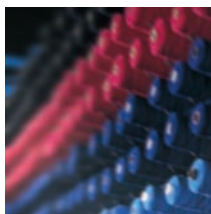


PRESSURE SENSING AND CONTROL



Proportional control is essential when you need the flexibility to control the output pressure of flow in an applications. this can be achieved with simple programming steps combining the proven technologies of Watson Smith and Herion. Norgren offers unrivalled expertise to find the right solutions for you. Choose from our extensive range of Proportional Valves, analog and digital, open or closed loop, flow or pressure control.



PRESSURE SENSING AND CONTROL

Pressure Switches



Solid State Switches



Analog Pressure Sensor



PRESSURE SENSING AND CONTROL

Proportional Pressure Control



Proportional Flow Control



PRESSURE SENSING AND CONTROL

Pressure Regulators Manostat



PSC-22

Additional Valve Products

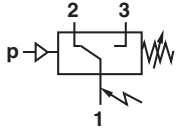


PSC-24

Herion 18D

Pneumatic pressure switches (diaphragm type)

Vac - 435 psi



DIN 43650

- Adjustable setpoint
- Gold-plated contacts
- Vibration resistant to 15 g
- Microswitch approved by UL and CSA

Technical data

- Medium
- Neutral, gaseous and liquid fluids
- Operation
- Diaphragm
- Mounting position
- Optional
- Operating pressure
- Vac to 435 psi
- Over pressure
- 1150 psi
- Ambient temperature
- 14°F to 175°F (-10°C to + 80°C)
- Viscosity
- Up to 1000 mm²/s (±450 ssu).
- Fluid temperature
- 14°F to 175°F (-10°C to +80°C)
- Repeatability
- ±3%, for vacuum ±4%
- Electrical connection
- DIN 43 650
- Switching element
- Microswitch
- Degree of protection
- IP 65
- Weight
- .4 lbs (0.2 kg)
- Materials
- Housing: aluminum
- Seals: Perbunan, Viton
- 'O'-ring: NBR



Model numbers - pneumatic/lubrication applications

Port size	Type	Pressure range psi (bar)	Switching pressure difference psi* (bar)		Model	Dimension Drawing No.
			lower range	upper range		
1/4 NPT	Female	-14 - 0 (-1 - 0)	2 (0.15)	3 (0.18)	0880120	1
-	Flange	-14 - 0 (-1 - 0)	2 (0.15)	3 (0.18)	0881100	3
1/4 NPT	Female	3 - 30 (0.2 - 2)	2 (0.15)	4 (0.27)	0880220	1
-	Flange	3 - 30 (0.2 - 2)	2 (0.15)	4 (0.27)	0881200	3
1/4 NPT	Female	7 - 120 (0.5 - 8)	4 (0.2)	9 (0.65)	0880320	2
-	Flange	7 - 120 (0.5 - 8)	4 (0.2)	9 (0.65)	0881300	3
1/4 NPT	Female	15 - 230 (1 - 16)	4 (0.2)	13 (0.90)	0880420	2
-	Flange	15 - 230 (1 - 16)	4 (0.2)	13 (0.90)	0881400	3
1/4 NPT	Female	15 - 435 (1 - 30)	15 (1.0)	75 (5.0)	0880620	2

Note: Switches are supplied with DIN 43650 mating connector.

* Switching pressure difference (hysteresis) is not adjustable. Typical valves are shown.

Caution: Observe switching range. Do not subject switch to maximum allowable pressure during normal operation. Even short pressure peaks must not exceed this value.

Herion 18D

Pneumatic pressure switches

Vac - 435 psi

Making And/Or Breaking Capacity

Load Level*	Type of Current	Type of Load	Vmin [V]	Maximum Permanent Current I _{max} [A] at V			Contact life	
				24 V	125 V	250 V	electrical at I _{max}	mechanical at I = 0
Standard (relays, solenoids)	AC	Resistive	12	5	5	5	5 x 10 ⁴ switching cycles	approx 10 ⁷ switching cycles
	AC	Inductive PF = .7	12	3	3	3		
	DC	Resistive	12	5	.4	-		
	DC	Inductive L/R = 10 ms	12	3	.05	-		
Low (electronic circuits)	AC	Resistive	5	.34	.08	.04	2 x 10 ⁵ switching cycles	approx 10 ⁷ switching cycles
	DC	Inductive L/R = 10 ms	5	.1	-	-		

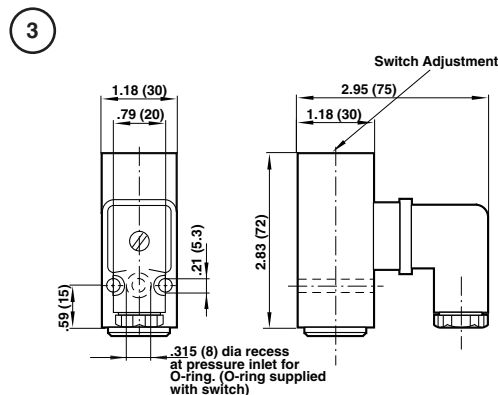
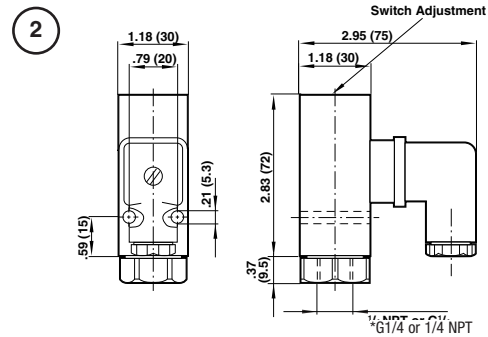
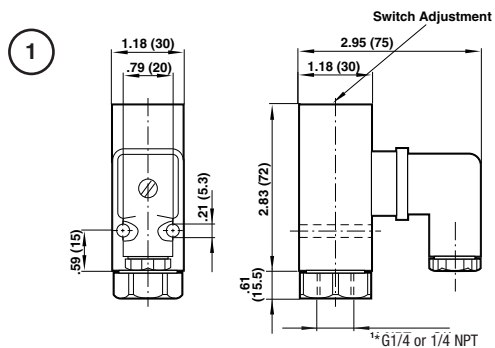
*Load Level Explanation

Series 18D Pressure Switches have microswitch contacts with gold-plating over silver base metal. The gold plating remains intact when "low level" voltage / current levels are observed. This feature assures highly reliable switching in low-level electronic circuits.

Standard applications do not require the gold plating – which will decay naturally when switching larger electrical loads.

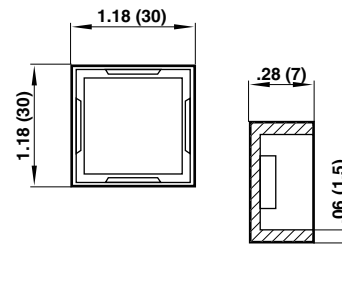
Notes:

- Reference conditions: 30 cycles per min and 86°F (30°C) ambient.
- Reducing load current to 50% of I_{max} approximately doubles contact life.
- Creepage and clearance distances correspond to insulation group B per VDE Reg. 0110 (except contact clearance of microswitch).



Protective Cover

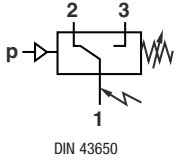
An optional elastomer cover for protection of the switch adjustment against dirt and splashing liquids Part No. 0554737



Herion 18D

Hydraulic pressure switches (piston type)

70 to 6100 psi



- Adjustable setpoint
- Gold-plated contacts
- Vibration resistant to 15 g
- Microswitch approved by UL and CSA

Technical data

Medium
Hydraulics, lubricating and light fuel oils

Operation

Piston

Mounting position

Optional

Operating pressure

70 to 6100 psi

Over pressure

5800 psi,

08824xx: 8700 psi

Ambient temperature

-4°F to 175°F (-20°C to +80°C)

Viscosity

Up to 1000 mm²/s (±450 ssu).

Fluid temperature

-4°F to 175°F (-20°C to +80°C)

Repeatability

±3%

Electrical connection

DIN 43 650

Switching element

Microswitch

Degree of protection

IP 65

Weight

.2 lbs (0.2 kg)

Materials

Housing aluminum

Port: stainless steel

Seals: Teflon/Buna-N



Model numbers - hydraulic applications

Port Size	Type	Pressure Range psi (bar)	Switching Pressure Difference (Hysteresis)* psi (bar)		Model	Dimension Drawing No.
			Lower Range	Upper Range		
-	flange	70 – 1015 (5 – 70)	152 (10.5)	218 (15)	0883100	2
7/16-20 UNF	female	70 – 1015 (5 – 70)	152 (10.5)	218 (15)	0882119	1
1/4 NPT	female	70 – 1015 (5 – 70)	152 (10.5)	218 (15)	0882120	1
-	flange	150 – 2320 (10 – 160)	160 (11)	247 (17)	0883200	2
7/16-20 UNF	female	150 – 2320 (10 – 160)	160 (11)	247 (17)	0882219	1
1/4 NPT	female	150 – 2320 (10 – 160)	160 (11)	247 (17)	0882220	1
-	flange	360 – 3600 (25 – 250)	160 (11)	247 (17)	0883300	2
7/16-20 UNF	female	360 – 3600 (25 – 250)	160 (11)	247 (17)	0882319	1
1/4 NPT	female	360 – 3600 (25 – 250)	160 (11)	247 (17)	0882320	1
-	flange	580 – 6100 (40 – 420)	247 (17)	508 (35)	0883400	2
7/16-20 UNF	female	580 – 6100 (40 – 420)	247 (17)	508 (35)	0882419	1
1/4 NPT	female	580 – 6100 (40 – 420)	247 (17)	508 (35)	0882420	1

Note: Switches are supplied with DIN 43650 mating connector

* Switching pressure difference (hysteresis) is not adjustable. Maximum values are shown.

Herion 18D

Hydraulic pressure switches

Vac - 435 psi

Making And/Or Breaking Capacity

Load Level*	Type of Current	Type of Load	Vmin [V]	Maximum Permanent Current I _{max} [A] at V			Contact life	
				24 V	125 V	250 V	electrical at I _{max}	mechanical at I = 0
Standard (relays, solenoids)	AC	Resistive	12	5	5	5	5 x 10 ⁴	approx 10 ⁷
	AC	Inductive PF = .7	12	3	3	3	switching cycles	switching cycles
	DC	Resistive	12	5	.4	-		
	DC	Inductive L/R = 10 ms	12	3	.05	-		
Low (electronic circuits)	AC	Resistive	5	.34	.08	.04	2 x 10 ⁵	approx 10 ⁷
	DC	Inductive L/R = 10 ms	5	.1	-	-	switching cycles	switching cycles

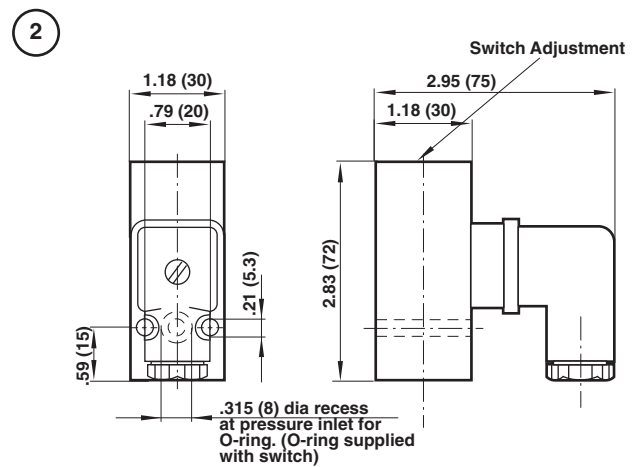
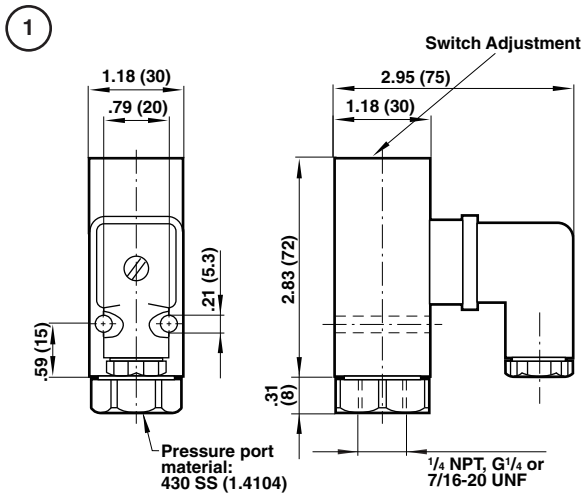
*Load Level Explanation

Series 18D Pressure Switches have microswitch contacts with gold-plating over silver base metal. The gold plating remains intact when "low level" voltage / current levels are observed. This feature assures highly reliable switching in low-level electronic circuits.

Standard applications do not require the gold plating – which will decay naturally when switching larger electrical loads.

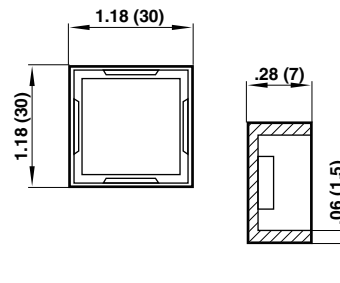
Notes:

- Reference conditions: 30 cycles per min and 86°F (30°C) ambient.
- Reducing load current to 50% of I max approximately doubles contact life.
- Creepage and clearance distances correspond to insulation group B per VDE Reg. 0110 (except contact clearance of microswitch).



Protective Cover

An optional elastomer cover for protection of the switch adjustment against dirt and splashing liquids Part No. 0554737



Herion 33D Series

Solid state switches (pneumatic / all-fluid)

Vac to 9100 psi

Real time pressure display with backlight

Compact and robust design

Easy programming of set points and additional functions

Transistor output signals 1 x PNP, 2 x PNP, or 1 x PNP + 4 to 20 mA

Electronic lock

Switching status indicated by LED

Standard M12x1 electrical connection (IP 65)

For pneumatic, all fluid and hydraulic applications

Technical data

Medium

Pneumatic types: compressed air or neutral gases

All fluid types: gasses or liquids, including aggressive

Display

LCD 4 digits illuminated, pressure unit programmable for bar, psi, mpa

Mounting position

Optional

Operating pressure

Vac to 230 psi (pneumatic)

0 to 9100 psi (hydraulic/allfluid)

Temperature sensitivity (zero point)

0.4% of final value/10 K

Temperature sensitivity (range)

0.4% FS/10 K

Ambient temperature

14°F to 140°F (-10°C to 60°C)

Fluid temperature

14°F to 75°F (-10°C to 80°C)

Switching point

Adjustable between 0 and 100% FS

Reset point

Adjustable between 0 and 100% FS

Electrical connection

M12 x 1

Linearity

< 0.2% FS ±1 digit

Degree of protection to DIN 40 050

IP 65 (with mounted plug)

Materials

Housing: aluminum

Pneumatic version

Seal : viton O-ring (FKM)

Sensor: silicon

Hydraulic/All fluid version

Porting block / sensor: 316 SS welded



Model number - standard pneumatic models*

Port size	Measuring range (psi) (relative pressure)	Maximum overpressure (psi)	Output signal	Model
1/4 NPT	Vac-15	145	1 x PNP	0863014
Flange	Vac-15	145	1 x PNP	0863016
1/4 NPT	Vac-15	145	2 x PNP	0863024
Flange	Vac-15	145	2 x PNP	0863026
1/4 NPT	Vac-15	145	1 x PNP / 4-20 mA	0863044
Flange	Vac-15	145	1 x PNP / 4-20 mA	0863046
1/4 NPT	0 - 230	435	1 x PNP	0863214
Flange	0 - 230	435	1 x PNP	0863216
1/4 NPT	0 - 230	435	2 x PNP	0863224
Flange	0 - 230	435	2 x PNP	0863226
1/4 NPT	0 - 230	435	1 x PNP / 4-20 mA	0863244
Flange	0 - 230	435	1 x PNP / 4-20 mA	0863246

* M12 x 1 connector not included. Please see table on next page.

Options selector

Pressure range (pneumatic)	Substitute	Fluid/electrical connection	Substitute
Vac-15 psi	0	G¼, M12 x 1	2
0 - 230 psi	2	¼ NPT, M12 x 1	4
		Flange, M12 x 1	6
Pressure range (allfluid)	Substitute	Output signal	Substitute
0 - 145 psi	1	1 digital out	1
0 - 580 psi	3	2 digital out	2
0 - 1450 psi	4	1 digital out/4 - 20 mA**	4
0 - 2300 psi	5		
0 - 3600 psi	6		
0 - 5800 psi	7		
0 - 9100 psi	8		

** 4-20 mA option not available on flange mounted versions.

Herion 33D Series

Solid state pressure switches (pneumatic / all-fluid)

Vacuum to 9100 psi

Electrical parameters

Electrical connection	M12 x 1
Power supply	10 – 32 V d.c. (polarity safe) digital models 15 – 32 V d.c. (polarity safe) analog models
Permissible residual ripple	10% (within 12 to 32 V)
Current consumption	<50 mA (plus load current)

Electromagnetic compatibility

Interference emission	Conforming to EN 50081. Part 1
Interference immunity	Conforming to EN 50082. Part 2

Electrical connection M12 x 1

Pin	Signal	Cable
1	Supply voltage	Brown
2	Out 2 (PNP) / analog 4 – 20 mA	White
3	Common	Blue
4	Out 1 (PNP)	Black
5	Earth ground	Grey

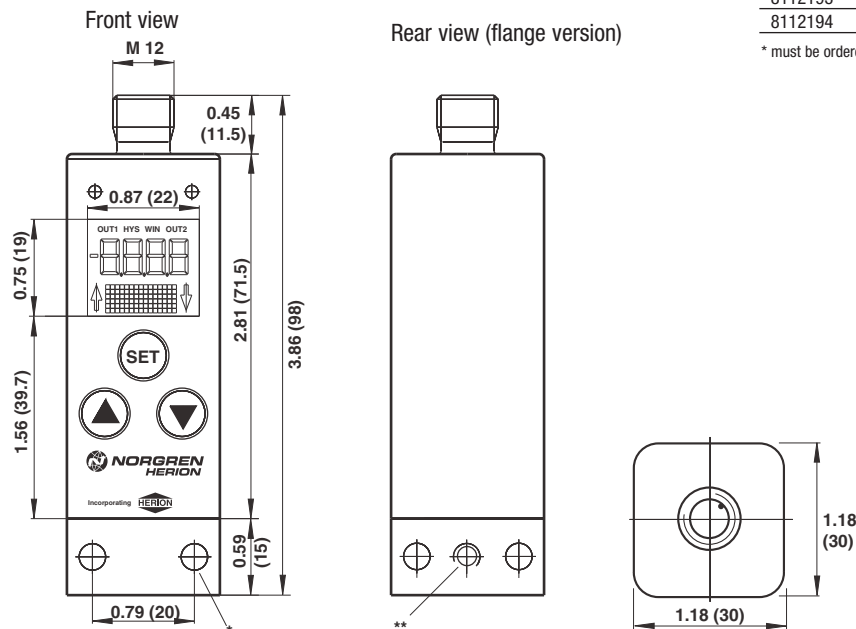
Switching output

Switching mode	PNP sourcing type transistor, suitable for inductive load
Output voltage	Supply voltage -1.5 V
Analog output	4 – 20mA
Contact rating	I _{max} = 500 mA (short-circuit proof)
Switching time	< 10 ms
Damping	5 ms – 0.64 sec programmable
Signal delay:	On/off 0 to 20 sec programmable
Service life	min. 100 million switching cycles
Switching logic	n.o. / n.c. programmable
Operating mode	Standard, hysteresis and window mode Separately selectable for each output

Accessories

Part number	Connectors and cordsets (M12 x 1)*
8112184	Mating connector 5-pin straight w/screw terminals, no cable
8112193	Molded cordset 5-pin straight w/2m cable
8112194	Molded cordset 5-pin 90° w/2m cable

* must be ordered separately

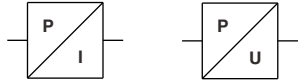


* Suitable for M 5 x 35 or 10-24 screws

** Flange diameter 8 x 1.2 deep, O-ring 4.47 x 1.78 (Viton 90)

Herion 18S Allfluid Series

Analog pressure sensor for hydraulic / all-fluid applications,
 0 - 11,600 psi



Robust sensor for hydraulic applications

Temperature compensated

3-wire technology (0 to 10 V)

2-wire technology (4 to 20 mA)

Excellent long-term stability

Stainless steel measuring element-
 not oil-filled

Technical data

Medium

For neutral and aggressive gases or fluids

Fluid connection

1/4 NPT male

Mounting position

Optional

Pressure range

0 to 11,600 psi

Fluid temperature:

-4°F to 185°F (-20°C to +85°C)

Ambient temperature

-4°F to 185°F (-20°C to +85°C)

Degree of protection

IP 65 (acc. to DIN 40050)

Shock protection

30g, to DIN EN 60068-2-27

Vibration protection

3g, 5 to 500 Hz, xyz, DIN EN 60068-2-6

Electrical connection

M12 x 1

Supply voltage

U_B = 12 to 30 V d.c. (current output)

U_B = 15 to 30 V d.c. (voltage output)

Output signal

4 to 20 mA (Two-wire technology)

0 to 10 V (Three-wire technology)

Electromagnetic compatibility

Interference immunity acc. to EN 50081. Part 1

Interference immunity acc. to EN 50082. Part 2

Load resistance

See diagram

Polarity

Short-circuit proof

Measuring range

See table below

Model	Measuring range (psi) (Relative pressure)**	Value max. (bar) (Over pressure)	Output signal
-------	--	-------------------------------------	---------------

Standard models*

Model	Measuring range (psi) (Relative pressure)**	Value max. (bar) (Over pressure)	Output signal
0862178	0 – 145	580	4 – 20 mA
0862188	0 – 145	580	0 – 10 V
0862378	0 – 360	725	4 – 20 mA
0862388	0 – 360	725	0 – 10 V
0862478	0 – 1450	2900	4 – 20 mA
0862488	0 – 1450	2900	0 – 10 V
0862678	0 – 3625	7250	4 – 20 mA
0862688	0 – 3625	7250	0 – 10 V
0862778	0 – 5800	10,800	4 – 20 mA
0862788	0 – 5800	10,800	0 – 10 V
0862978	0 – 11,600	14,500	4 – 20 mA
0862988	0 – 11,600	14,500	0 – 10 V

* Order mating connector separately

Electrical connection M 12 x 1 (4 pin)



Signal	4 ... 20 mA	0 ... 10 V	Frequency
+ UB (supply)	1	1	
Common	-	3	
Signal	4	4	

Options selector

0862***8

Measuring range relative pressure	Code
0 to 145 psi	1
0 to 360 psi	3
0 to 1450 psi	4
0 to 3625 psi	6
0 to 5800 psi	7
0 to 11,600 psi	9

Output signal	Code
4 to 20 mA	7
0 to 10 V	8

Linearity

< ±0.5% FS

Hysteresis

< 0.15% FS

Temperature sensitivity

(zero point)

Zero point < ± 0.4% FS/10K

Range < ± 0.2% FS/10K

Materials

Housing: 316 stainless steel

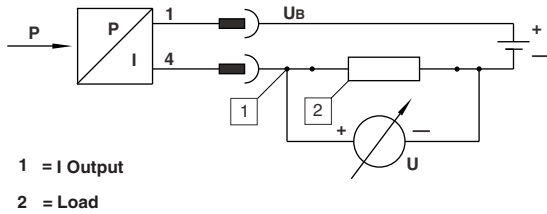
Sensor: 316 stainless steel welded

Herion 18S

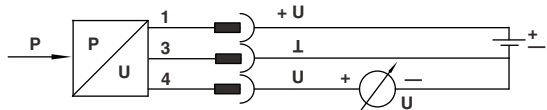
Pressure sensor analog

0 to 11,600 psi

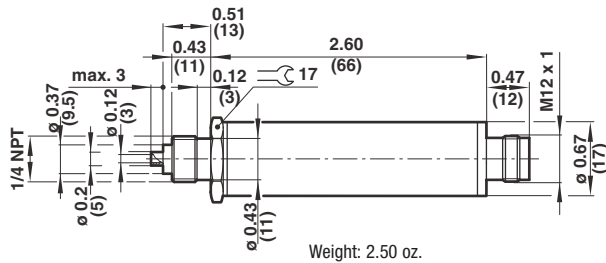
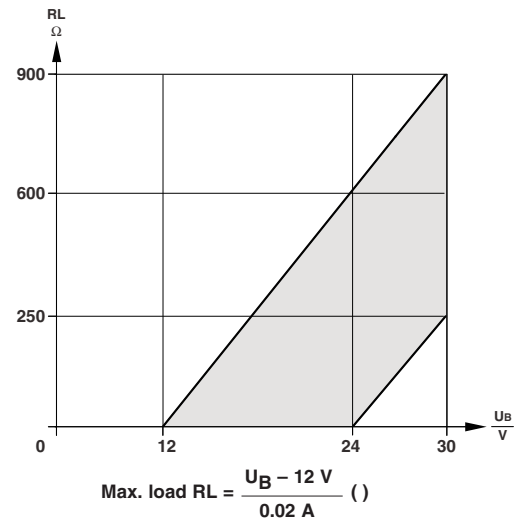
Electrical diagram for 2-wire versions 4 to 20 mA



Electrical diagram for 3-wire versions 0 to 10 V



Characteristic load curve



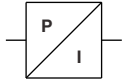
Accessories

Part number	Connector and cordsets (M12 x 1)
0523055	mating connector, 4-pin straight w/screw terminals, no cable
0523057	molded cordset, 4-pin straight, 2 meter
0523052	molded cordset, 4-pin straight, 5 meter
0523058	molded cordset, 4-pin 90°, 2 meter
0523053	molded cordset, 4-pin 90°, 5 meter

Herion 18S Pneumatic Series

Analog pressure sensor for pneumatic applications

-14.5 to 360 psi



Temperature compensated
Robust design for pneumatic and industrial applications

Technical data

Medium:
Filtered compressed air, lubricated or unlubricated, neutral gases

Mounting

Optional

Operating pressure
1.4 to 363 psi (-1 to 25 bar)

Fluid temperature
14°F to 185°F (-10°C to +85°C)

Ambient temperature
14°F to 185°F (-10°C to +85°C)

Degree of protection
IP 65

Electrical connection
DIN 43 650 or M12 x 1 short-circuit protected

Output signal
4 to 20 mA (Two-wire technology)

Linearity
< ±0.5% final scale

Hysteresis
< 0.15%

Temperature sensitivity (zero point)

Zero point < ± 0.4% FS/10K

Range < ± 0.2% FS/10K

Weight:
0.3 oz. (0.15 kg)

Materials
Housing: aluminum
Sensor: Silicon
O-rings: NBR

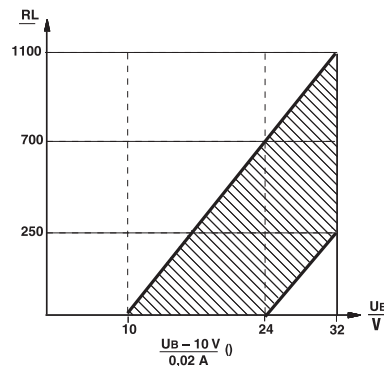


Model numbers*

Port size	Measuring range (bar) (Relative pressure)	Value max. (bar) (Over pressure)	Model DIN 43650	Model M12x1*
1/4 NPT	-14.5 to 14.5	145	0862083	0862084
Flange	-14.5 to 14.5	145	0862085	0862086
1/4 NPT	0 to 145	435	0862183	0862184
Flange	0 to 145	435	0862185	0862186
1/4 NPT	0 to 360	580	0862383	0862384
Flange	0 to 360	580	0862385	0862386

* M12 x 1 connector not included. Please see table below.

Characteristic curve of load



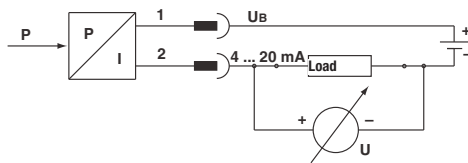
Herion 18S

Pressure sensor analog

-1 to 25 bar

Electrical connection

DIN 43650		M12 x 1	
Pin	Wiring	Pin	Wiring
1	+ UB	1	+ UB
2	Signal 4 ... 20 mA	4	Signal 4 ... 20 mA

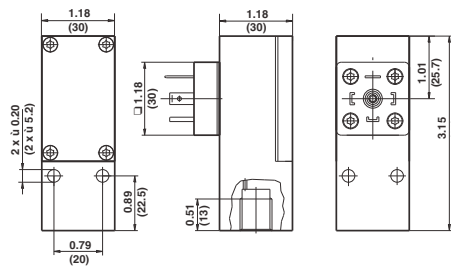


Accessories

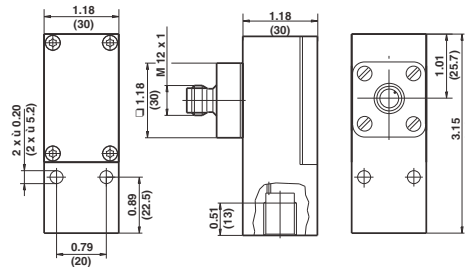
Connector cordsets (M12 x 1)

Model	Description
0523055	Straight, without cable
0523057	Straight, 2 m cable, 4-pin
0523052	Straight, 5 m cable, 4-pin
0523058	90° 2 m cable, 4-pin
0523053	90° 5 m cable, 4-pin

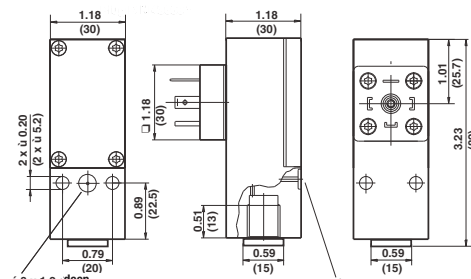
DIN 43650
¼ NPT



M12 x 1
¼ NPT

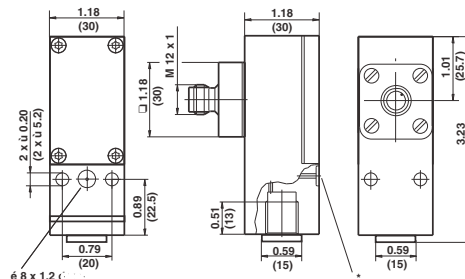


Flange



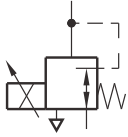
* O-ring 5 x 1.5

Flange



VP40 Series

3-way proportional pressure control valves
 1/8, 1/4, and 3/8"



- Low hysteresis
- Good repeatability
- High flow capacity at exhaust
- Manifold mountable
- Compact design

Technical data

Medium:
 Compressed air, filtered to 40 µm,
 lubricated or unlubricated

Mounting position:
 Any, preferably vertical

Flow direction:
 Fixed

Ambient temperature:
 14°F to 104°F (-10°C to +40°C)

Hysteresis:
 < 3% FS*

Repeatability:
 < 1% FS*

Linearity:
 See characteristic curves

Response sensitivity:
 1% FS*
 * at 20°C

Degree of protection:
 IP 65 with connector

Materials
 Body: aluminum alloy
 Seals: NBR

Orifice (mm)	Port size	Outlet pressure P2 (psi)	Maximum inlet pressure P1 (psi)	Rated current (mA)	Model
4	1/8 NPT	0 to 145	145	0 to 1600 (1800)	4088119.7053
4	1/8 NPT	0 to 190	230	0 to 1600 (1800)	4088217.7053
6	1/4 NPT	0 to 30	100	0 to 1600 (1800)	4088201.7053
6	1/4 NPT	0 to 145	175	0 to 1600 (1800)	4088211.7053
8	3/8 NPT	0 to 100	145	0 to 1600 (1800)	4088311.7071



Drive electronics pQ11

Model	Rated current mA	Type of connection	Remarks
5980081	0 to 2400	Connector according to DIN 43651	Suitable for 4088xxx.xxxx valves
5980085	0 to 2400	2 m cable	Suitable for 4088xxx.xxxx valves



Drive electronics pQ12

Model	Rated current mA	Remarks
5980126	0 to 2400	Suitable for 4088xxx.xxxx valves

Electrical information for proportional solenoids

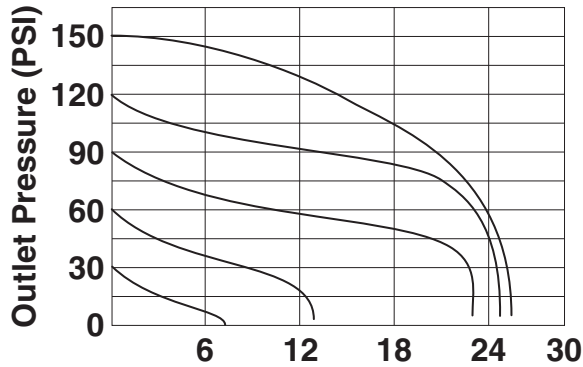
Nominal diameter	Limiting current IN	Rated power PN	Resistance R20	Duty cycle
4, 6 & 8	1600 mA	22 W	6.5 ohms + 3%	100%

VP40 Series

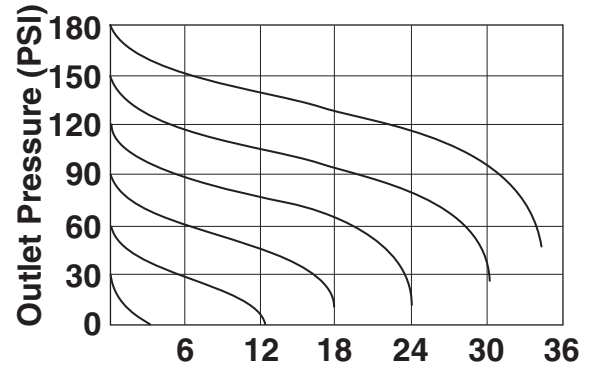
3-way proportional pressure control valves

NPT 1/8, NPT 1/4, NPT 3/8,

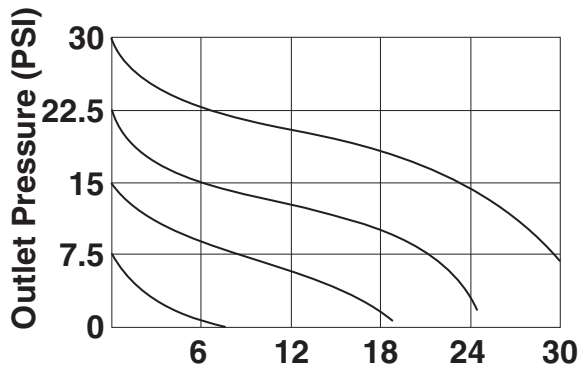
Characteristic curves



Flow (SCFM)
Fig. 3 Valve 40-881-19



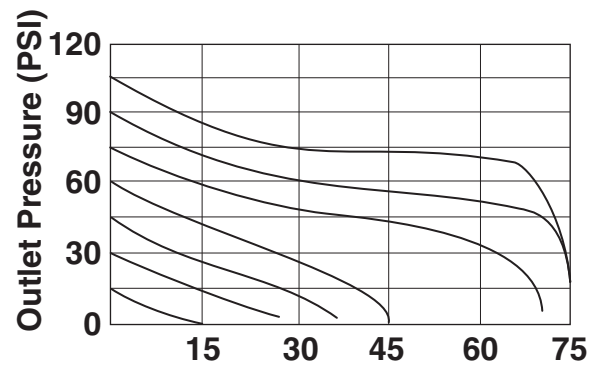
Flow (SCFM)
Fig. 4 Valve 40-882-17



Flow (SCFM)
Fig. 5 Valve 40-882-01



Flow (SCFM)
Fig. 6 Valve 40-882-17



Flow (SCFM)
Fig. 8 Valve 40-883-11

VP10

Electronic Pressure Regulator

Reliable, rugged proportional I/P and E/P converters

Suitable for a wide range of applications

Excellent accuracy

High flow versions

NEMA4 environmental protection in normal operation

Technical data

Medium:

Oil free, dry air, filtered to 5 micron

Output pressure:

3-15 psig (0.2-1.0 bar), 3-30 psig (0.2-2.0 bar), 3-60 psig (0.2-4.0 bar), 2-120 psig (0.14-8 bar) three wire version

Flow capacity:

Up to 10 scfm (300 l/min)

Air consumption

<60 psig (<4 bar): 0.03 scfm (0.85 l/min) typical

>60 psig (>4 bar): 0.06 scfm (1.75 l/min) typical

Operating pressure:

At least 10 psig (0.7 bar) above maximum required output pressure

Connections:

NPT 1/4" or 1/4" ISO G available

Operating temperature:

-4° to 160°F (-20°C to 70°C)

Response time

<30 psig (<2 bar): less than 0.5 seconds for 10-90% step change

>30 psig (>2 bar): 2 seconds for 10-90% step change

Total error:

±0.5% of span (typical, independent error includes the combined effect of non-linearity, hysteresis, deadzone and repeatability)

Temperature effect:

Typically 0.1% of span/°F for span and zero over operating range

Supply sensitivity:

>0.025% span output change per % supply pressure change

Failure mode:

Signal falls to bleed pressure when electrical supply fails

Mounting:

Integral surface mounting bracket provided for preferred vertical mounting. 50 mm pipe mounting kit available

Material of construction:

Zinc die-casting passivated and epoxy paint, nitrile diaphragms, stainless steel/nylon flapper nozzle and supply valve

Mass: 3.3 lbs (1500g) approx.



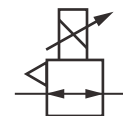
Part Number	Pressure range and input signal options		Calibration	Thread form*
	Control signal	Output pressure		
VP1001PK100A00	0-10 V	3-15 psi (0.2-1 bar)	PSIG	1/4" NPT
VP1001PK400A00	4-20 mA	3-15 psi (0.2-1 bar)	PSIG	1/4" NPT
VP1002PK100A00	0-10 V	3-30 psi (0.2-2 bar)	PSIG	1/4" NPT
VP1002PK400A00	4-20 mA	3-30 psi (0.2-2 bar)	PSIG	1/4" NPT
VP1004PK100A00	0-10 V	3-60 psi (0.2-4 bar)	PSIG	1/4" NPT
VP1004PK400A00	4-20 mA	3-60 psi (0.2-4 bar)	PSIG	1/4" NPT
VP1006PK101A00	0-10 V	3-90 psi (0.2-6 bar)	PSIG	1/4" NPT
VP1006PK401A00	4-20 mA	3-90 psi (0.2-6 bar)	PSIG	1/4" NPT
VP1008PK101A00	0-10 V	3-120 psi (0.2-8 bar)	PSIG	1/4" NPT
VP1008PK401A00	4-20 mA	3-120 psi (0.2-8 bar)	PSIG	1/4" NPT

Electrical Information

Electromagnetic compatibility	This is a passive electromagnetic instrument and is unaffected by interfering high frequency signals
Electrical signal	Two wire version 4-20 mA or 0-10 V for 60< PSIG Three wire version requires 12-24 V d.c. supply
Connections 30 mm square connector DIN 43650 provided, mountable in four directions (alternative connections available)	

* Replace PK w/BJ for calibration in Bar and 1/4 ISO G thread form.

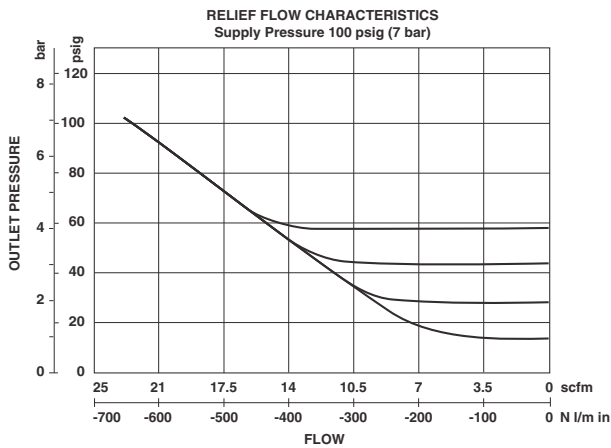
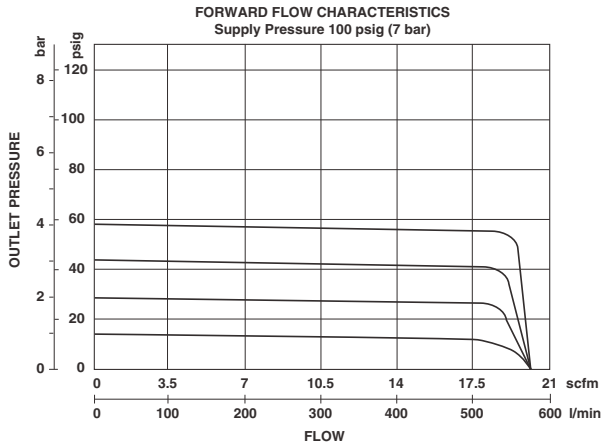
ISO Symbols



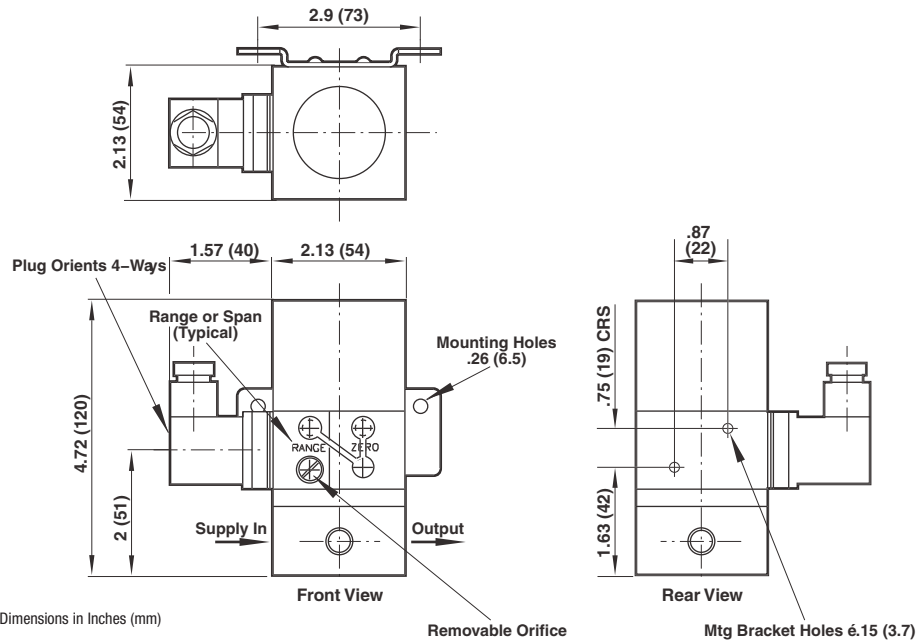
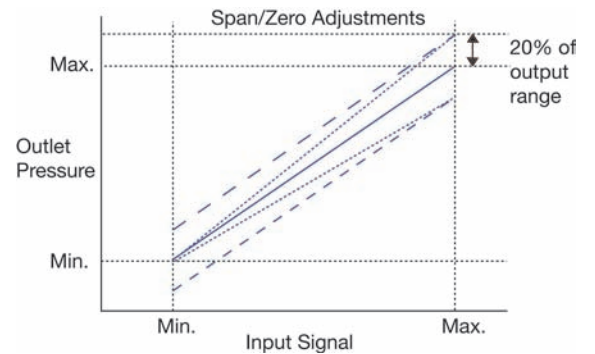
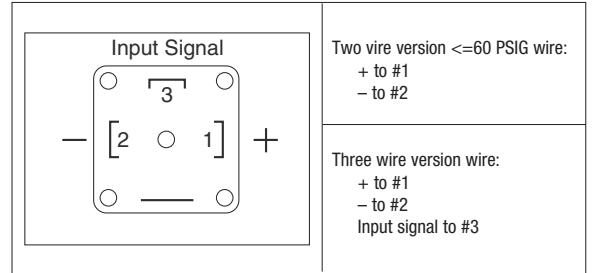
Typical Performance Characteristics

VP10

Electronic Pressure Regulator



Connector Wiring



NC = Normally closed, NO = Normally open, APB = All ports blocked, COE = Center open exhaust, COP = Center open pressure
 **** Insert coil connector code from Connectors table.
 For manual override options, substitute 'x' as follows: 1 = without manual override, 2 = locking, 3 = non-locking,

VP50

Proportional Pressure Control Valve

Air piloted proportional pressure control valve

Fully user adjustable for a wide range of applications

High speed

Lower power consumption

High flow capacity

Optional manifold mount utilizes the ISO Size 2 subbase

Technical Data

Medium:

Compressed air, filtered to 5 micron, non-lubricated

Operation:

Proportional, direct acting air piloted spool

Output Pressure:

See website

Supply Pressure:

200 psig (14 bar) max

Supply Sensitivity:

Better than 0.75% span output change per bar supply pressure change

Flow Capacity:

Up to 50 scfm (1400 NI/min)

Response Time:

< 80 mS (from 10-90% of output pressure into a 0.1 litre load)

Air Consumption:

< .177 scfm (5 l/min)

Port Size:

1/4 PTF (G1/4)

Total Error:

Max. error < ±1% of span (independent error includes the combined effect of non-linearity, hysteresis, deadzone and repeatability)

Operating Temperature:

23° to 120°F (-5° to 50°C)

Temperature Effect:

Typically better than 0.03% of span/°C for span and zero over operating range

Degree of protection:

NEMA 4 (IP65) in normal operation

Vibration Immunity:

< 3% output shift for 3g 10-2000Hz

Mounting Position:

Any screw mounting or manifold mount



Part Number*	Pressure Range and Input Signal Options		Port Size
	Control Signal	Output Pressure in psig (bar)	
VP5010PK111H00	0-10V	0-145 (0-10)	1/4" PTF
VP5010PK411H00	4-20mA	0-145 (0-10)	1/4" PTF
VP5006PK111H00	0-10V	0-90 (0-6)	1/4" PTF
VP5006PK411H00	4-20mA	0-90 (0-6)	1/4" PTF
VP5002PK111H00	0-10V	0-30 (0-2)	1/4" PTF
VP5002PK411H00	4-20mA	0-30 (0-2)	1/4" PTF

* To specify regulator calibration in BAR use "B" in the 7th position For 1/4" ISO G ports use "J" in the 8th position.

To order the VP50 with interface for manifold mounting, indicate an "X" in the 8th position of the part number. Also requires a manifold mounting kit, see Accessories.
All units shipped with M12 five pin electrical connector

Electrical information

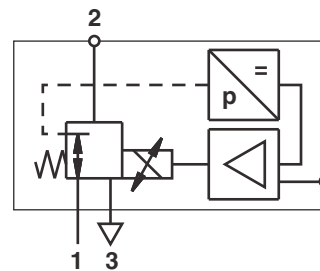
Electromagnetic Compatibility	CE marked: conforms to E.C. requirements EN 50081-2 (1994) and EN 50082-2 (1995)
Electrical Input Signal	4-20mA or 0-10V factory set
Electrical Power Input	24V dc ±25% (power consumption < 1W)
Output Pressure Feedback Signal	0-10V full range
Connections	DIN 43650 or Brad Harrison connection for feedback output

Material of Construction:

Aluminium body, zinc diecast lid and end cover

Weight: 1.76 lbs. (800g) approx

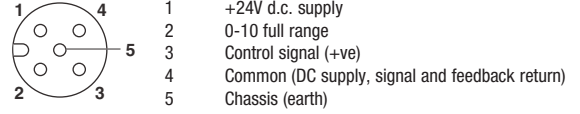
Symbol



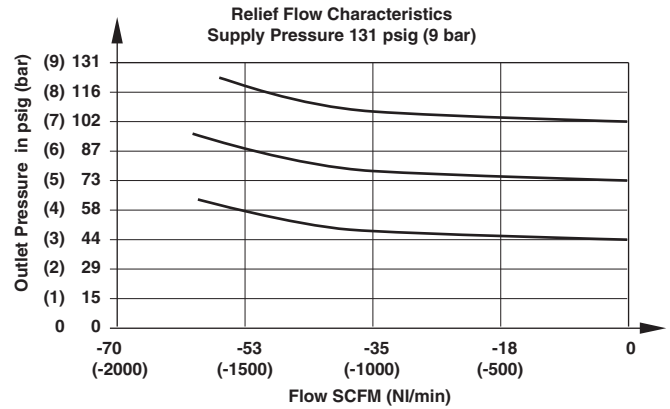
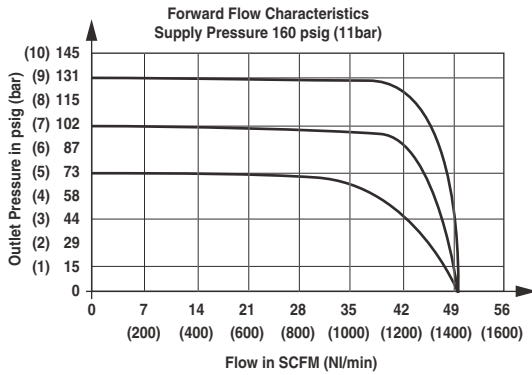
VP50

Proportional Pressure Control Valve

Instrument pin configuration



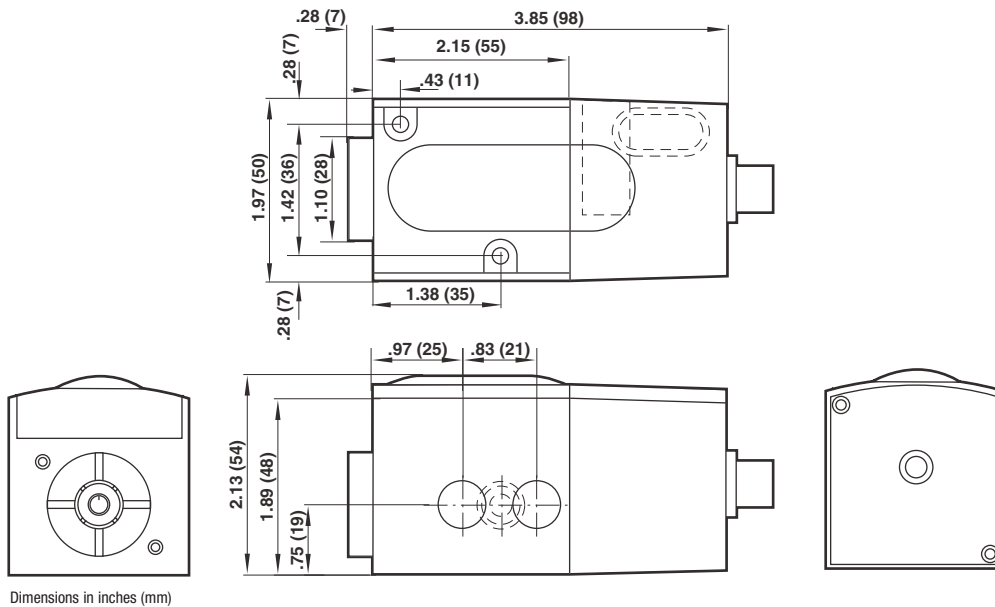
Characteristic Curves



Accessories

Designation	Specification	Type
Connectors with cable	M12 x 1.5 pin; 16 ft (5m) 5 x 0.34 mm2	0250081
	M12 x 1.5 pin; 30 ft (10 m) 5 x 0.34 mm2	0250472
Manifold Mounting Kit	Interface plate, gasket, mounting screws	53Z25M00

NOTE: Refer to website to select an ISO 2 size base and accessories.



VP51

Programmable proportional pressure

control valve G1/4, 1/4 NPT

Fully programmable with on-board diagnostics

Multi-option language display

Password protection option at first level functionality

Instant LED warning functions

Application specific set-up

Pressure output display; no gauge necessary

High speed response

Optional manifold mount utilizes the ISO Size 2 subbase

Technical data

Medium

Compressed air filtered to 40 µm, non-lubricated

Supply pressure

205 psig (14 bar) max.

Output pressure

0 - 145 psig (0 - 10)

Supply sensitivity

<= 50 mbar between 160 and 90 psig (11 and 6 bar) supply

Response time

< 100 ms (from 10 to 90% of output pressure into a 0,1 litre load)

Air consumption

< .177 scfm (5 l/min)

Total error

Maximum error ± 1.45 psig (100 mbar) of total span (independent error includes the combined effect of non-linearity, hysteresis, deadzone and repeatability)

Ambient temperature

-4 to 122°F (-20° to 50°C)

Temperature effect

Typically .04 psig (3 mbar)/°C for full scale and zero over operating range

Degree of protection

NEMA 4 in normal operation

Vibration immunity

<3% output shift for 3 g ~ 10 to 150 Hz

Weight

1.76 lbs (0.8 kg)

Mounting position

Any screw mounting or ISO 2 subbase manifold mount

Materials

Body: aluminum

Lid and end cover: zinc diecast



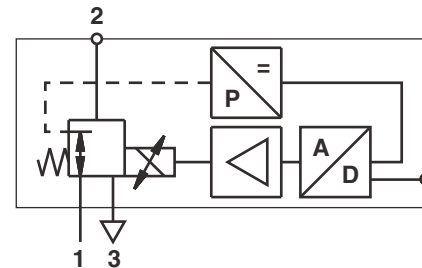
General information

Control signal	Output pressure range psig (bar)	Model	Connection	Output units
0-10 V	0 to 145 (10)	VP5110PK1111H00	1/4 NPT	psig
4-20 mA	0 to 145 (10)	VP5110PK4111H00	1/4 NPT	psig
0-10 V	0 to 145 (10)	VP5110BJ1111H00	ISO G 1/4	bar
4-20 mA	0 to 145 (10)	VP5110BJ4111H00	ISO G 1/4	bar

*To order the VP50 with interface for manifold mounting, indicate "X" in the 8th position of the part number. Also requires a manifold mounting kit, see Accessories.

All units shipped with M12 five pin electrical connectors with interface for manifold mounting.

Symbol



Electromagnetic compatibility

The valve conforms to the EC requirements EN50081-2 (emission) and EN50082-2 (disturbance noise). For this specification shielded cables have to be used

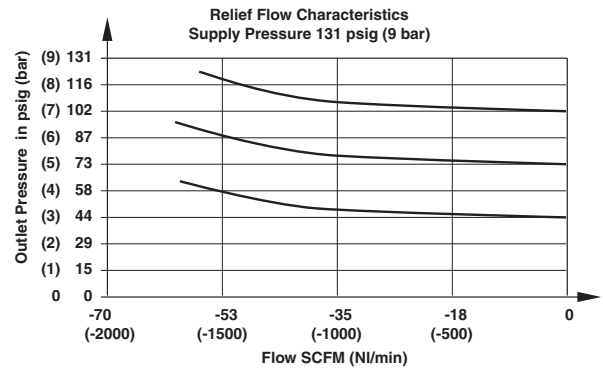
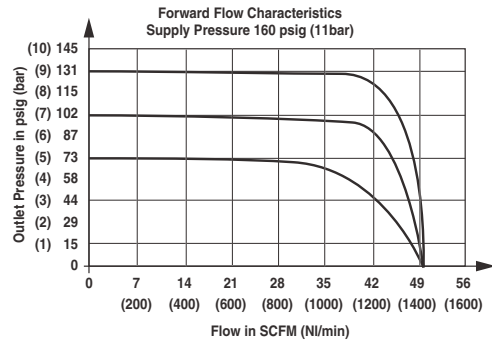
VP51

Programmable proportional pressure control valve G1/4, 1/4 NPT

User functionality options

Password protection	
Display set-up	Display language Pressure units Offline set-up Online set-up
Speed set-up	0 fastest to 7 slowest
Monitor set-up	Analogue 0 ... 10 V
Monitor output	Hi = P2 > x psi Hi = P2 OK
Local control	Manual control Max./min. ramp Max./min. stairs
Device database	Read only data: unit specific Tag number Help display
Factory defaults	Restore factory defaults

Characteristic curves



Electrical information

Electromagnetic compatibility	CE marked: conforms to EC requirements EN 50081-2 (1994) and EN 50082-2 (1995)
Electrical input signal	4 ... 20 mA or 0 ... 10 V factory set
Electrical power input	24 V d.c. ±25% (power consumption < 1 W)
Output pressure feedback signal	User configurable 0 ... 10V analog or Hi-Lo mode

Instrument pin configuration M12 x 1 (5 pin)

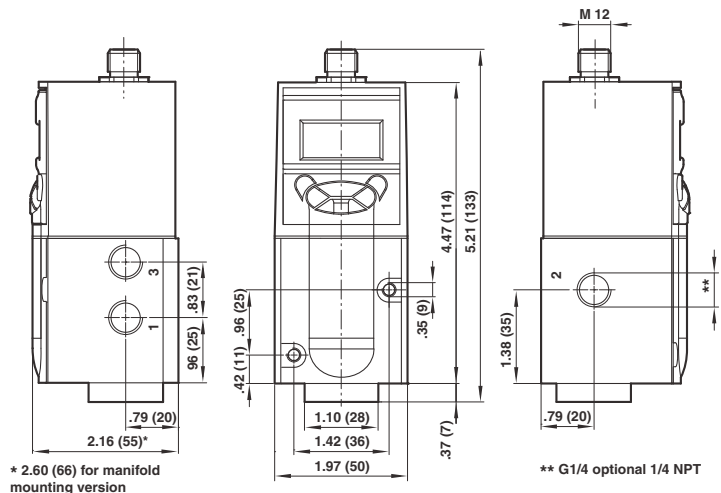
Pin	Designation	Color*
1	+24V d.c. supply	brown/red
2	1 v/bar monitor output	white
3	Control signal (+ve)	blue
4	Common (d.c. supply, signal and feedback return)	black
5	Chassis (earth)	grey/green/yellow

Accessories

Designation	Specification	Type
Connectors with cable	M12 x 1.5 pin; 16 ft (5m) 5 x 0.34 mm ²	0250081
	M12 x 1.5 pin; 30 ft (10 m) 5 x 0.34 mm ²	0250472
*Manifold Mounting Kit	Interface plate, gasket, mounting screws	53Z25M00

For ISO 2 Manifold see website

General dimensions



VP60

5/3 Proportional flow control valve (nominal dia. 8 mm)

Directly operated spool valve with μ P-electronics

Microprocessor control electronics

High dynamic regulation

On-board diagnostics

CE conformance

Technical data

Medium

Filtered unlubricated air.

Note: Using lubricated air may affect dynamic response and lifespan of the valve.

Filtration

Recommended 5 μ

Operation

Moving coil

Connection

1/4 NPT and G1/4"

Flow rate

40 scfm (1200 l/min)

for p1: 90 psi and p2: 75 psi

Mounting position

Any, preferred solenoid on top

Flow direction

1 \rightarrow 4+2 \rightarrow 3; 1 \rightarrow 2+4 \rightarrow 5

Operating temperature: 32°F to 140°F
(0°C to 60°C)

No condensation permissible

Materials

Electronic housing: plastic (PAA)

valve housing: aluminum alloy

seals: NBR

solenoid surface: steel

Degree of protection

IP65

Operating pressure [p1]

0 to 175 psi

Leakage

For center position 35 scfh with p1:
145 psi

Reaction time

At p1 = 90 psi and 100% stroke free
exhausting:

Dead time: 3 ms

Rise time (10% - 90%): 5ms

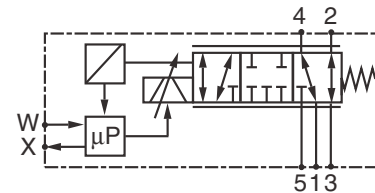
Electromagnetic compatibility

The valve conforms to the EC
requirements EN50081-2 (emission)
and EN50082-2 (disturbance noise).

For this specification shielded cables
have to be used.



Symbol



Electrical information

Power supply requirements

Supply voltage	U_B [VDC]	18...32
Current consumption with max. stroke 50 Hz (A)		2.0 at 24 VDC
Current consumption in steady state [A]		0.1 at 24 VDC

Input signal

Analog (single ended types)

Voltage signal	U_E [V]	0...10
Input resistance	R_i [k Ω]	110
Current signal	I_E [mA]	(0) 4...20
Load resistance	[Ω]	500

Analog (differential types)

Voltage signal	U_E [V]	0...10 -5...+5
Input resistance	R_i [k Ω]	110
max. Input voltage range	[V]	-10...40

Output signal

Spool position feedback (voltage)

Voltage signal slide position	U_A [V]	0...10 V = min...max. stroke
Max. output current	I_A [mA]	1

Spool position feedback (current)

Current signal slide position	I_A [mA]	0...20 mA = min...max. stroke
Load resistance	R_L [Ω]	recommended 500

VP60

5/3 Proportional control valve

Directly operated spool valve with μ P-electronic position control

Order information

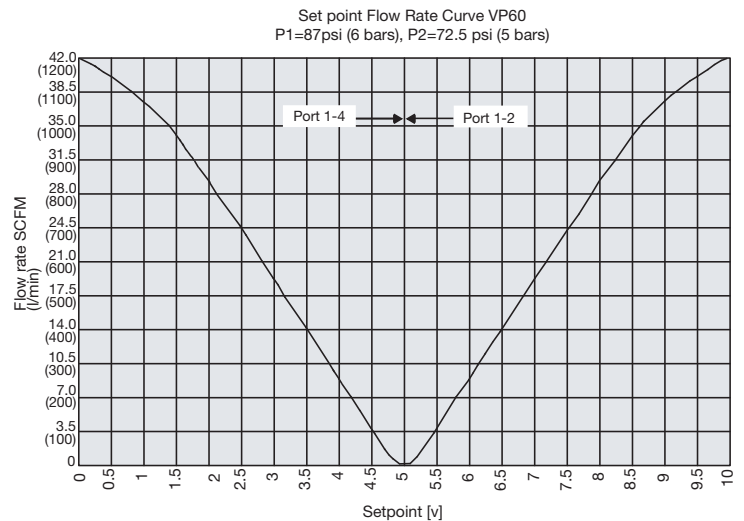
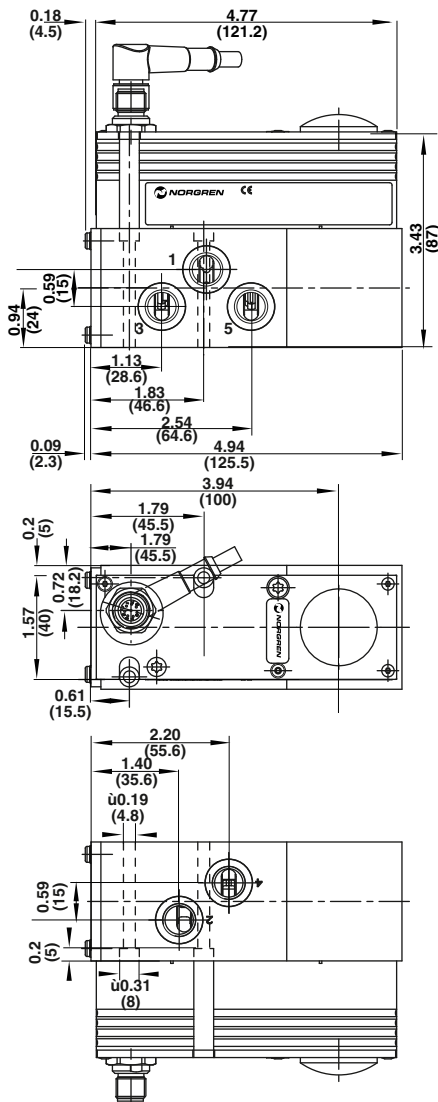
VP Proportional valve	60 Family code	xx Flow range	x Unit	x Port size	x Input signal*	x Feedback**	x Power supply	x Electrical connector	xxxx Options
VP	60	10 = 1000	L = liter/ min	J = G 1/4" K = G 1/4 NPT	1 = 0-10V 4 = 4-20- mA 6 = -5V to +5V 7 = 0-10V	6 = 0-10V and 4-20mA	1 = required	M = M12 x 1 8-pin	0000 = no options B200

*Input signal codes 6 and 7 are differential input versions.

** Both 0-10V and 4-20 mA feedback signals are available simultaneously.

Accessories

Description	Specification	Type
cordset	M12 x 1, 8-pin, 5m, straight	0250811
cordset	M12 x 1, 8-pin, 5m, 90° angle	0250813



R-27 Series

Manostat Precision Air Pressure Regulators

High precision pressure regulators

Suitable for dead end or flow applications

Excellent long term stability

Handwheel, lever, plunger or pilot operated

Technical Data

Medium:

Dry, oil free air filter to 25 microns

Operation:

Two stage servo mechanized regulator with integral precision measuring capsule

Mounting:

Any position. Panel mounting or through mounting holes on the unit (lever, plunger and pilot versions)

Port sizes:

G 1/4

Output pressure ranges:

See individual details

Supply pressure:

Minimum at least 2.9 psig (0.2 bar) above output pressure.

Maximum 145 psig (10 bar)

Flow capacity:

Up to 10.6 scfm (300 l/m)

Hysteresis and repeatability:

Less than 0.005% setting at midrange

Sensitivity:

Better than 0.3 mbar

Air consumption:

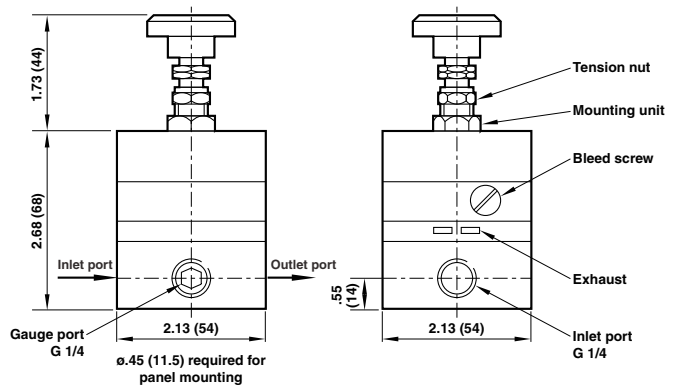
See individual details



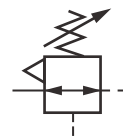
Ordering Information

Description	Model	Control Type	Output Pressure Range psig (bar)	Air Consumption scfm (l/m)	Weight lbs (kg)
Standard regulator	R27-200-RNCG	Handwheel 2.5-3 turns	2-25 (.14-2)	.01 (.3)	1.59 (.72)
Standard regulator	53-1003-00R	Handwheel 2.5-3 turns	2-60 (.14-4)	.02 (.6)	1.59 (.72)
Standard regulator	53-1004-00R	Handwheel 2.5-3 turns	2-120 (.14-8)	.04 (1.2)	1.59 (.72)
Lever operated regulator	53-1802-00R	Lever control 125° Rotation	2-25 (.14-2)	.01 (.3)	1.59 (.72)
Lever operated regulator	53-1803-00R	Lever control 125° Rotation	2-60 (.14-4)	.02 (.6)	1.59 (.72)
Lever operated regulator	53-1804-00R	Lever control 125° Rotation	2-120 (.14-8)	.04 (1.2)	1.59 (.72)
Plunger operated regulator	53-1404-00R	Plunger travel .065 (1.65)	2-60 (.14-4)	.02 (.6)	1.59 (.72)
Plunger operated regulator	53-1604-00R	Plunger travel .065 (1.65)	2-120 (.14-8)	.04 (1.2)	1.59 (.72)
Pilot operated relay	53-1904-00R	Pilot pressure signal	2-120 (.14-8)	.04 (1.2)	1.59 (.72)
Pilot operated relay with manual bias	53-2204-00R	Pilot pressure signal Handwheel controlled bias	2-120 (.14-8) bias of up to 30 (2)	.04 (1.2)	1.59 (.72)

Handwheel Operated

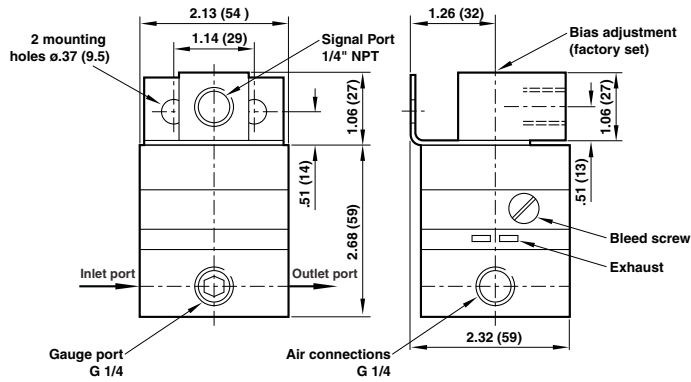


ISO Symbols

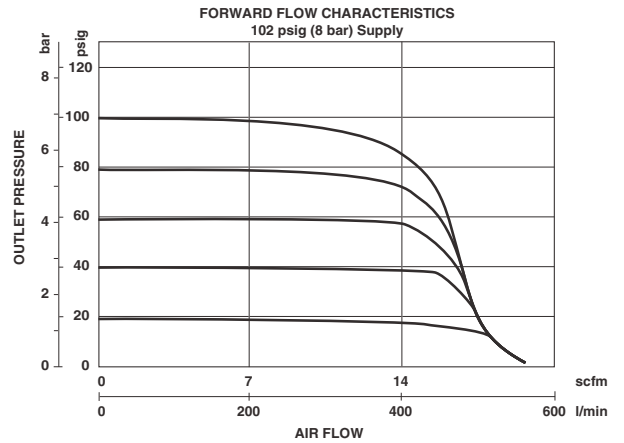


All Dimensions in Inches (mm)

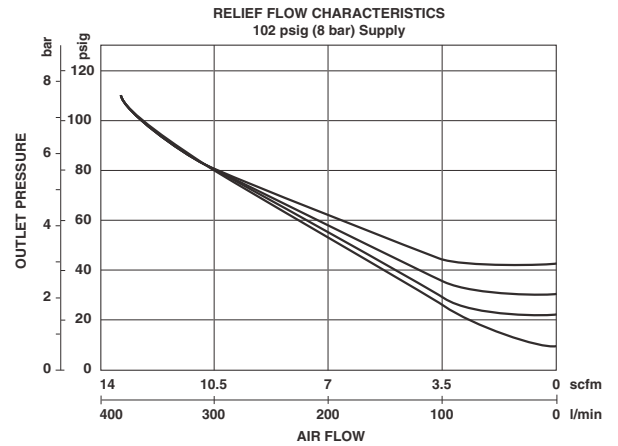
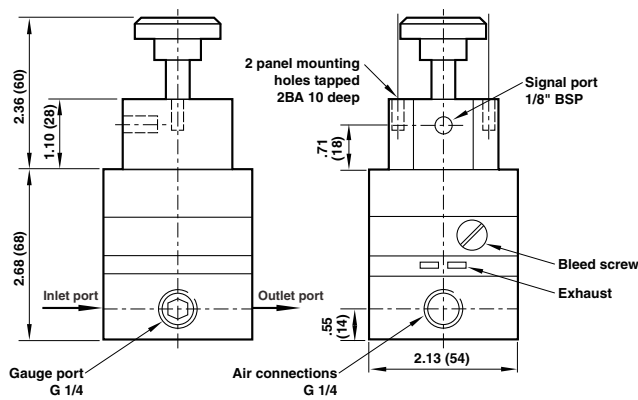
Pilot Operated



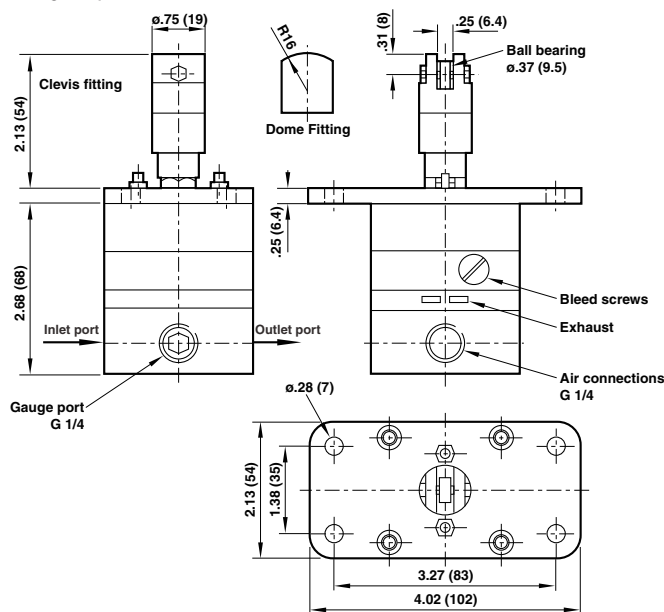
Typical Performance Characteristics



Pilot Operated with Bias



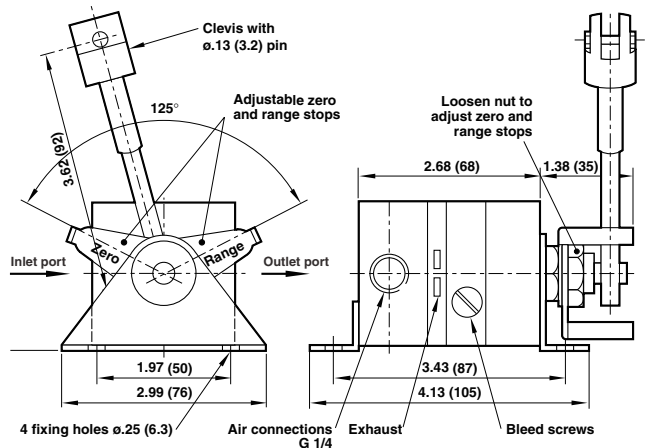
Plunger Operated



Diaphragm Repair Kits

Type	Part number
Units up to 25 psig	53-1000-95R
Units up to 60 psig	53-1000-99R
Units up to 120 psig	53-1000-98R
Tamperproof Nut	53-1000-97R
Wall Mounting Bracket	53-ABR-00700

Lever Operated



Additional Valve Products

Type 68 P/I

Transmitter type 68

Type 68 converts pneumatic pressure into a 4-20 ma electrical signal for uses with data loggers or PLC controls.

The unit is suitable for DIN rail or line mounting and requires only a non-critical DC power supply.

Optional IP65 weatherproof versions are available.



Type 422

Failfreeze Electronic Converter

A major advance in I/P converter design, offering failfreeze in addition to conventional I/P features

Advanced electronic control and a precision pressure transducer to achieve outstanding performance

Intended for field application in which rugged construction, vibration immunity, weatherproofing and reliability are essential, together with the enhanced system safety gained from its failfreeze characteristic

Two wire operation from a 4-20mA control signal with output pressures up to 120 psig (8 bar) as standard



Type 140

Electronic I/P Converter

For service in demanding process control applications, the Type 140 is used to convert a 4-20 mA control current to a 3-15 psi pneumatic signal for operating a control valve actuator.

The internal closed-loop control electronics assure high resolution and long-term accuracy.

Fully encapsulated circuit boards provide added environmental protection.

Type 140 is available in Intrinsically Safe and Explosion proof versions with ATEX, CSA and FM approvals.

