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
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.

OPERATION

Instrument air is applied to an isolating diaphragm on one side of the patented d-Cell™ sensor. An oil-fill fluid transmits the applied pressure to one side of the sensing diaphragm in the center of the d-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.

© Rosemount Inc., 2983, 1986, 1994. May be protected by one or more of the following U.S. Pat. Nos.: 3,793,885; 3,800,413. Other foreign patents issued and pending.


**FIGURE 2. Dimensional Drawings for Model 1135.**

**NOTE**
Dimensions are in inches (millimeters).

**FIGURE 3. Optional Universal Mounting Bracket.**

**NOTE**
Dimensions are in inches (millimeters).
SPECIFICATIONS

Functional Specifications
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
See Figure 4.
Indication
Optional 0–100% meter with 2.3 in. (58 mm) scale. Indication accuracy is ±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.

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, Vmax 28 V, Imax 120 mA.

Performance Specifications
(Performance specifications are derived at zero based, maximum spans under ambient reference conditions.)
Accuracy
±0.20% of calibrated span, includes combined effects of linearity, hysteresis, and repeatability.
Stability
±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 ±0.5% of span per 100 °F.
Total effect including span and zero errors: ±1.0% of span per 100 °F.
At minimum span: 0 to 12 psig (0 to 83 kPa) the zero error is ±1.25% of span per 100 °F and the total effect is ±1.75% of span per 100 °F.
Overpressure Effect
Zero shift less than ±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
±0.05% of upper range limit per g to 200 Hz in any axis.
Mounting Position Effect
Zero shift of up to 1 inH20 (0.24 kPa) which can be calibrated out. Position has no effect on span setting.
Physical Specifications

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 alone, 5 lb (2.27 kg); with mounting bracket, 6 lb (2.72 kg).

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FIGURE 5. Wiring Connections.

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FIGURE 6. Electrical Block Diagram.

NOTE
Dashes outline reverse polarity protection.

FIGURE 8. Field P/I Optional Meter Assembly.
### ORDERING INFORMATION

**TABLE 1. Model 1135F Field Mounted Pneumatic-to-Current Converter**

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Description</th>
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<tr>
<td>1135F</td>
<td>Field Mounted Pneumatic-to-Current Converter</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Calibrated Pressure</th>
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<tbody>
<tr>
<td>1</td>
<td>3 to 15 psig (21 to 103 kPa)</td>
</tr>
<tr>
<td>2</td>
<td>3 to 27 psig (21 to 186 kPa)</td>
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<tr>
<td>3</td>
<td>6 to 30 psig (41 to 207 kPa)</td>
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<td>4</td>
<td>20 to 100 kPa (2.9 to 14.5 psig)</td>
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<tr>
<td>5</td>
<td>40 to 200 kPa (5.8 to 29 psig)</td>
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<td>6</td>
<td>Special Range (consult factory)</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Flame Arrester and Sensor Materials</th>
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<tbody>
<tr>
<td>B</td>
<td>Bronze Flame Arresters with Brass Fittings</td>
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<tr>
<td>S</td>
<td>Stainless Steel Frame Arresters with Stainless Steel Fittings</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Meter</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>None Required</td>
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<tr>
<td>2</td>
<td>Meter with Linear Scale (0 to 100%)</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Mounting</th>
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<tr>
<td>NB</td>
<td>None Required</td>
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<tr>
<td>B1</td>
<td>Universal Mounting Bracket for 2-inch Pipe or Wall Mounting</td>
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<table>
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<tr>
<th>Code</th>
<th>Options</th>
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<tbody>
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<td>E5</td>
<td>Factory Mutual (FM) Approvals</td>
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<tr>
<td>E6</td>
<td>Canadian Standards Association (CSA) Approvals</td>
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<tr>
<td>I5</td>
<td>Factory Mutual (FM) Non-incendive and Intrinsic Safety Certification (both system and entity concepts)</td>
</tr>
<tr>
<td>I6</td>
<td>Canadian Standard Association (CSA) Intrinsic Safety Certification when Connected with Approved Barrier Systems</td>
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<tr>
<td>I1</td>
<td>CENELEC Intrinsic Safety Certification</td>
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<tr>
<td>N1</td>
<td>BASEEEFA Type N Certification</td>
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</table>

**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.