LD290 Series

290 - 291 - 292 - 293

PRESSURE TRANSMITTERS

- 0 ~ 125 Pa to 0 ~ 25 MPa
- 0 ~ 0.5 in$H_2$0 to 0 ~ 3600 psi
- ± 0.075% Accuracy
- 40:1 Rangeability
- Wetted parts in 316 SS, Hastelloy
- Totally digital; including sensor, electronics and communication (Except LD290)
- Digital LCD display
- Weather proof, explosion proof and intrinsically safe
- Self diagnostics
- Three options of technology

CEPEL OCP-0007 · INMETRO · CSA · FM APPROVED · Ex · EXAM BBG Prüf- und Zertifizier GmbH · N · A3 · Ex NEPSI

FOUNDATION · HART COMMUNICATION PROTOCOL · PROFIBUS · FDT · EDDL

smar

4-20 mA

- Updating time of output current in 100 ms;
- With high performance mathematical co-processor;
- Digital electronics and sensor;
- Weather proof, explosion proof and intrinsically safe;
- FMEDA (failure Modes, Effects and Diagnostic Analysis);
- MTBF (Mean Time Between Failures) of 239 years;
- MTTR (Mean Time to Repair) of 18 minutes;
- MTTF (Mean Time to Failure) of 239 years;
- Applicable in safety areas according to SIL (Safety Integrity Level) requirements;
- Write protection by hardware;
- Designed and manufactured according to ISO 9001 standards.

HART® 4-20 mA

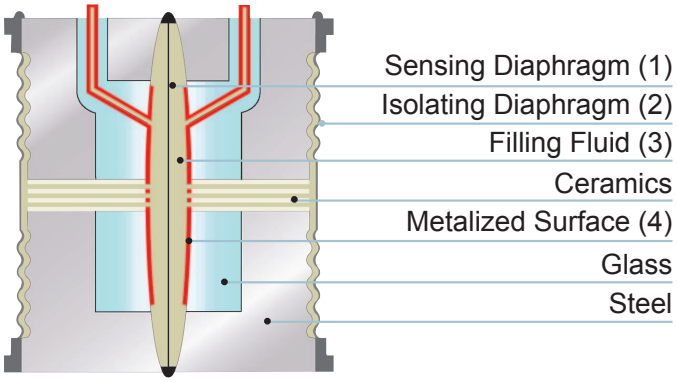
- Updating time of output current in 100ms;
- Improved performance due to dedicated math co-processor;
- FMEDA (Failure Modes, Effects and Diagnostic) Analysis;
- MTBF (Mean Time Between Failures) of 239 years;
- MTTR (Mean Time to Repair) of 18 minutes;
- MTTF (Mean Time to Failure) of 239 years;
- Applicable in safety areas according to SIL (Safety Integrity Level) requirements;
- Write protection by hardware;
- Designed and manufactured according to ISO 9001 standards;
- Zero, span and damping adjustment through HART® local switches (only if fitted with display);
- Easy update for FOUNDATION™ fieldbus and PROFIBUS PA technologies.

FOUNDATION™ fieldbus

- Instantiation and deletion of function blocks;
- Network master capability;
- Easy update for HART® and Profibus PA technologies.

PROFIBUS PA

- Use of the Analog Input function;
- Easy firmware upgrade (via Flash Memory Interface);
- Easy update to FOUNDATION™ fieldbus and HART® protocol.



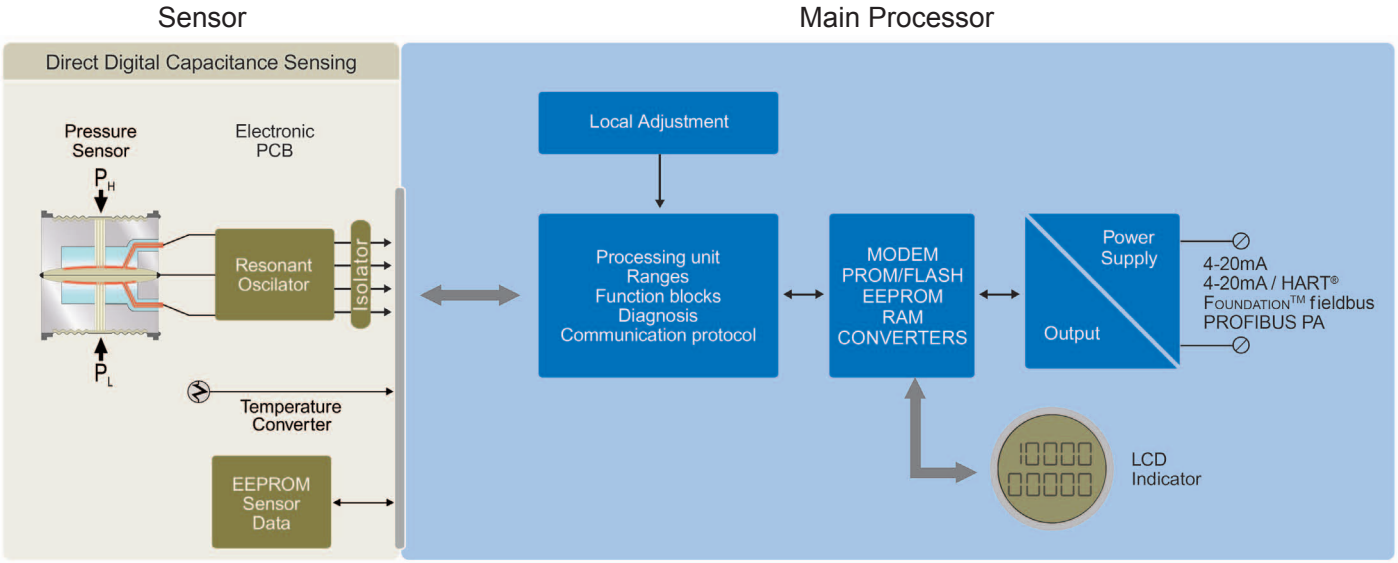
The **LD290 Series** are an economical alternative gauge pressure transmitter. It is based on a field-proven capacitive sensor that provides reliable operation and high performance.

This lightweight design eliminates the need for mounting brackets and transmitter supports in many applications. It's microprocessor-based electronics allows total interchangeability with Smar capacitive sensors. It is automatically corrects sensors characteristics changes caused by temperature fluctuations.

The sensor is shown in the picture above. The sensing diaphragm **(1)** is at the cell center. The diaphragm deflects as a result of the difference between the pressures applied to the left and right sides of the sensor. Pressure is directly applied to the isolating diaphragms **(2)**, which provide resistance against process fluid corrosion. The pressure is transmitted to the sensing diaphragm through the filling fluid **(3)**. The sensing diaphragm is a moving capacitor plate while the two metallized surfaces **(4)** are fixed plates. The sensing diaphragm deflection results in capacitance variations between the moving and fixed plates.

The electronic resonance circuit reads capacitance variation between the moving and fixed plates. The CPU conditions the measurement and communicates according to protocol. As there is no A/D conversion, errors and drifts during conversions are eliminated. A temperature sensor provides temperature compensations, which combined with the sensor precision, results in high accuracy and rangeability for the **LD290 Series.**

The process variable, as well as monitoring and diagnostics information, are provided by digital communication protocol. The available protocol options are: HART®, FOUNDATION™ fieldbus and PROFIBUS PA.



Transmitters Types

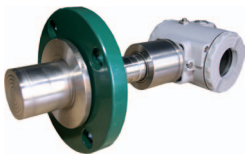
Gage Pressure - LD290M

The **LD290M** model is a pure 4-20 mA transmitter. Even though it has only analog input, its microprocessor-based electronics allow for total interchangeability with Smar capacitive sensors. It automatically corrects sensor characteristics changes caused by temperature fluctuations.

Gage Pressure - LD291M, LD292M and LD293M

The **LD291M**, **LD292M** and **LD293M** models offer digital communication based in HART®, FOUNDATION™ fieldbus and PROFIBUS PA - protocols, simplifying calibration and providing remote diagnostics. Their microprocessor-based electronic circuit allows for total interchangeability with Smar capacitive sensors.

Sanitary Transmitter - LD290S, LD291S, LD292S and LD293S



The **LD290S**, **LD291S**, **LD292S** and **LD293S** models are specially designed for food and other applications where sanitary connections are required. With threaded or “tri-clamp” connections, it allows for easy and quick maintenance and cleaning.
Tri-clamp and other connections are compliant to 3A-7403 standard for food grade applications.
For further information, see the Smar SR301 Series Catalog.

Flanged Pressure Transmitter - LD290L, LD291L, LD292L and LD293L

The **LD290L, LD291L, LD292L** and **LD293L** models have a flange mounted unit for direct installation on vessels. Extended diaphragms are also available.

Pressure Transmitter with Extended Probe - LD290I, LD291I, LD292I and LD293I

The **LD290I**, **LD291I**, **LD292I** and **LD293I** models allow measurement of liquid level in open tanks, closed non-pressurized tanks, canals, wells etc. The measurement principle is based on measuring the column of fluid with the immersion of the hard probe into the liquid.

Manifold Valves

Smar manifold valves provide all of the necessary safety for field maintenance of **LD290 Series** transmitters. Working at pressures up to 6,000 psi, they are easy to handle and lighter than others in the market. Pressure and leakage tests carried out in 100% of the valves, also for models mounted on the transmitter. For further information, please see the Smar Manifold Valves Catalog.

Parameterization and Diagnostics

LD290 Series are available in four different technologies: 4-20 mA **(LD290)**, HART® **(LD291)**, FOUNDATION™ fieldbus **(LD292)** and PROFIBUS PA **(LD293)**.
These instruments can be configured with Smar software and other manufacturers’ configuration tools.
Local adjustment is available in all **LD290 Series**. It is possible to configure zero and span, and other functions using the magnetic tool. Smar has developed AssetView, which is a user-friendly Web Tool that can be accessed anywhere and anytime using an Internet browser. It is designed for management and diagnostics of field devices to ensure reactive, preventive, predictive and proactive maintenance.

4-20 mA - LD290

Only configurable using magnetic tool if device is fitted with display.

HART® - LD291

LD291 (HART® protocol) can be configured by:

- Smar CONF401 for Windows;
- Smar DDCON100 for Windows;
- Smar HPC301 and HPC401 for several models of Palms*;
- Other manufacturers' configuration tools based on DD (Device Description) or DTM (Device Type Manager), such as AMS™, FieldCare™, PACTware™, HHT275 and HHT375, PRM Device Viewer. For **LD291** management and diagnostics, AssetView ensures continuous information monitoring.

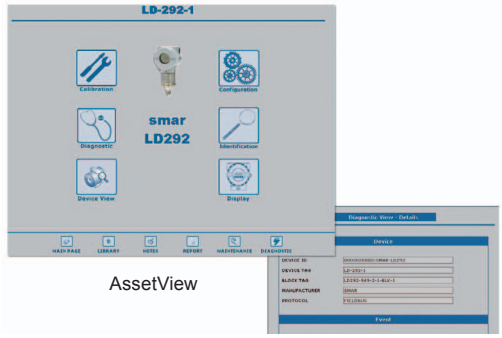
CONF401

HPC401

* Requires HPI311.

FOUNDATION™ fieldbus - LD292

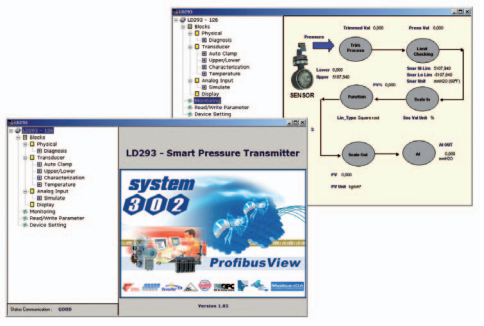
LD292 utilizes the FOUNDATION™ fieldbus H1 protocol, an open technology that allows any H1 enabled configuration tool to configure this device.
Syscon (System Configuration Tool) is a software tool used to configure, maintain and operate the field devices. Syscon offers efficient and friendly interaction with the user, using Windows NT version 4.0 or later, Windows 2000 and Windows XP.
Configuration tools such as AMS™, FieldCare™ and HHT375 can configure **LD292** devices. DD (Device Description) and CF (Capability File) files can be downloaded at either the Smar or Fieldbus FOUNDATION™ website.
LD292 supports complex strategies configurations due to the high capacity and variety of dynamic instantiable function blocks. Seventeen different types of function blocks are supported, and up to 20 function blocks can be running simultaneously.
Maintenance procedures with AssetView diagnostics and status information from FOUNDATION™ fieldbus result in a safe plant with higher availability.



AssetView

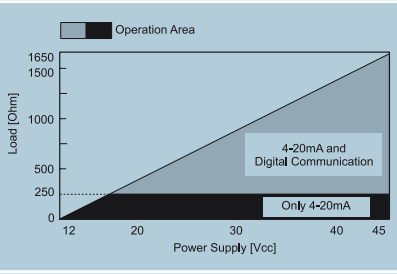
PROFIBUS PA - LD293

LD293 (PROFIBUS PA protocol) can be configured using Smar ProfibusView and Simatic PDM and by the FDT (Field Device Tool) and DTM (Device Type Manager) concept tools, such as FieldCare™ and PACTware™. It can also be integrated by any PROFIBUS System using the GSD file. PROFIBUS PA also has quality and diagnostic information, improving plant management and maintenance. The EDDL and DTM are available in Smar website. Conforms to profile 3.0.



ProfibusView

Functional Specifications

Process Fluid	Liquid, gas or steam
Output and Communication Protocol	**4-20 mA** Two-wire, 4-20 mA controlled according to NAMUR NE43 Specification. **HART®** Two-wire, 4-20 mA according to NAMUR NE43 specification, with superimposed digital communication (HART® Protocol). **FOUNDATION™ fieldbus and PROFIBUS PA** Digital only. Complies with IEC 61158-2:2000 (H1): 31.25 kbit/s voltage mode, bus powered.
Power Supply / Quiescent Current	**4-20 mA and HART®** 12 to 45 Vdc. **FOUNDATION™ fieldbus and PROFIBUS PA** Bus powered: 9 to 32 Vdc. Quiescent current consumption: 12 mA Output impedance: nonintrinsic safety from 7.8 kHz - 39 kHz should be greater or equal to 3 kOhm. Intrinsic safety output impedance (assuming an IS barrier in the power supply) from 7.8 kHz - 39 kHz should be greater or equal to 400 Ohm. 
Indicator	4 1/2 - digit numerical and 5-character alphanumerical LCD indicator (optional).
Hazardous Area Certifications	Intrinsic Safe (FM, CSA, Nemko, Dekra/EXAM, Cepel and NEPSI), non-incendive (FM, CSA and Cepel), explosion proof (FM, Nemko and Cepel) and dust ignition proof (FM).
European Directive Information	**Authorized representative in European Community** Smar Gmbh-Rheingaustrasse 9-55545 Bad Kreuzanach. **PED Directive (97/23/EC) - Pressure Directive** This product is in compliance with the directive and was designed and manufactured in accordance with sound engineering practice using several standards from ANSI, ASTM, DIN and JIS. Quality Management System certified by BVQI (Bureau Veritas Quality International). **EMC Directive (2004/108/EC) - Eletromagnetic Compatibility** The EMC test was performed according to IEC satndard: IEC61326-1:2006, IEC61326-2-3:2006, IEC61000-6-4:2006, IEC61000-6-2:2005. For use in industrial environment only. Keep the shield insulated at the instrument side, connecting the other one to the ground if necessary to use shielded cable. **ATEX Directive (94/9/EC) - Equipment and protective systems intended for use in potentially explosive atmospheres** This product is certified according to the European Standards at NEMKO and EXAM European Standards. **LVD Directive (2006/95/EC) - Electrical Equipment designed for use within certain voltage limits** According the LVD directive Annex II the equipment under ATEX “Electrical equipment for use in an explosive atmosphere” directive are excluded from scope from this directive.
Temperature Limits	Ambient: -40 to 85°C (-40 to 185 °F) -15 to 85°C (-59 to 185 °F) (**LD290I**) Process: -40 to 100°C (-40 to 212 °F) (Silicone Oil) 0 to 85°C (32 to 185 °F) (Inert Fluorolube Oil) -25 to 85 ºC (-13 to 185 ºF) (Viton O´Ring) -40 to 150 °C (-40 to 302 ºF) **(LD290L)** -15 to 150°C (-59 to 302 °F) (**LD290I**) Storage: -40 to 100°C (-40 to 212 °F) Display: -20 to 80°C (-4 to 176 °F) -40 to 85°C (-40 to 185 °F) (Without Damages)
Turn-on Time	**4-20 mA and HART®** Performs within specifications in less than 5 seconds after power is applied to the transmitter. **FOUNDATION™ fieldbus and PROFIBUS PA** Performs within specifications of less than 10 seconds after power is applied to the transmitter.
Overpressure and Static Pressure Limits (MWP – Maximum Working Pressure)	14 MPa (138 bar) for ranges 2, 3, 4. 31 MPa (310 bar) for range 5. For Level Ranges ANSI/DIN (models LD290L): 150#: 6 psia to 235 psi (-0,6 to 16 bar) to 199,4 °F (93 °C) 300#: 6 psia to 620 psi (-0,6 to 43 bar) to 199,4 °F (93 °C) 600#: 6 psia to 1240 psi (-0,6 to 85 bar) to 199,4 °F (93 °C) PN10/16: -60 kPa to 1,02 MPa to 212 °F (100 °C) PN25/40: -60 kPa to 2,55 MPa to 212 °F (100 °C) Overpressures above will not damage the transmitter, but a new calibration may be necessary. **WARNING** It is described here only the maximum pressures of the materials referenced in each rule, it can not be manufactured on request. Temperatures above 150 °C are not available in standard models.

Overpressure and Static Pressure Limits (MWP - Maximum Working Pressure) (continuation)

PRESSURES TABLE FOR SEAL AND LEVEL FLANGES DIN EN 1092-1 2008 STANDARD

Material Group	Pressure Class	Maximum Temperature Allowed						
		RT	100	150	200	250	300	350
		Maximum Pressure Allowed (bar)						
10E0 AISI 304/304L	PN 16	16	13.7	12.3	11.2	10.4	9,6	9.2
	PN 25	25	21.5	19.2	17.5	16.3	15.1	14.4
	PN 40	40	34.4	30.8	28	26	24.1	23
	PN 63	63	63	57.3	53.1	50.1	46.8	45
	PN 100	100	86.1	77.1	70	65.2	60.4	57.6
	PN 160	160	137.9	123.4	112	104.3	96.7	92.1
	PN 250	250	215.4	192.8	175	163	151.1	144

Material Group	Pressure Class	Maximum Temperature Allowed						
		RT	100	150	200	250	300	350
		Maximum Pressure Allowed (bar)						
14E0 AISI 316/316L	PN 16	16	16	14.5	13.4	12.7	11.8	11.4
	PN 25	25	25	22.7	21	19.8	18.5	17.8
	PN 40	40	40	36.3	33.7	31.8	29.7	28.5
	PN 63	63	63	57.3	53.1	50.1	46.8	45
	PN 100	100	100	90.9	84.2	79.5	74.2	71.4
	PN 160	160	160	145.5	134.8	127.2	118.8	114.2
	PN 250	250	250	227.3	210.7	198.8	185.7	178.5

Material Group	Pressure Class	Maximum Temperature Allowed						
		RT	100	150	200	250	300	350
		Maximum Pressure Allowed (bar)						
16E0 1.4410 Super Duplex 1.4462 Duplex	PN 16	16	16	16	16	16	-	-
	PN 25	25	25	25	25	25	-	-
	PN 40	40	40	40	40	40	-	-
	PN 63	63	63	63	63	63	-	-
	PN 100	100	100	100	100	100	-	-
	PN 160	160	160	160	160	160	-	-
	PN 250	250	250	250	250	250	-	-

PRESSURES TABLE FOR SEAL AND LEVEL FLANGES ASME B16.5 2009 STANDARD

Material Group	Pressure Class	Maximum Temperature Allowed								
		-29 to 38	50	100	150	200	250	300	325	350
		Maximum Pressure Allowed (bar)								
Hastelloy C276	150	20	19.5	17.7	15.8	13.8	12.1	10.2	9.3	8.4
	300	51.7	51.7	51.5	50.3	48.3	46.3	42.9	41.4	40.3
	400	68.9	68.9	68.7	66.8	64.5	61.7	57	55	53.6
	600	103.4	103.4	103	100.3	96.7	92.7	85.7	82.6	80.4
	900	155.1	155.1	154.6	150.6	145	139	128.6	124	120.7
	1500	258.6	258.6	257.6	250.8	241.7	231.8	214.4	206.6	201.1
	2500	430.9	430.9	429.4	418.2	402.8	386.2	357.1	344.3	335.3

Overpressure and Static Pressure Limits (MWP - Maximum Working Pressure) (continuation)

Material Group	Pressure Class	Maximum Temperature Allowed								
		-29 to 38	50	100	150	200	250	300	325	350
		Maximum Pressure Allowed (bar)								
S31803 Duplex S32750 Super Duplex	150	20	19.5	17.7	15.8	13.8	12.1	10.2	9.3	8.4
	300	51.7	51.7	50.7	45.9	42.7	40.5	38.9	38.2	37.6
	400	68.9	68.9	67.5	61.2	56.9	53.9	51.8	50.9	50.2
	600	103.4	103.4	101.3	91.9	85.3	80.9	77.7	76.3	75.3
	900	155.1	155.1	152	137.8	128	121.4	116.6	114.5	112.9
	1500	258.6	258.6	253.3	229.6	213.3	202.3	194.3	190.8	188.2
	2500	430.9	430.9	422.2	382.7	355.4	337.2	323.8	318	313.7

Material Group	Pressure Class	Maximum Temperature Allowed								
		-29 to 38	50	100	150	200	250	300	325	350
		Maximum Pressure Allowed (bar)								
AISI316L	150	15.9	15.3	13.3	12	11.2	10.5	10	9.3	8.4
	300	41.4	40	34.8	31.4	29.2	27.5	26.1	25.5	25.1
	400	55.2	53.4	46.4	41.9	38.9	36.6	34.8	34	33.4
	600	82.7	80	69.6	62.8	58.3	54.9	52.1	51	50.1
	900	124.1	120.1	104.4	94.2	87.5	82.4	78.2	76.4	75.2
	1500	206.8	200.1	173.9	157	145.8	137.3	130.3	127.4	125.4
	2500	344.7	333.5	289.9	261.6	243	228.9	217.2	212.3	208.9

Material Group	Pressure Class	Maximum Temperature Allowed								
		-29 to 38	50	100	150	200	250	300	325	350
		Maximum Pressure Allowed (bar)								
AISI316	150	19	18.4	16.2	14.8	13.7	12.1	10.2	9.3	8.4
	300	49.6	48.1	42.2	38.5	35.7	33.4	31.6	30.9	30.3
	400	66.2	64.2	56.3	51.3	47.6	44.5	42.2	41.2	40.4
	600	99.3	96.2	84.4	77	71.3	66.8	63.2	61.8	60.7
	900	148.9	144.3	126.6	115.5	107	100.1	94.9	92.7	91
	1500	248.2	240.6	211	192.5	178.3	166.9	158.1	154.4	151.6
	2500	413.7	400.9	351.6	320.8	297.2	278.1	263.5	257.4	252.7

Volumetric Displacement

Less than 0.15 cm^3 (0.01 in^3)

Damping Adjustment

4-20 and HART®
Through magnetic tool: adjustable for any value from 0 to 128 seconds, added to the sensor response time (0.2 s).

FOUNDATION™ fieldbus and PROFIBUS PA
From any value between 0 and 32 seconds plus intrinsic sensor response time (0.2 s).

Configuration and Zero and Span Adjustments

4-20 mA
Only zero and span via local adjustment if device is fitted with display.

HART®
By digital communication (HART® protocol) using the Configuration Interface CONF301 or the Hart Pocket Configurator HPC301. Basic configuration may be done using local adjustment magnetic tool if device is fitted with display.

FOUNDATION™ fieldbus and PROFIBUS PA
Basic configuration may be done using local adjustment magnetic tool if device is fitted with display.
Complete configuration is possible using remote, SYSCON (**LD292**), Smar ProfibusView and Simatic PDM (**LD293**).

Humidity Limits

0 to 100% RH (Relative Humid).

Performance Specifications

Accuracy	For ranges 2, 3, 4 or 5: ±0.075% of span (for span >= 0.1 URL) ±[0.0375 + 0,00375 URL/SPAN] % of span (for span < 0.1 URL) For Level Transmitter: ± 0.08 % of span (for span >= 0.1 URL) ± [0.0504 + 0.0047 URL/span] % of span (for span < 0.1 URL) For Insertion Transmitter: ±0.2% of span Linearity effects, hysterese and repeatability are included.
Stability	± 0.15% of URL per 5 years
Temperature Effect	± [0.02% URL + 0.06% of span], per 20 ºC (68 ºF) for span >= 0.2 URL ± [0.023% URL + 0.045% of span], per 20 ºC (68 ºF) for span < 0.2 URL For **LD290L**: 6 mmH_2O per 20 ºC for 4" and DN100 17 mmH_2O per 20 ºC for 3" and DN80 Consult for other flange dimensions and fill fluid.
Power Supply Effect	± 0.005% of calibrated span per volt
Mounting Position Effect	Zero shift of up to 250 Pa (1 inH_2O) which can be calibrated out. No span effect.
Electromagnetic Interference Effect	Approved according to IEC61326-1:2006, IEC61326-2-3:2006, IEC61000-6-4:2006, IEC61000-6-2:2005.

Physical Specifications

Electrical Connection	See options in Ordering Code.
Process Connection	See options in Ordering Code.
Wetted Parts	316L SST, Hastelloy C276 Diaphragm for sanitary models available in Monel 400 and Tantalum too.
Nonwetted Parts	**Electronic Housing** Injected aluminum with polyester painting or 316 SST. According to NEMA Type 4X or Type 4, IP66, IP66W*. *The IP66W sealing test (immersion) was performed at 1 bar for 24 hours. For any other situation, please consult Smar. IP66W tested for 200h to according NBR 8094 / ASTM B 117 standard. **Level Flange (LD290L):** 316 SST, 304 SST and Plated Carbon Steel. **Fill Fluid** Silicone Oil or Inert Fluorolube Oil. **Cover O-Rings** Buna-N **Mounting Bracket** Plated Carbon Steel or 316 SST. Accessories (bolts, nuts, washers and U-clamps) in Carbon Steel or 316 SST. **Identification Plate** 316 SST.
Approximate Weights	< 2.0Kg (4lb): aluminum housing without mounting bracket.

MODEL	GAGE PRESSURE TRANSMITTERS
LD290M	4-20 mA
LD291M	HART® & 4-20 mA
LD292M	Foundation™ fieldbus
LD293M	PROFIBUS PA

CODE	Type	Range Limits Min	Max	Unit	Range Limits Min	Max	Unit
2	Gage	12.5	500	mbar	5.02	201.9	inH_2O
3	Gage	62.5	2500	mbar	25.13	1005.45	inH_2O
4	Gage	0.625	25	bar	157.1	10054.5	inH_2O
5	Gage	6.25	250	bar	90.65	3625.94	psi

CODE	Diaphragm Material	Fill Fluid
1	316L SST	Silicone Oil
2	316L SST	Inert Fluorolube Oil **(2)**
3	Hastelloy C276	Silicone Oil **(1)**
4	Hastelloy C276	Inert Fluorolube Oil **(2)**
D	316L SST	Inert Krytox Oil **(2)**
E	Hastelloy C276	Inert Krytox Oil **(2)**
Q	316L SST	Inert Halocarbon 4.2 Oil **(2)**
R	Hastelloy C276	Inert Halocarbon 4.2 Oil **(2)**

CODE	Process Connections Material				
H	Hastelloy C276 **(1)**	I	316L SST	Z	User's specifications

CODE	Local Indicator		
0	Without Indicator	1	With Indicator

CODE	Process Connections				
1	1/2 - 14 NPT - Female	M	1/2 - 14 NPT - Male	X	1" NPT Sealed (316L Diaphragm, DC200/20 Silicone Fill Fluid)
A	M20 X 1,5 Male	R	Remote Seal	Z	User's specifications
G	G 1/2 A DIN 16288 - Form B	U	1/2 BSP – Male		
H	G 1/2 DIN 16288 - Form D	V	Valve Manifold integrated to the transmitter		

CODE	Electrical Connection		
0	1/2 - 14 NPT **(3)**	A	M20 X 1.5 **(5)**
1	1/2 - 14 NPT X 3/4 NPT (316 SST) - with adapter **(4)**	B	PG 13.5 DIN **(5)**
2	1/2 - 14 NPT X 3/4 BSP (316 SST) - with adapter **(11)**	Z	User's specifications
3	1/2 - 14 NPT X 1/2 BSP (316 SST) - with adapter **(11)**		
4	1/2 - 1/2 NPTF (316 SST) - with adapter		
5	1/2 - 3/4 NPTF (316 SST) - with adapter		

CODE	Mounting Bracket		
0	Without Mounting Bracket	7	Carbon Steel Mounting Bracket with 316 SST accessories
1	Carbon Steel Mounting Bracket with Carbon Steel accessories	A	304 SST Mounting Bracket with 316 SST accessories
2	316 SST Mounting Bracket with 316 SST accessories		

CODE	Optional Items

LD290M -	2	1	I	1	1	A	0	*	← Typical Model Number
LD291M -	2	1	I	1	1	A	0	*	
LD292M -	2	1	I	1	1	A	0	*	
LD293M -	2	1	I	1	1	A	0	*	

* Leave blank for no optional items.

MODEL	GAGE PRESSURE TRANSMITTER (CONTINUATION)				
CODE	**Output Signal (10)**				
G0	4-20 mA				
G4	4-20 mA + Output for Remote Indicator				
CODE	**Housing Material (8) (9)**				
H0	Aluminium (IP/TYPE)	**H3**	316 SST for saline atmosphere (IPW/TYPEX) **(7)**		
H1	316 SST (IP/TYPE)	**H4**	Copper Free Aluminium (IPW/TYPEX) **(7)**		
H2	Aluminium for saline atmosphere (IPW/TYPEX) **(7)**				
CODE	**Identification Plate**				
I1	FM: XP, IS, NI, DI	**I4**	EXAM (DMT): Ex-ia; NEMKO: Ex-d	**I7**	EXAM (DMT) Grupo I, M1 Ex-ia
I2	NEMKO: Ex-d, Ex-ia	**I5**	CEPEL: Ex-d, Ex-ia	**ID**	NEPSI: Ex-ia, Ex-d
I3	CSA: XP, IS, NI, DI	**I6**	Without Certification	**IJ**	NEMKO: Ex-d
CODE	**Painting**				
P0	Munsell N 6,5 Gray	**P5**	Polyester Yellow		
P3	Polyester Black	**P8**	Without Painting		
P4	Epoxy White	**P9**	Blue Safety Base Epoxy – Eletrostatic Painting		
CODE	**Display Unit 1 (10)**				
Y0	Percentage	**Y3**	Temperature (Temperature)		
Y1	Current (mA)	**YU**	User's specification **(6)**		
Y2	Pressure (Eng. Unit)				
CODE	**Display Unit 2 (10)**				
Y0	Percentage	**Y6**	Temperature (Temperature)		
Y4	Current (mA)	**YU**	User's specification **(6)**		
Y5	Pressure (Eng. Unit)				
CODE	**Tag Plate**				
J0	With TAG	**J2**	User's specification		
J1	Without TAG				

LD290M -	**G0**	**H0**	**I1**	**P0**	**Y0**	**Y5**	**J0**
LD291M -	**G0**	**H0**	**I1**	**P0**	**Y0**	**Y5**	**J0**
LD292M		**H0**	**I1**	**P0**			**J0**
LD293M		**H0**	**I1**	**P0**			**J0**

TYPICAL MODEL NUMBER

Optional Items

Special Procedures	**C1** – Degrease Cleaning (Oxygen or Chlorine Service)
Burnout	**BD** – Down Scale **BU** – Up Scale
Optional Items	**ZZ** – User Specification

NOTE

(1) Meets NACE material recommendation per MR-01-75.
(2) Inert fluid: safe for oxygen service.
(3) This adapter has certified for use in Explosion Proof (CEPEL, NEPSI, NEMKO, EXAM, FM, CSA).
(4) This adapter has certified for use in Explosion Proof (CEPEL, CSA).
(5) This adapter has certified for use in Explosion Proof (CEPEL, NEPSI, NEMKO, EXAM).
(6) Limited values to 4 1/2 digits; limited unit to 5 characters.
(7) IPW/TYPEX was tested for 200 hours according to NBR 8094 / ASTM B 117 standard.
(8) IPX8 tested for 10 meters of water column for 24 hours.

(9) Ingress Protection:

Products	CEPEL	NEMKO / EXAM	FM	CSA	NEPSI
LD29X	IP66/W	IP66/68/W	Type 4X/6/6P	Type 4X	IP67

(10) Only available for **LD290** and **LD291**.
(11) Not certified for use in hazardous locations.

Note

Hastelloy is a trademark of the Cabot Corp.
Monel is a trademark of International Nickel Co.
Viton and Teflon are trademarks of E. I. DuPont de Nemours & Co.

Fluorolube is a trademark of Hooker Chemical Corp.
HART® is a trademark of HART® Communication Foundation
Foundation is a trademark of Fieldbus Foundation.
Profibus is a trademark of Profibus International.

Smar Pressure Transmitters are protected by US patent number 6,433,791

Ordering Code

MODEL	PRESSURE SANITARY TRANSMITTERS
LD290S	4-20 mA
LD291S	HART® & 4-20 mA
LD292S	FOUNDATION™ fieldbus
LD293S	PROFIBUS PA

CODE	Type	Range Limits Min	Max	Unit	Range Limits Min	Max	Unit
2	Sanitary	12.5	500	mbar	5.02	201.09	inH_2O
3	Sanitary	62.5	2500	mbar	25.13	1005.45	inH_2O
4	Sanitary	0.625	25	bar	157.1	10054.5	inH_2O
5	Sanitary	6.25	55.15	bar	90.65	799.89	psi

CODE	Diaphragm Material
I	316L SST

CODE	Fill Fluid
S	Silicone DC-200/20 Oil

CODE	Local Indicator
0	Without Indicator
1	With Indicator

CODE	Process Connections	CODE	Process Connections
B	Thread IDF - 2" **(2)**	H	DN40 - DIN 11851
C	Thread RJT - 2"	P	Tri-Clamp - 2" HP **(2)**
D	Tri-Clamp - 2" **(2)**	Q	Tri-Clamp - 1 1/2" HP **(2)**
E	Thread SMS - 2" **(2)**	Z	User's specifications
F	Tri-Clamp - 1 1/2" **(2)**		

CODE	Electrical Connections	CODE	Electrical Connections
0	1/2 - 14 NPT **(3)**	A	M20 X 1.5 **(5)**
1	1/2 - 14 NPT X 3/4 NPT (316 SST) - with adapter **(4)**	B	PG 13.5 DIN **(5)**
2	1/2 - 14 NPT X 3/4 BSP (316 SST) - with adapter **(10)**	Z	User's specifications
3	1/2 - 14 NPT X 1/2 BSP (316 SST) - with adapter **(10)**		
4	1/2 - 1/2 NPTF (316 SST) - with adapter		
5	1/2 - 3/4 NPTF (316 SST) - with adapter		

CODE	O'Ring Material	CODE	O'Ring Material
0	Without O'Ring	V	Viton **(2)**
B	Buna-N **(2)**	Z	User´s specifications
T	Teflon **(2)**		

CODE	Adaptation Sleeve
0	Without Sleeve
1	With Adaptation Sleeve in 316 SST

CODE	Tri-Clamp Connection
0	Without Clamp
2	With Tri-Clamp in 304 SST

CODE	Diaphragm Material (Sanitary Connection)
H	Hastelloy
I	316L SST

CODE	Fill Fluid (Sanitary Connection)
D	Silicone DC-704 Oil
F	Inert Fluorolube MO-10 Oil **(1)**
N	Propileno Glicol Neobee M20 Oil (Approved 3A) **(2)**
S	Silicone DC-200/20 Oil
T	Sytherm 800 Oil
Z	User's specifications

CODE	Optional Items

LD290S	-	2	I	N	1	D	0	V	1	2	I	D	*
LD291S	-	2	I	N	1	D	0	V	1	2	I	D	*
LD292S	-	2	I	N	1	D	0	V	1	2	I	D	*
LD293S	-	2	I	N	1	D	0	V	1	2	I	D	*

Typical Model Number

* Leave blank for no optional items.

MODEL	SANITARY PRESSURE TRANSMITTERS (CONTINUATION)

Output Signal (9)

CODE	
G0	4-20 mA
G4	4-20 mA + Output for Remote Indicator

Housing Material (7) (8)

CODE	
H0	Aluminium (IP/TYPE)
H1	316 SST (IP/TYPE)

Identification Plate

CODE		CODE	
I1	FM: XP, IS, NI, DI	I4	EXAM (DMT): Ex-ia; NEMKO: Ex-d
I2	NEMKO: Ex-d, Ex-ia	I5	CEPEL: Ex-d, Ex-ia
I3	CSA: XP, IS, NI, DI	I6	Without Certification

Painting

CODE		CODE	
P0	Munsell N 6,5 Gray	P5	Polyester Yellow
P3	Polyester Black	P6	Epoxy Yellow
P4	Epoxy White		

Display Unit 1 (9)

CODE		CODE	
Y0	Percentage	Y3	Temperature (Temperature)
Y1	Current (mA)	YU	User's specification **(6)**
Y2	Pressure (Eng. Unit)		

Display Unit 2 (9)

CODE		CODE	
Y0	Percentage	Y6	Temperature (Temperature)
Y4	Current (mA)	YU	User's specification **(6)**
Y5	Pressure (Eng. Unit)		

Tag Plate

CODE		CODE	
J0	With TAG	J2	User's specification
J1	Without TAG		

LD290S	-	G0	H0	I1	P0	Y0	Y5	J0
LD291S	-	G0	H0	I1	P0	Y0	Y5	J0
LD292S			H0	I1	P0			J0
LD293S			H0	I1	P0			J0

TYPICAL MODEL NUMBER

Optional Items

Special Procedures	**C1** – Degrease Cleaning (Oxygen or Chlorine Service) **C4** – Polishing of the sanitary connections according to 3A Certification **(2)**
Burnout	**BD** – Down Scale **BU** – Up Scale

NOTE

(1) Inert Fluid: safe for oxygen service.
(2) Compliant with 3A-7403 standard for food and other applications where sanitary connections are required:
- Neobee M2O Fill Fluid;
- Wet face finishing: 0.8 µm Ra (32 µ" AA);
- Wet O-Ring: Viton, Teflon and Buna-N.

(3) Certificate for use in Hazardous Locations (CEPEL, NEPSI, NEMKO, EXAM, FM, CSA).
(4) Certificate for use in Hazardous Locations (CEPEL, CSA).
(5) Certificate for use in Hazardous Locations (CEPEL, NEPSI, NEMKO, EXAM).
(6) Limited values to 4 1/2 digits; limited unit to 5 characters.
(7) IPX8 tested for 10 meters of water column for 24 hours.
(8) Ingress Protection:

Products	CEPEL	NEMKO / EXAM	FM	CSA	NEPSI
LD29X	IP66/W	IP66/68/W	Type 4X/6/6P	Type 4X	IP67

(9) Only available for **LD290** and **LD291**.
(10) Not certified for use in hazardous locations.

MODEL	LOW COST FLANGED PRESSURE TRANSMITTER
LD290L	4-20 mA
LD291L	HART® & 4-20 mA
LD292L	FOUNDATION™ fieldbus
LD293L	PROFIBUS PA

CODE	Type	Range Limits Min	Range Limits Max	Unit	Range Limits Min	Range Limits Max	Unit
2	Level	12.5	500	mbar	5.02	201.9	inH_2O
3	Level	62.5	2500	mbar	25.13	1005.45	inH_2O
4	Level	0.625	25	bar	157.1	10054.5	inH_2O
5	Level	6.25	250	bar	90.65	3625.94	psi

CODE	Diaphragm Material and Fill Fluid
1	316L SST Silicone Oil

CODE	Local Indicator
0	Without Indicator
1	With Digital Indicator

CODE	Process Connection	CODE	Process Connection
1	3" 150 # (ANSI B16.5)	B	2" 600# (ANSI B16.5)
2	3" 300# (ANSI B16.5)	C	3" 600# (ANSI B16.5)
3	4" 150# (ANSI B16.5)	D	4" 600# (ANSI B16.5)
4	4" 300# (ANSI B16.5)	E	DN50 PN10/40
6	DN80 PN25/40	O	1½" 150# (ANSI B16.5)
7	DN100 PN10/16	P	1½" 300# (ANSI B16.5)
8	DN100 PN25/40	Q	1½" 600# (ANSI B16.5)
9	2" 150# (ANSI B16.5)	Z	User's specifications
A	2" 300# (ANSI B16.5)		

CODE	Electrical Connection	CODE	Electrical Connection
0	1/2 - 14 NPT **(3)**	5	1/2 - 3/4 NPTF (AI 316) - with adapter
1	1/2 - 14 NPT X 3/4 NPT (AI 316) - with adapter **(4)**	A	M20 X 1.5 **(5)**
2	1/2 - 14 NPT X 3/4 BSP (AI 316) - with adapter **(14)**	B	PG 13.5 DIN **(5)**
3	1/2 - 14 NPT X 1/2 BSP (AI 316) - with adapter **(14)**	Z	User´s specifications
4	1/2 - 1/2 NPTF (AI 316) - with adapter		

CODE	Type and Material Flange	CODE	Type and Material Flange
4	304 SST (slip-on flange)	6	Carbon Steel (slip-on flange)
5	316 SST (slip-on flange)	Z	User's specifications

CODE	Extension Lenght	CODE	Extension Lenght
0	0 mm (0")	3	150 mm (6")
1	50 mm (2")	4	200 mm (8")
2	100 mm (4")	Z	User's specifications

CODE	Diaphragm Material / Extension (Process Connection)	CODE	Diaphragm Material / Extension (Process Connection)
1	316 L SST / 316 SST	5	Titanium / 316 SST **(6)**
2	Hastelloy C276 / 316 SST	6	316L SST with Teflon Lining
3	Monel 400 / 316 SST	L	316L SST with Halar Lining
4	Tantalum / 316 SST **(6)**	Z	User's specification

CODE	Fill Fluid (Process Connection)	CODE	Fill Fluid (Process Connection)
S	Silicone DC-200/20 Oil	H	Halocarbon 4.2 Oil
F	Inert Fluorolube MO-10 Oil **(7)**	N	Propileno Glicol (Neobee) Oil
D	Silicone DC-704 Oil	T	Syltherm 800 Oil
K	Krytox Oil	Z	User´s specifications

CODE	Lower Housing Material	CODE	Lower Housing Material
0	Without Lower Housing	4	Duplex (UNS 31803)
1	316L SST	5	304L SST
2	Hastelloy C276	Z	User´s specifications
3	Super Duplex (UNS 32750)		

CODE	Gasket Material	CODE	Gasket Material
0	Without Gasket	I	316L SST
C	Copper	T	Teflon (PTFE)
G	Grafoil (Flexible Lead)	Z	User´s specifications

CODE	Optional Items

LD290L	-	2	1	1	1	0	6	2	1	S	1	T	*
LD291L	-	2	1	1	1	0	6	2	1	S	1	T	*
LD292L	-	2	1	1	1	0	6	2	1	S	1	T	*
LD293L	-	2	1	1	1	0	6	2	1	S	1	T	*

Typical Model Number

* Leave blank for no optional items.

MODEL	LOW COST FLANGED PRESSURE TRANSMITTER (CONTINUATION)

Output Signal (13)

CODE	
G0	4-20 mA
G4	4-20 mA + Output for Remote Indicator

Housing Material (11) (12)

CODE		CODE	
H0	Aluminium (IP/TYPE)	H3	316 SST for saline atmosphere (IPW/TYPEX) **(10)**
H1	316 SST (IP/TYPE)	H4	Copper Free Aluminium (IPW/TYPEX) **(10)**
H2	Aluminium for saline atmosphere (IPW/TYPEX) **(10)**		

Identification Plate

CODE		CODE		CODE	
I1	FM: XP, IS, NI, DI	I4	EXAM (DMT): Ex-ia; NEMKO: Ex-d	I7	EXAM (DMT) Grupo I, M1 Ex-ia
I2	NEMKO: Ex-d, Ex-ia	I5	CEPEL: Ex-d, Ex-ia	IJ	NEMKO: Ex-d
I3	CSA: XP, IS, NI, DI	I6	Without Certification		

Painting

CODE		CODE	
P0	Munsell N 6,5 Gray	P6	Epoxy Yellow
P3	Polyester Black	P8	Without Painting
P4	Epoxy White	P9	Blue Safety Base Epoxy – Eletrostatic Painting
P5	Polyester Yellow	PC	Safety Base Polyester – Eletrostatic Painting

Display Unit 1 (13)

CODE		CODE	
Y0	Percentage	Y3	Temperature (Temperature)
Y1	Current (mA)	YU	User's specification **(9)**
Y2	Pressure (Eng. Unit)		

Display Unit 2 (13)

CODE		CODE	
Y0	Percentage	Y6	Temperature (Temperature)
Y4	Current (mA)	YU	User's specification **(9)**
Y5	Pressure (Eng. Unit)		

Tag Plate

CODE		CODE	
J0	With TAG	J2	User's specification
J1	Without TAG		

LD290L	-	G0	H0	I1	P0	Y0	Y5	J0
LD291L	-	G0	H0	I1	P0	Y0	Y5	J0
LD292L			H0	I1	P0			J0
LD293L			H0	I1	P0			J0

TYPICAL MODEL NUMBER

Optional Items

Special Procedures	**C1** – Degrease Cleaning (Oxygen or Chlorine Service)
Burnout	**BD** – Down Scale **BU** – Up Scale
Lower Housing Connection	**U0** – With 1 Flush Connection 1/4" NPT (if supplied with lower housing) **U1** – With 2 Flush Connections 1/4" NPT per 180° **U2** – With 2 Flush Connections 1/4" NPT per 90° **U3** – With 2 Flush Connections 1/2" - 14 NPT per 180° (with cover) **U4** – Without Flush Connection

NOTE

(1) Silicone Oils not recommendations for Oxygen (O2) or Chlorine service.
(2) Not applicable for vacuum service.
(3) Certificate for use in Hazardous Locations (CEPEL, NEPSI, NEMKO, EXAM, FM, CSA).
(4) Certificate for use in Hazardous Locations (CEPEL, CSA).
(5) Certificate for use in Hazardous Locations (CEPEL, NEPSI, NEMKO, EXAM).
(6) Attention, check corrosion rate for the process, tantalum plate 0.1 mm, AISI 316L extension 3 to 6mm.
(7) Fluorolube fill fluid is not available for Monel diaphragm.
(8) Inert Fluid: Safe for oxygen service.
(9) Limited values to 4 1/2 digits; limited unit to 5 characters.
(10) IPW/TYPEX was tested for 200 hours according to NBR 8094 / ASTM B 117 standard.
(11) IPX8 tested for 10 meters of water column for 24 hours.
(12) Ingress Protection:

Products	CEPEL	NEMKO / EXAM	FM	CSA	NEPSI
LD29X	IP66/W	IP66/68/W	Type 4X/6/6P	Type 4X	IP67

(13) Only available for **LD290** and **LD291**.
(14) Not certified for use in hazardous locations.

MODEL	PRESSURE TRANSMITTER WITH EXTENDED PROBE
LD290I	4-20 mA
LD291I	HART® & 4-20 mA
LD292I	FOUNDATION™ fieldbus
LD293I	PROFIBUS PA

CODE	Type	Range Limits Min.	Max.	Unit
2	Level	12.5	500	mbar

CODE	Diaphragm Material and Fill Fluid
1	316L SST – Silicon Oil **(1)**

CODE	Local Indicator
0	Without Indicator
1	With Indicator

CODE	Fixing Transmitter
1	Bracket in L
2	Flanged Bracket
3	Triclamp 3" **(11)**
Z	User's specification

CODE	Electrical Connection	CODE	
0	1/2 - 14 NPT **(2)**	**A**	M20 X 1.5 **(4)**
1	1/2 - 14 NPT X 3/4 NPT (316 SST) – with adapter **(3)**	**B**	PG 13.5 DIN **(4)**
2	1/2 - 14 NPT X 3/4 BSP (316 SST) - with adapter **(10)**	**Z**	User's specification
3	1/2 - 14 NPT X 1/2 BSP (316 SST) - with adapter **(10)**		
4	1/2 - 1/2 NPTF (316 SST) - with adapter		
5	1/2 - 3/4 NPTF (316 SST) - with adapter		

CODE	Probe Material / Diaphragm (Wetted Parts)
A	304L SST / 316L SST
I	316L SST / 316L SST
U	316L SST / Hastelloy C276
Z	User's specification

CODE	Probe Length	CODE	
1	500 mm	**6**	1600 mm
2	630 mm	**7**	2000 mm
3	800 mm	**8**	2500 mm
4	1000 mm	**9**	3200 mm
5	1250 mm	**Z**	User's specification

CODE	Probe Fill Fluid
N	Neobee M20 Propylene Glycol Oil **(11)**
Z	User's specification

CODE	Optional Items

LD290I	-	**2**	**1**	**1**	**2**	**A**	**I**	**1**	**N**	*
LD291I	-	**2**	**1**	**1**	**2**	**A**	**I**	**1**	**N**	*
LD292I	-	**2**	**1**	**1**	**2**	**A**	**I**	**1**	**N**	*
LD293I	-	**2**	**1**	**1**	**2**	**A**	**I**	**1**	**N**	*

Typical Model Number

*Leave blank for no optional items.

MODEL	PRESSURE TRANSMITTER WITH EXTENDED PROBE (CONTINUATION)		
CODE	**Output Signal (9)**		
G0	4-20 mA		
G4	4-20 mA + Output for Remote Indicator		
CODE	**Housing Material (7) (8)**		
H0	Aluminium (IP/TYPE)	**H3**	316 SST for saline atmosphere (IPW/TYPEX) **(6)**
H1	316 SST (IP/TYPE)	**H4**	Copper Free Aluminium (IPW/TYPEX) **(6)**
H2	Aluminium for saline atmosphere (IPW/TYPEX) **(10)**		
CODE	**Identification Plate**		
IN	CEPEL: Ex-ia		
CODE	**Painting**		
P0	Munsell N 6,5 Gray	**P6**	Epoxy Yellow
P3	Polyester Black	**P8**	Without Painting
P4	Epoxy White	**P9**	Blue Safety Base Epoxy - Eletrostatic Painting
P5	Polyester Yellow	**PC**	Safety Base Polyester - Eletrostatic Painting
CODE	**Display Unit 1 (9)**		
Y0	Percentage	**Y3**	Temperature (Temperature)
Y1	Current (mA)	**YU**	User's specification **(5)**
Y2	Pressure (Eng.Unit)		
CODE	**Display Unit 2 (9)**		
Y0	Percentage	**Y6**	Temperature (Temperature)
Y4	Current (mA)	**YU**	User's specification **(5)**
Y5	Pressure (Eng. Unit)		
CODE	**Tag Plate**		
J0	With TAG	**J2**	User's specification
J1	Without TAG		

LD290I	**G0**	**H0**	**IN**	**P0**	**Y0**	**Y5**	**J0**
LD291I	**G0**	**H0**	**IN**	**P0**	**Y0**	**Y5**	**J0**
LD292I		**H0**	**IN**	**P0**			**J0**
LD293I		**H0**	**IN**	**P0**			**J0**

Typical Model Number

Optional Items

Special Procedures	**C1** – Degrease Cleaning (Oxygen or Chlorine Service) **C4** – Polishing of the wet parts according to 3A certification **(11)**
Burnout	**BD** – Down Scale **BU** – Up Scale
Special Caracteristics	**U0** – With 1 Flush Connection 1/4" NPT (if supplied with lower housing) **U1** – With 2 Flush Connections 1/4" NPT per 180º **U2** – With 2 Flush Connections 1/4" NPT per 90º **U3** – With 2 Flush Connections 1/2" - 14 NPT per 180º (with cover) **U4** – Without Flush Connection **ZZ** – User's specifications

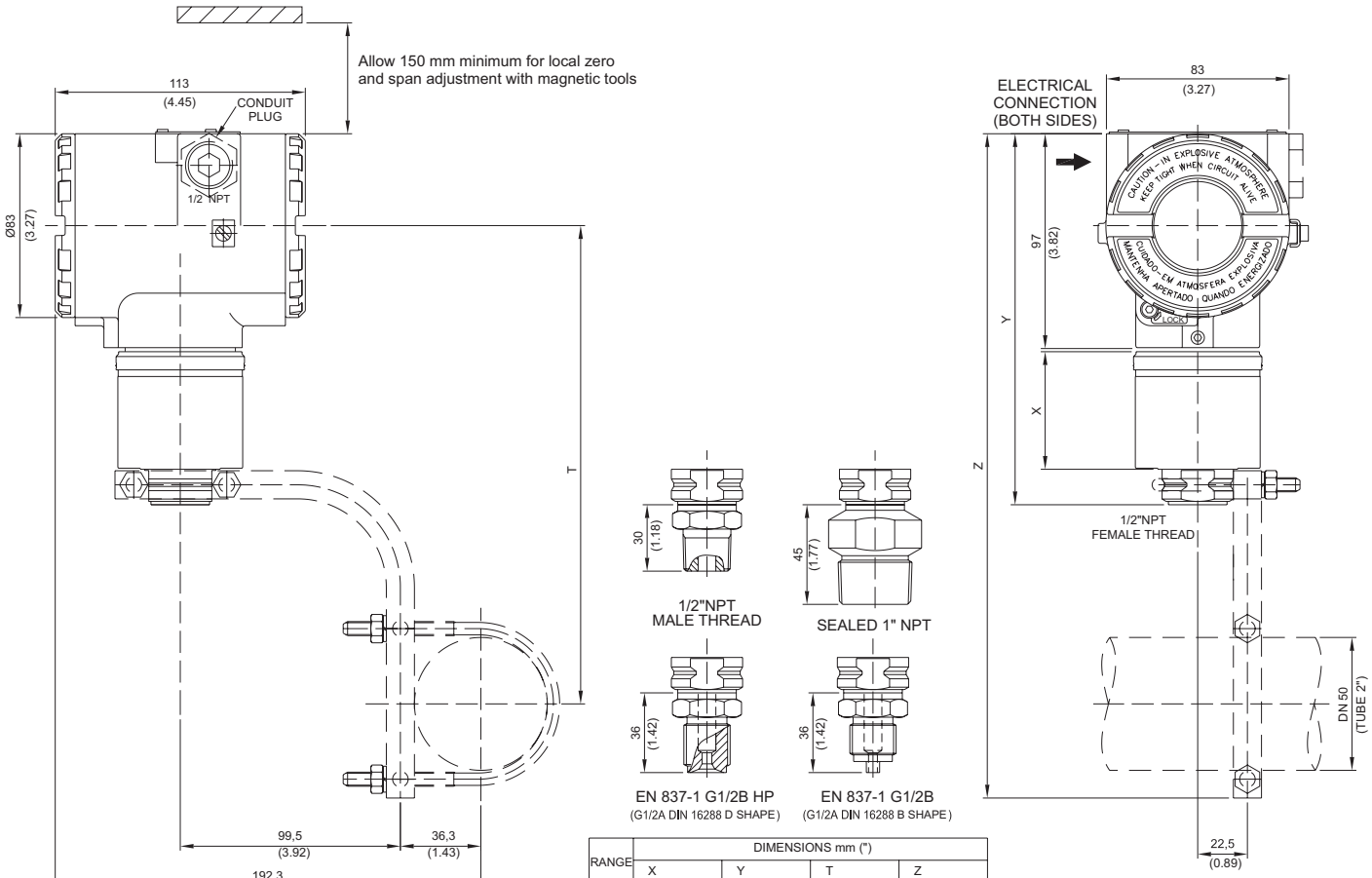
NOTE

(1) Silicone Oils not recommendations for Oxygen (O2) or Chlorine service.
(2) Certificate for use in Hazardous Locations (CEPEL, NEPSI, NEMKO, EXAM, FM, CSA).
(3) Certificate for use in Hazardous Locations (CEPEL, CSA).
(4) Certificate for use in Hazardous Locations (CEPEL, NEPSI, NEMKO, EXAM).
(5) Limited values to 4 1/2 digits; limited unit to 5 characters.
(6) IPW/TYPEX was tested for 200 hours according to NBR 8094 / ASTM B 117 standard.
(7) IPX8 tested for 10 meters of water column for 24 hours.
(8) Ingress Protection:

Products	CEPEL	NEMKO / EXAM	FM	CSA	NEPSI
LD29X	IP66/W	IP66/68/W	Type 4X/6/6P	Type 4X	IP67

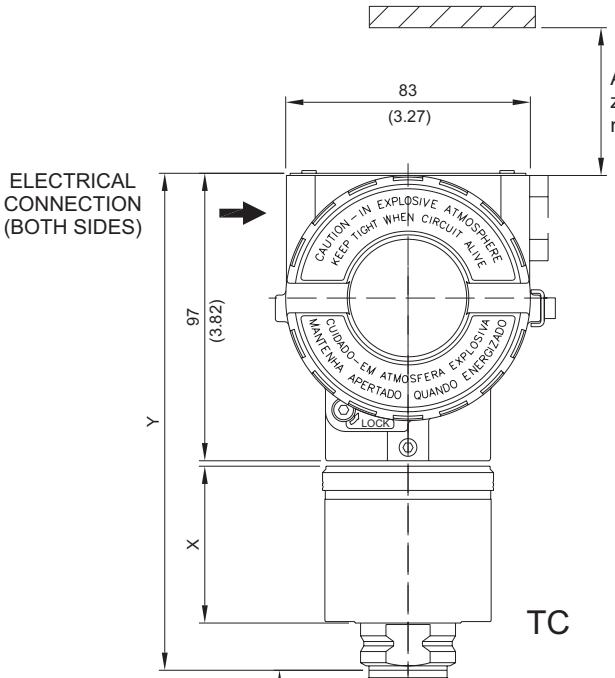
(9) Only available **for LD290** and **LD291.**
(10) Not certified for use in hazardous locations.
(11) Compliant with 3A-7403 standard for food and other applications where sanitary connections are required:
- Neobee M2O Fill Fluid;
- Wet face finishing: 0.8 µm Ra (32 µ" AA);
- Wet O-Ring: Viton, Teflon and Buna-N.

LD290M - Gage Pressure Transmitters



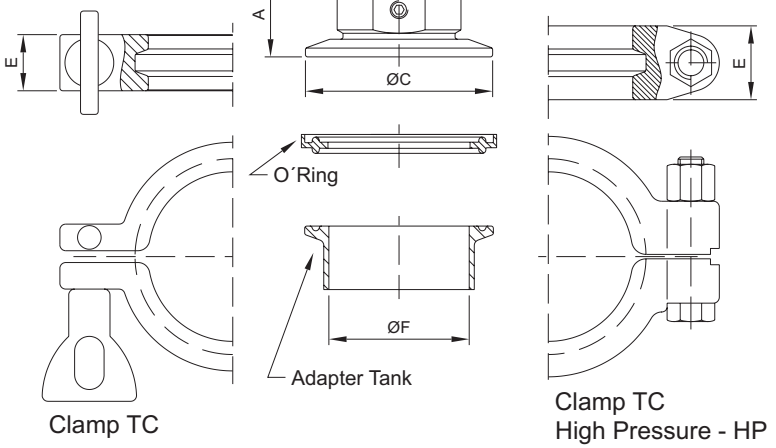
RANGE	DIMENSIONS mm (")							
	X		Y		T		Z	
2-3	48,6	(1.91)	163,5	(6.44)	211,5	(8.33)	295,5	(11.63)
4	50,6	(1.99)	165,5	(6.52)	213,5	(8.41)	297,5	(11.71)
5	53,1	(2.09)	168	(6.61)	216	(8.50)	300	(11.81)

LD290S - Pressure Sanitary Transmitters

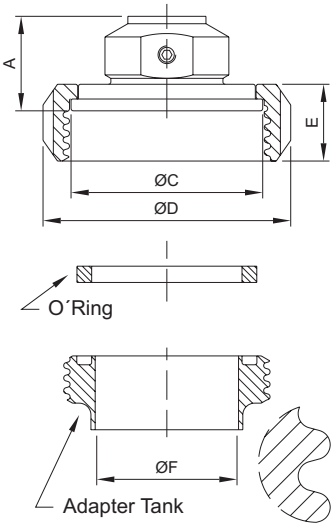


RANGE	DIMENSIONS mm (")			
	X		Y	
2-3	48,6	(1.91)	163,5	(6.44)
4	50,6	(1.99)	165,5	(6.52)
5	53,1	(2.09)	168	(6.61)

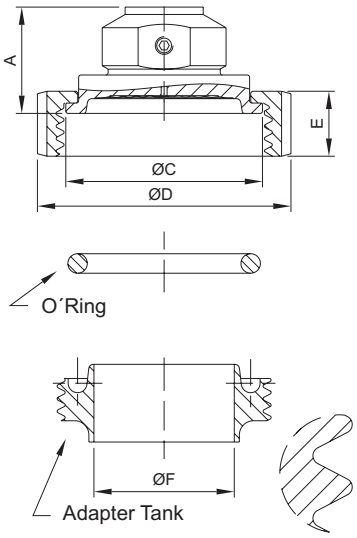
TC



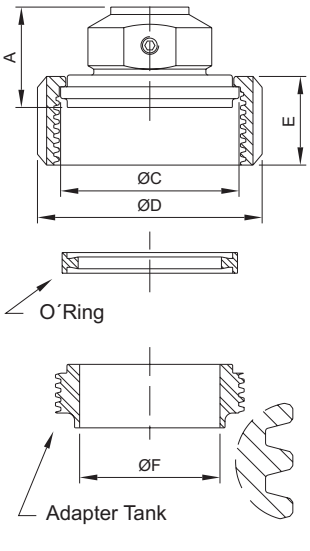
SMS



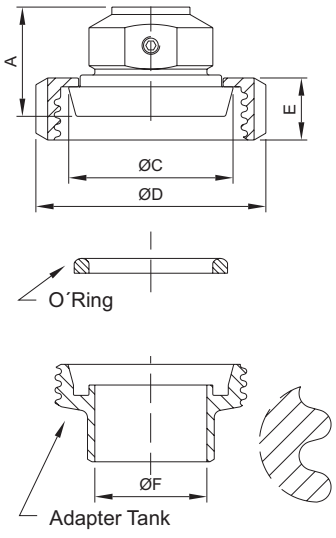
RJT



IDF



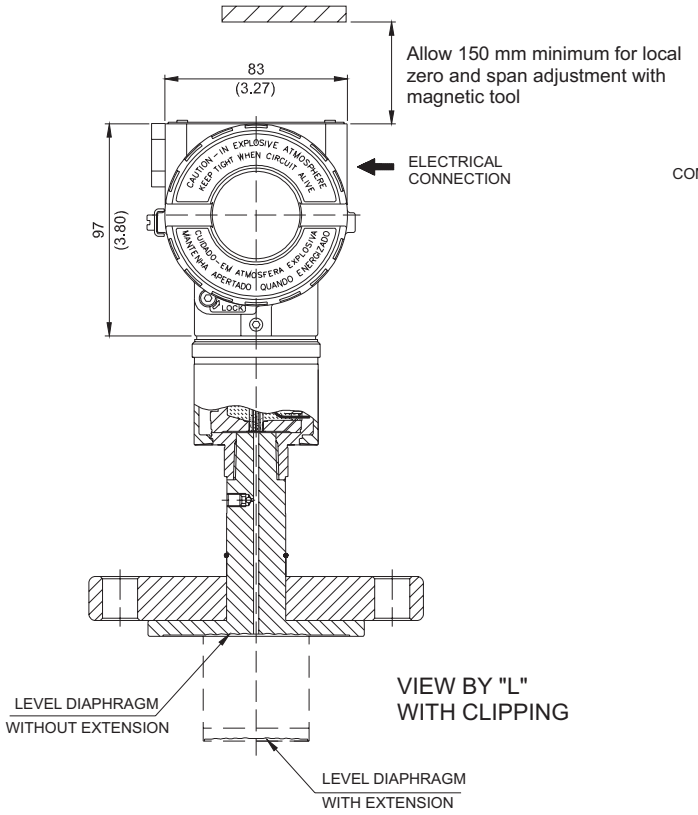
DIN 11851

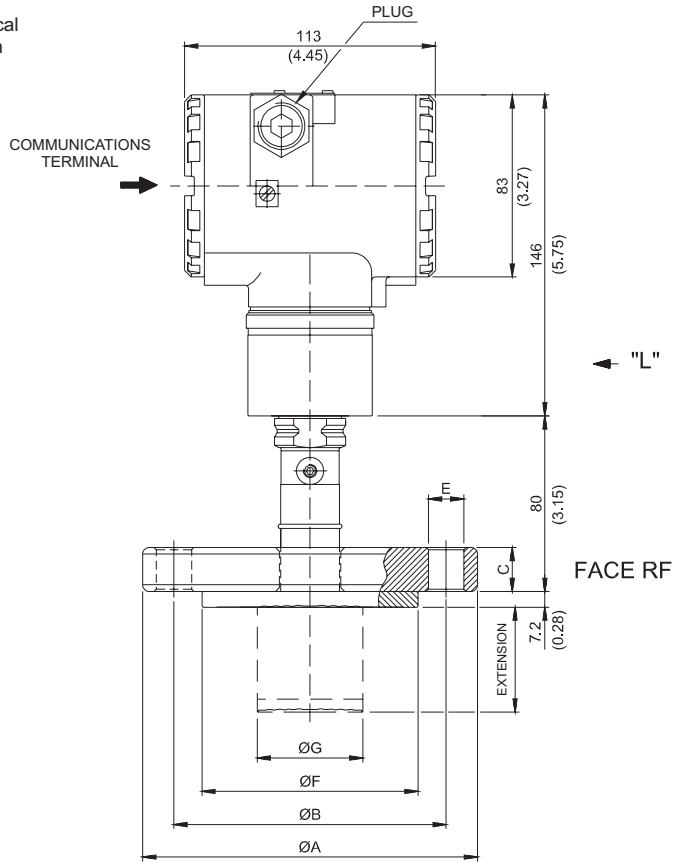


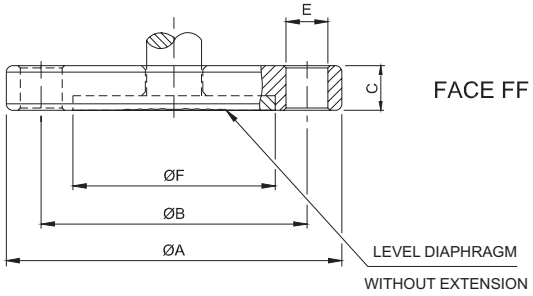
CONNECTION WITHOUT EXTENSION	Dimensions in mm (inche)				
	A1	ØC	ØD	E	ØF
Tri-Clamp - 1 1/12"	27 (1.06)	50 (1.96)	61 (2.40)	18 (0.71)	35 (1.38)
Tri-Clamp - 1 1/2" HP	27 (1.06)	50 (1.96)	66 (2.59)	25 (0.98)	35 (1.38)
Tri-Clamp - 2"	29 (1.14)	63.5 (2.50)	76.5 (3.81)	18 (0.71)	47.6 (1.87)
Tri-Clamp - 2" HP	29 (1.14)	63.5 (2.50)	81 (3.19)	25 (0.98)	47.6 (1.87)
Threaded DN40 - DIN 11851	37 (1.46)	56 (2.20)	78 (3.07)	21 (0.83)	38 (1.50)
Threaded DN50 - DIN 11851	38 (1.50)	68.5 (2.70)	92 (3.62)	22 (0.86)	50 (1.96)
Threaded SMS - 1 1/2"	31 (1.22)	55 (2.16)	74 (2.91)	25 (0.98)	35 (1.38)
Threaded SMS - 2"	32 (1.26)	65 (2.56)	84 (3.30)	26 (1.02)	48.6 (1.91)
Threaded RJT - 2"	35 (1.38)	66.7 (2.63)	86 (3.38)	22 (0.86)	47.6 (1.87)
Threaded IDF - 2"	34 (1.34)	60.5 (2.38)	76 (2.99)	30 (1.18)	47.6 (1.87)

Table 1 - LD290S - Table relative to dimension drawing from page 17

LD290L - Flanged Pressure Transmitter





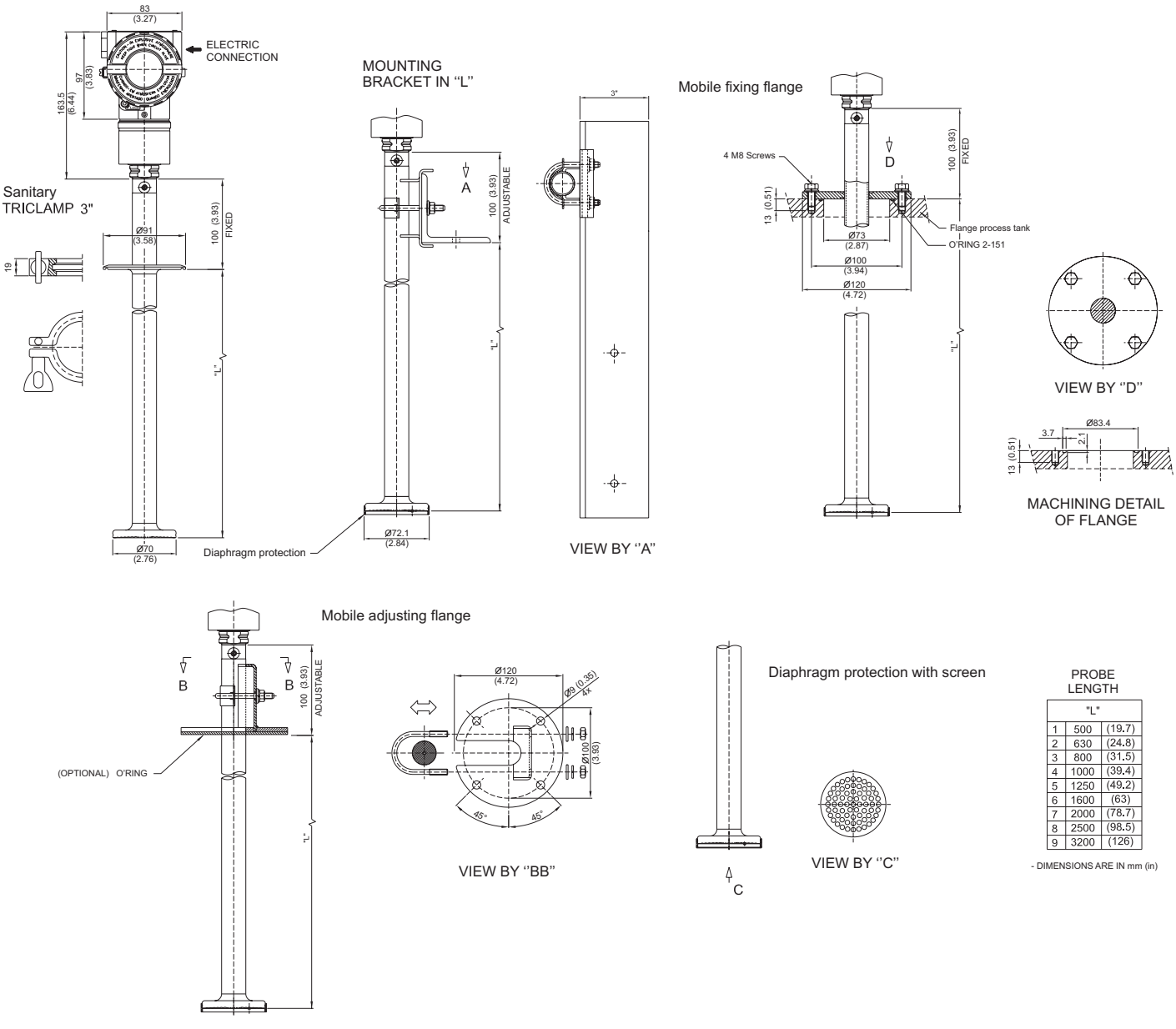


NOTES:
-EXTENSION LENGHT mm (in): 0, 50 (1.96), 100 (3.93), 150 (5.9) OR 200 (7.87)
-DIMENSIONS ARE mm (in)

ANSI-B 16.5 DIMENSIONS								
DN	CLASS	A	B	C	E	F (RF) (FF)	G	HOLES
1"	150	108 (4.25)	79.4 (3.16)	14.3 (0.56)	16 (0.63)	50.8 (2)	-	4
	300/600	124 (4.88)	88.9 (3.5)	17.5 (0.69)	19 (0.75)	50.8 (2)	-	4
1.1/2"	150	127 (5)	98.6 (3.88)	20 (0.78)	16 (0.63)	73.2 (2.88)	40 (1.57)	4
	300	155.4 (6.12)	114,3 (4.5)	21 (0.83)	22 (0.87)	73.2 (2.88)	40 (1.57)	4
	600	155.4 (6.12)	114,3 (4.5)	29,3 (1.15)	22 (0.87)	73.2 (2.88)	40 (1.57)	4
2"	150	152.4 (6)	120.7 (4.75)	17.5 (0.69)	19 (0.75)	92 (3.62)	48 (1.89)	4
	300	165.1 (6.5)	127 (5)	20.7 (0.8)	19 (0.75)	92 (3.62)	48 (1.89)	8
	600	165.1 (6.5)	127 (5)	25.4 (1)	19 (0.75)	92 (3.62)	48 (1.89)	8
3"	150	190.5 (7.5)	152.4 (6)	22.3 (0.87)	19 (0.75)	127 (5)	73 (2.87)	4
	300	209.5 (8.25)	168.1 (6.62)	27 (1.06)	22 (0.87)	127 (5)	73 (2.87)	8
	600	209.5 (8.25)	168.1 (6.62)	31.8 (1.25)	22 (0.87)	127 (5)	73 (2.87)	8
4"	150	228.6 (9)	190.5 (7.5)	22.3 (0.87)	19 (0.75)	158 (6.22)	89 (3.5)	8
	300	254 (10)	200 (7.87)	30.2 (1.18)	22 (0.87)	158 (6.22)	89 (3.5)	8
	600	273 (10.75)	215.9 (8.5)	38.1 (1.5)	25 (1)	158 (6.22)	89 (3.5)	8

EN 1092-1 / DIN2501 DIMENSIONS								
DN	PN	A	B	C	E	F	G	HOLES
25	10/40	115 (4.53)	85 (3.35)	18 (0.71)	14 (0.55)	68 (2.68)	-	4
40	10/40	150 (5.9)	110 (4.33)	20 (0.78)	18 (0.71)	88 (3.46)	40 (1.57)	4
50	10/40	165 (6.50)	125 (4.92)	20 (0.78)	18 (0.71)	102 (4.01)	48 (1.89)	4
80	10/40	200 (7.87)	160 (6.30)	24 (0.95)	18 (0.71)	138 (5.43)	73 (2.87)	8
100	10/16	220 (8.67)	180 (7.08)	20 (0.78)	18 (0.71)	158 (6.22)	89 (3.5)	8
	25/40	235 (9.25)	190 (7.50)	24 (0.95)	22 (0.87)	162 (6.38)	89 (3.5)	8

LD290I - Pressure Transmitter with Extended Probe



PROBE LENGTH

	"L"	
1	500	(19.7)
2	630	(24.8)
3	800	(31.5)
4	1000	(39.4)
5	1250	(49.2)
6	1600	(63)
7	2000	(78.7)
8	2500	(98.5)
9	3200	(126)

- DIMENSIONS ARE IN mm (in)

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web: www.smar.com/contactus.asp

LD290CE