

7MF15654 Series

Pressure Transmitter, PSIG Range for Sensing Liquid/Gas



Description	The 7MF15654 Series Pressure Transmitters measure the gauge pressure of aggressive and non-aggressive gases as well as the level of liquids and vapors.
Features	<ul style="list-style-type: none"> • High measuring accuracy • Sturdy stainless steel housing • For aggressive and non-aggressive media • Measures the pressure of liquids, gases and vapor • Temperature-compensated measuring cell • Compact design
Application	<p>The 7MF15654 Series Pressure Transmitters are mainly used in the U.S. market for the following industrial areas:</p> <ul style="list-style-type: none"> • Chemical industry • Pharmaceutical industry • Food industry • Mechanical engineering • Water supply

Product Numbers

Table 1.

Product Number	Description
7MF15654 XX 005EA1	Sensor, Liquid/Gas, 4 to 20 mA
7MF15654 XX 105EA1	Sensor, Liquid/Gas, 0 to 10 Vdc
XX = BB	0 to 15 PSI
BE	0 to 30 PSI
BF	0 to 60 PSI
BG	0 to 100 PSI
CA	0 to 150 PSI
CB	0 to 200 PSI
CD	0 to 300 PSI

Design

Measuring range
<1 bar (<14.5 psi)

The design of the pressure transmitter is dependent on the measuring range.

The main components of the pressure transmitter are:

- Stainless steel housing with piezo-resistive silicon measuring cell (with stainless steel diaphragm, temperature-compensated) and electronics module.
- Stainless steel process connection 1/4 - 18 NPT Straight.
- Electrical connection is made to DIN 43650 with the cable inlet 1/2 – 14 Taper.

Pressure transmitters with a nominal range < 1 bar g (< 14.5 psi g) are available with or without explosion protection.

Measuring range
 ≥ 1 bar (> 14.5 psi)

The main components of the pressure transmitter are:

- Stainless steel housing with ceramic measuring cell and electronics module. The temperature-compensated ceramic measuring cell has a thin-film strain gauge which is mounted on a ceramic diaphragm. The ceramic diaphragm can also be used for aggressive media.
- Stainless steel process connection 1/4 - 18 NPT Straight.

Electrical connection is made to DIN 43650 with the cable inlet 1/2 – 14 Taper.

Pressure transmitters with a nominal range ≥ 1 bar g (≥ 14.5 psi g) are available with or without explosion protection.

Function

The pressure transmitter measures the gauge pressure as well as the level of liquids and gases.

Mode of Operation

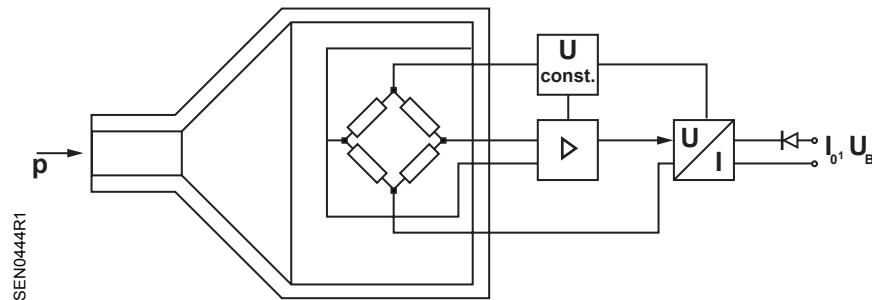


Figure 1. Functional Diagram.

The mode of operation of the pressure transmitter is dependent on the measuring range.

Measuring range <1 bar
(<14.5 psi)

The silicon measuring cell of the pressure transmitter has a piezo-resistive bridge to which the operating pressure is transmitted through silicone oil and a stainless steel diaphragm.

The measuring cell output voltage is fed to an amplifier and converted into a 4 to 20 mA output current.

The output is linearly proportional to the input pressure.

Measuring range ≥ 1 bar (≥ 14.5 psi)	<p>The thin-film measuring cell has a thin-film resistance bridge to which the operating pressure p is transmitted through a ceramic diaphragm.</p> <p>The measuring cell output voltage is converted by an amplifier into an output current.</p> <p>The output is linearly proportional to the input pressure.</p>
Specifications	Measuring range <1 bar (<14.5 psi) Piezo-resistive
Mode or Operation	Measuring range ≥ 1 bar (≤ 14.5 psi) Thin-film strain gauge
Input Media Range	Measured variable Gauge pressure Measured range Pressure 0 to 300 psi g (0 to 21 bar g)
Output Signal	Current output signal 4 to 20 mA Voltage output signal 0 to 10 Vdc
Accuracy	To EN 60770-1 Error in measurement (at 77°F [25°C]), including conformity error, hysteresis and repeatability 0.25% of full-scale value – typical Response time T_{99} < 0.1 second Long-term drift Start of scale 0.25% of full scale value/year Full-scale value 0.25% of full scale value/year Influence of ambient temperature Start of scale 0.25%/10 K of full-scale value Full-scale value 0.25%/10 K of full-scale value
Rated Operating Conditions	Process temperature -22°F to 248°F (-30°C to 120°C) Ambient temperature -13°F to 185°F (-25°C to 84°F) Storage temperature -58°F to 212°F (-50°C to 100°C) Degree of protection to EN60529 IP65
Design	Weight ≈ 0.55 lb (≈ 0.25 kg) Wetted parts materials: Measuring cell Measuring range < 1 bar (< 14.5 psi) Stainless steel, 1.456 1/316Ti Measuring range ≥ 1 bar (≥ 14.5 psi) Al ₂ O ₃ – 96% Process connection Stainless steel, mat. No. 1.4571/316Ti Gasket Viton
Input Power Supply U_H	Terminal voltage on pressure transmitter For current output 10 to 36 Vdc

Specifications, Continued	Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Certificates and Approvals	Explosion protection Intrinsic safety "i" (only with current output Identification) Intrinsic safety "T.I.S." (only with current output) Lloyd's Register of Shipping	TÜV 02 ATEX 1953X Ex II 1/2G EEx ia IIC T4 Applied Certificate No. 03/30003

Wiring Diagram

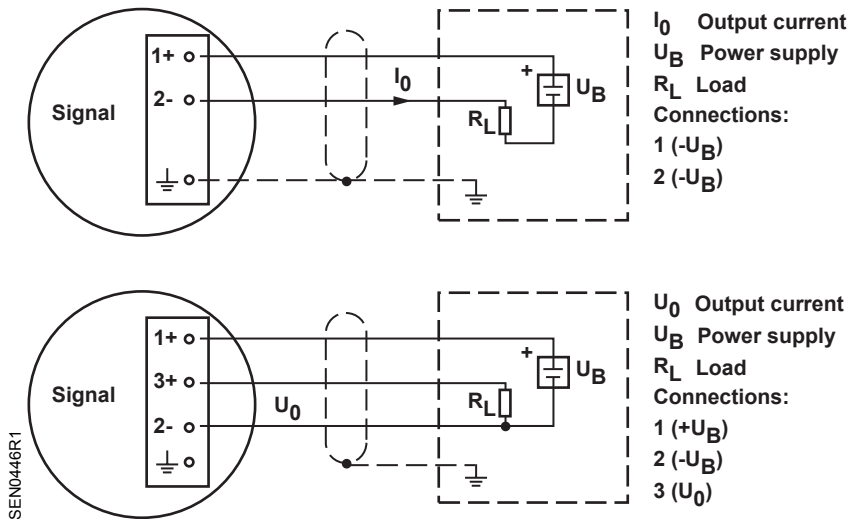


Figure 2. Wiring Diagram with Current Output (Top) and Voltage Output (Bottom).

Dimensions

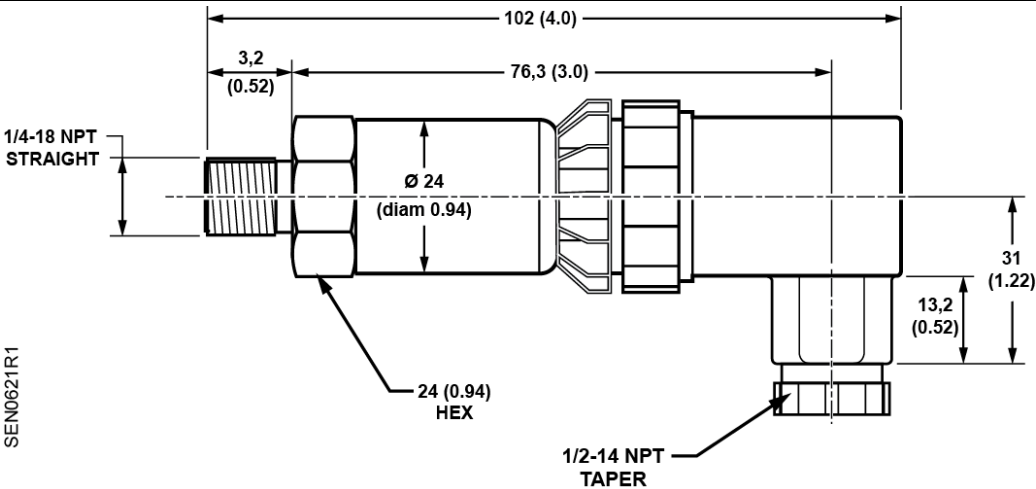


Figure 3. Dimensions in Millimeters (Inches).

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