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PRESSURE TRANSMITTER

ETRANS – DP08 SMART DIFFERENTIAL Datasheet

4~20mA+HART | 4~20mA | RS485 MODBUS

Precise Measurement,
Ultimate Control

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Document 00000045

Pressure Transmitter

MODEL Etrans- DP08

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Application Areas

Oil and gas industry
Chemical industry
Pharmaceutical industry
Water treatment industry
Food and beverage industry
Laboratory and scientific research
Power industry
Metallurgical industry

Features

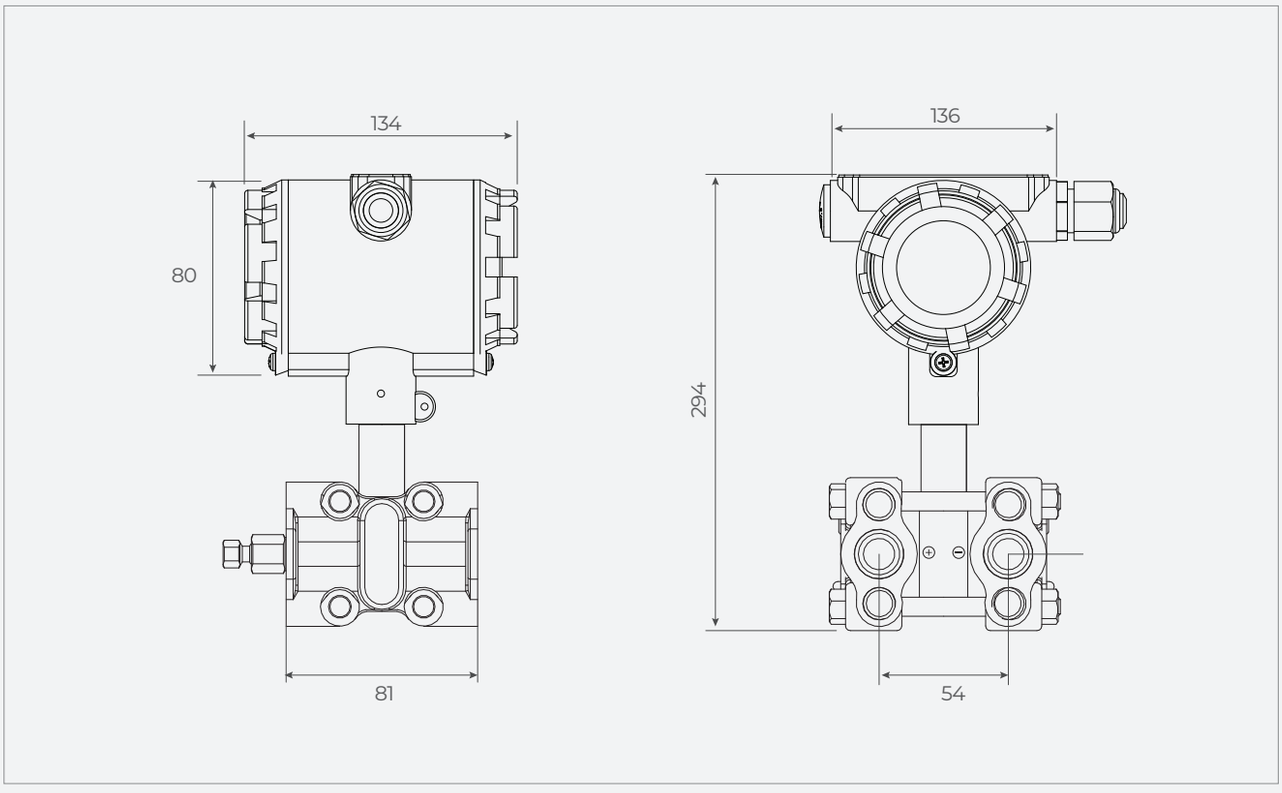
- Utilizes reliable silicon sensor or capacitance sensor
- Stable, reliable, anti-vibration with excellent interchangeability
- Powerful interface operation function
- Optional signal output
- Offset and full scale adjustable
- LCD display
- Multiple installation options available

Description

The ETRANS DP08 Smart Differential Pressure Transmitter is a multi-functional digital instrument meticulously designed by Enelsan using advanced, mature, and reliable silicon or capacitive sensor technology. It combines cutting-edge microcontroller technology with digital sensor conversion technology to deliver reliable and accurate measurement performance. The high-performance micro-controller at the core of the transmitter ensures superior quality through its powerful functionality and high-speed processing capabilities. The overall design focuses on reliability, long-term stability, high accuracy, and intelligent operation.

Featuring an advanced user interface, the ETRANS DP08 displays pressure, percentage, and current values while providing a standard 4–20 mA analog output. Keypad operation allows users to conveniently configure essential parameters such as zero adjustment, measuring range, and damping without requiring a standard pressure source, significantly simplifying on-site commissioning and setup. Dedicated integrated circuits are used for signal conversion, data acquisition and processing, and current output control. This ensures stable transmitter performance, excellent resistance to vibration and shock, and outstanding interchangeability.

Structure



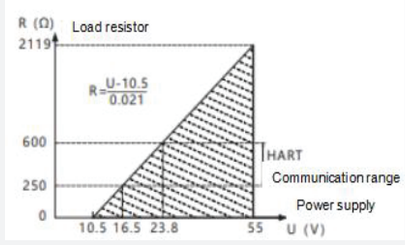
TECHNICAL FEATURES

Accuracy	±0.01bar: ±0.02%FS; ±0.06bar: ±0.1%FS; other range:±0.075%FS （standard range 25±5 ）
Range	±0.01bar；±0.06bar；±0.4bar；±1bar；±2.5bar；±10bar；±30bar
Range type	Differential pressure
Output signal	4~20mA+HART, 4~20mA+RS485 ModbusRTU
Long-term Stability	±0.1%FS/year
Ambient temperature effect	±0.5%FS（±0.01bar）;±0.3%FS（±0.06bar）；±0.25%FS（other range）;@-20°C～70°C
Static pressure range	±0.01bar; ±0.06bar; ±0.40bar Static Load Resistance 160bar ±1bar; -1～2.5bar Static Load Resistance 250bar -1～10bar；-1～30barStatic Load Resistance 400bar
Over Pressure Limit	160bar
Voltage Influence	When the supply voltage varies within 18.3V to 44V DC, the changes in zero point and span shall not exceed ±0.005% URL/V.
Mounting Position Influence	The device can be installed in any orientation, with a maximum deviation not exceeding 400 Pa, which can be corrected via the zeroing function.
Housing protection	IP67
Weight	Net weight:about 4kg (no mounting bracket, process connection accessories)

ENVIRONMENTAL CONDITION

Item	Condition	
Operating ambient temperature range	40°C ~ 85°C, LCD display: -20°C ~ 70°C, low-temperature liquid crystal display: -40°C~ 60°C.	
Storage ambient temperature range	-40°C ~100°C, LCD display：-40°C ~85°C	
Measured medium temperature range	Filling normal temperature silicone oil : -40 °C ~ 105 °C	Filling inert filling liquid : -45 °C ~ 85 °C
Operating ambient humidity range	5%RH~100%RH@40°C	

POWER AND LOAD CONDITIONS

Item	Operating Condition	
Power Supply Voltage	HART Communication Protocol：16.5V-55VDC	
	Intrinsically Safe HART Communication	
Load Resistance	0Ω~2119Ω for operation, 250Ω~600Ω for HART communication	
Transmission Distance	＜1000m	
Power Consumption		
4mA-20mA	≤ 500mW@24V DC, 20.8mA	

CONSTRUCTION MATERIAL

Diaphragm	Stainless Steel 316L, Hastelloy C
Process Connection	Stainless steel 316L
Filling liquid	Silicone oil,Inert filling liquid
Sealing ring	Silicone rubber
Transmitter housing	Aluminum alloy material, epoxy resin glue spraying on the surface
Nameplate	Stainless steel 304

WORKING PRINCIPLE

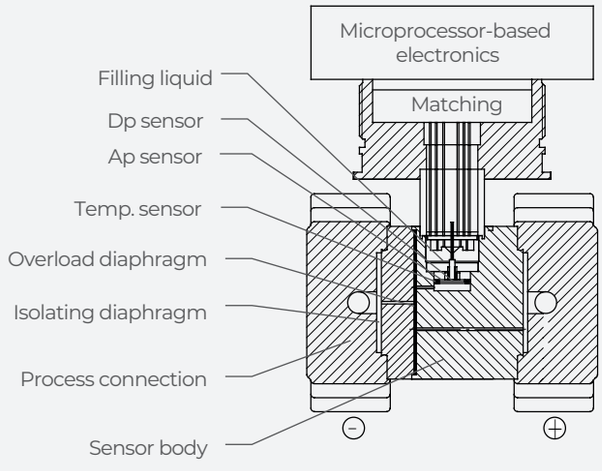
The differential pressure transmitter includes two functional units: Main unit / auxiliary unit

The main unit includes a sensor and process connection.

The completely welded sensor module is a twin-chamber system with an integral overload diaphragm, an absolute pressure sensor, a temperature sensor and the silicon differential pressure sensor.

The absolute pressure sensor, which is only exposed to the pressure at the high pressure side, acts as a reference value to compensate for the static pressure.

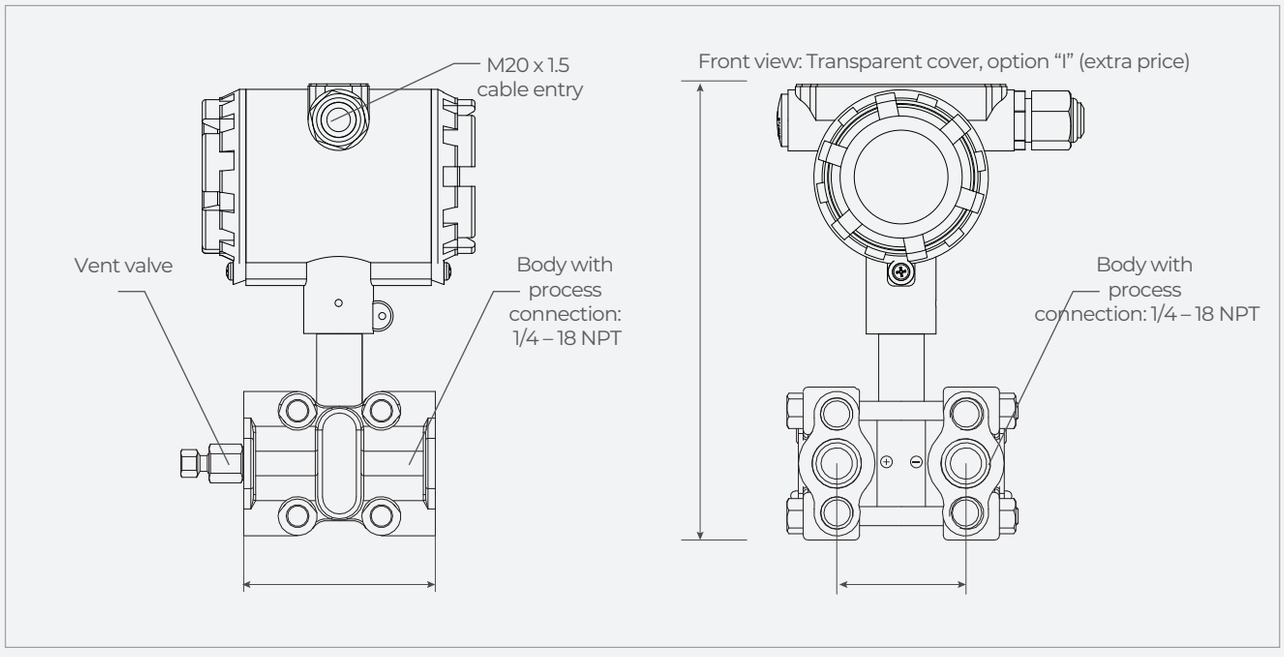
The temperature sensor as a temperature compensated reference value to compensate for the temperature drift.



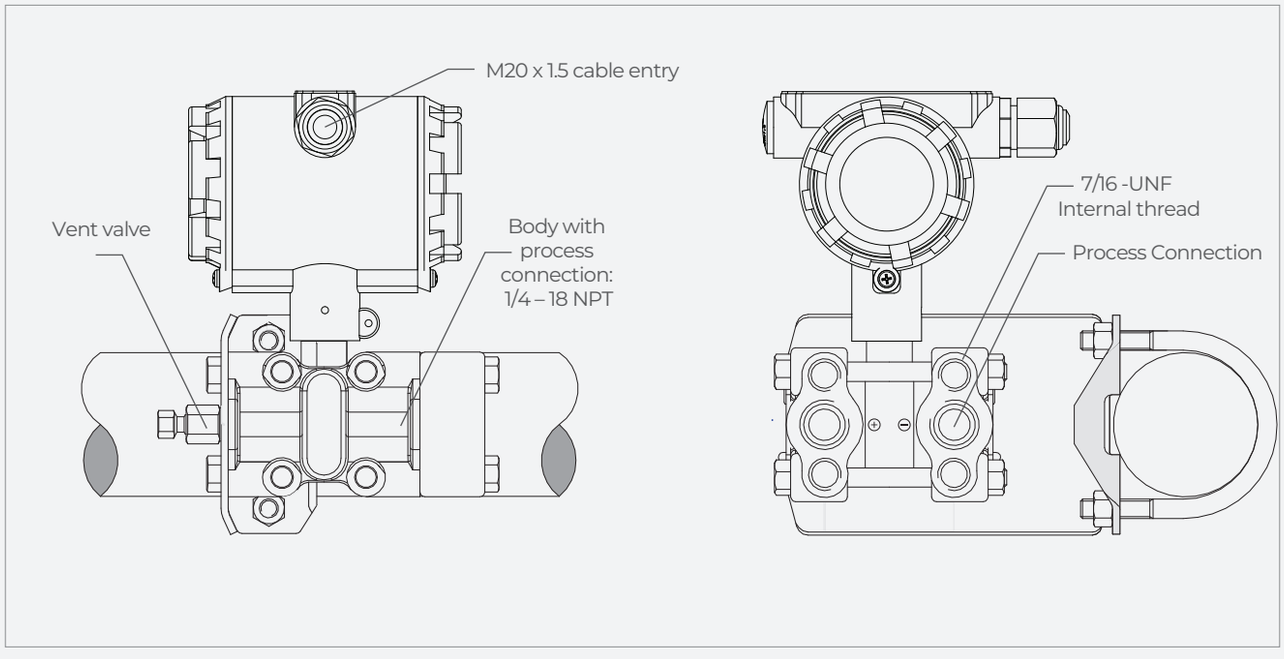
MAIN SPECIFICATION

- The differential pressure transmitter utilize the world's leading high stability silicon sensor, the highest Reference Accuracy is ±0.05 %
- Micro-differential pressure transmitter utilize the world's leading dual overload diaphragm patented technology, the highest Reference Accuracy is ±0.05 %
- The differential pressure transmitter's working pressure are 16 MPa, 25 MPa and 40 MPa, the one-way limited pressure up to 16 MPa, 25 MPa and 40 MPa
- The absolute pressure sensor packaged in the differential pressure transmitter, can be used for static pressure measurement, display and the static pressure compensation. The minimum of the static error is ≤ ±0.05 % / 10 MPa
- High sensitivity temperature sensor packaged in the sensor. The minimum of the temperature error is ≤ ±0.04 % / 10K
- Stainless steel 316L and silicone oil filling welded seal structure
- Long stability is ≤ ±0.1% / 3years, 10 years of maintenance-free
- Adjustable up to 100:1 range ability
- The remote seal transmitter utilize ultra-high temperature (400 °C) patented technology.

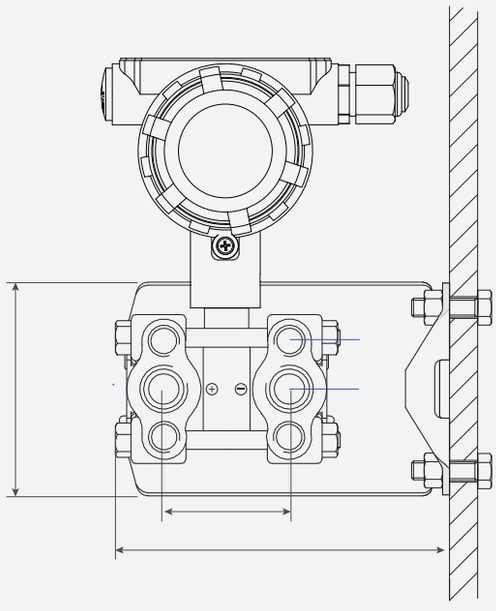
DRAWINGS



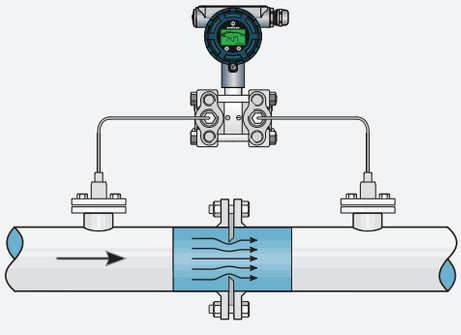
MOUNTING BRACKET



WALL MOUNTING

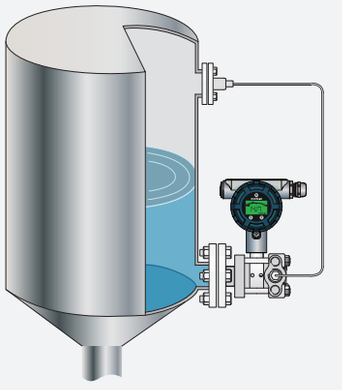


APPLICATIONS

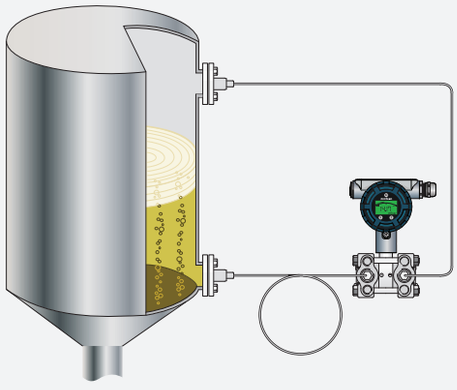


Flow measurement, for example:
Orifice flanges, Pitot tubes and Venturi tubes.

APPLICATIONS



Differential pressure measuremer flanged connection and chemical



Differential pressure measuren with chemical seals.

APPLICATIONS

Adjustment of flow connection hole distance of differential pressure transmitter

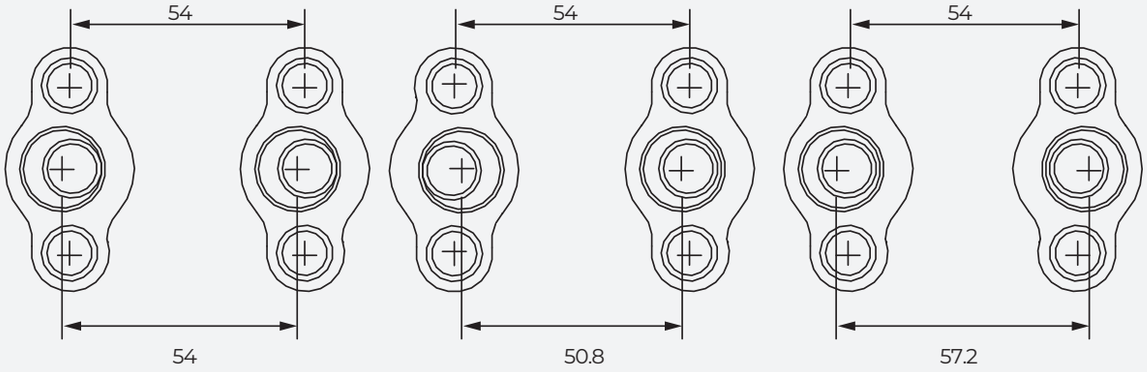


Figure 1

Connecting hole spacing diagram of differential pressure transmitter

The flow connection hole on the pressure chamber is 1/4-18NPT. These process connection holes require thread sealing. When using the waist flange joint, the transmitter can be easily removed from the production device as long as the upper and lower bolts of the joint are removed. The center distance between the connecting holes of the two processes is 54mm. Rotate waist flanged joints, center distance can be changed to 50.8 mm, 54mm, 57.2 mm as shown in Figure 1

Contact us

Enelsan Istanbul Office Address
Şerifali, Barbaros Cd. No: 60, 34775 Ümraniye/İstanbul

Enelsan Factory 1 Address
Çerkeşli OSB Mahallesi İmes 4 Bulvarı No: 11 Dilovası/Kocaeli

Enelsan Factory 2 Address
Çerkeşli OSB Mahallesi İmes 14. Cadde No: 17 Dilovası/Kocaeli

Phone: +90 262 754 63 13
Fax: +90 262 754 93 93
sales@enelsan.com