

# EPIc Miniature Digital Pressure Controller

High-Performance Pressure Controllers




The EPIc Digital Pressure Controller converts a variable input control signal into a controlled pneumatic output up to 150 PSI (10.3 bar). Used to control critical pressure and flow levels in applications that require extreme precision and quiet operation, the EPIc replaces manual regulators, needle valves, and bleed orifices. This pressure controller delivers stable, accurate, and repeatable pressure by pairing digital integration and Parker Hannifin's LowPro® proportional valve technology. The EPIc returns feedback on performance to help improve process efficiency. Integration is simple with multiple communication protocol options, two pneumatic porting options, and the smallest package size.

## Typical Applications

- Carrier Gas Pressure Control
- Pressure-Driven Microfluidic Flow Control
- Air-Over-Liquid Flow Control
- Sample Movement for POCT

## Features

- Turnkey solution that replaces DIY
- Extreme accuracy, stability, and repeatability
- Flexibility in communication with analog or digital control options
- Ported or manifold pneumatic connections
- Extremely small package size, less than 48 cm<sup>3</sup>
- RoHS and REACH compliant 

## Product Specifications

### Physical Properties

<b>Valve Technology:</b>
LowPro® proportional valve, available in orifice sizes: 0.011" (0.28mm) and 0.030" (0.76mm)
<b>Media:</b>
Non-corrosive gases
<b>Operating Environment:</b>
-32 to 131°F (0 to 60°C) Up to 95% RH, non-condensing
<b>Storage Temperature:</b>
-40 to 158°F (-40 to 70°C)
<b>Dimensions:</b>
<b>Ported:</b> 2.22" x .70" x 1.85" (56.3mm x 17.8mm x 47.0mm)
<b>Manifold:</b> 2.22" x .70" x 2.25" (56.3mm x 17.8mm x 57.15 mm)
<b>Porting:</b>
M5 Threaded Port or Face Seal Manifold Mount

### Electrical

<b>Power:</b>
10.8 to 26.4 VDC 2W Max, 1W Nominal
<b>Input Control Signal:</b>
0-5 VDC, 0-10 VDC, & RS485
<b>Fault Detection:</b>
Digital - Multiple Status Indicators Analog - Monitor Voltage Out

### Wetted Materials

<b>Valve:</b>
Aluminum, Brass, Nickel, Stainless Steel, Urethane Polyvinyl Butyral, FKM, Epoxy
<b>Manifold:</b>
Aluminum
<b>Sensor:</b>
Gold, Silicon, PPS polymer, Silicone Adhesive

### Performance Characteristics

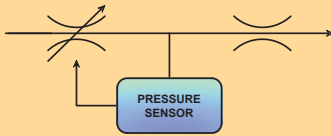
<b>Pressure Ranges:</b>
30 psig (2.06 bar) 150 psig (10.3 bar)
<b>Pressure Accuracy:</b>
± 0.25 % FS Maximum
<b>Repeatability:</b>
± 0.2 % FS Maximum
<b>Linearity:</b>
± 0.2 % FS Maximum
<b>Stability:</b>
± 0.2 % FS Maximum
<b>Resolution:</b>
Digital Control: 0.02% step Analog Control: 0.1% step
<b>Temperature Error:</b>
± 0.05% of FS / °C
<b>Pressure Drop:</b>
15 psid (1.03 bar) Minimum

# EPiC Miniature Digital Pressure Controllers

## How Flow Affects Pressure Control

The flow curves illustrate the flow capabilities of the two models of pressure controllers.

Pressure control using a constant flow approach requires the system to manage pressure drop across a variable orifice and a fixed orifice (see below).



## Choosing the Right Model

In many cases, the fixed orifice is the cumulative restriction of the application system consuming gas. That fixed restriction and the inlet supply pressure level are key factors when selecting the correct model number for the EPiC.

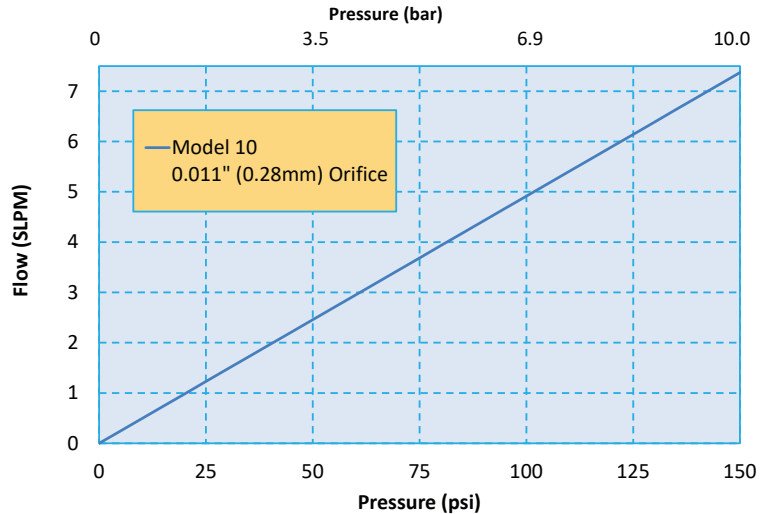
If the orifice is too small, it may fail to generate enough flow to drop the required pressure across the fixed orifice. If the orifice is too large, the pressure controller can become unstable.

### EXAMPLE #1:

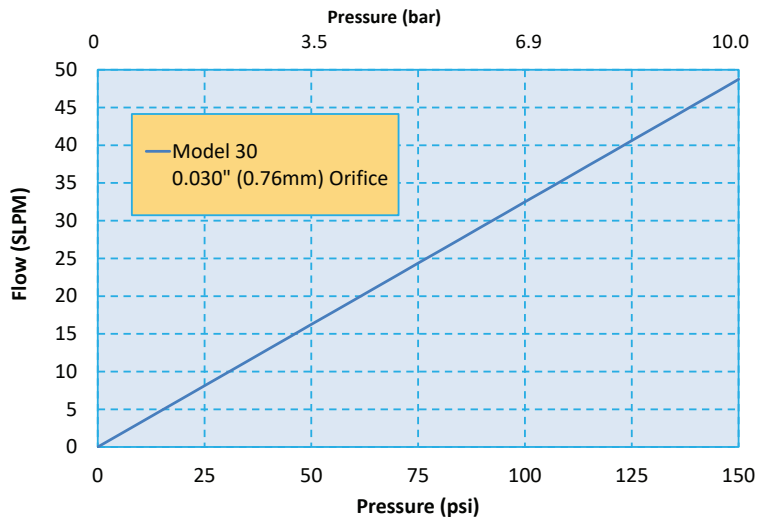
Please refer to the chart labeled Model 10 - 0.011" (0.28 mm) orifice. If your application requires 40 PSIG of pressure at 2 SLPM of flow, you will need the Pressure Controller with the Model 10 orifice. This graph illustrates that the required flow is below the blue flow line which indicates the maximum flow at that pressure for the Model 10 proportional valve. Any flow requirements, at pressure, that are above the blue line will not be able to reach the required pressure setting.

## EPiC Flow Capability Sizing Charts

Max Flow at Pressure  
Model 10



Max Flow at Pressure  
Model 30

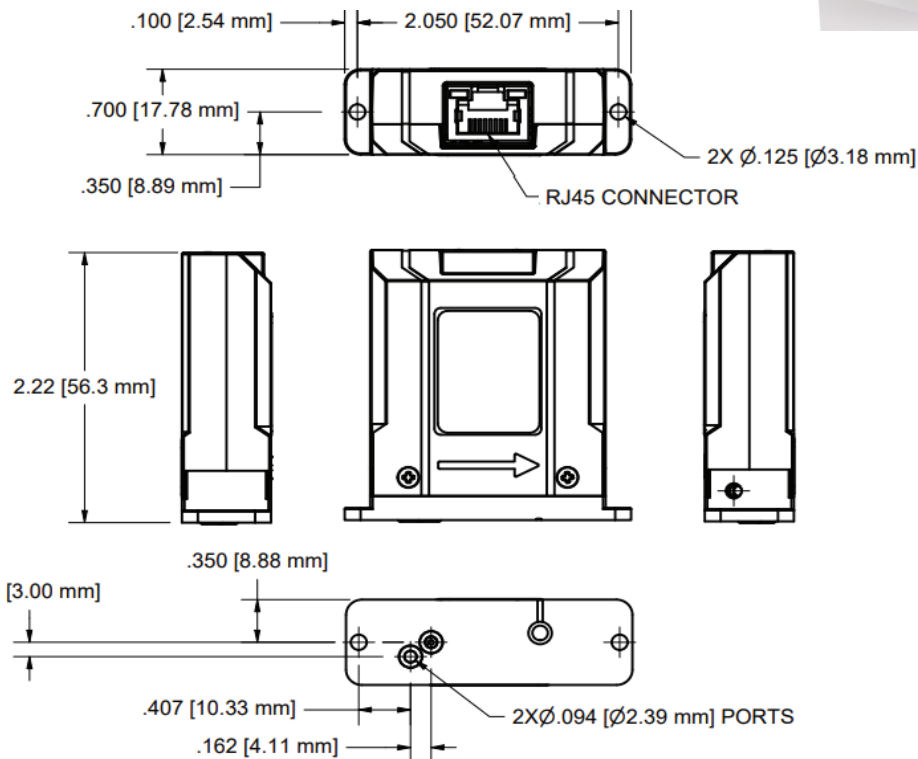


# EPiC Miniature Digital Pressure Controllers

## Mechanical Integration

### Dimensions

### EPiC Basic Dimensions Manifold Mount Version



DIMENSIONS ARE INCH [mm].

## Electrical Interface

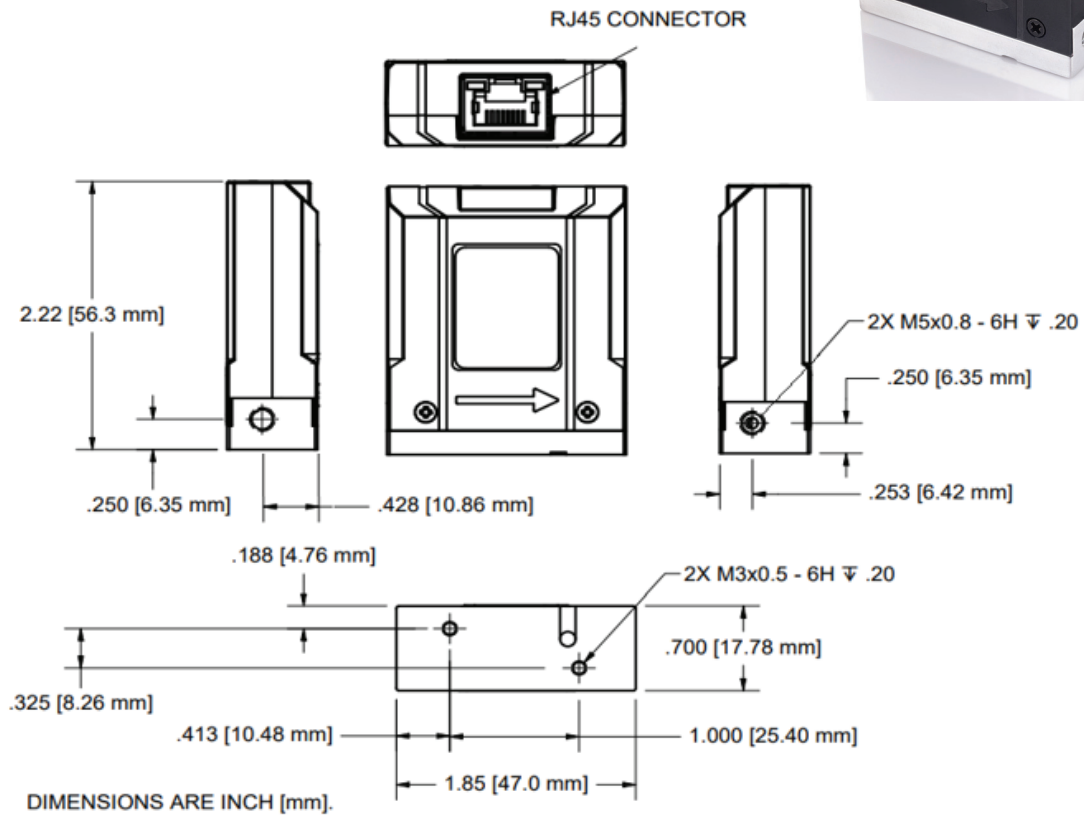
CAT 5e Plug-In (RJ-45 T-568B) Connector (not included)	
Signal	RJ-45 Pin Number
RS485 A	1 Or/Wh
RS485 B	2 Or
Not Used	3 Gr/Wh
Analog Ground	4 Blu
Analog Control In	5 Bl/Wh
Analog Monitor Out	6 Gr
Vdc Supply	7 Br/Wh
Supply Ground	8 Br

# EPiC Miniature Digital Pressure Controllers

## Mechanical Integration

### Dimensions

### EPiC Basic Dimensions M5 Threaded Port Version



## Electrical Interface

CAT 5e Plug-In (RJ-45 T-568B) Connector (not included)	
Signal	RJ-45 Pin Number
RS485 A	1 Or/Wh
RS485 B	2 Or
Not Used	3 Gr/Wh
Analog Ground	4 Blu
Analog Control In	5 Bl/Wh
Analog Monitor Out	6 Gr
Vdc Supply	7 Br/Wh
Supply Ground	8 Br

# EPiC Miniature Digital Pressure Controllers

## Configurations

### Key Things to Remember:

The pressure controller requires downstream restriction to build pressure against.

There are two ways to accomplish this:

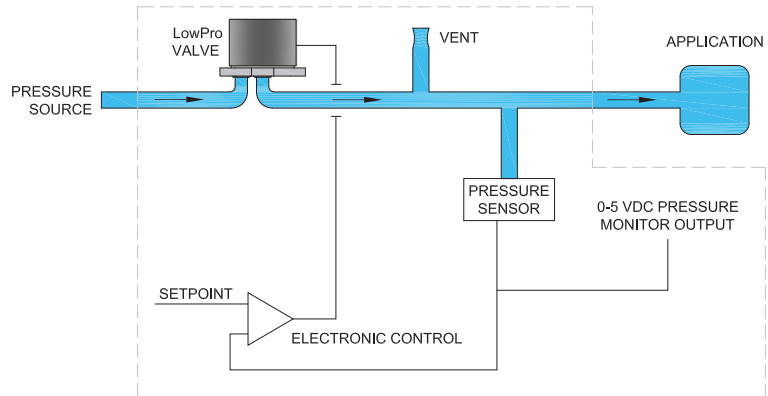
- Use a venting controller. The venting controller is configured with an internal vent orifice that is roughly 40% of the controller orifice size. This configuration of controller can supply pressure to an application with an effective downstream restriction that represents 30% of the controller orifice size down to a completely restricted application.

- Use of a non-venting controller. The non-venting controller does not incorporate an internal vent orifice and will require a downstream restriction of roughly 20% to 60% of the controller's orifice size.

For example:

A non-vented controller with an orifice size of 0.011" should have 0.002" to 0.007" effective downstream restriction.

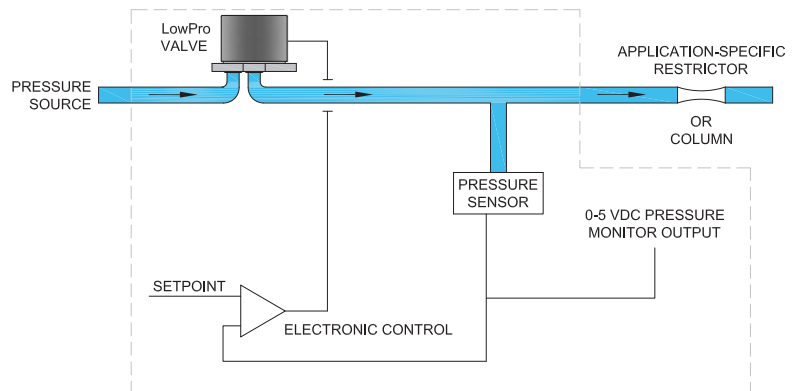
### Pressure Controller with Internal Vent



#### With Internal Vent

A vent is required when the application does not consume any gas. For example, pressurizing a piloted regulator.

### Pressure Controller with No Internal Vent



#### With No Internal Vent

An internal vent may not be required when the application consumes a high rate of gas or the gas is coming from a limited source and/or is flammable.

# EPiC Miniature Digital Pressure Controllers

## Ordering Information

Sample Part ID	942-	030	10	0	-001
Description	Series	Pressure Range	Valve Orifice	Configuration	Pneumatic Porting
Options		030: 0 - 30 psig (0 - 2.06 bar)  150: 0 - 150 psig (0 - 10 bar)	10: 0.011" (0.25 mm)  30: 0.030" (0.76 mm)	0: Non Vented  1: Vented	-000: M5 Threaded Ports  -001: Manifold Ports

Accessories (not included)	
290-006062-001:	350MHz CAT5E Patch CABLE, 1 ft Length (0.304 m)
290-006062-003:	350MHz CAT5E Patch CABLE, 3 ft Length (0.914 m)

290-006062-001: CAT5E Patch CABLE,  
1 ft Length (0.304 m)



290-006062-003: CAT5E Patch CABLE,  
3 ft Length (0.914 m)



