Low hysteresis and a consistent lift-off current make the PFV series of 2-way proportional valves ideal for OEM liquid and gas applications where repeatable, accurate performance is key. Featuring stainless steel construction and an IP67 rating, these valves are top-in-class for both performance and construction.

Features
• Optimized Onboard Drive Electronics Available
• Low Hysteresis
• Stainless Steel Construction
• Consistent Lift-Off Current
• Individually Calibrated
• Laser-Marked Traceable Serial Number
• Low Power Consumption
• 6 Available Flow Rates
• Handles Liquids & Gases

Applications
• Gas Chromatography
• Respiratory Care
• Mass Flow Control
• Air Analysis & Monitoring
• Pressure Control
• Diagnostics
• Mass Spectrometry
• Oxygen Handling
• Dispensing and Dosing

Industries
• Life Sciences
• Medical Equipment
• Industrial Automation
• Semiconductor
• Pharmaceutical

Mechanical Specifications:
Valve Type:
2-Way Proportional Normally Closed
Gating Element:
Poppet Seat Valve
Environmental Protection Class:
IP67
Ports:
Concentric Porting with 10-32 Male Stud or 1/8” NPT Ports
Connector:
Wire Leads - 22 Gauge, 491mm length
Mounting:
10-32 UNC Male Stud or 2x 10-24 UNC
Operating Temperature:
-20...50°C (-4...122°F)
Filtration:
5 um Particulate
Media:
Neutral Gases, Oxygen, Liquids
Other Compatibilities Available
Diameter:
26.0 mm (1.02 in)
Height:
62.5 to 76.0 mm (2.46 to 3.0 in)
Burst Pressure:
35 bar (500 psi)
Leak Rate:
< 0.2 sccm

Electrical Specifications
(for valves without onboard electronics):
Nominal Coil Resistance:
16.6Ω or 65Ω
Maximum Coil Voltage:
12VDC or 24VDC
Current for Full Open:
350mA or 175mA
Nominal Maximum Power Consumption:
2.1W

Performance Specifications:
Orifice Sizes Available:
Ø0.12 mm, Ø0.50 mm, Ø0.75 mm, Ø1.00 mm, Ø1.25 mm, Ø1.50 mm, Ø1.75 mm
Hysteresis:
±5% of full current (max)
Response Time:
<30 ms

Wetted Material Specifications:
Body:
316 Series Stainless Steel
Seals:
FKM, FFKM or EPDM - other materials available on request
Moving Elements:
430 Series Stainless Steel
302 Series Stainless Steel
304 Series Stainless Steel

Electrical Specifications
(for valves with onboard electronics):
Power Requirement:
12 or 24 VDC options available
Command Input:
0...5VDC, 0...10VDC or 0...20mA options available
Valve Design: With its unique, patented triple spring technology (balance - guide - control), the PFV series of valves produces highly linear flow curves that can be calibrated to the ideal inlet air pressure based on the flow required. This ensures consistent current liftoff from valve to valve and application to application.

Onboard electronics available for optimized control, consistent performance and quick set up

Fully-sealed wire leads help maintain the valve's IP67 ingress protection rating

Wire numbering on cap makes consistent wiring in OEM applications easy

Body made from 300 and 400 series stainless steel for maximum chemical and media capability

Each valve is laser marked at end-of-line with date and time traceable serial number

24mm hex flats allow for easy mounting and tightening of valve to the correct torque specification
Coil Characteristics and Electrical Properties (without onboard electronics)

<table>
<thead>
<tr>
<th>Coil Order Code</th>
<th>Resistance</th>
<th>Max Current</th>
<th>Max Voltage</th>
<th>Nominal Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>16.6Ω</td>
<td>350mA</td>
<td>12Vdc</td>
<td>2.1W</td>
</tr>
<tr>
<td>24</td>
<td>65Ω</td>
<td>175mA</td>
<td>24Vdc</td>
<td>2.1W</td>
</tr>
</tbody>
</table>

Electrical Properties (with onboard electronics)

The PFV comes with three available onboard driver options engineered to optimize the performance of the valve. These electronics were designed especially for the PFV, helping users avoid the expense and effort of characterizing valves and developing electronics. This is ideal for users who have tight project deadlines, want to get to market quickly and are looking for a plug-and-play device that can be up and running in a short amount of time. Additionally, since these electronics sit under the cap of the valve, the valve is able to maintain its IP67 rating that allows it to tackle more challenging applications.

Features

- Automatically Adjusts for Changes in Coil Resistance due to Temperature
- Reverse Polarity Protection
- Simplified 3-Wire Design (Power, Ground and Command)
- Onboard Power LED
- Closed Loop Current Design
- Wide Temperature Range
- Overvoltage Protection
- Designed for Continuous Use
- Low Power Consumption
- Compact Size - Fits Under Cap
- Maintains IP67 Rating
- Handles Power Supply Fluctuations
- Three Input Ranges (0...5V, 0...10V and 0...20mA)
- Protects Against Wiring Mistakes
- Plug & Play
- Designed and Optimized for PFV Series of Valves

Electrical connections see Part number key for specific voltage and signal levels.

<table>
<thead>
<tr>
<th>Wire</th>
<th>Function</th>
<th>Input &amp; Impedance</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1: (Brown) DC Power</td>
<td>1 (brown) DC Power</td>
<td>12: 12 Vdc&lt;br&gt;24: 24 Vdc</td>
</tr>
<tr>
<td>#2: (Blue) DC Common</td>
<td>2 (blue) DC Common*</td>
<td>0Vdc</td>
</tr>
<tr>
<td>#3: (Black) Command</td>
<td>3 (black) Command +</td>
<td>E01: 0...10Vdc (3.24k Ohm)&lt;br&gt;E02: 0...20mA (280 Ohm)&lt;br&gt;E05: 0...5Vdc (73.6k Ohm)</td>
</tr>
</tbody>
</table>

*Command (-) should be connected to this 0V source.
Air Flow vs Current: Each Orifice Size and Calibration Pressure

Note: Based on test results from typical setup: 24Vdc coil, 20C ambient temperature and 100 kPa increases in calibration pressure (port 1) flowing to atmosphere (port 2).
Figures are to be used for general guidance only.
**PFV Miniature Proportional Valve**

### Maximum Flow Rate vs. Upstream Pressure - Air

**Graph:**
- **Y-axis:** Maximum Flow Rate ±10% (SLPM)
- **X-axis:** Upstream Pressure (Referenced to Atmosphere)
- **Legend:**
  - Ø0.50 mm Orifice
  - Ø0.75 mm Orifice
  - Ø1.00 mm Orifice
  - Ø1.25 mm Orifice
  - Ø1.50 mm Orifice
  - Ø1.75 mm Orifice

### Maximum Flow Rate vs. Upstream Pressure - Water

**Graph:**
- **Y-axis:** Maximum Flow Rate ±10% (LPM Water)
- **X-axis:** Upstream Pressure (Referenced to Atmosphere)
- **Legend:**
  - Ø0.50 mm Orifice
  - Ø0.75 mm Orifice
  - Ø1.00 mm Orifice
  - Ø1.25 mm Orifice
  - Ø1.50 mm Orifice
  - Ø1.75 mm Orifice
Ø0.12 mm (0.005”) Orifice Flow vs. Current

Flow (SLPM) vs. Current (mA)

Ø0.12 mm Orifice Maximum Flow Rate vs. Upstream Pressure - Water

Maximum Flow Rate ±10% (mLPM Water) vs. Upstream Pressure (Referenced to Atmosphere)

Ø0.12 mm Orifice Maximum Flow Rate vs. Upstream Pressure - Air

Maximum Flow Rate ±10% (SLPM) vs. Upstream Pressure (Referenced to Atmosphere)
The PFV Miniature Proportional Valves simplify design and installation for makers of medical, life science, semiconductor and other OEM equipment by providing repeatable, accurate flow in response to input current. With seven available orifice sizes ranging from Ø0.12 mm to Ø1.75 mm, choosing a valve based on inlet air pressure and required flow becomes easy. Each valve and orifice combination is then individually calibrated to maximize linearity and minimize hysteresis, providing top of the line performance in a small package size.

PFV - W24  E05 - M175  C - 0100

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Max Coil Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>12Vdc</td>
</tr>
<tr>
<td>24</td>
<td>24Vdc</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Electronics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>No Electronics</td>
</tr>
<tr>
<td>E01</td>
<td>0...10V Input</td>
</tr>
<tr>
<td>E02</td>
<td>0...20mA Input</td>
</tr>
<tr>
<td>E05</td>
<td>0...5V Input</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Orifice Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>012</td>
<td>Ø0.12 mm</td>
</tr>
<tr>
<td>050</td>
<td>Ø0.50 mm</td>
</tr>
<tr>
<td>075</td>
<td>Ø0.75 mm</td>
</tr>
<tr>
<td>100</td>
<td>Ø1.00 mm</td>
</tr>
<tr>
<td>125</td>
<td>Ø1.25 mm</td>
</tr>
<tr>
<td>150</td>
<td>Ø1.50 mm</td>
</tr>
<tr>
<td>175</td>
<td>Ø1.75 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>10-32 Stud</td>
</tr>
<tr>
<td>P</td>
<td>1/8 NPT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>FKM</td>
</tr>
<tr>
<td>E</td>
<td>EPDM</td>
</tr>
<tr>
<td>K</td>
<td>FFKM</td>
</tr>
</tbody>
</table>

Calibration Pressure
Select the maximum pressure that the valve will operate at.
Example: A valve with order code 0100 is calibrated for use with 100kPa (14.5psi) max inlet pressure.
Increments of 100 kPa can be specified.
**Enfield Technologies** is an expert in high performance proportional control systems. Our standard product line focuses on pneumatics. With custom products and engineering services, we also apply our expertise in other areas of fluid power, electromechanical systems, and control electronics. New developments in pneumatic technology are opening doors for design engineers to create unique, market leading products and systems.

Enfield Technologies is leading this innovation. Our control valves and electronics solve many of the challenges posed by compressible fluids. The additional functionality and performance from Enfield Technologies helps our customers create breakthrough applications and enhance existing systems. Simply put, we make pneumatics do things that others declare impossible.