EU Type Examination Certificate CML 16ATEX2331X Issue 2

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

2 Equipment **MicroFlow-i and MicroFlow-T**

3 Manufacturer **Pulsar Process Measurement**

4 Address Cardinal Building,
Enigma Commercial Centre
Sandy's Road
Malvern
Worcestershire WR14 1JJ
UK

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 60079-0: 2012:A11:2013, Corr3 EN 60079-11:2012

10 The equipment shall be marked with the following:

MicroFlow-i:	**MicroFlow-T:**
Ex II 1 G D	Ex II 1 G D
Ex ia IIC T4 Ga	Ex ia IIC T4 Ga
Ex ia IIIC T135°C Da	Ex ia IIIC T135°C Da
Ta= -20°C to +60°C	Ta= -30°C to +60°C

D R Stubbings
Technical Director

11 Description

MicroFlow-i

The MicroFlow-i is a two wire loop powered process flow measurement sensor utilising radar technology. The sensor is housed in a non-metallic enclosure with integral cable which connects to control equipment located in the safe area. The equipment can be operated in either 4-20 mA loop powered mode or digital HART mode. The enclosure incorporates a threaded cap which allows the equipment to be mounted on a suitable bracket.

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

The equipment has the following safety description:

Ui = 28 V
Ii = 162 mA
Pi = 1.03 W
Ci = 0
Li = 0

MicroFlow-T

The MicroFlow-T is a DC powered process flow 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.

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

The equipment has the following safety description:

Ui = 9.6V
Ii = 350 mA
Pi = 0.65 W
Ci = 0
Li = 0

Variation 1

This variation introduces the following modifications:

i. Changes to the circuit and PCB layout of the power supply board.
ii. A revised front face arrangement of the MicroFlow-i.
iii. Addition of a new version, the MicroFlow-T, to the certificate.
iv. The addition of a further “X” condition to consider the integral cable parameters.

Variation 2

This variation introduces the following modifications:

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

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	11 Nov 2016	R950A/00	Issue of prime certificate
1	04 Sep 2017	R11291A/00	Introduction of Variation 1
2	15 Oct 2019	R12797D/00	The introduction of Variation 2

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

13 Conditions of manufacture

None.

14 Specific Conditions of Use (Special Conditions)

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

14.1 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.

14.2 The equipment must be routinely inspected to avoid the build-up of dust layers when installed in a Zones 20, 21, or 22.

14.3 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 1µH/m or 30µH/Ω.

Certificate Annex

Certificate Number	CML 16ATEX2331X
Equipment	MicroFlow-i and MicroFlow-T
Manufacturer	Pulsar Process Measurement Ltd.

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

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
D-804-1199-A	1 of 1	-	10 Nov 2016	Microflow transducer cap
D-804-1200-B	1 of 1	B	10 Nov 2016	Microflow-i loop powered Exia generic wraparound label
D-804-1201-A	1 of 1	-	10 Nov 2016	Microflow base housing
D-804-1202-A	1 of 1	-	10 Nov 2016	Sub shield machining for ATEX Microflow
D-804-1203-A	1 of 1	-	10 Nov 2016	Microflow ATEX housing face
D-804-1204-A	1 of 1	-	10 Nov 2016	Microflow cable for Exia
D-804-1189-A	1 to 2	A	10 Nov 2016	Flowradar sensor V1.2 (1) Haz area
D-804-1191-A	1 to 4	1.2	10 Nov 2016	Microflow sensor PCB
D-804-1190-A	1 to 2	A	10 Nov 2016	Flowradar power V1.2 (1) Haz area
D-804-1192-A	1 to 4	1.2	10 Nov 2016	Microflow power PCB
D-804-1188-A	1 to 2	A	10 Nov 2016	Flowradar HART V1.0 (2) Haz area
D-804-1193-B	1 to 4	B	10 Nov 2016	Microflow HART PCB
A-301-0148-A	1 to 2	1.2	10 Nov 2016	Microflow sensor PCB BOM
A-301-0149-A	1 to 2	1.2	10 Nov 2016	Microflow power PCB BOM
A-301-0155-A	1 to 2	1.0	10 Nov 2016	Microflow HART PCB BOM
D-804-1172-C	1 of 1	C	10 Nov 2016	Microflow loop powered hazardous area protection overview
D-804-1171-C	1 of 1	C	10 Nov 2016	Microflow loop powered Exia general layout
BOM-0017-A	1 of 1	1.0	10 Nov 2016	Microflow loop powered Ex ia O/A BOM
D-804-1216-A	1 of 1	-	10 Nov 2016	Microflow ATEX potting detail

Issue 1

Drawing No	Sheets	Rev	Approved date	Title
D-804-1190-B	1 to 2	B	04 Sep 2017	Flowradar Power V2.0 haz area sch
D-804-1192-B	1 to 4	B	04 Sep 2017	Microflow Power PCB
D-804-1171-D	1 of 1	D	04 Sep 2017	Microflow loop powered Ex ia general layout
D-804-1216-B	1 of 1	B	04 Sep 2017	Microflow Ex ia ATEX potting detail

Certificate Annex

Certificate Number CML 16ATEX2331X

Equipment MicroFlow-i and MicroFlow-T

Manufacturer Pulsar Process Measurement Ltd.

Drawing No	Sheets	Rev	Approved date	Title
D-804-1234-B	1 of 1	B	04 Sep 2017	Technolog MicroFlow-T Ex ia wraparound label
D-804-1254-A	1 to 4	A	04 Sep 2017	Cello Interface
D-804-1255-B	1 of 1	B	04 Sep 2017	Cello Interface V2.0 Haz area sch
D-804-1256-A**	1 of 1	A	04 Sep 2017	Microflow Ex ia Housing Face
D-804-1257-B	1 of 1	B	04 Sep 2017	Microflow-T Ex ia version hazardous area protection
D-804-1258-A	1 of 1	A	04 Sep 2017	Microflow-T Ex ia general layout
D-804-1259-A	1 of 1	A	04 Sep 2017	Microflow-T cable assembly
A-301-0149-A	1 of 1	2.0	04 Sep 2017	Microflow Power V2.0 hazardous area BOM
A-301-0161-A	1 of 1	2.0	04 Sep 2017	Cello Interface V2.0 Hazardous area BOM
BOM-0017-A	1 of 1	1.1	04 Sep 2017	Controlled Bill of Materials – Microflow loop powered Ex ia
BOM-0019-A	1 of 1	1.0	04 Sep 2017	Controlled Bill of Materials – Microflow-T Ex ia

**This drawing replaces drawing D-804-1203-A

Issue 2

Drawing No	Sheets	Rev	Approved date	Title
D-804-1200-C	1 of 1	C	15-10-2019	MicroFlow-i loop powered Ex ia generic wraparound label
D-804-1234-C	1 of 1	C	15-10-2019	Technolog MicroFlow-T Ex ia wraparound label