EU Type Examination Certificate CML 17ATEX5228X Issue 3

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **mmWAVE**

3 Manufacturer **Pulsar Process Measurement**

4 Address **Cardinal Building, Enigma Commercial Centre, Malvern, Worcestershire, WR14 1JJ, United Kingdom**

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 CML B.V., Chamber of Commerce No 6738671, Hoogoorddreef 15, Amsterdam, 1101 BA, 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 60079-18:2015

10 The equipment shall be marked with the following:

Ex II 2 G Ex mb IIC T4 Gb

Ex II 2 D Ex mb IIIC T135°C Db

Ta= -20°C to +80°C

R C Marshall
Certification Officer

11 Description

The mmWAVE is a DC powered level measurement sensor utilising radar technology. The sensor is housed in a non-metallic enclosure with integral five core cable which connects to control equipment located in the safe area providing power and data communication. The enclosure incorporates a threaded cap which allows the equipment to be mounted on a suitable bracket or flange.

The equipment is powered from a nominal 24Vdc power supply located in the safe area. The output of the sensor is sent via a signalling wire to external control equipment.

The equipment is fully encapsulated to allow use in areas requiring equipment protection levels Gb and Db and has the following ratings:

Um = 28Vdc (supply input)

Um = 6Vdc (signal connection)

The equipment is available with various power outputs represented by the dBRx marking on the label.

Variation 1

This variation introduced the following modifications:

i. The use of an alternative internal dome material
ii. Update of standard to EN IEC 60079-0:2018
iii. Minor circuit and PCB layout changes

Variation 2

This variation introduced the following modifications:

i. The transfer from a CML UK certificate to CML BV.

Variation 3

This variation introduced the following modifications:

i. Minor change to the label that doesn't affect the certification

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	12 Jun 2018	R11292B/00	Issue of Prime Certificate
1	29 Apr 2019	R12235B/00	The Introduction of Variation 1
2	16 Oct 2019	R12797B/00	The Introduction of Variation 2
3	21 May 2020	R13269B/00	The Introduction of Variation 3

Note: Drawings that describe the equipment or component 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.
ii. Each piece of equipment shall be visually inspected. No damage shall be evident, such as cracks in the compound, exposure of encapsulated parts, flaking, inadmissible shrinkage, swelling, decomposition, failure of adhesion, or softening.

14 Specific Conditions of Use (Special Conditions)

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

i. Under certain extreme circumstances, the non-metallic parts incorporated in 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 (e.g. steam generation or windblown dust). In addition, the equipment shall only be cleaned with a damp cloth.
ii. The equipment shall be routinely inspected to avoid the build-up of dust layers when installed in Zones 21 or 22.
iii. The equipment shall not be used if there are any cracks or damage to the enclosure.
iv. The power supply and signal connections to the equipment shall each incorporate a 100mA fuse located in the safe area. The fuses shall have a minimum breaking capacity of 1500A.
v. The equipment shall only be installed in areas where there is a low risk of mechanical danger.

Certificate Annex

Certificate Number	**CML 17ATEX5228X**
Equipment	**mmWAVE**
Manufacturer	**Pulsar Process Measurements**

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

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
D-804-1270-A	1 of 1	-	12 Jun 2018	mmWAVE dBR16 Radar Ex mb hazardous area protection
D-804-1264-A	1 to 2	A	12 Jun 2018	mmWAVE dBR16 Protection PCB layout
D-804-1246-A	1 of 1	A	12 Jun 2018	mmWAVE dBR16 Protection V1.0 Haz area schematic
D-804-1243-A	1 of 1	A	12 Jun 2018	mmWAVE dBR16 radar module
D-804-1241-C	1 of 1	C	12 Jun 2018	mmWAVE dBR series Ex mb wraparound label
D-804-1293-A	1 of 1	-	12 Jun 2018	mmWAVE dBR16 Radar general arrangement
D-804-1240-B	1 of 1	B	12 Jun 2018	mmWAVE dBR16 Radar housing base
D-804-1261-A	1 to 4	A	12 Jun 2018	mmWAVE dBR16 CPU PCB layout
D-804-1260-A	1 to 2	A	12 Jun 2018	mmWAVE dBR16 CPU V1.1 Haz area schematic
D-804-1245-C	1 of 1	C	12 Jun 2018	mmWAVE dBRxx Radar cable assembly Ex mb
D-804-1238-A	1 of 1	-	12 Jun 2018	mmWAVE dBR16 Radar cap BSP
BOM-0021-A	1 of 1	1.1	12 Jun 2018	Controlled Bill of Materials mmWAVE Ex mb dBR-xx series
A-301-0163-A	1 of 1	1.0	12 Jun 2018	mmWAVE dBR16 Protection V1.0 hazardous area BOM
D-804-1239-A	1 of 1	A	12 Jun 2018	mmWAVE dBR16 Radar cap NPT
D-804-1230-B	1 of 1	B	12 Jun 2018	mmWAVE dBR16 Polysulfone dome

Issue 1

Drawing No	Sheets	Rev	Approved date	Title
D-804-1293-B	1 of 1	1	29 Apr 2019	mmWAVE dBR Radar general arrangement
D-804-1260-B	1 to 3	B	29 Apr 2019	mmWAVE dBRx CPU V1.2 schematic
D-804-1261-B	1 to 4	B	29 Apr 2019	mmWAVE dBRx CPU V1.2 PCB layout
D-804-1230-D	1 of 1	D	29 Apr 2019	Polysulfone dome

Certificate Annex

Certificate Number	**CML 17ATEX5228X**
Equipment	**mmWAVE**
Manufacturer	**Pulsar Process Measurements**

Issue 2

Drawing No	Sheets	Rev	Approved date	Title
D-804-1241-D	1 of 1	D	16 Oct 2019	mmWAVE dBR series Ex mb wraparound labels
BOM-0021-A	1 of 1	1.2	16 Oct 2019	Controlled Bill of Materials mmWAVE Ex mb dBR-xx series

Issue 3

Drawing No	Sheets	Rev	Approved date	Title
D-804-1241-E	1 of 1	E	21 May 2020	mmWAVE dBR series Exmb wraparound labels