IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx CSA 25.0032X** Page 1 of 3 Certificate history:

Status: **Current** Issue No: 0

Date of Issue: 2025-10-28

Applicant: **Flowline, Inc.**
10500 Humbolt Street
Los Alamitos, CA 90720
United States of America

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

Optional accessory:

Type of Protection: **Intrinsic Safety "ia" & Dust Protection by Enclosure "ta"**

Marking: LR81-1**0: Ex ia IIC T6/T5 Ga
LR81-2**0, LR81-2**1: Ex ta IIIC T_{200}106°C Da
LR83-13*0, LR85-13*0: Ex ia IIC T6…T4 Ga

LR81-2**0, LR81-2**1: IP 66/67

Type of protection “ia”: -40˚C ≤ Tamb ≤ 60˚C
Type of protection “ta”: -40˚C ≤ Tamb ≤ 50˚C

Approved for issue on behalf of the IECEx Certification Body: **Dave Magee**

Position: **Senior Director of Operations**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:

CSA Group
178 Rexdale Boulevard
Toronto, Ontario M9W IR3
Canada

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Date of issue: 2025-10-28

Manufacturer:
Flowline, Inc.
10500 Humbolt Street
Los Alamitos, CA 90720
United States of America

Manufacturing locations:

Flowline, Inc.
10500 Humbolt Street
Los Alamitos, CA 90720
United States of America

Beijing GODA Instruments Co., Ltd.
Building A, 2001-2006, 2041-2049,
Hongfu International Innovation Center,
Beiqijia Town,
Changping District,
Beijing
China

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-31:2022 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
Edition:3.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

CA/CSA/ExTR25.0053/00

Quality Assessment Reports:

DE/TUR/QAR16.0007/06 GB/CSAE/QAR24.0017/01

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

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).

Refer to certificate Annexe for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

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.
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.
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.
4. Cables must be effectively clamped to prevent pulling or twisting.
5. The equipment shall be protected against excessive UV light emission.
6. The product shall only be used in locations where there is a low risk of mechanical impact.
7. Installation per drawing 8X-CONWIRE and instruction manual.

Annex:

IECEx CSA 25.0032X Iss 0 Annexe.pdf

EQUIPMENT (continued)

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

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Type	Type of protection	Electrical Data
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.

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