

Certificate of Conformity

Certificate No.: Smar 0001 **Date of issue:** 19-12-2012

Applicant: Smar Equipamentos Industriais Ltda
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Equipment: Pressure Transmitter LD290, LD291 and LD301

Applied Standards: IEC 60079-0: 2007 Explosive atmospheres – Part 0: General requirements
IEC 60079-15: 2010 Explosive atmospheres – Part 15: Equipment protection by type of protection “n”

Type of protection: Type Ex nA

Marking: Ex nA IIC T4 Gc IP66/68W
Ta: -50 °C to +60 °C
Ui ≤ 32 Vdc

The product complies with the requirements of the Directive 94/9/EC, according to Chapter II, Article 8, No. 1, item (c).

Approved by: César Cassiolato

Position: Field Devices Director

Signature:



Date: 19/Dec/2012

Test Report Smar n.: DOC-DD-0081-00**Description:**

The Pressure Transmitter types LD301-xx, LD290-xx and LD291-xx which serve for the transmission of measured pressure data in form of 4 - 20 mA current loop, comprise a tubular light alloy or stainless steel housing which contains printed circuit boards fitted with electronic components. These Pressure

Transmitters use the same physical structure in terms of electronic boards and mechanical enclosures, differing only by the firmware configuration.

The housing is closed by means of removable screwed covers.

Under the one cover, being equipped with an inspection glass, an alphanumeric LCD-display is arranged optionally; under the other cover, terminals for the signal-circuit are arranged.

A cable entry for electronic circuits is mounted in the wall of the housing.

A mechanical pressure gauge fitted with process connection facilities and an electronics assembly boards embedded in casting compound is located inside an extension of the housing. To measure the applied pressure, the LD301 pressure transmitter uses the differential capacitive sensor and the LD29x pressure transmitter, the gauge in-line capacitive sensor.

The Pressure Transmitters of the LD Series family are designed as non-sparking apparatus “nA” intended for interconnection to a general power supply with $U_0 \leq 32V_{dc}$ and a signal-circuit (4 - 20 mA current loop).

These devices have an IP66/68W ingress protection certificate.

Model designation:**Communication Protocol**

Hart & 4-20 mA

Local Indicator

With Digital Indicator

Without Indicator

Electrical Connection

1/2 - 14 NPT

3/4 - 14 NPT (with 316 SST adapter for 1/2 - 14 NPT)

M20 X 1.5

PG 13.5 DIN

Housing Material

Aluminium (Default) (IP/TYPE)

316 SST - CF8M (ASTM - A351) (IP/TYPE)

Aluminium for Saline Atmospheres (IPW/TYPEX)

316 SST for Saline Atmospheres (IPW/TYPEX)

Aluminium Copper Free (IPW/TYPEX)

Pressure Transmitter LD290 - xx x x - x x - x x / xx xx xx xx xx xx xx

In the full designation, the spacers 'x' are replaced by numbers and letters specifying constructive details. For Pressure Transmitter type LD290, the basic specification is according to:

LD290-abc-**

a = Model and Range code;

b = Sensor Diaphragm material and fill fluid code;

c = Local Indicator code;

** = The next codes are specific for transmitter models, differing according to GAGE PRESSURE TRANSMITTER model, SANITARY PRESSURE TRANSMITTER model, LOW COST FLANGED PRESSURE TRANSMITTER model and PRESSURE TRANSMITTER WITH EXTENDED PROBE model.

Refer to “*LD290 - Operation and Maintenance Instruction Manual*” for more details.

Pressure Transmitter LD291 - xx x x - x x - x x / xx xx xx xx xx xx xx

In the full designation, the spacers 'x' are replaced by numbers and letters specifying constructive details. For Pressure Transmitter type LD291, the basic specification is according to:

LD291-a**

a = Model and Range code;

** = The next codes are specific for transmitter models, differing according to GAGE PRESSURE TRANSMITTER model, SANITARY PRESSURE TRANSMITTER model, LOW COST FLANGED PRESSURE TRANSMITTER model and PRESSURE TRANSMITTER WITH EXTENDED PROBE model.

Refer to “*LD291 - Operation and Maintenance Instruction Manual*” for more details.

Pressure Transmitter LD301- xx x x - x x x x - x x x / xx xx xx xx xx xx xx xx xx

In the full designation, the spacers 'x' are replaced by numbers and letters specifying constructive details. For Pressure Transmitter type LD301, the basic specification is according to:

LD301-abc-defg-h**

a = Model and range code;

b = Sensor Diaphragm material and fill fluid code;

c = Flanges, adapters, and drain/vent valves materials code;

d = Wetted O-Rings materials code;

e = Vent/Drain position code;

f = Local Indicator code;

g = Process connections code;

h = Electrical connection code;

i = Zero/Span Adjustment code;

** = The next codes are specific for transmitter models, differing according to DIFFERENTIAL , FLOW, GAGE, ABSOLUTE or HIGH STATIC PRESSURE TRANSMITTER models,

FLANGED PRESSURE TRANSMITTER model and SANITARY PRESSURE TRANSMITTER model.

Refer to “*LD301 - Operation and Maintenance Instruction Manual*” for more details.

Special condition for safe use:

- i) Is not allowed the removal or insertion of components with the circuit energized.
- ii) If a charge-generating mechanism is present, the exposed metallic part on the enclosure is capable of storing a level of electrostatic charge that could become incendive for IIC gases. Therefore, the user shall implement precautions to prevent the build up of electrostatic charge, e.g. earthing the metallic part.

Routine tests:

- i) The manufacturer shall subject 100% of completed Pressure Transmitter units to the electrical strength test according to IEC 60079-15:2010 clauses 6.5, by applying a voltage of 500 Vrms between all input terminals and the outer enclosure for a minimum of 60s. Alternatively, a voltage of 850 Vdc may be applied for 1s. The current flowing during the test shall not exceed 5mA.
- ii) Each manufactured sample shall withstand a pressure test to 1.5 times the maximum working pressure.