CATALOG

air prep

E02/E22/E32 Series

Proportional Regulators

numatics®

www.numatics.com

Introducing the E02/E22/E32 Series

The E02/E22/E32 Series electronic proportional regulators quickly and accurately adjusts output pressure in relation to an electrical control signal. They meet requirements of industrial environments including rapid cycling, quick response, and repeatability, which are found in paint, welding, packaging, textile, medical, and many other process applications.

The electrical control signal can be either analog or digital. The analog unit controls any pressure setting directly proportional to the command signal of 4-20mA, 0-10VDC, or 0-5VDC. The optional digital unit uses a 2 bit binary signal to control four user defined pressures eliminating the need for an analog I/O card.

E02 Series Features:

- Available in 1/8 NPT, BSPP or BSPT threads
- Dead-head or pilot applications
- Manifoldable or stand-alone units
- Three outlet port options
- Three setable performance modes in a single unit
- Compact design with large LED display
- Locking feature prevents unwanted changes
- Designed to meet IP65 and NEMA 4 requirements

E22 Series Features:

- Available in 1/4, 3/8, and 1/2 NPT, BSPP or BSPT threads
- Capable of flow up to 100 SCFM
- Modular 22 Series Flexiblok design
- Fully ported 1/2 exhaust for optimal performance
- Three setable performance modes in a single unit
- Large digital display for easy reading
- Locking feature prevents unwanted changes
- Designed to meet IP65 and NEMA 4 requirements

E32 Series Features:

- Available in 1/2 and 3/4 NPT, BSPP or BSPT threads
- Capable of flow up to 250 SCFM
- Modular 32 Series Flexiblok design
- 1/2 exhaust for optimal performance
- Three setable performance modes in a single unit
- Large digital display for easy reading
- Locking feature prevents unwanted changes
- Designed to meet IP65 and NEMA 4 requirements

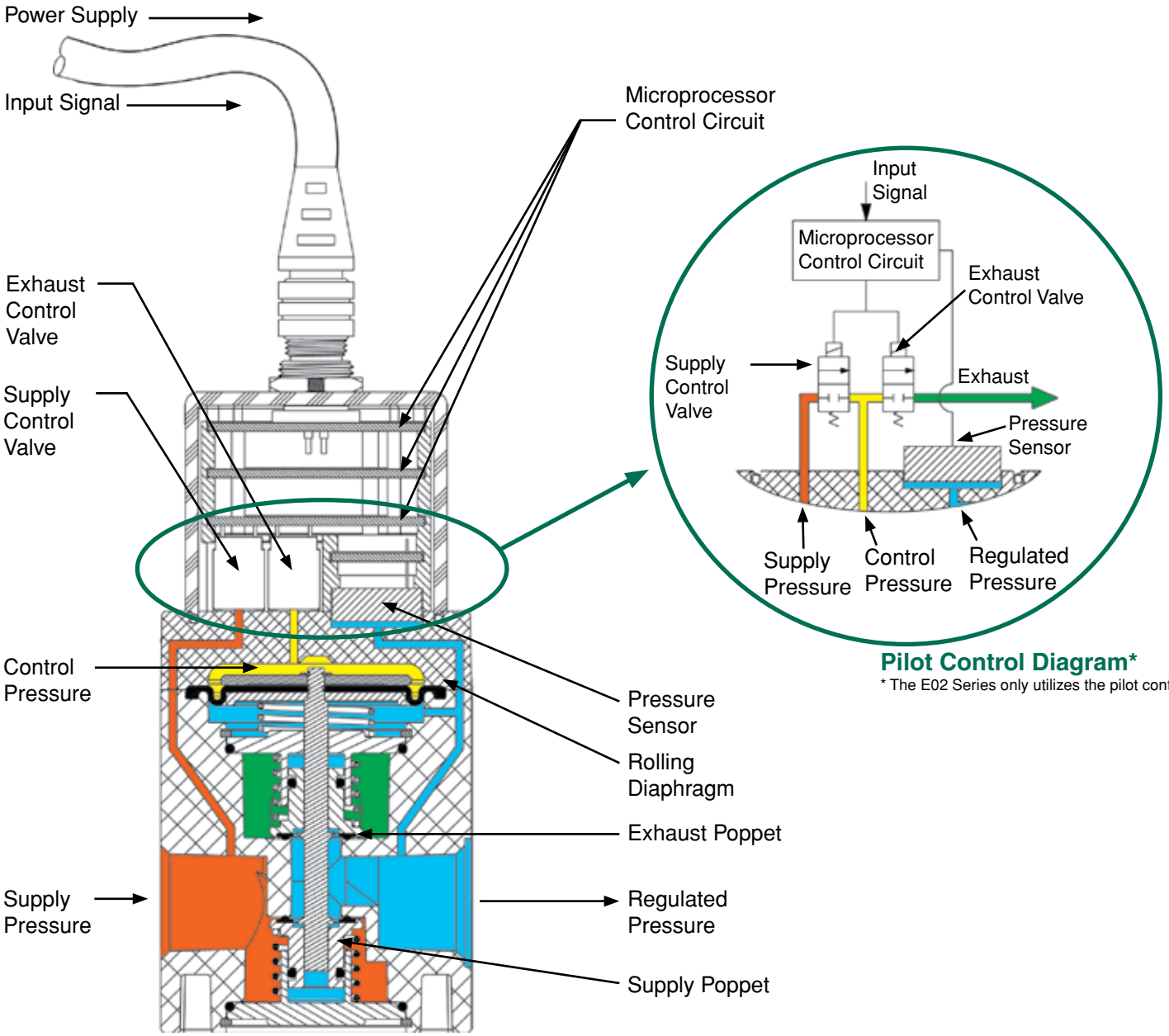
How the Proportional Regulators Work

1. Microprocessor control circuit compares input signal to pressure sensor signal, which monitors the downstream regulated pressure. Microprocessor control circuit analyzes this data and energizes the appropriate control valve (supply or exhaust control valve).

2. If the regulated pressure is too low, the microprocessor control circuit energizes the supply control valve, which allows supply pressure to increase the control pressure moving the rolling diaphragm downward opening the supply poppet allowing supply pressure downstream increasing regulated pressure.

3. If the regulated pressure is too high the microprocessor control circuit energizes the exhaust control valve, which allows the control pressure to vent to atmosphere, moving the rolling diaphragm upward opening the exhaust poppet and allowing downstream regulated pressure to decrease by exhausting to atmosphere.

4. If the regulated pressure matches the commanded pressure the microprocessor control circuit leaves the supply and exhaust control valves de-energized keeping the control pressure constant.

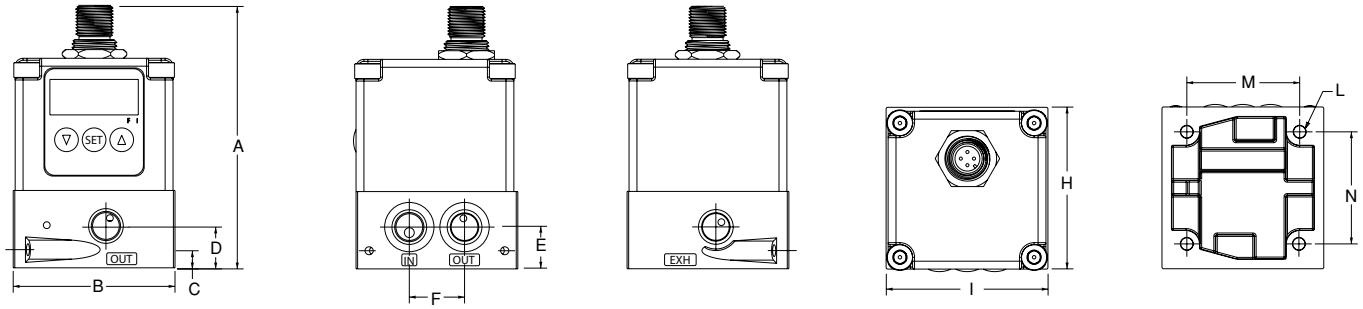


Pilot Control Diagram*

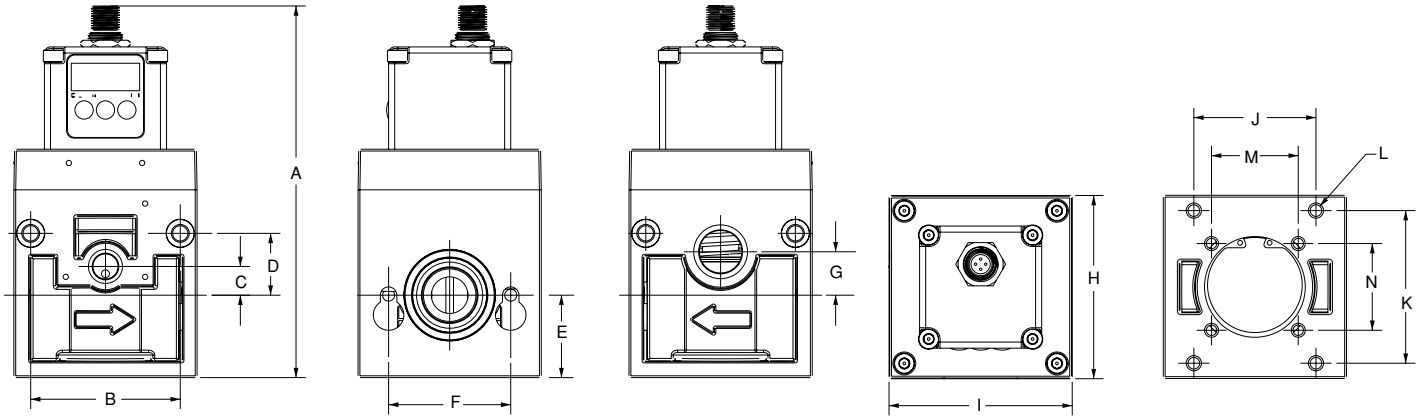
* The E02 Series only utilizes the pilot control.

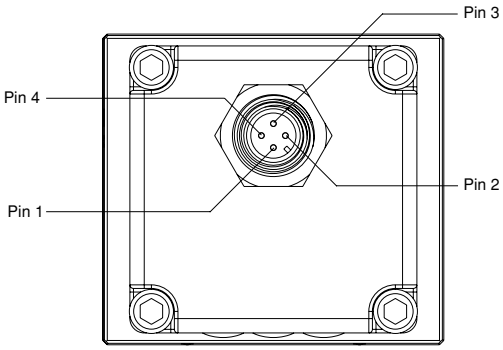
Dimensional Drawings

E02 Series



E22 and E32 Series



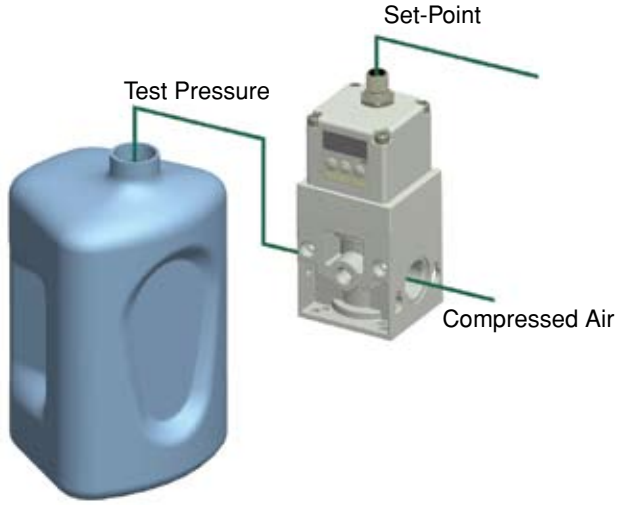


Pin Configuration	Command Signal	
	Analog	Digital
Pin 1	+24VDC	
Pin 2	Command Signal	Input Signal 1
Pin 3	+0VDC common	
Pin 4	Monitor Output	Input Signal 2

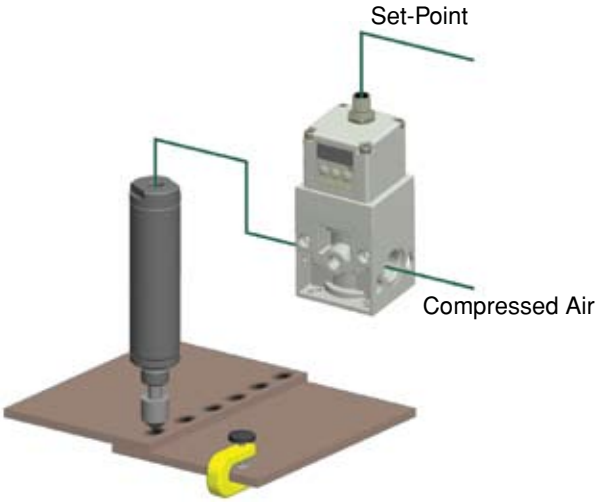
Dimensions	A	B	C	D	E	F	G	H	I	J	K	L	M	N
E02	3.33 (85)	2.05 (52)	0.23 (6)	0.53 (13)	0.53 (13)	0.70 (18)	NA	2.05 (52)	2.05 (52)	NA	NA	0.80 (20)	1.42 (36)	1.42 (36)
E22	5.57 (141)	1.83 (46)	0.29 (7)	.70 (18)	1.00 (25)	1.58 (40)	0.70 (18)	2.17 (55)	2.38 (60)	1.70 (43)	1.80 (46)	0.19 (5)	1.42 (36)	1.42 (36)
E32	6.09 (155)	2.45 (62)	0.47 (12)	1.01 (26)	1.35 (34)	2.00 (51)	0.71 (18)	3.00 (76)	3.00 (76)	2.00 (51)	2.50 (64)	0.19 (5)	1.42 (36)	1.42 (36)

Applications

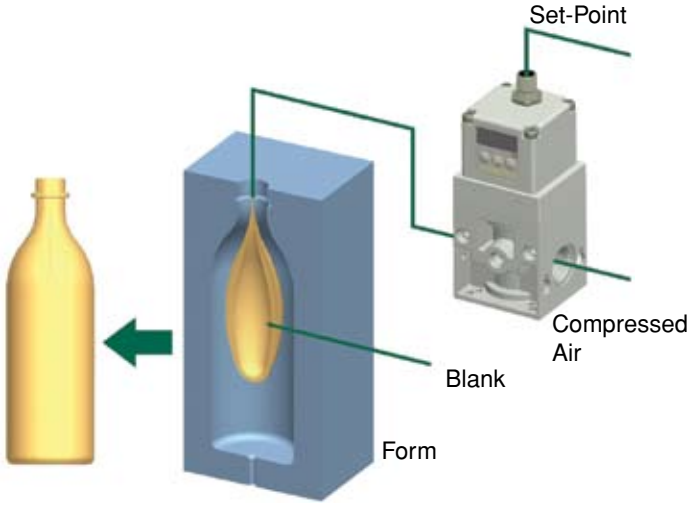
Leak Test



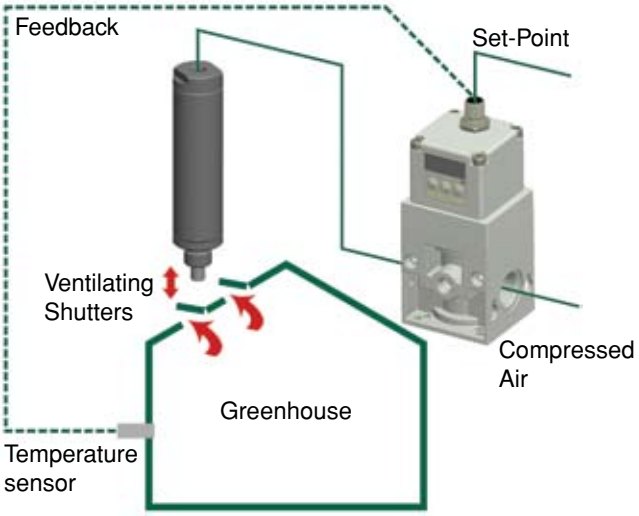
Spot Welding



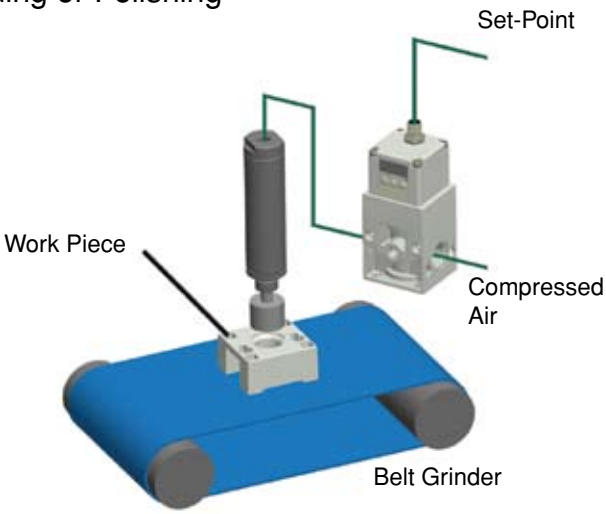
Bottle Molding



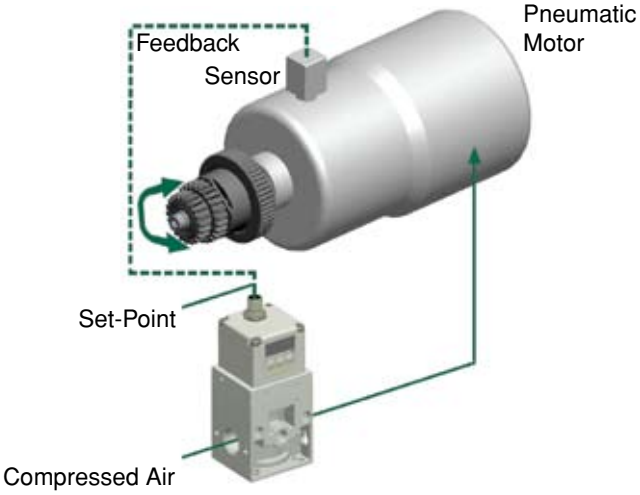
Temperature Control



Grinding or Polishing



Torque Control



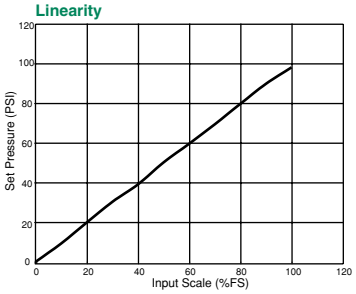
Specifications

Specifications		E02	E22	E32
Minimum Supply Pressure		Set Pressure + 15 PSI (1 BAR)	Set Pressure + 15 PSI (1 BAR)	Set Pressure + 15 PSI (1 BAR)
Maximum Supply Pressure		Standard Pressure: 150 PSI (10 BAR) High Pressure: 190 PSI (13 BAR)	Standard Pressure: 150 PSI (10 BAR) High Pressure: 190 PSI (13 BAR)	Standard Pressure: 150 PSI (10 BAR) High Pressure: 190 PSI (13 BAR)
Regulating Pressure Ranges		Standard Pressure: 0-100 PSI (0-6.9 BAR) High Pressure: 0-150 PSI (0-10.2 BAR)	Standard Pressure: 0-100 PSI (0-6.9 BAR) High Pressure: 0-150 PSI (0-10.2 BAR)	Standard Pressure: 0-100 PSI (0-6.9 BAR) High Pressure: 0-150 PSI (0-10.2 BAR)
Power Supply	Voltage	24VDC ±10%	24VDC ±10%	24VDC ±10%
	Current Consumption	0.04 A	0.04 A	0.04 A
Input Signal	Current	4-20mA	4-20mA	4-20mA
	Voltage	0-5VDC, 0-10VDC	0-5VDC, 0-10VDC	0-5VDC, 0-10VDC
Input Impedance	0-5 VDC	10 KΩ	10 KΩ	10 KΩ
	0-10 VDC	20 KΩ	20 KΩ	20 KΩ
	4-20 mA	100 Ω	100 Ω	100 Ω
Output Signal	Analog Output	0-5VDC 0-10VDC 4-20mA	0-5VDC 0-10VDC 4-20mA	0-5VDC 0-10VDC 4-20mA
	Switch Output	24VDC (PNP or NPN)	24VDC (PNP or NPN)	24VDC (PNP or NPN)
Linearity		≤ ±1% of span	≤ ±1% of span	≤ ±1% of span
Hysteresis		≤ ±.5% of span	≤ ±.5% of span	≤ ±.5% of span
Repeatability		≤ ±.5% of span	≤ ±.5% of span	≤ ±.5% of span
Sensitivity		≤ ±.2% of span	≤ ±.2% of span	≤ ±.2% of span
Temp Characteristics		±.5% of span /°C	±.5% of span /°C	±.5% of span /°C
Output Display	Accuracy	±.5% of span	±.5% of span	±.5% of span
	Minimum unit	PSI 0.1, BAR 0.01, kPa 001., kgf/cm² 0.01	PSI 0.1, BAR 0.01, kPa 001., kgf/cm² 0.01	PSI 0.1, BAR 0.01, kPa 001., kgf/cm² 0.01
Temperature Range		40-120°F 4-50°C	40-120°F 4-50°C	40-120°F 4-50°C
Enclosure		IP65 and NEMA 4 Equivalent	IP65 and NEMA 4 Equivalent	IP65 and NEMA 4 Equivalent
Weight		0.68 lbs (0.31kg)	1.4 lbs (0.64kg)	2.34 lbs (1.06kg)

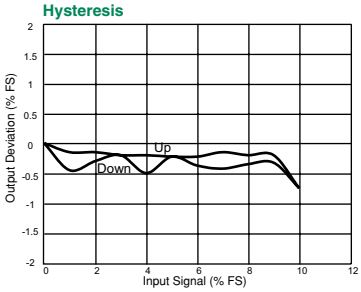
Performance Graphs

E02 Series

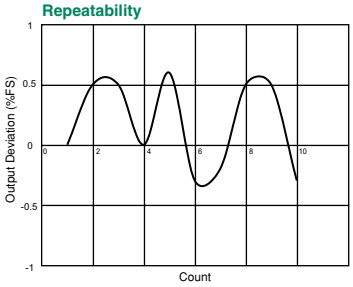
Linearity



Hysteresis

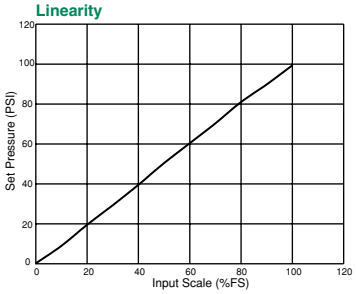


Repeatability

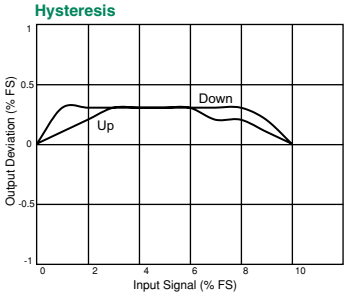


E22 Series

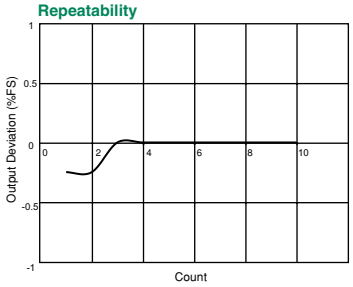
Linearity



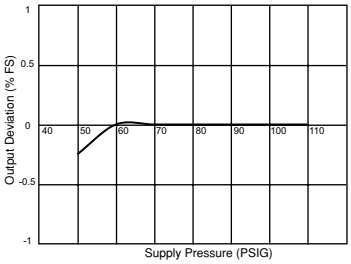
Hysteresis



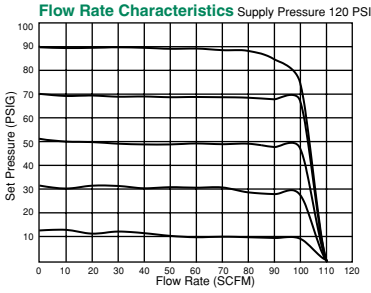
Repeatability



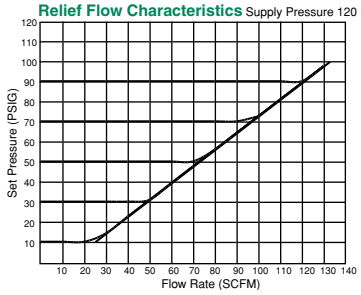
Pressure Characteristics Set Pressure 40 PSIG



Flow Rate Characteristics Supply Pressure 120 PSIG

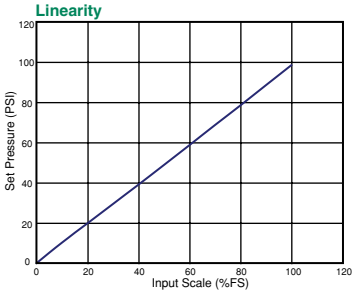


Relief Flow Characteristics Supply Pressure 120 PSIG

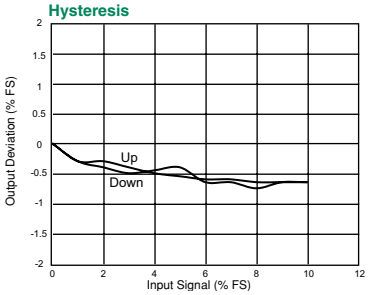


E32 Series

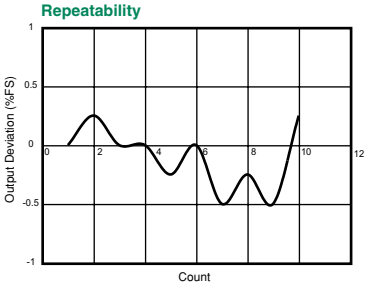
Linearity



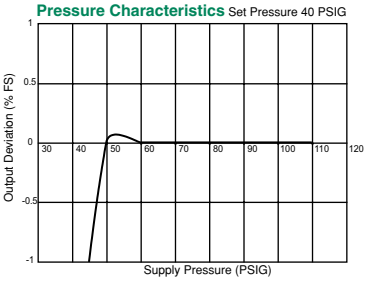
Hysteresis



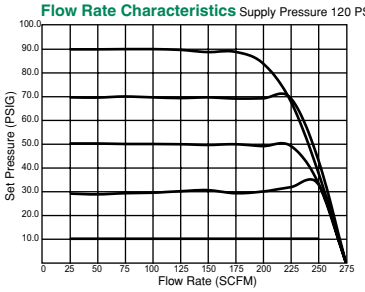
Repeatability



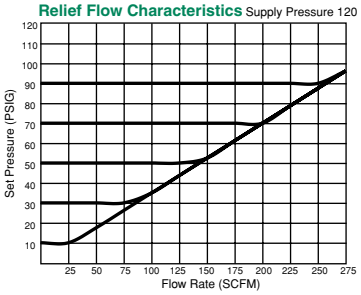
Pressure Characteristics Set Pressure 40 PSIG



Flow Rate Characteristics Supply Pressure 120 PSIG



Relief Flow Characteristics Supply Pressure 120 PSIG



How to Order

E 22 3 - 04 3 H

Series
- 02 = 02 Series
- 22 = 22 Series
- 32 = 32 Series

Input Signal
- 1 = 4 - 20mA
- 2 = 0 - 5VDC
- 3 = 0 - 10VDC
- 9 = 2 bit, 4 pressure select (PNP sourcing)
- 0 = 2 bit, 4 pressure select (NPN sinking)

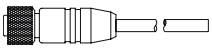
Thread Types
- - = NPTF
- G = GTAP (BSPP)
- R = PT (BSPT)

Port Tap Size
- 01 = 1/8 (E02 Series Only)
- 02 = 1/4 (E22 Series Only)
- 03 = 3/8 (E22 Series Only)
- 04 = 1/2 (E22 & E32 Series Only)
- 06 = 3/4 (E32 Series Only)

Feedback Signal
- 1 = 4 - 20mA
- 2 = 0 - 5VDC
- 3 = 0 - 10VDC
- 8 = 24VDC Switched (PNP)
- 9 = 24VDC Switched (NPN)
- 0 = use with 2 bit, 4 pressure select (type 9 or 0 input signal)

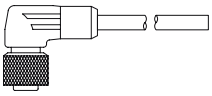
Options
- H = 0 - 150 PSI (10 BAR) regulating pressure range (For 0-100 PSI standard unit no suffix necessary)

Accessories



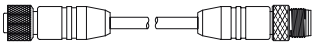
Micro Female 4 Pole Straight 22 AWG Euro Color Code

Unshielded	Shielded
2 Meter - TC0403MIE0000000	3 Meter - TC0403MME0000000
5 Meter - TC0405MIE0000000	5 Meter - TC0405MME0000000



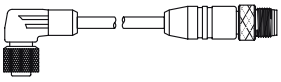
Micro Female 4 Pole 90 Degree 22 AWG Euro Color Code

Unshielded	Shielded
2 Meter - TD0403MIE0000000	3 Meter - TD0403MME0000000
5 Meter - TD0405MIE0000000	5 Meter - TD0405MME0000000



Micro F/M 4 Pole Straight 22 AWG Euro Color Code

Unshielded	Shielded
2 Meter - TC0403MIETA04000	3 Meter - TC0403MMETA04000
5 Meter - TC0405MIETA04000	5 Meter - TC0405MMETA04000

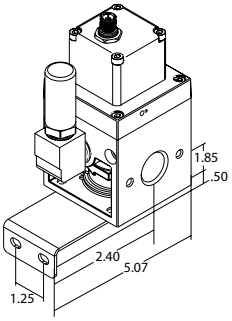


Micro F 90°/M Straight 22 AWG Euro Color Code

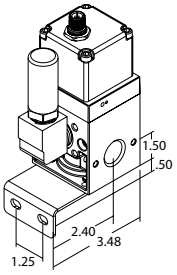
Unshielded	Shielded
2 Meter - TD0403MIETA04000	3 Meter - TD0403MMETA04000
5 Meter - TD0405MIETA04000	5 Meter - TD0405MMETA04000

Bracket/Muffler Kits

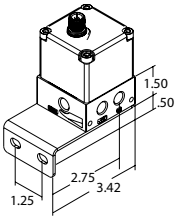
Model Number	Description
BRK-KIT-L	Includes (1) E32-10 Bracket, (4) E32-11 Screws, (1) M4MN Muffler, (1) E22-29 Elbow
BRK-KIT	Includes (1) E02-10 Bracket, (4) E32-11 Screws, (1) M4MN Muffler, (1) E22-29 Elbow
BRK-KIT-WOEM	Includes (1) E02-10 Bracket, (4) E32-11 Screws
BRK-KIT-LWOE	Includes (1) E32-10 Bracket, (4) E32-11 Screws, (1) M4MN Muffler



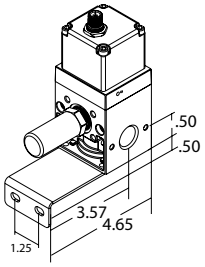
BRK-KIT-L



BRK-KIT

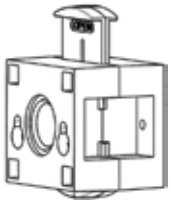


BRK-KIT-WOEM



BRK-KIT-LWOE

Accessories Continued

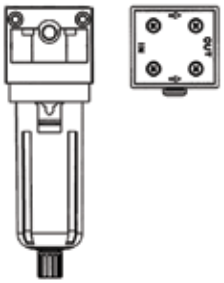


Shut Off

Threads	NPTF	BSPP (G Thread)	BSPT (R Thread)
1/4	VS22-02	VS22G02	VS22R02
3/8	VS22-03	VS22G03	VS22R03
1/2	VS22-04	VS22G04	VS22R04
1/2	VS32-04	VS32G04	VS32R04
3/4	VS32-06	VS32G06	VS32R06

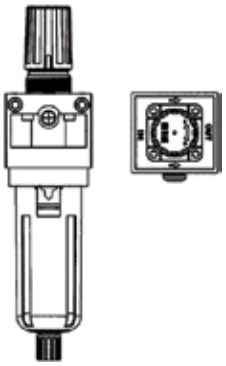
Diverter Block

Threads	NPTF	BSPP (G Thread)	BSPT (R Thread)
3/8	DK22-03	DK22G03	DK22R03
1/2	DK32-04	DK32G04	DK32R04



22 and 32 Series Particulate Filter

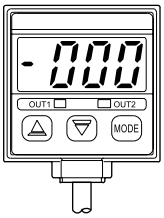
Bowl	Polycarbonate Bowl	CircleVision Bowl™	Metal Bowl
1/4 NPTF	F22B-02	F22B-02C	F22B-02M
1/4 BSPP (GThread)	F22BG02	F22BG02C	F22BG02M
1/4 BSPT (RThread)	F22BR02	F22BR02C	F22BR02M
3/8 NPTF	F22B-03	F22B-03C	F22B-03M
3/8 BSPP (GThread)	F22BG03	F22BG03C	F22BG03M
3/8 BSPT (RThread)	F22BR03	F22BR03C	F22BR03M
1/2 NPTF	F22B-04	F22B-04C	F22B-04M
1/2 NPTF	F32B-04	F32B-04C	F32B-04M
1/2 BSPP (GThread)	F22BG04	F22BG04C	F22BG04M
1/2 BSPP (GThread)	F32BG04	F32BG04C	F32BG04M
1/2 BSPT (RThread)	F22BR04	F22BR04C	F22BR04M
1/2 BSPT (RThread)	F32BR04	F32BR04C	F32BR04M
3/4 NPTF	F32B-06	F32B-06C	F32B-04M
3/4 BSPP (G Thread)	F32BG06	F32BG06C	F32BG06M
3/4 BSPT (R Thread)	F32BR06	F32BR06C	F32BR04M



22 and 32 Series Particulate Filter/Regulator

Bowl	Polycarbonate Bowl	CircleVision™ Bowl	Metal Bowl
1/4 NPTF	P22B-02	P22B-02C	P22B-02M
1/4 BSPP (GThread	P22BG02	P22BG02C	P22BG02M
1/4 BSPT (RThread)	P22BR02	P22BR02C	P22BR02M
3/8 NPTF	P22B-03	P22B-03C	P22B-03M
3/8 BSPP (GThread)	P22BG03	P22BG03C	P22BG03M
3/8 BSPT (RThread)	P22BR03	P22BR03C	P22BR03M
1/2 NPTF	P22B-04	P22B-04C	P22B-04M
1/2 NPTF	P32B-04	P32B-04C	P32B-04M
1/2 BSPP (GThread)	P22BG04	P22BG04C	P22BG04M
1/2 BSPP (GThread)	P32BG04	P32BG04C	P32BG04M
1/2 BSPT (RThread)	P22BR04	P22BR04C	P22BR04M
1/2 BSPT (RThread)	P32BR04	P32BR04C	P32BR04M
3/4 NPTF	P32B-06	P32B-06C	P32B-06M
3/4 BSPP (G Thread)	P32BG06	P32BG06C	P32BG06M
3/4 BSPT (R Thread)	P32BR06	P32BR06C	P32BR06M

Accessories continued



Digital Pressure Sensor with 2 meter pigtail cable

Pressure Sensor (0-145PSI; 0-1.000MPa)	
Model	Description
DPS-180N	NPN (sinking) 1/8 NPTF Base
DPS-180P	PNP (sourcing) 1/8 NPTF Base
DPSG180N	NPN (sinking) 1/8 BSPP Base
DPSG180P	PNP (sourcing) 1/8 BSPP Base
DPSR180N	NPN (sinking) 1/8 BSPT Base
DPSR180P	PNP (sourcing) 1/8 BSPT Base

Digital Pressure Sensor with 8 inch lead, 8 mm pico connector

Pressure Sensor (0-145PSI; 0-1.000MPa)	
Model	Description
DPS-180N-1	NPN (sinking) 1/8 NPTF Base
DPS-180P-1	PNP (sourcing) 1/8 NPTF Base
DPSG180N-1	NPN (sinking) 1/8 BSPP Base
DPSG180P-1	PNP (sourcing) 1/8 BSPP Base
DPSR180N-1	NPN (sinking) 1/8 BSPT Base
DPSR180P-1	PNP (sourcing) 1/8 BSPT Base

Digital Pressure Sensor with 8 inch lead, 12 mm micro connector

Pressure Sensor (0-145PSI; 0-1.000MPa)	
Model	Description
DPS-180N-2	NPN (sinking) 1/8 NPTF Base
DPS-180P-2	PNP (sourcing) 1/8 NPTF Base
DPSG180N-2	NPN (sinking) 1/8 BSPP Base
DPSG180P-2	PNP (sourcing) 1/8 BSPP Base
DPSR180N-2	NPN (sinking) 1/8 BSPT Base
DPSR180P-2	PNP (sourcing) 1/8 BSPT Base

Female Single Ended Cordset

Model Number	Connector Type	Connector Style	Connector Length
DPS-08-02-ST	M8 Pico	Straight	2 Meters
DPS-08-05-ST	M8 Pico	Straight	5 Meters
DPS-12-02-ST	M12 Micro	Straight	2 Meters
DPS-12-05-ST	M12 Micro	Straight	5 Meters

DeviceNet and Profibus Products

Accurate in that it offers greater than +/-0.10% accuracy of span.
Adaptable in that it has the opportunity for adding, changing, or removing regulators without the need to shutoff the main air supply.
Clean for the reason that with one power cord and one fieldbus connection the system is up and running. Furthermore, piping away of contaminated exhaust becomes easy with the manifold common exhaust option.
Cost Effective because it eliminates the need for multiple fieldbus nodes, power cables, and fittings which in turn cuts labor costs.
User Friendly refers to the MPCR's easy interface with DeviceNet and Profibus fieldbus networks.

Precision Instrumentation Products

1. Precision Regulator
• Standard or High Relief
2. High Flow Precision Regulator
• 880 Series Regulator
• 881 Series Precision High Flow Exhaust Relief Regulator
3. Electropneumatic Transducer
• I/P or E/P Versions
• Magnet Coil Technology
4. Miniature Electropneumatic Transducer
• I/P or E/P Versions
• R84 Series Magnet Coil Technology
• R85 Series Piezo Electric Technology
5. Ratio Relay Volume Booster
• Precision Air Pilot Regulation
• 1:1 or 1:6 Ratios Available
6. Instrument Air Regulator
• Precision Regulator with Integral 5 Micron Filtration
7. Proportional Regulator
• E02/E22/E32 Series
I/P or E/P Versions
Microprocessor Controlled

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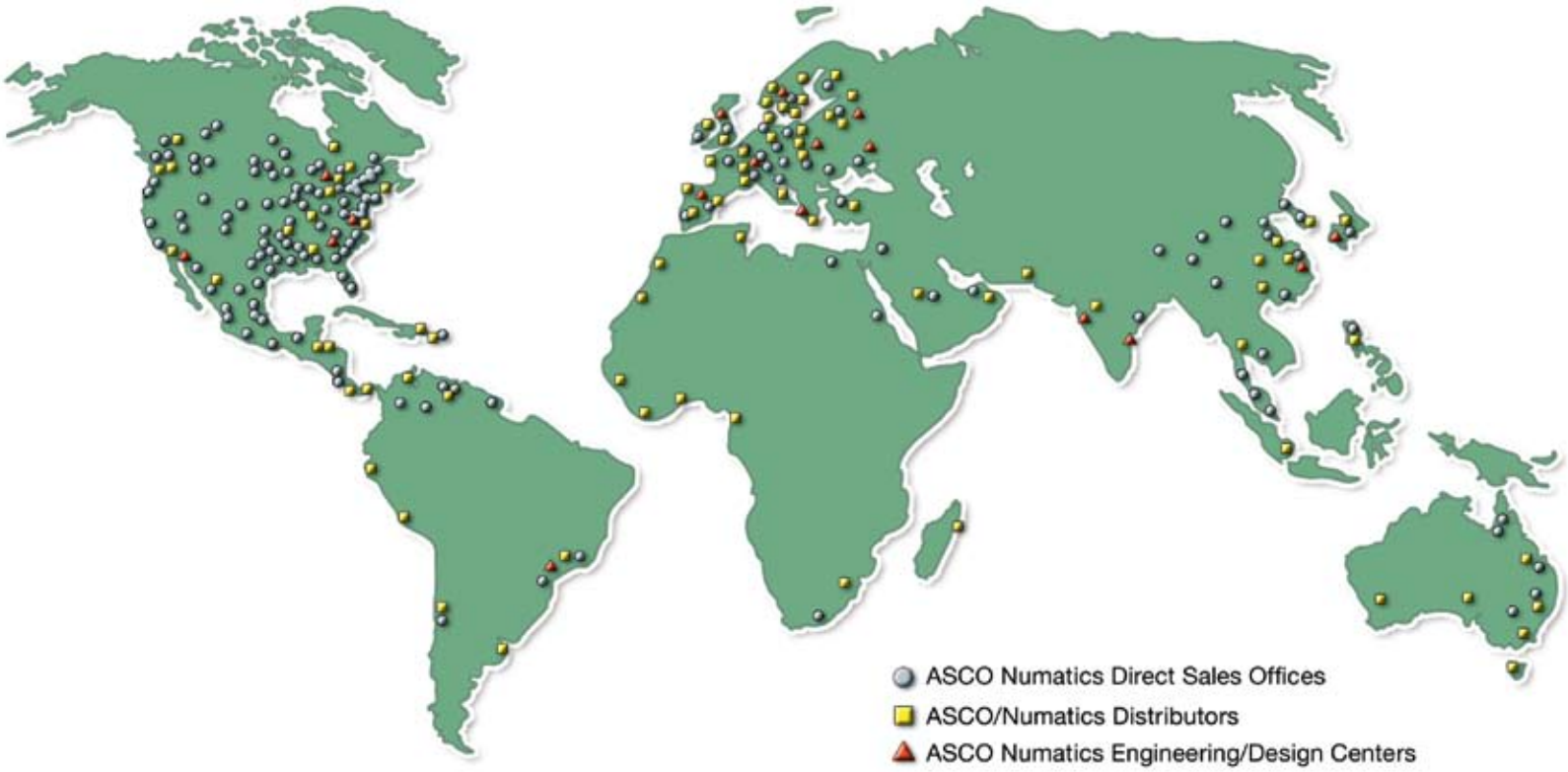

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