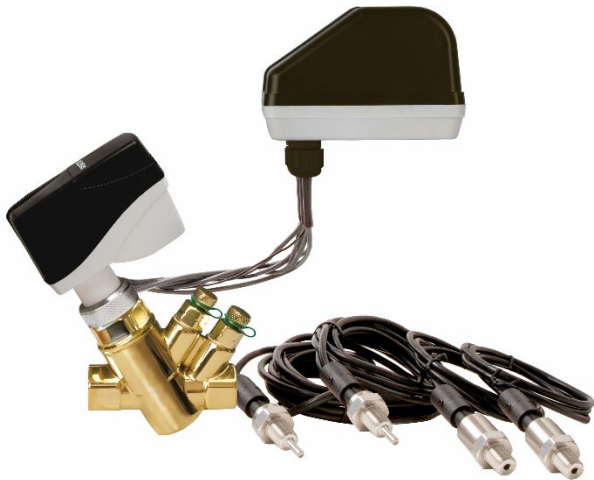


**ENERGY-SAVING PRESSURE-INDEPENDENT SYSTEM**



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 Delta T is outside of specification.

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

**PI VALVE SPECIFICATIONS**

- PSI / Temperature Rating:** 360 PSI / 248° F
- Actuator Ambient Temp.:** 34° F to 122° F
- Flow Insert:** Glass reinforced PSU/POM/PPS and Stainless Steel
- Diaphragm:** Small: EPDM; Medium and Large: Hydrogenated acrylonitrile-butadiene-rubber
- Stroke:** Small: 3.4mm/0.13"; Medium: 5.2mm/0.2"; Large: 6.2mm/0.24"
- Body Material:** Forged brass
- End Connections:** Female NPT
- O-Rings:** EPDM
- Body Tappings:** P/T Test Valves on AB Valve Housing
- Shut Off Leakage:** IEC 60534-4 – Class IV
- Maximum Close Off:** 116 PSI
- Maximum Operational ΔP:** Small & Medium (1/2"-1-1/4"): 116 PSID; Large (1-1/2"-2"): 87 PSID
- Control Range:** 1:800 / IEC 60534
- Turndown Ratio:** 1:100
- Shut Off Leakage:** ANSI Class IV / IEC 60534-4 Class IV

**PI VALVE ACTUATOR SPECIFICATIONS (FN0.2&FN1.2/FH&FH.1)**

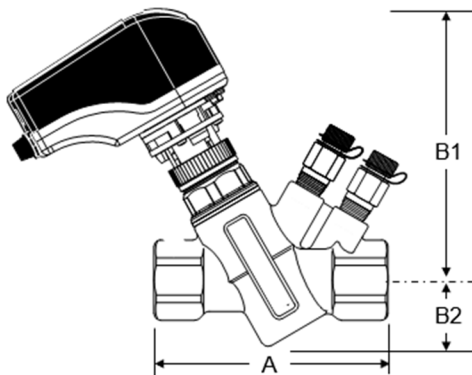
- Supply Voltage:** 24 VAC/VDC 50/60 HZ
- Power Consumption:**
  - Small/Medium Non-Failsafe with AC: 2.5 VA Operating / 4.7 VA Max
  - Small/Medium Non-Failsafe with DC: 1.2 W Operating / 2.2 W Max
  - Small/ Medium Failsafe with AC: 5.8 VA Operating / 6.8VA Max
  - Small/Medium Failsafe with DC: 2.9 W Operating / 3.3 W Max
  - Large Non-Failsafe with AC: 6 VA Operating / 8.5 VA Max
  - Large Non-Failsafe with DC: 2.6 W Operating / 4.1 W Max
  - Large Failsafe with AC: 7.9 VA Operating / 9VA Max
  - Large Failsafe with DC: 3.7 W Operating / 4.5 W Max
- Signal:** 2-10V DC Analog; <0.5mA
- Feedback Position Output:** 2-10V DC
- Operation Time Standard:** Small: 75 seconds; Medium: 115 seconds; Large: 137 seconds (from closed to fully open)
- Operation Time to Failsafe:** Small: 17 seconds; Medium: 26 seconds; Large: 31 seconds
- Housing Insulation:** IP 54 including upside down mounting, class III, indoor use only
- Housing Material:** UL94 V0-rated plastic

**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**

**Thermocouple Type:** K Type  
**Temperature Range:** 32° to 752°F  
**Probe:** Diameter: 0.2" Length: 2" (Included flexible section)  
**Internal Insulation:** Fiberglass  
**External Shielding:** Metal Shield  
**Total Length:** 39"  
**Electrical Connection:** 2 wire connection (connected directly in the EPIC box)



**DIMENSIONS & WEIGHTS (NOMINAL) (measured in inches and lbs unless noted)**

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

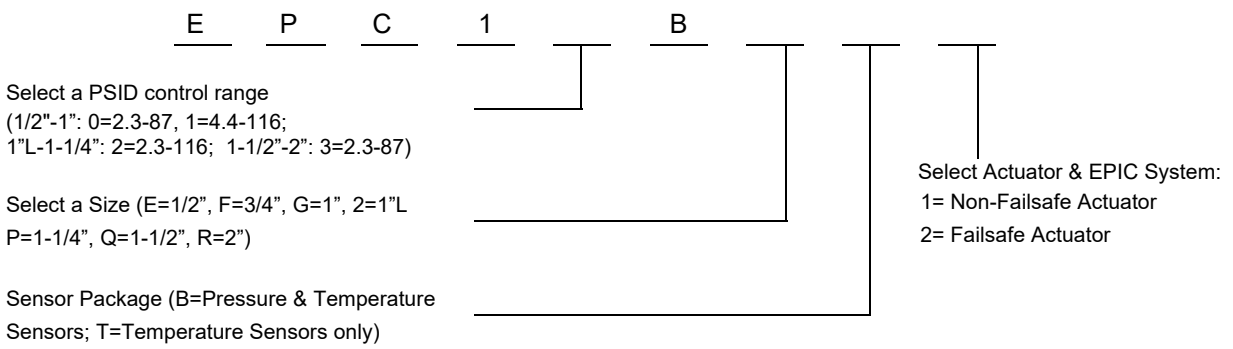
SIZE	MODEL NO.	L1	H1	H2	HOUSING	Cv <sup>1</sup>	WEIGHT (LBS.) <sup>2</sup>
1/2"	EPC1 BE	3.2	1.2	4.9	SMALL AB	3.0	2
3/4"	EPC1 BF	3.4					
1"	EPC1 BG	4.0					
1"L	EPC1 B2	5.0	1.9	5.7	MEDIUM AB	14.5	3
1-1/4"	EPC1 BP						
1-1/2"	EPC1 BQ						
2"	EPC1 BR	7.5	4.0	7.7	LARGE AB	39.6	11

**NOTES**

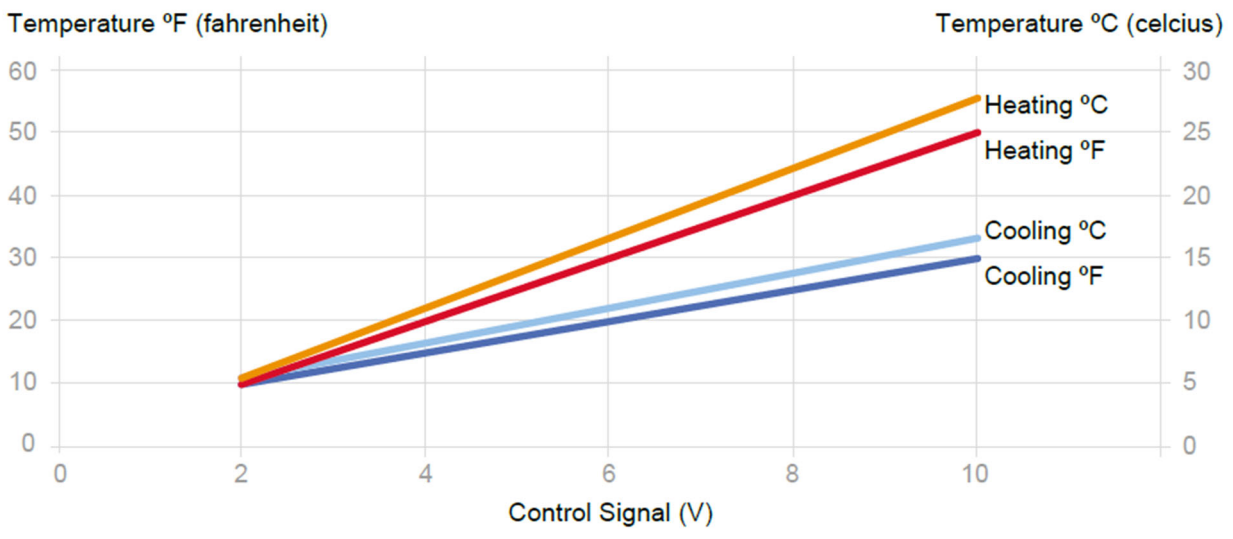
<sup>1</sup> Cvs are based on housing without cartridge. To calculate pressure drop use the formula  $\Delta P = (GPM/CV)^2$  and add the pressure drop to the cartridge PSID range.

<sup>2</sup> Weight Includes PI Valve, non-failsafe actuator, Intelligent Interface and Sensor kit. Add 0.3LBS for failsafe actuator.

**MODEL NUMBER SELECTION**



**CONTROL CURVE VS ΔT**



**FLOW RATES PI VALVE**

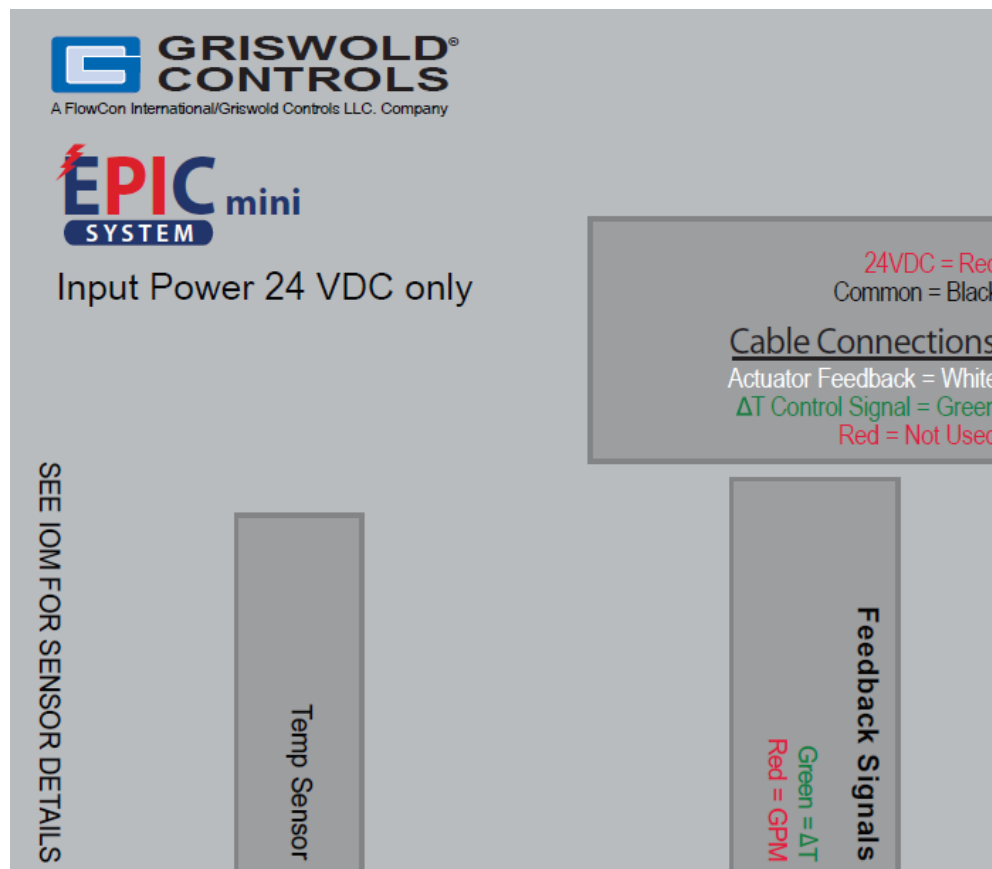
GPM				SETTING <sup>3</sup>
1/2"-1"		1"L-1-1/4"	1-1/2"-2"	
2.3-87 PSID <sup>4</sup>	4.4-116 PSID <sup>4</sup>	2.3-116 PSID <sup>4</sup>	2.3-87 PSID <sup>4</sup>	
-	0.282	3.81	8.36	1.0
0.163	0.624	4.46	10.0	1.1
0.370	0.920	5.10	11.7	1.2
0.510	1.18	5.72	13.3	1.3
0.664	1.41	6.32	15.0	1.4
0.792	1.61	6.90	16.7	1.5
0.902	1.80	7.47	18.3	1.6
1.03	1.96	8.02	20.0	1.7
1.14	2.12	8.56	21.6	1.8
1.24	2.27	9.08	23.2	1.9
1.33	2.42	9.59	24.8	2.0
1.41	2.56	10.1	26.4	2.1
1.49	2.69	10.6	28.0	2.2
1.55	2.82	11.0	29.6	2.3
1.63	2.95	11.5	31.2	2.4
1.68	3.08	11.9	32.7	2.5
1.73	3.21	12.4	34.2	2.6
1.79	3.33	12.8	35.7	2.7
1.82	3.45	13.2	37.2	2.8
1.88	3.56	13.6	38.6	2.9
1.93	3.68	14.0	40.0	3.0
1.98	3.79	14.4	41.4	3.1
2.02	3.89	14.7	42.8	3.2
2.06	3.99	15.1	44.1	3.3
2.10	4.08	15.5	45.4	3.4
2.14	4.17	15.8	46.6	3.5
2.17	4.25	16.1	47.8	3.6
2.21	4.32	16.5	49.0	3.7
2.25	4.39	16.8	50.2	3.8
2.28	4.46	17.1	51.3	3.9
2.31	4.51	17.4	52.3	4.0
2.34	4.57	17.7	53.3	4.1
2.37	4.61	18.1	54.3	4.2
2.39	4.66	18.4	55.2	4.3
2.42	4.70	18.7	56.0	4.4
2.43	4.73	19.0	56.8	4.5
2.46	4.77	19.2	57.6	4.6
2.48	4.80	19.5	58.3	4.7
2.50	4.83	19.8	58.9	4.8
2.51	4.86	20.1	59.5	4.9
2.53	4.89	20.4	60.0	5.0

**NOTES**

<sup>3</sup> Valve is set to maximum setting at factory. Please set maximum flow to at least 50% of valve capacity for optimum control.

<sup>4</sup> Valve must be within PSID range to control flow and provide accurate BTU values.

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** – Pinnacle (white wire) connects to the BMS

**WRITTEN SPECIFICATIONS**

1. PRESSURE INDEPENDENT AND TEMPERATURE INDEPENDENT SYSTEM
  - 1.1. Contractor shall install where indicated in drawings.
  - 1.2. System shall include a pressure independent modulating dynamic control valve, a sensor kit and an electronic unit.
    - 1.2.1. The valve shall accurately control flow independent of system pressure fluctuations.
    - 1.2.2. The sensor kit shall include 2 temperature sensors and 2 optional pressure sensors. Temperature sensors shall measure the  $\Delta T$  across the coil and pressure sensors shall measure the  $\Delta P$  across the PICV.
    - 1.2.3. The intelligent interface shall accurately modulate PICV flow to maintain target  $\Delta T$ . In addition, the intelligent interface shall calculate BTU heat transfer and supply continuous information on  $\Delta T$ ,  $\Delta P$  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 while valve is in line and operating.
  - 2.3. Flow regulation unit shall be manufactured of stainless steel and hydrogenated acrylonitrile-butadiene rubber and shall be capable of controlling flow within  $\pm 10\%$  of controlled flow rate or  $\pm 5\%$  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 forged brass rated at no less than 360psi 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 on all valve sizes.
  - 2.6. VALVE ACTUATOR
    - 2.6.1. Valve actuator housing shall be rated to IP54 insulation.
    - 2.6.2. Actuator shall use full stroke and provide full authority.
    - 2.6.3. Actuator shall have visible indication of stroke position.
    - 2.6.4. Actuator shall be driven by a 24Vdc motor, and shall accept 2-10 VDC signal.
    - 2.6.5. Actuator shall be capable of providing 2-10 Vdc feedback signal to the control system.
    - 2.6.6. 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.
  - 3.2. Intelligent interface shall be rated to IP54 including upside-down mounting.
  - 3.3. Intelligent interface shall be driven by a 24V DC signal.
  - 3.4. Intelligent interface shall be Bluetooth® enabled.
  - 3.5. Intelligent interface shall be capable of communicating via with the control system and wireless feedback signal to handheld devices. Shall communicate with both Android and iPhone devices and display via App.
4. TEMPERATURE SENSOR
  - 4.1. Temperature sensors shall consist of 304 stainless steel.
  - 4.2. Temperature sensors shall be IP65.
  - 4.3. Temperature sensors shall provide a resistive output signal corresponding to water temperature.