



EU Type Examination Certificate CML 17ATEX2227X Issue 4

- 1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
- 2 Equipment **mmWAVE-is**
- 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 60079-11:2012

- 10 The equipment shall be marked with the following:

II 1 G

II 1 D

Ex ia IIC T4 Ga

Ex ia IIIC T135°C Da

Ta= -20°C to +80°C



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11 Description

The mmWAVE-is 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.

Intrinsic safety is achieved by connecting to the non-hazardous area via intrinsically safe interface devices, and by encapsulation of the electronics and sensor.

The equipment has the following safety description:

Power Port		Signal Port		RX port		TX port		
Ui	=	28V	Ui	=	10V	Ui	=	10V
li	=	120mA	li	=	200mA	li	=	200mA
Pi	=	0.83W	Pi	=	0.5W	Pi	=	0.5W
Ci	=	5nF	Ci	=	0	Ci	=	0
Li	=	0	Li	=	0	Li	=	0
					Uo	=	6.51V	
					Io	=	208mA	

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. Amendments to the equipment labelling and description
- ii. Modifications to the specification of the integral cable

Variation 2

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
- iv. The addition of an optional sub-shield for flange mounting

Variation 3

This variation introduced the following modifications:

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

Variation 4

This variation introduced the following modifications:

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



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12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	2 Nov 2017	R11292A/00	Issue of Prime Certificate
1	22 Jun 2018	R11827A/00	The Introduction of Variation 1
2	29 Apr 2019	R12235A/00	The Introduction of Variation 2
3	15 Oct 2019	R12797A/00	The Introduction of Variation 3
4	21 May 2020	R13269A/00	The Introduction of Variation 4

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.

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. This is particularly important if the equipment is installed in a zone 0 location. 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 a Zones 20, 21, or 22.
- iii. The equipment shall only be connected to resistive intrinsically safe sources with minimum resistances as follows
 - Power connection $R \geq 234\Omega$
 - Signal connection $R \geq 50\Omega$
 - TX connection $R \geq 50\Omega$
 - RX connection $R \geq 50\Omega$
- iv. When installing the equipment, the installer shall consider the length of integral cable attached to the equipment, in addition to any externally installed cable. The integral cable shall be considered to have parameters of 200pF/m , and $1\mu\text{H/m}$ or $30\mu\text{H}/\Omega$

Certificate Annex

Certificate Number CML 17ATEX2227X

Equipment mmWAVE-is

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-804-1221-B	1 of 1	B	02 Nov 2017	mmWAVE dBR16 Radar hazardous area protection
D-804-1264-A	1 to 2	A	02 Nov 2017	mmWAVE dBR16 Protection PCB layout
D-804-1246-A	1 of 1	A	02 Nov 2017	mmWAVE dBR16 Protection V1.0 Haz area schematic
D-804-1243-A	1 of 1	A	02 Nov 2017	mmWAVE dBR16 radar module
D-804-1242-A	1 of 1	A	02 Nov 2017	mmWAVE-is dBR16 Exia wraparound label
D-804-1197-E	1 of 1	E	02 Nov 2017	mmWAVE dBR16 Radar general arrangement
D-804-1240-B	1 of 1	B	02 Nov 2017	mmWAVE dBR16 Radar housing base
D-804-1261-A	1 to 4	A	02 Nov 2017	mmWAVE dBR16 CPU PCB layout
D-804-1260-A	1 to 2	A	02 Nov 2017	mmWAVE dBR16 CPU V1.1 Haz area schematic
D-804-1244-B	1 of 1	1	02 Nov 2017	mmWAVE dBR16 Radar cable assembly Exia
D-804-1238-A	1 of 1	A	02 Nov 2017	mmWAVE dBR16 Radar cap BSP
BOM-0020-A	1 of 1	1.1	02 Nov 2017	Controlled Bill of Materials mmWAVE dBR16 Exia
A-301-0163-A	1 of 1	1.0	02 Nov 2017	mmWAVE dBR16 Protection V1.0 hazardous area BOM
D-804-1239-A	1 of 1	A	02 Nov 2017	mmWAVE dBR16 Radar cap NPT
D-804-1230-B	1 of 1	B	02 Nov 2017	mmWAVE dBR16 Polysulfone dome

Issue 1

Drawing No	Sheets	Rev	Approved date	Title
D-804-1242-B	1 of 1	B	21 Jun 2018	mmWAVE-is dBRxx Exia generic wraparound labels
D-804-1244-C	1 of 1	C	21 Jun 2018	mmWAVE dBRxx Radar cable assembly Exia
BOM-0020-A	1 of 1	1.2	21 Jun 2018	Controlled Bill of Materials mmWAVE-IS Ex ia, dBR16-xx series

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Issue 2

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
D-804-1197-F	1 of 1	F	29 Apr 2019	mmWAVE dBR Radar Exia General Arrangement

Issue 3

Drawing No	Sheets	Rev	Approved date	Title
D-804-1242-C	1 of 1	C	15 Oct 2019	mmWAVE-is dBRxx Ex ia Pulsar wraparound labels

Issue 4

Drawing No	Sheets	Rev	Approved date	Title
D-804-1242-D	1 of 1	D	21 May 2020	mmWAVE-is dBRxx Exia Pulsar wraparound labels