Transducers
Models 77 and 771 Current-to-Pneumatic Transducers

Introduction

Features & Benefits
- High signal sensitivity for demanding applications
- Simplified design ensures simplified operation
- Rugged, NEMA construction, with insensitivity to shock, vibration, and supply pressure variations accommodate operation in harsh industrial environments
- Choice of output capacities provides application versatility

Description
The Models 77 and 771 convert a DC millampere input signal to a pneumatic output signal directly proportional to the input. Their rugged design and ability to withstand shock and vibration allow them to be installed in even the harshest industrial environments.

Model 77 Current-to-Pneumatic Transducer
The Model 77 Current-to-Pneumatic Transducer, which was designed specifically for measuring circuits, converts the output of an electronic measuring device to a pneumatic signal for indication, recording, computation, or control. It can also be used to convert an electronic controller’s signal to operate a final control element, such as a control valve circuit that requires a high degree of accuracy.

The Model 77 is typically used to signal a valve positioner. If it is used for direct-loading of valve actuators or other large volumes, a volume booster relay is required to minimize time lags and the effects of leakage.

Model 771 Current-to-Pneumatic Transducers
The Model 771 Current-to-Pneumatic Transducers were designed as a cost-effective valve service current-to-pneumatic transducer.

The Model 771 receives the output signal of an electronic device, such as a PID control function, and drives a control valve via the transducer until the control function is satisfied. For measuring circuits, or for control circuits requiring a higher degree of transducing accuracy, the Model 77 should be used.

Because it’s boosted output capacity minimizes time lags and the effects of leakage, the Model 771B should be used for direct-loading of valve actuators or other large volumes. If the valve actuator includes a valve positioner, a Model 771S should be used.

Specifications – Model 77
Functional Specifications
Supply Pressure
20 psig, ±2 psig for 3-15 psig output
30 psig, ±2 psig for 3-27 psig output

Input/Output Data
See Model Selection
Model 77
For general purpose and non-incendive applications

Model 77F
For intrinsically-safe applications
Zero Offset Adjustment
+40% and –20% of span

Pneumatic Connections
1/4” NPT

Output Capacity
0.16 scfm

Supply Pressure Effect
Less than 1% of span (change of output for supply change from 18 to 22 psig)

Temperature Range
-40 to 180°F (-40 to 82°C)

Electrical Connections
Enclosed terminal block, 1/2” threaded
Surface Mounting
Two 1/4 x 20 x 5/16" deep blind tapped holes

Enclosure
NEMA 3R
NEMA 4 via conduit vent

Electrical Classification
FM Approved
Model 77
Non-incendive for Class I, Div. 2, Groups A, B, C, D.
Dust-ignition proof for Class II, Div. 1, Groups E, F, G.
Suitable for Class III, Div. 1 hazardous locations and NEMA 4.
Model 77XXF
Intrinsically safe for Class I/II/III, Div. 1, Groups A, B, C, D, E, F, G and NEMA 4 when used with approved barriers and converters listed on Siemens drawing #15032-7704/7705.

Performance Specifications
Calibration Accuracy
±0.25% of span
Reproducibility
0.2% of span
Response Level
0.025% of span

Model Number
Current-to-Pneumatic Transducer

Exhaust
• Atmospheric
• Tapped Exhaust

Input/Output

<table>
<thead>
<tr>
<th>Input Range (mA dc)</th>
<th>Output Range (psig)</th>
<th>Impedance (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5</td>
<td>3 to 15</td>
<td>2450</td>
</tr>
<tr>
<td>0 to 4</td>
<td>3 to 15</td>
<td>2450</td>
</tr>
<tr>
<td>4 to 20</td>
<td>3 to 27</td>
<td>610</td>
</tr>
<tr>
<td>4 to 20</td>
<td>3 to 15</td>
<td>185</td>
</tr>
<tr>
<td>10 to 50</td>
<td>3 to 15</td>
<td>30</td>
</tr>
</tbody>
</table>

Intrinsically-Safe Designation
• Intrinsically Safe (omit for other classifications)

Accessories
• Reverse Acting Output

Specifications – Series 771

Functional Specifications
Supply Pressure
20 psig (35 psig for 771-8 _ _ _)

Input/Output Data
See Model Selection

Zero Offset Adjustment
+40% and –20% of span

Output Capacity
Standard: 0.16 scfm
Boosted: 2.0 scfm

Supply Pressure Effect
Less than 2% of span (change of output for supply change from 18 to 22 psig)

Temperature Range
-40 to 180°F (-40 to 82°C)

Electrical Connections
Enclosed terminal block, 1/2" threaded
Enclosed
NEMA 3R
NEMA 4 via conduit vent

Electrical Classification
FM Approved
Series 771_ _ _ F1: Intrinsically safe for Class I/II/III, Div. I, Groups A, B, C, D, E, F, G when used with approved barriers and converters listed on Siemens drawing #15032-7704/7705.

Performance Specifications
Calibration Accuracy
±1/2% of span standard unit
±1% of span boosted unit

Reproducibility
0.2% of span

Response Level
0.025% of span

1) Other input ranges available; 0 - 3 mA to 0-60 mA, consult factory.
Transducers
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Ordering data

Model Number
Current-to-Pneumatic Transducer

<table>
<thead>
<tr>
<th>Input/Output</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Range 1</td>
<td>Output Range</td>
</tr>
<tr>
<td>(mA dc)</td>
<td>(psig)</td>
</tr>
<tr>
<td>1 to 5</td>
<td>3 to 15</td>
</tr>
<tr>
<td>4 to 20</td>
<td>3 to 27</td>
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<tr>
<td>4 to 20</td>
<td>3 to 15</td>
</tr>
<tr>
<td>10 to 50</td>
<td>3 to 15</td>
</tr>
</tbody>
</table>

Impedence (Ohms)
- 2450
- 610
- 185
- 30

Output Capacity
- Boosted
- Standard

Terminal Strip

Electrical Approval
- None Required
- Intrinsically Safe
- Non-incendive

Accessories
- P/N 12330-100 - Wall Mount Bracket
- P/N 12334-130 - Pipe Mounting Bracket
- Reverse Acting (not available on the Model 771-8), Increase input; decrease output. Add “R” to model number.

Mounting Dimensions – Model 77

NOTES:
1. ALL CONNECTIONS ARE 1/4 NPT EXCEPT AS SHOWN.
2. MUST BE MOUNTED VERTICALLY (≤ 10°) AS SHOWN.
3. FLAT ADAPTER PLATE (P/N 12330-100) AVAILABLE TO MOUNT TRANSUCER ON A BLIND WALL.
Mounting Dimensions – Model 771 S/B

3.15

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Dimensional drawings

NOTES:

1. Sealing screw must not be removed in a Class II hazardous location or under any NEMA 4 condition.
2. Dimensions are shown in inches and (millimeters).
3. Clearance of at least 5" (127MM) must be left above the top when mounting the transducer to permit removal of shipping and restriction screws and top cap (standard capacity models) and retaining nut (boosted models).
4. Transducer must be installed so that water cannot enter booster exhaust under NEMA 4 conditions (boosted models).
5. Transducer must be installed within 10° of vertical.