1 # EU-TYPE EXAMINATION CERTIFICATE

2 Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014

3 EU-Type Examination Certificate Number: **CSANe 25ATEX1048X** Issue: **0**

4 Equipment: **Radar Level Transmitter, model number LR81-****, LR83-13*0, LR85-13*0**

5 Manufacturer: **Flowline, Inc.**

6 Address: 10500 Humbolt Street
Los Alamitos, CA 90720
United States of America

7 This product and any acceptable variation thereto, is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Netherlands B.V., Notified Body No. 2813 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products 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 item 16.2.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-11:2012 EN 60079-31:2014

Where additional criteria beyond those given here have been used, they are listed in item 18 in the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed in item 17 of this certificate.

11 This EU-Type Examination Certificate relates only to the technical design of the specified product in accordance with the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product, these are not covered by this certificate.

12 The marking of the product shall include the following (additional marking is provided in the Schedule as a part of item 15, if applicable):

LR81-10**
II 1G
Ex ia IIC T6/T5 Ga

LR81-20, LR81-2**1**
II 1D
Ex ta IIIC T_{200}106°C Da
IP 66/67

LR83-13*0, LR85-13*0
II 1G
Ex ia IIC T6...T4 Ga

Type of protection "ia": -40°C ≤ Tamb ≤ 60°C
Type of protection "ta": -40°C ≤ Tamb ≤ 50°C

Signed: M Halliwell
Title: Senior Director of Operations
Date 28 October 2025

13 # SCHEDULE

14 **EU-Type Examination Certificate Number: CSANe 25ATEX1048X** Issue: **0**

15 **Description:**

Radar Level Transmitter types LR8X for use in explosive atmospheres caused by the presence of combustible gases or dusts, are used for monitoring and control of filling levels by means of microwave technology. LR8X Series radar level transmitter, X could be 1, 3 and 5 to represent different structure. Electronic circuits inside mainframe are almost same. The electronics, mounted in a plastic enclosure converts the reflected microwave echo, indicating the filling level, into a 2-wire 4...20mA HART signal or 4-wire Modbus signal. Operation and control of the product can either be through the wired connection or via smart phone and Bluetooth.

Model LR83 and LR85 are equipped with a display module and a windowed cover, and the housing is equipped with a wire terminal via a ½″ NPT or M20*1.5 cable entry. The housing of LR83 and LR85 is made of PBT, and the antenna of LR83 and LR85 is made of PVDF material and PFA material respectively. Model LR81 is equipped with a selectable length cable, and the housing and antenna of LR81 are both made of PVDF material.

Model LR81 has been tested in accordance with the testing requirements of the enclosure section in IEC 60079-0:2017, and it meets the ingress protection requirements of IP66/67.

Models LR83 and LR85 have been tested in accordance with the requirements of standard IEC 60529 and meet ingress protection requirements of IP66/67. Model LR81 also has been tested in accordance with standard IEC 60529 and meet ingress protection requirements of IP68 (1m, 24h).

The model designation of LR81, LR83 and LR85 series are as follows:

Breakdown of the model number LR81 is as follows:

Type designation key	LR81- * * * * 1 2 3 4
1st character: CLASSIFICATION	1 Intrinsically Safe 2 Dust Protection by Enclosure
2nd character: CABLE ORIENTATION	0 Vertical 1 Horizontal
3rd character: PROCESS MOUNT	0 1 1/2″ NPT 1 1 1/2″ G with Viton Gasket
4th character: SIGNAL OUTPUT	0 4-20 mA with HART 1 ModBus

Breakdown of the model number LR83 is as follows:

Type designation key	LR83- * 3 * * 1 2 3
1st character: CLASSIFICATION	1 Intrinsically Safe
2nd character: PROCESS MOUNT	0 1 1/2″ NPT 1 1 1/2″ G with Viton Gasket
3rd character: SIGNAL OUTPUT	0 4-20 mA with HART 1 ModBus

Breakdown of the model number LR85 is as follows:

Type designation key	LR85- * 3 * * 1 2 3
1st character: CLASSIFICATION	1 Intrinsically Safe
2nd character: PROCESS MOUNT	0 3″ NPT 1 M80x3 with Viton Gasket 3 3″ ANSI Gimbal Flange 5 DIN80 Gimbal Flange
3rd character: SIGNAL OUTPUT	0 4-20 mA with HART 1 ModBus

Electrical data:

Type	Type of protection	Electrical Data
LR81-1**0	Ex ia	Supply and output circuit (+ (Red wire), - (Black wire)): Supply voltage: 12-30 VDC Signal output: 4-20mA, two-wire, HART Max. consumption:22.5 mA The entity parameters for the product are: Ui=30.6V, Ii=131mA, Pi=1.0W Ci=$L_{cable\ (ft)}$ *36pF/ft, Li=132.6uH+ $L_{cable\ (ft)}$ *0.083uH/ft
LR81-2**1	Ex ta	Supply (+ (Red wire), - (Black wire)) and Signal (A (White wire), B (Green wire)): Supply voltage: 9-27 VDC Signal output: Modbus, RS485 Max. consumption: 1.5W
LR81-2**0	Ex ta	Supply and output circuit (+ (Red wire), - (Black wire)): Supply voltage: 12-30 VDC Signal output: 4-20mA, two-wire, HART Max. consumption:22.5 mA@30V
LR83-13*0 LR85-13*0	Ex ia	Supply and output circuit (+, -): Supply voltage: 12-30 VDC Signal output: 4-20mA, two-wire, HART Max. consumption: 22.5 mA The entity parameters for the product are: Ui=30.6V, Ii=131mA, Pi=1.0W, Ci=0, Li=132.6uH

Temperature ratings(gas):

The temperature ratings are depending on the model, ambient temperature and process temperature and are as listed below.

Type	T class of whole equipment	Ambient temperature range	Process temperature range
LR81-1**0	T6	-40°C to 60 °C	-40°C to 60 °C
	T5	-40°C to 60 °C	-40°C to 80 °C
LR83-13*0	T6	-40°C to 60 °C	-40°C to 60 °C
	T5	-40°C to 60 °C	-40°C to 100 °C
LR85-13*0	T6	-40°C to 60 °C	-40°C to 60 °C
	T5	-40°C to 60 °C	-40°C to 100 °C
	T4	-40°C to 60 °C	-40°C to 120 °C

Temperature ratings (dust):

Temperature ratings for equipment in EPL Da (maximum surrounding dust layer when installed in zone 20 = 200 mm).

Type	T class of whole equipment	Ambient temperature range	Process temperature range
LR81-2**1	T98 °C	-40°C to 50 °C	-40°C to 60 °C
LR81-2**0	T106 °C	-40°C to 50 °C	-40°C to 80 °C

Note: Asterisks "* " denotes alpha-numeric characteristic denoting cable orientation, process mount.

16 **Drawings and documents:**

16.1 **Technical documents:**

Refer to Certificate Annex.

16.2 **Associated reports and certificate history:**

Issue	Date	Report number	Comment
0	28 October 2025	R80205484A	The release of the prime certificate.

17 **Specific conditions of use** (denoted by "X" after the certificate number):

17.1 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 includes but is not limited to prevent friction to the enclosure surface or by the process medium as well as exposition to high voltage fields. In addition, the equipment shall only be cleaned with a damp cloth.

17.2 All parts of the equipment which are in contact with the process medium must only be used in such a medium the materials are sufficiently resistant against.

17.3 The model LR81 shall be installed such that the supply cable is protected from mechanical damage. The cable shall not be subjected to tension or torque. If the cable is to be terminated within an explosive atmosphere, then the free end shall be terminated in a suitably certified termination facility.

17.4 Cables must be effectively clamped to prevent pulling or twisting.

17.5 The equipment shall be protected against excessive UV light emission.

17.6 The product shall only be used in locations where there is a low risk of mechanical impact.

17.7 Installation per drawing 8X-CONWIRE and instruction manual.

18 **Essential health and safety requirements of Annex II** (EHSRs):

The relevant EHSRs that are not addressed by the standards listed in item 9 of this certificate have been identified and conformity of the product demonstrated in the reports listed in item 16.2.

19 **Remarks and additional information:**

The use of this certificate is subject to the regulations applicable to holders of CSA Group Netherlands B.V. certificates.

Compliance of the product with the applicable safety requirements of the relevant industrial standards has not been verified and is not covered by this certificate.

19.1 **Conditions of manufacture:**

None