2

Drawing no.	Sheets	Rev	Approved date	Title
982852	1 to 2	B	31 Jul 2024	ASSEMBLY DRAWING, HART MONOLITHIC CONFIGURATION
982853	1 to 2	B	31 Jul 2024	ASSEMBLY DRAWING, ANALOG MONOLITHIC CONFIGURATION
982854	1 to 3	A	31 Jul 2024	ASSEMBLY DRAWING, BiT, I.S., HART-MONOLITHIC CONFIGURATION
982855	1 to 3	B	31 Jul 2024	ASSEMBLY DRAWING, BiT, I.S., ANALOG-MONOLITHIC CONFIGURATION
371MT132	1 of 1	D	31 Jul 2024	BODY, HP, HF4, 1/4" TUBE, -P15
371MT148	1 of 1	C	31 Jul 2024	Body, Monolithic, 1/4" NPTM
371MT149	1 of 1	D	31 Jul 2024	Body, Monolithic, 1/2" NPTM
371MT150	1 of 1	D	31 Jul 2024	Body, Monolithic, 1/4" NPTF
371MT151	1 of 1	C	31 Jul 2024	Body, Monolithic, 1/2" NPTF
371MT152	1 of 1	C	31 Jul 2024	Body, Monolithic, 7/16-20 37 Flared, Male
371MT153	1 of 1	C	31 Jul 2024	Body, Monolithic, 7/16-20 37 Flared, F, -P1-M
371MT154	1 of 1	D	31 Jul 2024	Body, Monolithic, 7/16-20 SAE #4 (ORB), M, -P2-M
371MT155	1 of 1	C	31 Jul 2024	Body, Monolithic, 7/16-20 SAE #4 (ORB), F, -P14-M
371MT156	1 of 1	E	31 Jul 2024	Body, Monolithic, G1/4" M
371MT157	1 of 1	C	31 Jul 2024	Body, Monolithic, G1/4" F
371MT158	1 of 1	D	31 Jul 2024	Body, Monolithic, G1/2" M
371MT159	1 of 1	C	31 Jul 2024	Body, Monolithic, G1/2" F
371MT166	1 of 1	B	31 Jul 2024	Body, Monolithic, EN837-1 G1/2B Male
982434	1 to 3	D	31 Jul 2024	Assembly Drawing Bit, I.S., Silicon Hart Configuration

Issue 3

Drawing no.	Sheets	Rev	Approved date	Title
982852	1 to 2	B	05 Sep 2024	ASSEMBLY DRAWING, HART MONOLITHIC CONFIGURATION
982853	1 to 2	B	05 Sep 2024	ASSEMBLY DRAWING, ANALOG MONOLITHIC CONFIGURATION
982854	1 to 3	A	05 Sep 2024	ASSEMBLY DRAWING, BiT, I.S., HART-MONOLITHIC CONFIGURATION
982855	1 to 3	B	05 Sep 2024	ASSEMBLY DRAWING, BiT, I.S., ANALOG-MONOLITHIC CONFIGURATION
371MT132	1 of 1	D	05 Sep 2024	BODY, HP, HF4, 1/4" TUBE, -P15

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371MT148	1 of 1	C	05 Sep 2024	Body, Monolithic, 1/4" NPTM
371MT149	1 of 1	D	05 Sep 2024	Body, Monolithic, 1/2" NPTM
371MT150	1 of 1	D	05 Sep 2024	Body, Monolithic, 1/4" NPTF
371MT151	1 of 1	C	05 Sep 2024	Body, Monolithic, 1/2" NPTF
371MT152	1 of 1	C	05 Sep 2024	Body, Monolithic, 7/16-20 37 Flared, Male
371MT153	1 of 1	C	05 Sep 2024	Body, Monolithic, 7/16-20 37 Flared, F, -P1-M
371MT154	1 of 1	D	05 Sep 2024	Body, Monolithic, 7/16-20 SAE #4 (ORB), M, -P2-M
371MT155	1 of 1	C	05 Sep 2024	Body, Monolithic, 7/16-20 SAE #4 (ORB), F, -P14-M
371MT156	1 of 1	E	05 Sep 2024	Body, Monolithic, G1/4" M
371MT157	1 of 1	C	05 Sep 2024	Body, Monolithic, G1/4" F
371MT158	1 of 1	D	05 Sep 2024	Body, Monolithic, G1/2" M
371MT159	1 of 1	C	05 Sep 2024	Body, Monolithic, G1/2" F
371MT166	1 of 1	B	05 Sep 2024	Body, Monolithic, EN837-1 G1/2B Male
982434	1 to 3	D	05 Sep 2024	Assembly Drawing Bit, I.S., Silicon Hart Configuration
371MT141	1 of 1	C	05 Sep 2024	Sensor High Pressure HM4 Monolithic