

Model 1135F Pressure-to-Current Converter

- *Guaranteed 0.2% accuracy*
- *External zero adjustment*
- *Range adjustable from 0–12 to 0–30 psig*
- *Plug-in circuit board*
- *Overpressure to 150 psig*
- *Dual-compartment housing*



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Features and Operation

FEATURES

The Model 1135F Field-Mounted P/I Converter, together with the Model 1133 rack-mounted version, bring unsurpassed performance and versatility to the pressure-to-current converter market. This instrument operates on the same variable capacitance sensing technique that has made the Rosemount pressure transmitter the most widely accepted electronic pressure transmitter in the world today.

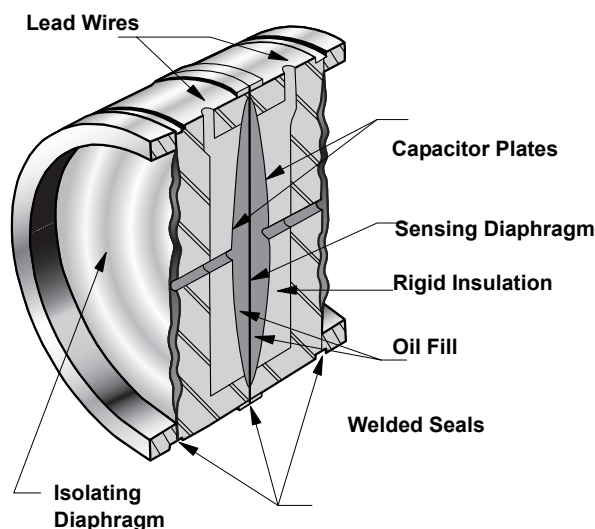
Designed for field installation, the Model 1135F converts incoming pneumatic signals into an electronic 4–20 mA output signal. It is ideal for plants that are converting from pneumatic to electronic control. It is also an excellent choice for use in electronic plants that monitor local pneumatic control loops in safety-related areas.

The dual-compartment housing design of the converter permits the electronics and pressure sensor to be environmentally isolated from the field wiring terminals, thus increasing reliability. A single plug-in amplifier board is readily accessible and easily removed for replacement or troubleshooting. To meet hazardous location certifications, the electronics compartment is designed with flame arresters located between the internal compartment and the external ports leading to the outside atmosphere.

The range of the Model 1135F is continuously adjustable from 0–12 to 0–30 psig (0–83 to 0–207 kPa). The ordering information lists five factory calibrated ranges, but the converter may be factory calibrated to any custom range within its operating limits. Various material and certification options are available, including a direct-reading output signal meter.

The Model 1135F pressure-to-current converter combines proven design, superior performance, and maintenance simplicity to make it the finest P/I converter on the market.

FIGURE 1. Cross Section of the Rosemount δ -Cell™ Sensor



1151-0142A

OPERATION

Instrument air is applied to an isolating diaphragm on one side of the patented δ -Cell™ sensor. An oil-fill fluid transmits the applied pressure to one side of the sensing diaphragm in the center of the δ -Cell sensor. In a like manner, an atmospheric reference pressure is transmitted to the other side of the sensing diaphragm. The displacement of the sensing diaphragm, moving a maximum of 0.004 in. (0.10 mm), is proportional to the pressure differential across it. Fixed capacitor plates on both sides of the sensing diaphragm continuously detect the position of the sensing diaphragm. The differential capacitance between the sensing diaphragm and the capacitor plates is converted electronically to a 2-wire, 4–20 mA dc signal.

Specification

FUNCTIONAL

Input

Instrument air, 0 to 12 psig (0 to 83 kPa) minimum, 0 to 30 psig (0 to 207 kPa) maximum span

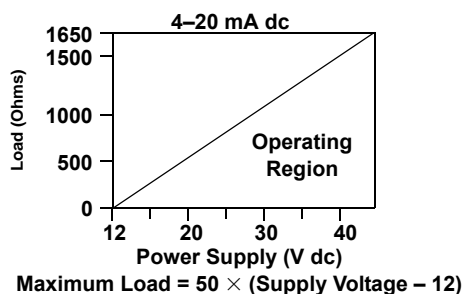
Output

4–20 mA dc

Power Supply

External power supply required. Converter operates on 12 to 45 V dc with no load

Load Limitations



Indication

Optional 0–100% meter with 2.3 in. (58 mm) scale. Indication accuracy is $\pm 2\%$

Span

Continuously adjustable between a minimum span of 0 to 12 psig (0 to 83 kPa), and a maximum of 0 to 30 psig (0 to 207 kPa)

Zero Suppression

Up to 30% of calibrated span. Externally adjustable

Ambient Temperature Limits

Operating: -20 to 180 °F (-29 to 82 °C)
Storage: -50 to 250 °F (-46 to 121 °C)

Overpressure Limit

150 psig (1.03 MPa) maximum

Damping

Time constant fixed at approximately 100 ms

Humidity

0 to 100% relative humidity

Turn-On Time

Two seconds. No warm-up required

PERFORMANCE

(Performance specifications are derived at zero based, maximum spans under ambient reference conditions.)

Accuracy

$\pm 0.20\%$ of calibrated span, includes combined effects of linearity, hysteresis, and repeatability

Stability

$\pm 0.20\%$ of upper range limit for six months

Temperature Effect

At maximum span: 0 to 30 psig (0 to 207 kPa) the zero error is $\pm 0.5\%$ of span per 100 °F

Total effect including span and zero errors: $\pm 1.0\%$ of span per 100 °F

At minimum span: 0 to 12 psig (0 to 83 kPa) the zero error is $\pm 1.25\%$ of span per 100 °F and the total effect is $\pm 1.75\%$ of span per 100 °F

Overpressure Effect

Zero shift less than $\pm 0.2\%$ of upper range limit for 150 psig (1.03 MPa)

Power Supply Effect

Less than 0.005% of calibrated span per volt

Vibration Effect

$\pm 0.05\%$ of upper range limit per g to 200 Hz in any axis

Mounting Position Effect

Zero shift of up to 1 inH₂O (0.24 kPa) which can be calibrated out. Position has no effect on span setting

PHYSICAL

Isolating Diaphragms

316L SST

Sensor Fittings and Flame Arresters

Brass fittings with bronze arresters are standard. Stainless steel fittings and arresters are optional

Mounting

Optional universal mounting bracket for 2-in. (5.08-cm) pipe or wall mounting

Enclosure

Explosion-proof, low copper aluminium housing. NEMA 4X rating. Buna-N O-rings

Paint

Polyurethane

Electrical Connection

Screw terminals for signal lead termination. Integral test terminals compatible with miniature banana plugs. Conduit connection is $\frac{1}{2}$ –14 NPT

Pneumatic Connection

Standard $\frac{1}{4}$ –18 NPT female connection

Weight

Converter: 5 lb (2.27 kg)

Converter with mounting bracket: 6 lb (2.72 kg)

Hazardous Locations Certifications

Factory Mutual (FM) Approvals:

Explosion proof for Class I, Division 1, Groups B, C, and D.
Dust-Ignition Proof for Class II, Division 1, Groups E, F, and G. Suitable for use in Class III, Division 1, indoor and outdoor use. NEMA 4X.

Canadian Standards Association (CSA) Approvals:

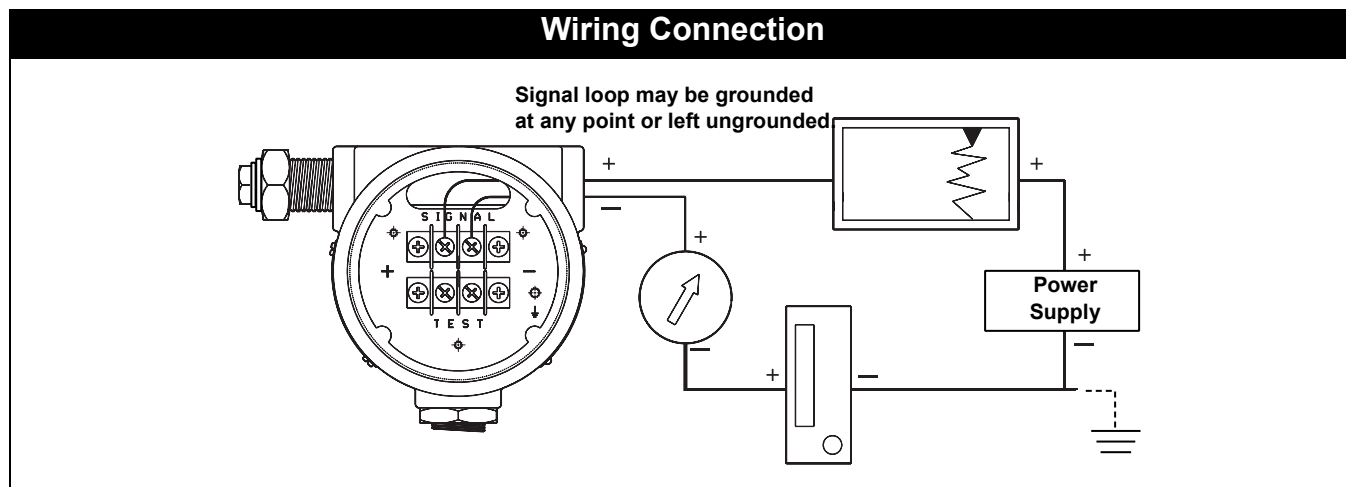
Certified for Class I, Division 2, Groups A, B, C, and D; Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F, and G; Class III hazardous locations; CSA enclosure 4, factory sealed.

Intrinsic Safety Approvals:

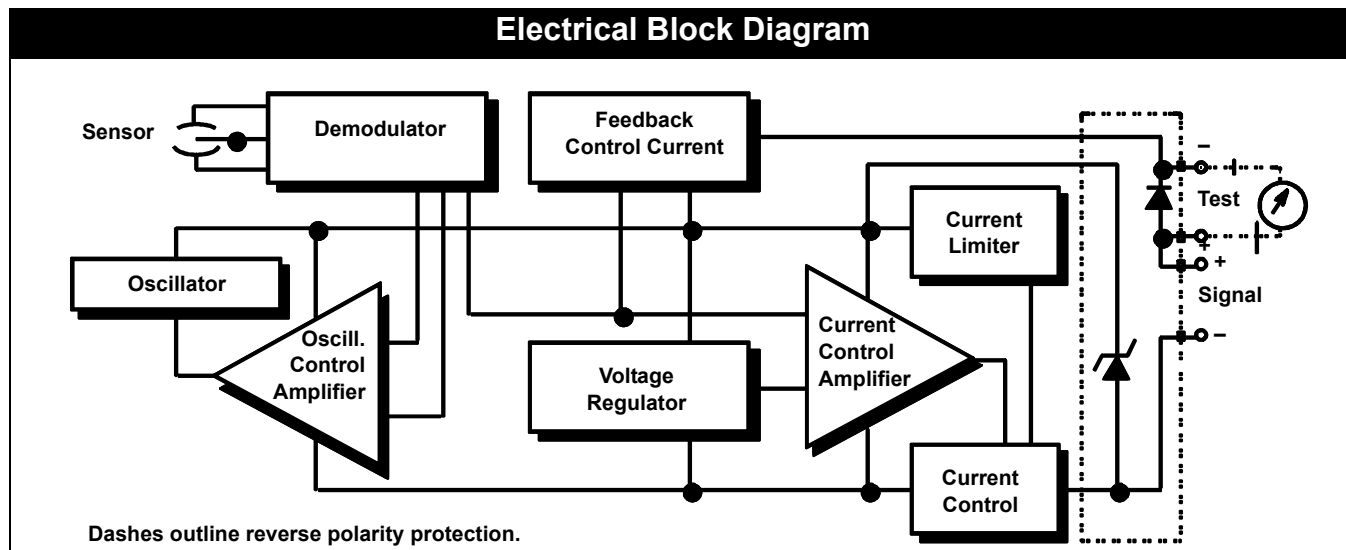
FM and CSA certifications optional for specific Classes, Divisions, and Groups when connected with approved barrier systems. See MAN 4458 for FM and CSA approved barriers and groups. CENELEC Intrinsic Safety Approval by BASEEFA (EEx ia IIC T4) when connected with CENELEC EEx ia approved barrier systems, V_{max} 28 V, I_{max} 120 mA.

Drawings

Wiring Connection

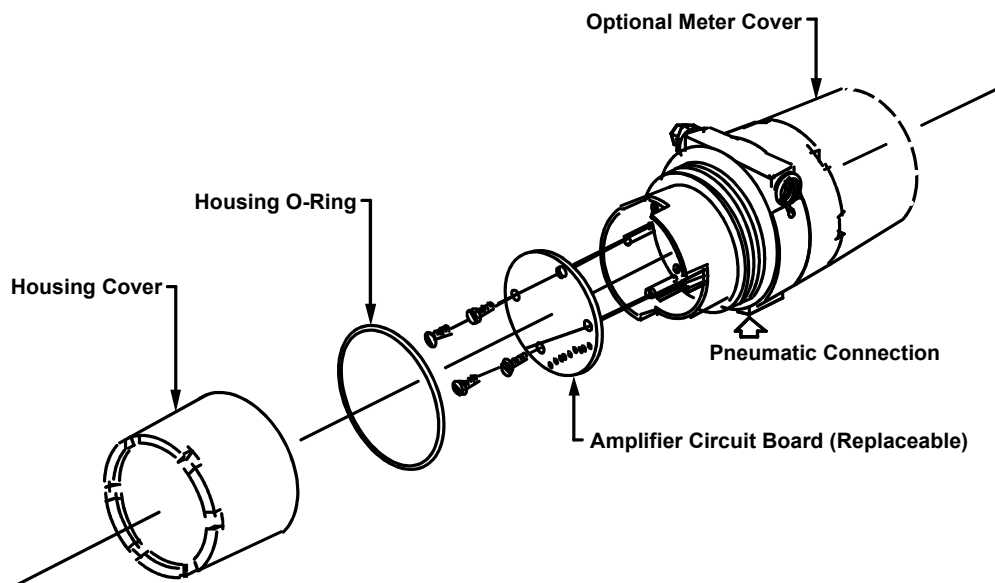


Electrical Block Diagram



Field-Mounted Pressure-to-Converter

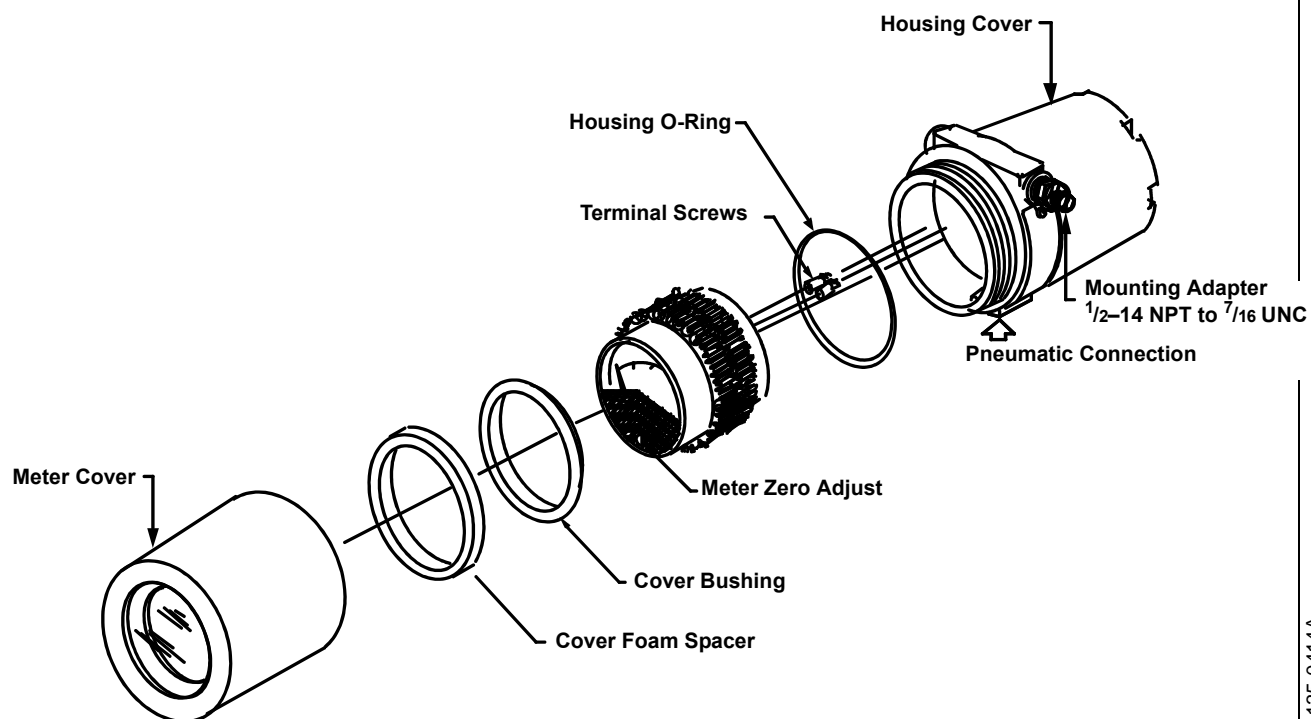
Circuit Side



1135-0413A

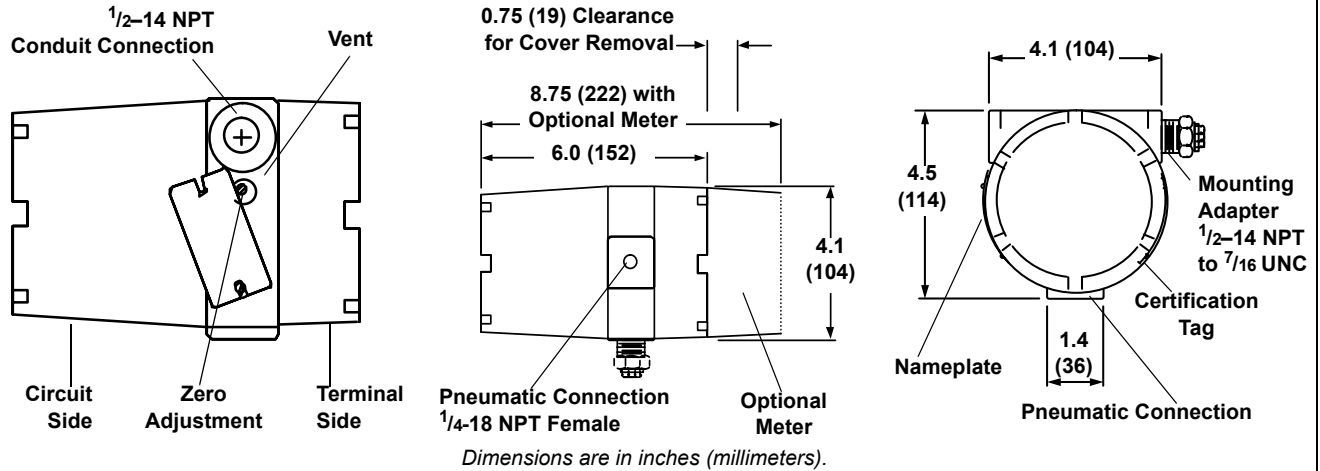
Field P/I Optional Meter Assembly

Terminal Side



1135-0414A

Model 1135

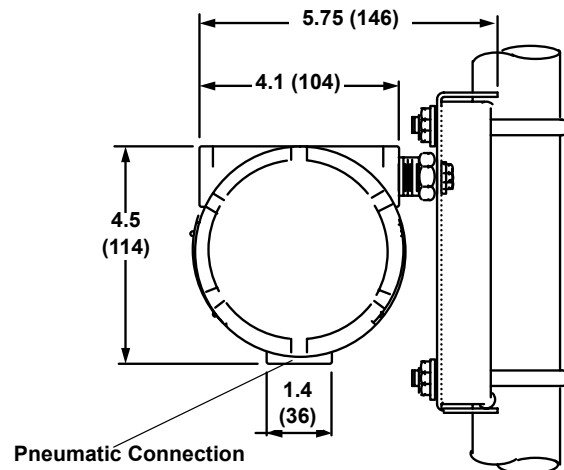
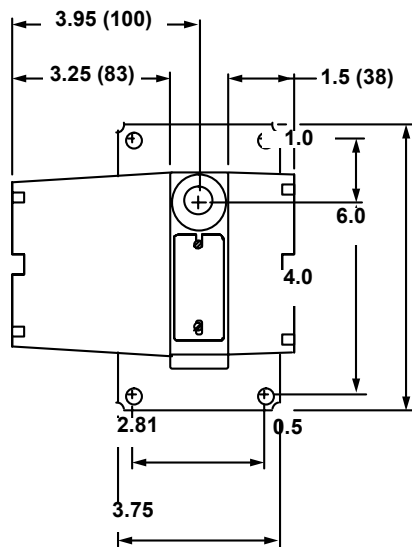


1135-0415A, 0418A, 0419A

Universal Mounting Bracket (Optional)

Panel

Pipe



Dimensions are in inches (millimeters).

1135-0416A, 0417A

Ordering Information

Model	Product Description
1135F	Field Mounted Pneumatic-to-Current Converter
Code	Calibrated Pressure
1	3 to 15 psig (21 to 103 kPa)
2	3 to 27 psig (21 to 86 kPa)
3	6 to 30 psig (41 to 207 kPa)
4	20 to 100 kPa (2.9 to 14.5 psig)
5	40 to 200 kPa (5.8 to 29 psig)
6	Special Range (consult factory)
Code	Flame Arrester and Sensor Materials
B	Bronze Flame Arresters with Brass Fittings
S	Stainless Steel Flame Arresters with Stainless Steel Fittings
Code	Meter
1	None Required
2	Meter with Linear Scale (0 to 100%)
Code	Mounting
NB	None Required
B1	Universal Mounting Bracket for 2-inch Pipe or Wall Mounting
Code	Options
E5	Factory Mutual (FM) Approvals
E6	Canadian Standards Association (CSA) Approvals
I5	Factory Mutual (FM) Non-incendive and Intrinsic Safety Certification (both system and entity concepts)
I6	Canadian Standard Association (CSA) Intrinsic Safety Certification when Connected with Approved Barrier Systems
I1	CENELEC Intrinsic Safety Certification
N1	BASEEFA Type N Certification
Typical Model Number: 1135F 1 B 1 B1 E5	

Tagging

The transmitter will be tagged, at no charge, in accordance with customer requirements. All tags are stainless steel. The standard tag is wired to the transmitter. Tag character height is $\frac{1}{8}$ in. (0.318 cm). A permanently attached tag is available upon request.

Calibration

Converters are factory calibrated to the range specified by the customer. Calibration is performed at ambient temperature and pressure.

Model 1135F

Product Data Sheet

00813-0100-4458, Rev BA

June 2002

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Emerson Process Management

Rosemount Inc.

8200 Market Boulevard
Chanhassen, MN 55317 USA
T (U.S.) 1-800-999-9307
T (International) (952) 906-8888
F (952) 949-7001

www.rosemount.com

