

ENERGY-SAVING PRESSURE-INDEPENDENT SYSTEM



The EPIC System measures energy usage while monitoring coil performance to adjust a Pressure Independent (PI) Control Valve to optimize coil performance.

The PI Valve maintains the correct flow, in spite of pressure changes, and guarantees the flow only changes when demand requirements change or ΔT is outside of specification.

The pressure transducers measure upstream and downstream pressure allowing the Building Management System (BMS) to reduce system pressures to save pump energy when pressure drop is higher than the PI valve's requirements.

The Griswold EPIC Intelligent Interface calculates the BTU and displays the data via Bluetooth® on an Android and iPhone mobile device.

PI VALVE SPECIFICATIONS

Static Pressure:	580psid
Media Temperature:	-4° to 248°F
Ambient Temperature:	14° to 122°F
Body Material:	Ductile Iron, ASTM A395, Class 60-40-18
Flow Regulation Unit:	316 Stainless Steel
Diaphragm:	Hydronogenated acrylonitrile butadiene rubber
End Connections¹:	ANSI Class 150/300
Stem Seals:	EPDM and Nitrile O-Rings
Test Ports:	1/4" ISO
Rangeability:	>100:1
Turn Down Ratio:	228:1
Maximum Close Off Pressure:	116 PSID
Maximum Operational ΔP:	116 PSID
Shut Off Leakage:	ANSI/FCI 70-2 2006 /IEC 60534-4 Class IV

PI VALVE ACTUATOR SPECIFICATIONS

Supply Voltage:	22-26 VAC/VDC
Power Consumption:	12 VA, Failsafe Version: 25VA (Peak)
Control Signal:	2-10 VDC
Frequency:	50/60 HZ
Feedback:	2-10 VDC
Resolution:	1:800 (2-10V)
Turn Time:	2-1/2"-6": 190 seconds (from closed to fully open) 8"-10": 317 (from closed to fully open)



Listed temperature regulating equipment 41 X 9

Class 2 circuit

NOTES

¹ Studs and bolts for installation are supplied by others.

PRESSURE INDEPENDENT

2-1/2" – 10"

Electrical Connection:	5 wires 18AWG halogen free cable, 3 feet Additional for BACnet versions: 3 wires 18AWG halogen free cable, 3 feet
CE Conformity:	EN 60730, class II
Humidity Rating:	5-95% RH non condensing
Housing Insulation:	IP 54 including upside down mounting
Housing Material:	UL94 V0-rated plastic
Programming:	External programming of all settings, interface buttons and display
Calibration:	Automatic calibration at start-up

GRISWOLD EPIC INTELLIGENT INTERFACE SPECIFICATIONS

Supply Voltage:	24 VDC
Control Signal:	2-10 VDC
Output Signal:	2-10 VDC
Humidity Rating:	5.95% rH, no condensation
Housing Insulation:	IP 54 including upside down mounting
Housing Material:	UL94 V0-rated plastic

TEMPERATURE SENSOR (T1 & T2) SPECIFICATIONS

Supply Voltage:	24V DC
Media Temperature:	32° to 212°F
Connection:	1/4" NPT
Housing Material:	UL94 V0-rated plastic
Signal Output:	0-5 V (3-wire)
Electrical Connection:	Directly Outlet Cable IP67
Probe Length:	50 mm

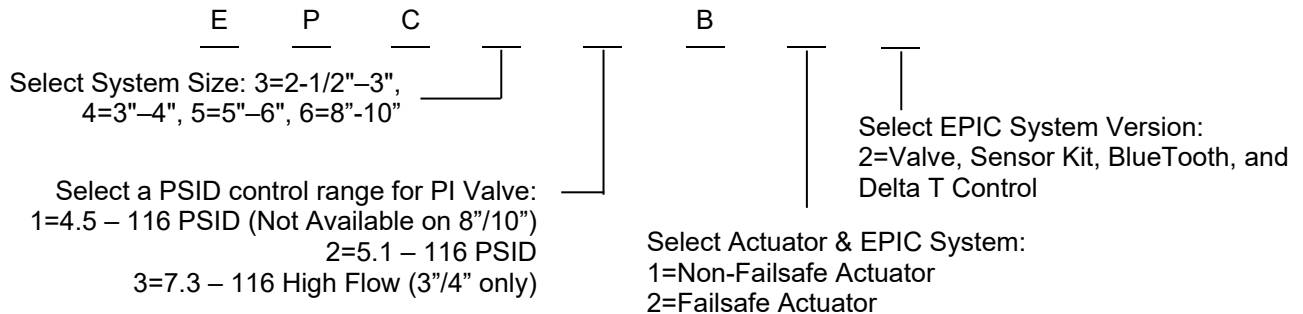
PRESSURE TRANSDUCER (P1 & P2) SPECIFICATIONS

Accuracy RSS:	±0.5% FS
Non-Linearity, BFSL	±0.20% FS
Hysteresis	0.5% FS
Non-Repeatability	±0.05% FS
Connection:	1/4" NPT
Thermal Effects °F (°C)	Compensated 14 to 140 (-10 to 60)
Zero Shift %FS/°F(%FS/°C)	< ±0.02 (<±0.04)
Span Shift %FS/°F(%FS/°C)	< ±0.02 (<±0.04)
Line Pressure Effect	Zero shift approx. ±0.004% FS/psig line pressure
Resolution	Infinite, limited only by output noise level (0.02% FS)
Static Acceleration Effect	2% FS/g (most sensitive axis)
Natural Frequency	> 500 Hz (gaseous media)
Response Time	30 to 50 milliseconds
Maximum Working Pres:	150 psig
Circuit:	2-wire
Output at Zero Pressure:	4mA (1V with filter)
Output at Full Range:	20mA (5V with filter)
Pressure²:	0-16 Bar (0-401.8"WC)
Full Scale Output:	16mA (4V with filter)
External Load:	0 to 1000 Ω
Minimum Supply Voltage:	12vDC + 0.02 x (Resistance of receiver plus line)
Maximum Supply Voltage:	30vDC + 0.004 x (Resistance of receiver plus line)

NOTES

² Calibrated at factory at 24Vdc.

MODEL NUMBER SELECTION



DIMENSIONS & WEIGHTS FOR PI VALVE (NOMINAL)

All dimensions are for planning purposes only and may change without notice.

MODEL NO.	SIZE	LENGTH	CL TO BOTTOM	CL TO TOP	ASME B16.5 WELD NECK		ASME B16.5 SLIP ON		WEIGHT ³
					CLASS 150	CLASS 300	CLASS 150	CLASS 300	
EPC3__	2-1/2"	8.8"	9.7"	3.74"	•	•	•	•	27.8
	3"				•	•			
EPC4__	3"	12.6"	11.4"	5.3"	•	•	•	•	75
	4"				•	•			
EPC5__	5"	16.6"	13.3"	7.1"	•	•	•	•	148
	6"				•				
EPC6__	8"	28.5"	18.6"	11.5"		•		•	547
	10"				•		•		

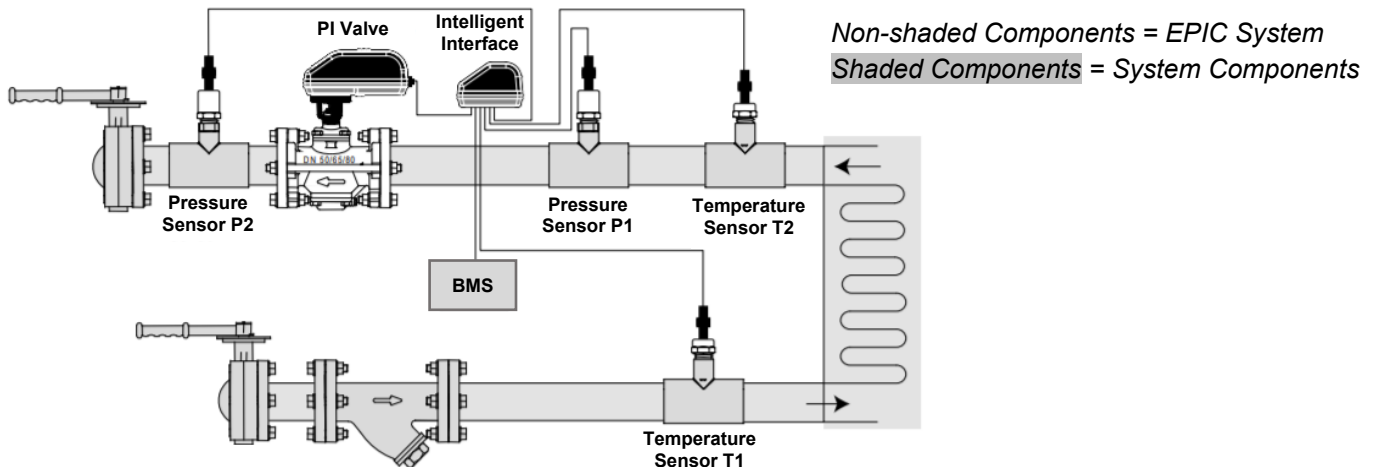
FLOW RATES PI VALVE

MODEL NO.	SIZE	PSID RANGE	MAXIMUM FLOW GPM ⁴	TURN DOWN RATIO – MAX FLOW	LOWEST MAX SETTING GPM	TURN DOWN RATIO – LOWEST MAX FLOW
EPC31__	2-1/2" / 3"	4.5 – 116	113	228:1	40.7	38:1
EPC32__	2-1/2" / 3"	5.1 – 116	157		56.3	
EPC41__	3" / 4"	4.5 – 116	149		55.4	
EPC42__	3" / 4"	5.1 – 116	225		75.0	
EPC43__	3" / 4"	7.3 – 116	320		58.3	
EPC51__	5" / 6"	4.5 – 116	369		103	
EPC52__	5" / 6"	5.1 – 116	468		113	
EPC62__	8" / 10"	5.1 – 116	1220		146	

NOTES

³ Weight includes valve and actuator.

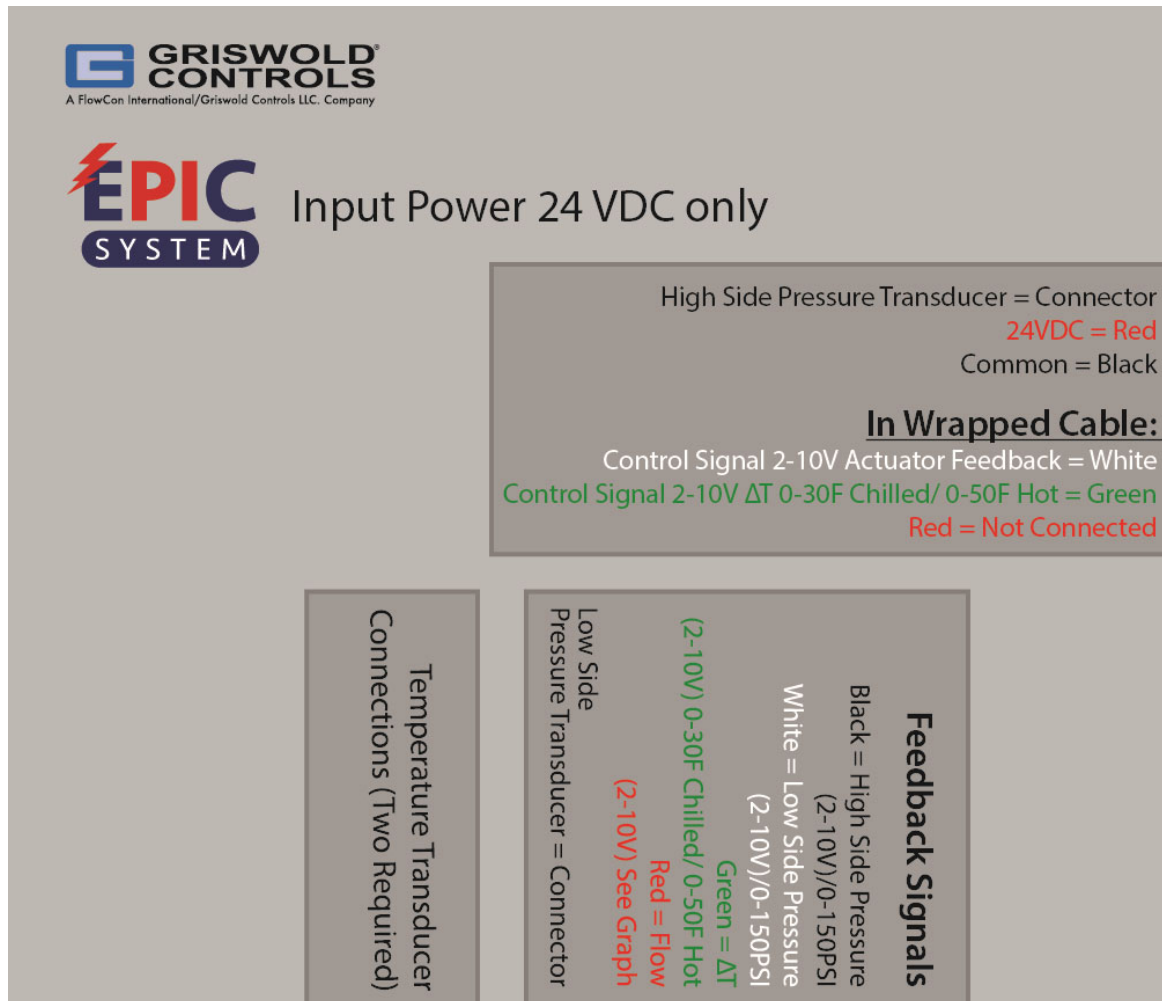
⁴ Maximum flowrate can be reduced during programming. Maximum flowrate reflects a 10V signal. All flowrates will have 1000 positions between the pre-set maximum flowrate and 0V if 0V range is 0-10V. Griswold Controls recommends that the maximum flowrate is at least 50% of the rated valve capacity.



WRITTEN SPECIFICATIONS

1. PRESSURE INDEPENDENT AND TEMPERATURE INDEPENDENT SYSTEM
 - 1.1. System shall include a pressure independent modulating dynamic control valve, a sensor kit and an electronic unit.
 - 1.1.1. The valve shall accurately control flow independent of system pressure fluctuations.
 - 1.1.2. The sensor kit shall include 2 temperature sensors and 2 pressure sensors. Temperature sensors shall measure the ΔT across the coil and pressure sensors shall measure the ΔP across the PICV.
 - 1.1.3. The intelligent interface shall accurately modulate PICV flow to maintain target ΔT . In addition, the intelligent interface shall calculate BTU heat transfer and supply continuous information on ΔT , ΔP and flow.
2. PRESSURE INDEPENDENT MODULATING DYNAMIC FLOW CONTROL VALVE
 - 2.1. Valve shall be electronic, dynamic, modulating 2-way control device
 - 2.2. Maximum flow setting shall be adjustable to 55 different settings within the range of the valve size by changing the actuator programming.
 - 2.3. Flow regulation unit shall be manufactured of stainless steel and hydrogenated acrylonitrile-butadiene rubber and shall be capable of controlling flow within $\pm 5\%$ of controlled flow rate or $\pm 2\%$ of maximum flow rate.
 - 2.4. Flow regulation unit shall be accessible for change-out or maintenance.
 - 2.5. VALVE HOUSING
 - 2.5.1. Housing shall consist of ductile iron ASTM A395 Grade 60-40-18 rated at no less than 580 psi (4000 kPa) static pressure and 248°F (120°C).
 - 2.5.2. Housing shall be permanently marked to show direction of flow.
 - 2.5.3. Dual pressure/temperature test plugs for verifying accuracy of flow performance shall be standard.
 - 2.6. VALVE ACTUATOR
 - 2.6.1. Valve actuator housing shall be rated to IP54 insulation.
 - 2.6.2. Actuator shall be driven by a 24Vdc motor, and shall accept 2-10 Vdc, 4-20mA, 3-point floating or pulse width modulation electric signal and shall include resistor to facilitate any of these signals.
 - 2.6.3. Actuator shall be capable of providing 4-20mA or 2-10 Vdc feedback signal to the control system.
 - 2.6.4. External LED readout of current valve position and maximum valve position setting shall be standard.
 - 2.6.5. Optional fail safe system to power valve to either open or closed position from any position in case of power failure shall be available.
3. INTELLIGENT INTERFACE
 - 3.1. Intelligent interface shall consist of UL94 V0-rated plastic and rated to IP54 including upside-down mounting.
 - 3.2. Intelligent interface shall be driven by a 24V DC signal.
 - 3.3. Intelligent interface shall be Bluetooth® enabled and shall communicate with both Android and iPhone devices.
4. SENSORS (TEMPERATURE AND PRESSURE)
 - 4.1. Temperature and pressure sensors shall consist of 304 stainless steel.
 - 4.2. Temperature and pressure sensors shall be IP65.
 - 4.3. Temperature sensors shall provide a resistive output signal corresponding to water temperature. Pressure sensors shall be driven by a 12V DC signal and provide 4-20mA output signal corresponding to pressure.

WIRING DIAGRAM PI VALVE & INTELLIGENT INTERFACE



- **Both Delta T Control Version and Non- Delta T Control Version** - In Wrapped Cable in box- Control Signal (white wire) connects to PI Valve (green wire)
- **Delta T Control Version** – Feedback Signal/ Red wire = Flow (2-10V) on box connects to PI Valve (white wire)
- **Delta T Control Version** – In Wrapped Cable in box - Control signal 2-10 (green wire) connects to BMS
- **Non-Delta T Control Version** – MVP (white wire) connects to the BMS