LD293 Series
PROFIBUS PA GAGE TRANSMITTER

Features

- 0 ~ 125 Pa to 0 ~ 25 MPa.
- 0 ~ 0.5 inH20 to 0 ~ 3600 psi.
- 0.1% accuracy of the calibrated range.
- Accepts calibration from URL to URL/40.
- Wetted parts in 316 SS, Hastelloy, Tantalum.
- Configuration and Parameterization all through open and interoperable configuration tools available in the market, e.g., based on PC or PCMCIA Cards or operations by the local adjustment switches (should be used with a LCD display).
- Use of the Analog Input function.
- Totally digital; including sensor, electronics and communication.
- Digital LCD display.
- Weather proof, explosion proof and intrinsically safe.
- Self diagnostics.
- Configurable Local Adjustment.
- Easy firmware upgrade(via Flash Memory Interface).
- Esay update to Foundation Fieldbus and HART protocol.
- PROFIBUS PA compliant.

Description

The LD293 is from the first generation of Profibus-PA Devices. It is 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 digital technology used in the LD293 enables the choice of several types of transfer functions, an easy interface between the field and the control room and several interesting features that considerably reduce the installation, operation and maintenance costs.

Function Blocks Table

BLOCK	
PHY	**PHYSICAL -** This Function Block contains data regarding the device's identification, specific information of the hardware and firmware of the device and diagnosis information.
TRD	**TRANSDUCER -** The Transducer Block measures and calculates the pressure measurement in engineering units, provides calibration methods and temperature measurement. The built-in self-diagnostic provides device's operation reliability.
DSP	**DISPLAY-** This Transducer Block controls the LCD display and interfaces with the user providing local configuration capability.
AI	**ANALOG INPUT -** This block takes the input data from the transducer block and scales it, provides different types of linearization, filtering and fault state mechanism.

Technical Characteristics

Functional Specifications

Process Fluid	Application Services: Liquid, gas or vapor.
Communication Protocol	PROFIBUS PA, Digital only, complies with IEC IEC 61158-2 (H1): 31.25 kbit/s voltage mode with bus power.
Output Signal	Profibus PA, Digital only, Complies with IEC 1158-2(H1): 31.25 kbit/s and voltage mode with bus power.
Power Supply	Bus powerep 9 - 32 Vdc. Current consumption quiescent 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	Optional 4½-digit numerical and 5-character alphanumerical LCD indicator.
Hazardous Area Certifications	Explosion proof, weather proof and intrinsically safe: NEMKO, DMT, FM, CSA and CEPEL standards.
Temperature Limits	Ambient: -40 to 85 ºC (-40 to 185 ºF) Process: -40 to 100 ºC (-40 to 212 ºF) (Silicone Oil). 0 to 85 ºC (-32 to 185 ºF) (Fluorolube Oil). -40 to 150 ºC (-40 to 302 ºF) for LD293L. -25 to 85 ºC (-13 to185 ºF) (Viton O-Rings). Storage: -40 to 100 ºC (-40 to 212 ºF) Display: -10 to 60 ºC (14 to 140 ºF) operation. -40 to 85 ºC (-40 to 185 ºF) without damage.
Turn-on Time	Performs within specifications of less than 5.0 seconds after power is applied to the transmitter.
Configuration	Basic configuration may be done using local adjustment magnetic tool if device is fitted with display. Complete configuration is possible using remote configurator (Ex: Simatic PDM).
Volumetric Displacement	Less than 0.15 cm3 (0.01 in^3).
Overpressure and Static Pressure Limits	14 Mpa (2000psi) for ranges 2, 3, 4. 31 Mpa (2000psi) for range 5. These overpressures will not damage the transmitter, but a new calibration may be necessary.
Humidity Limits	0 to 100% RH.

Performance Specifications

Reference conditions: range starting at zero, temperature 25 ºC (77 ºF), atmospheric pressure, power supply of 24 Vdc, silicone oil fill fluid, isolating diaphragms in 316L SS and digital trim equal to lower and upper range values.

Exatidão	±0.1% of span (for span 0.1 URL). ±0.05 [1+ (0.1 URL/SPAN)]% of span (for span < 0.1 URL) For range 5: ±0.2% of span (for span 0.1 URL). ±0.11 [1+ (0.1 URL/SPAN)]% of span (for span < 0.1 URL).
Stability	±0.2% of URL for 12 months.
Temperature Effect	±(0.19% x URL+0.18% x span) per 20 ºC (36 ºF)
Power Supply Effect	±0.005% of calibrated span per volt.
Mounting Position	Zero shift of up to 250 Pa (1 inH2O) which can be calibrated out. No span effect.
Electro-Magnetic Interference Effect	Designed to comply with IEC 801.

Physical Specifications

Hardware	Physical: according to IEC 61158-2 and conformity with the FISCO model.
Electrical Connection	½ -14 NPT, Pg 13.5, or M20 × 1.5. Other connections or request.
Process Connection	¼ -18 NPT or ½ -14 NPT (with adapter).
Wetted Parts	• Isolating Diaphragms 316L SST, Hastelloy C276, Monel 400 or Tantalum.
Nonwetted Parts	• Electronic Housing Injected aluminum with polyester painting or 316 SST (NEMA 4X, IP67). • Fill Fluid PSilicone or Fluorolube Oil. • Cover O-Rings Buna N. • Mounting Bracket Plated carbon steel with polyester painting or 316 SST. Accessories (bolts, nuts, washers and U-clamp) in carbon steel or 316 SST. • Identification Plate 316 SST. • Approximate Weights < 2.0Kg (4lb): aluminium housing without mountatin bracket.

Ordering Code

MODEL PROFIBUS PA DIFFERENTIAL, GAGE, ABSOLUTE AND HIGH STATIC PRESSURE TRANSMITTERS LD293

CODE — Type and Range (1)

CODE									
M2	Gage	1.25	to	50	kPa	5	to	200	inH2O
M3	Gage	6.25	to	250	kPa	25	to	1000	inH2O
M4	Gage	62.5	to	2500	kPa	9	to	360	psi
M5	Gage	0.625	to	25	Mpa	90	to	3600	psi

CODE — Diaphragm Material — Fill Fluid (Low Side) — Process Connection Material

CODE	Diaphragm Material	Fill Fluid (Low Side)	Process Connection Material
1I	316L SST	Silicone Oil	316L SST
2I	316L SST	Fluoroclube Oil	316L SST
3H	Hastelloy C276	Silicone Oil*	Hastelloy C276*
4H	Hastelloy C276	Fluoroclube Oil	Hastelloy C276*
Z	Others – Specify		

CODE — Flange(s), Adapter(s) and Drain/Vent Valves Material

CODE	
0	Without Indicator
1	Wiithout Digital Indicator

CODE — Wetted 0-Rings Materials (4)

CODE	
1	½ - 14 NPT - Female
G	G ½ A DIN 16288 Form B - Male
H	G ½ A DIN 16288 Form D - Male
M	½ - 14 NPT - Male
Z	Others – Specify

CODE — Electrical Connections

CODE	
0	½ - 14 NPT
A	M20 x 1.5
B	Pg 13.5 DIN

CODE — Mounting Bracket

CODE	
0	Without Mounting Bracket
1	Carbon Steel Mounting Bracket with Carbon Steel accessories
2	316 SST Mounting Bracket with 316 SST accessories
7	Carbon Steel Mounting Bracket with 316 SST accessories
Z	Others – Specify

CODE — Process Connections

CODE	
H1	316 SST Housing
ZZ	Special Options - Specify

LD293	-	M2	1	0	-	1	A	/	0	**

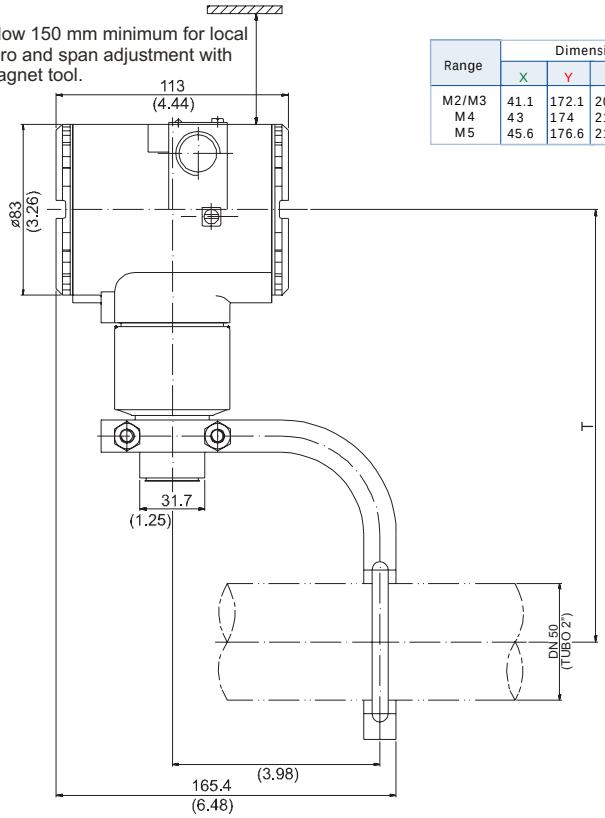
◀ TYPICAL MODEL NUMBER

* Meets NACE material recommendations per MR-01-75.
** Leave it blank for no optional Items.

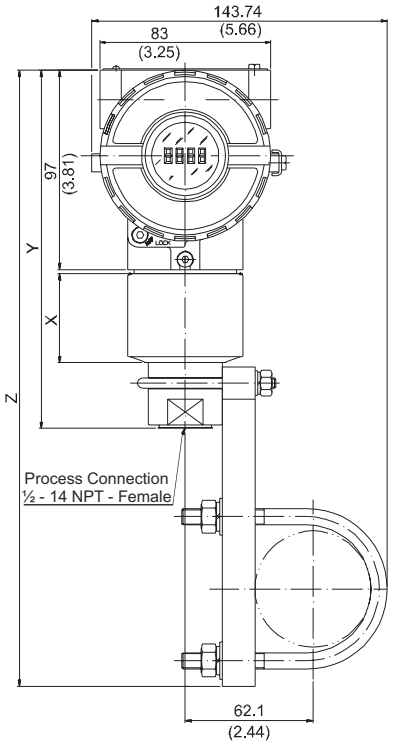
Female

Allow 150 mm minimum for local zero and span adjustment with magnet tool.

Range	Dimensions			
	X	Y	T	Z
M2/M3	41.1	172.1	208.3	297.6
M4	43	174	210.2	299.5
M5	45.6	176.6	212.8	302.1



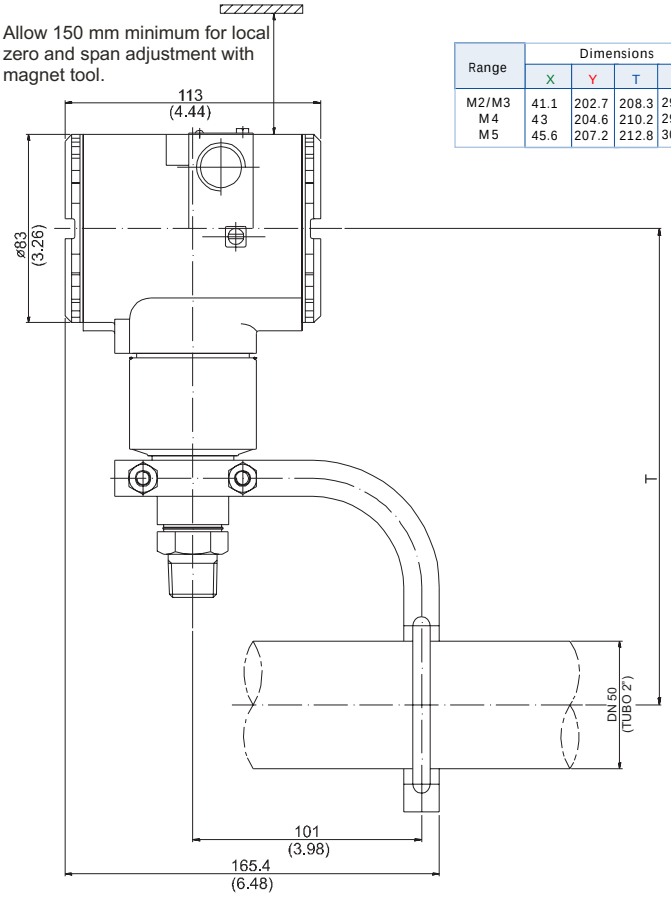
Dimensions are in mm (in)

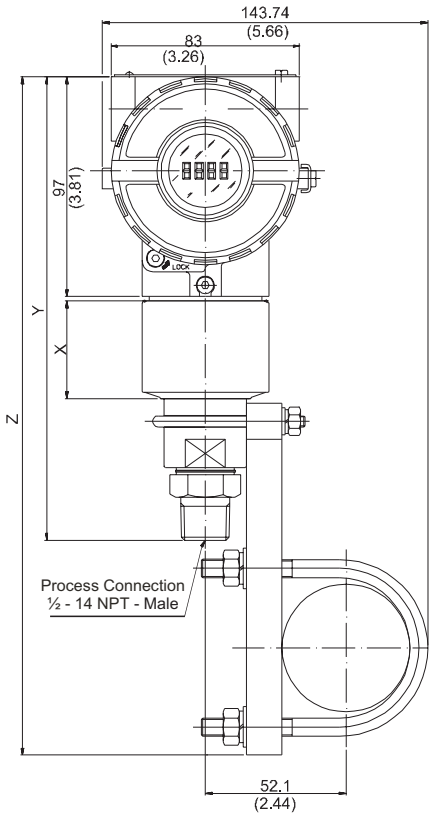


Male

Allow 150 mm minimum for local zero and span adjustment with magnet tool.

Range	Dimensions			
	X	Y	T	Z
M2/M3	41.1	202.7	208.3	297.6
M4	43	204.6	210.2	299.5
M5	45.6	207.2	212.8	302.1





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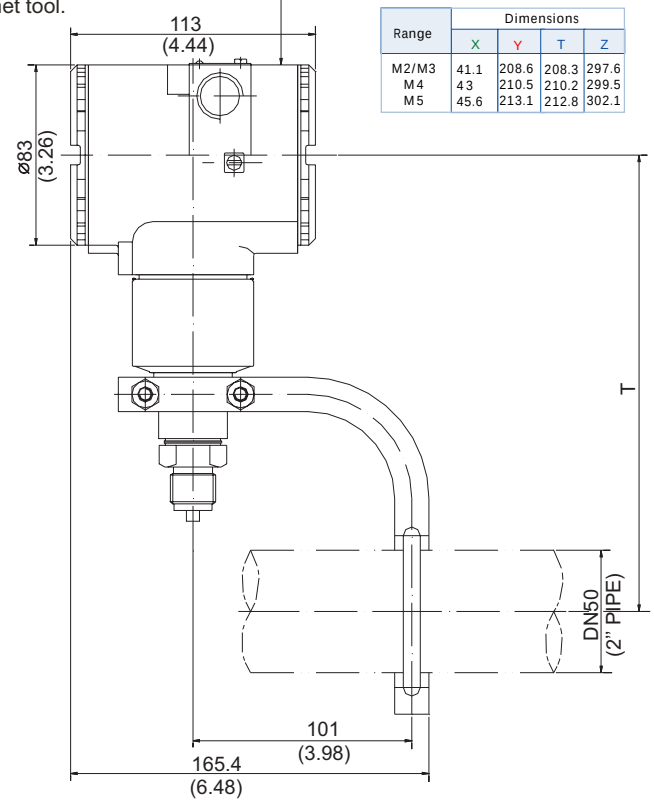
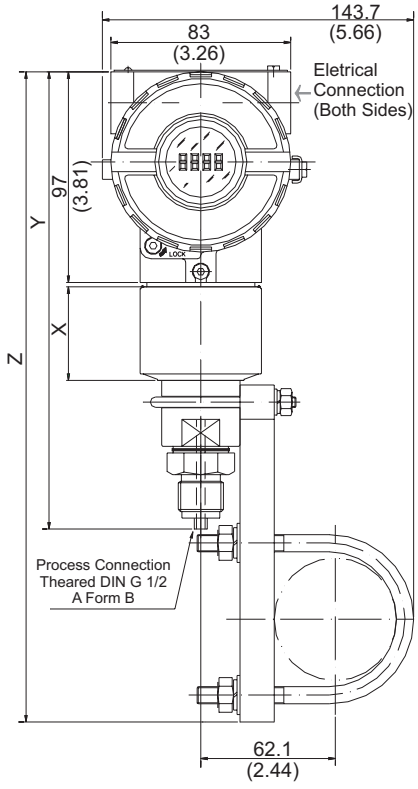


Range	Dimensions			
	X	Y	T	Z
M2/M3	41.1	208.6	208.3	297.6
M4	43	210.5	210.2	299.5
M5	45.6	213.1	212.8	302.1



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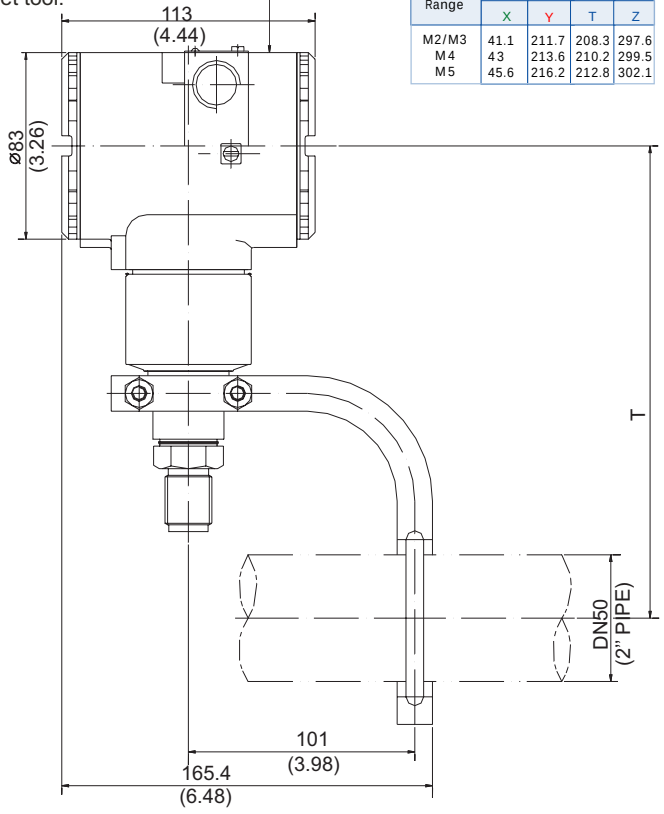

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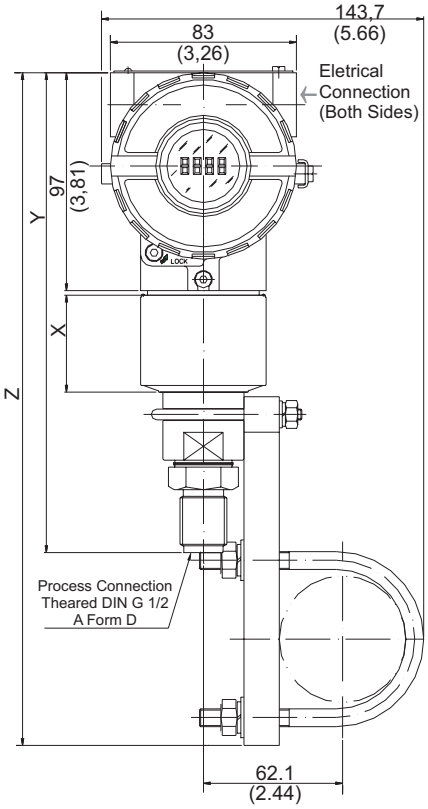
	X	Y	T	Z
M2/M3	41.1	211.7	208.3	297.6
M4	43	213.6	210.2	299.5
M5	45.6	216.2	212.8	302.1



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