

7MF15644 Series

Gauge Pressure Sensors, PSI Range



Description The Z series (7MF15644...) Gauge Pressure Sensors measure the gauge pressure of aggressive and non-aggressive gases as well as the level of liquids and vapors.

- Features**
- 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 The pressure transmitter of the Z series for gauge pressure (7MF15644...) is mainly used in the following industrial areas:

- Chemical industry
- Pharmaceutical industry
- Food industry
- Mechanical engineering
- Ship building
- Water supply

Product Numbers

Table 1.

Product Number	Description
7MF15644XX003EA1	Sensor, Liquid/Gas, 4 to 20 mA
7MF15644XX103EA1	Sensor, Liquid/Gas, 0 to 10 Vdc
XX = BA	0 to 10 PSI
BB	0 to 15 PSI
BC	3 to 15 PSI
BD	0 to 20 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

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

Measuring range
<1 bar (<14.5 psi)

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.
- Electrical connection is made to DIN 43650 with the cable inlet M16 × 1.5, 1/2 – 14 NPT or round plug connector M12.

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.
- Electrical connection is made to DIN 43650 with the cable inlet M16 × 1.5, 1/2 – 14 NPT or round plug connector M12.

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

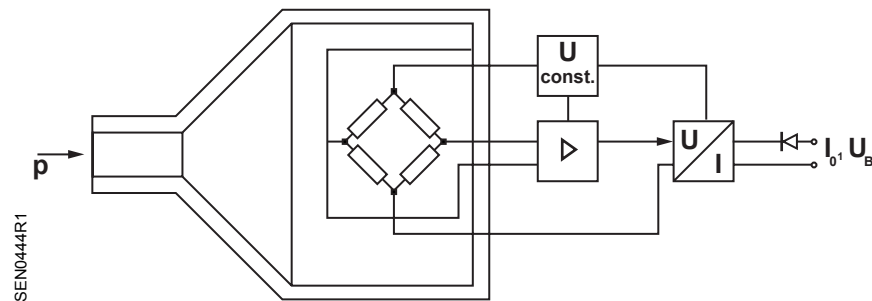


Figure 1. Functional Diagram.

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)	The thin-film measuring cell has a thin-film resistance bridge to which the operating pressure p is transmitted through a ceramic diaphragm.	
	The measuring cell output voltage is converted by an amplifier into an output current.	
	The output is linearly proportional to the input pressure.	
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	Measured variable Measured range Pressure	Gauge pressure 0 to 300 psi g (0 to 21 bar g)
Output	Current output signal	4 to 20 mA
Accuracy	Error in measurement (at 77°F [25°C]), including conformity error, hysteresis and repeatability	To EN 60770-1 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
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)

TÜV 02 ATEX 1953X
 Ex II 1/2G EEx ia IIC T4

Intrinsic safety "T.I.S." (only with current output)

Applied

Lloyd's Register of Shipping

Certificate No. 03/30003

Wiring Diagram

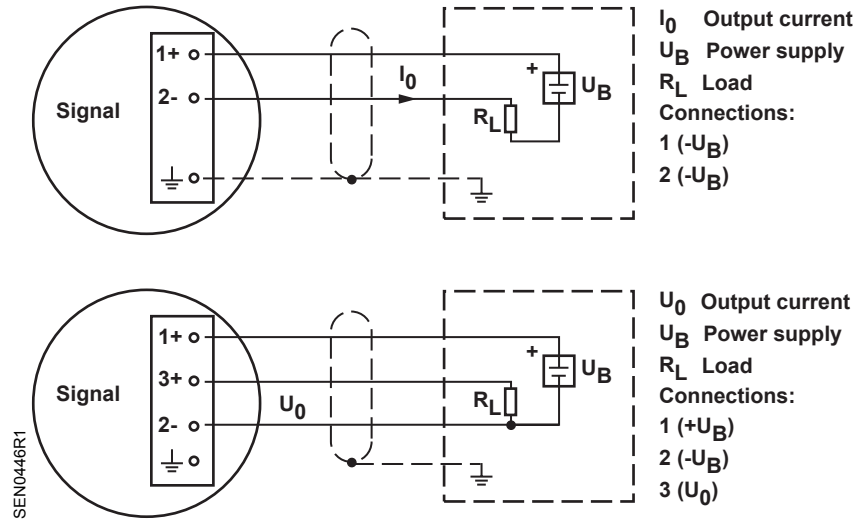


Figure 2. Wiring Diagram with Current Output (Top) and Voltage Output (Bottom).

Dimensions

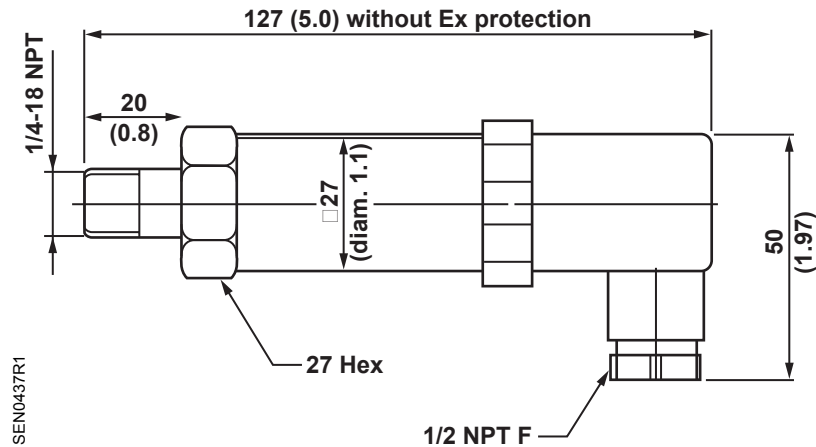


Figure 3. Dimensions in Millimeters (Inches).

Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced. Product or company names mentioned herein may be the trademarks of their respective owners. © 2007 Siemens Building Technologies, Inc.