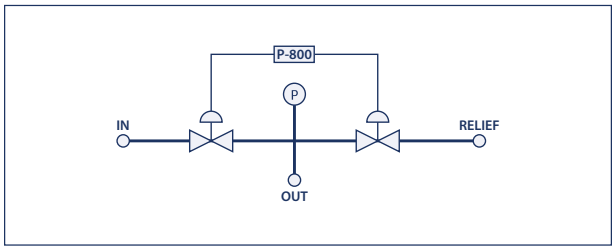
Process Pressure Controllers - P-8x2CI Series

Principle of operation

The Process Pressure Controller consists of a piezo-resistive pressure sensor and two direct acting, solenoid control valves. The instrument has a gas inlet for pressurisation, a pressure relief outlet and a system outlet. While pressurizing the system - this will normally be a static volume - the pressure sensor and the inlet valve operate as a forward pressure controller and the relief valve remains shut. When the system requires depressurisation, the inlet valve is shut and the pressure sensor in combination with the relief valve will act as back pressure controller. This dual valve construction is a compact, economical alternative to configurations where forward pressure controllers are combined with separate bleed ports and relief valves. It is considered as a great advantage that the relief valve does not continuously vent to the atmosphere. Furthermore the system can be set for either fast or smooth controlled (de)pressurization.

Configuration

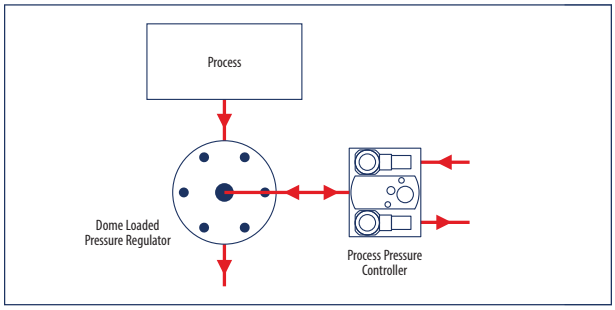


Process Pressure Control

Features P-8x2I Series

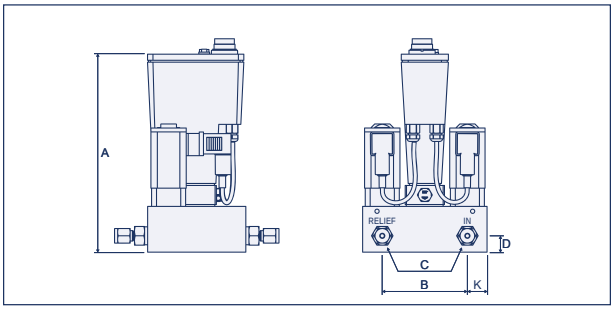
- Pressure up to 200 bar
- Dual valve pressure control (inlet/relief)
- For absolute or gauge pressure
- High accuracy and repeatability
- Low gas consumption (no gas bleed)
- Rugged, weatherproof housing (IP65, dust and waterproof)
- On-board PID controller for pressure control
- Analog, RS232 and fieldbus communication

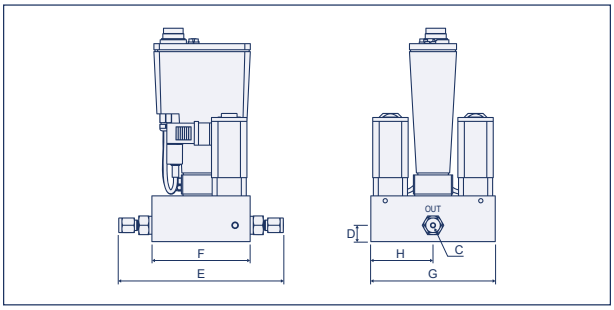
Application: Automated dome loaded back pressure regulator



Dome loaded pressure regulators are often used to process aggressive reactants and by-products at high temperatures. For these severe applications, dome valves can be manufactured from chemically inert materials such as SS316, Hastelloy, Zirconium and Monel. For the automation of dome loaded back pressure regulators, P-8x2I instruments can be applied to control the position of the membrane to open or close the orifices of the dome loaded regulator, thereby releasing gas or liquids from the process as to keep the process pressure at a constant level.

Dimensional drawings





Model	A	B	C	D	E	F	G	H	K	Weight (kg)
P-802CI / P-812CI / P-822CI (¼")	151	65	G ⅛"	12.5	130	75	95	47.5	15	2,8

Dimensions in mm.

IN-PRESS P-812CI Industrial Process Pressure Controller

Technical specifications

Measurement / control system	
Accuracy (incl. linearity and hysteresis)	± 0,5% of Full Scale (FS)
Pressure control rangeability	1:20 with flow range 1:50
Repeatability	≤ 0,25% RD
Response time sensor	2 msec
Max. Kv-value	1,56 x 10^{-3}
Max. pressure difference (ΔP)	P-802CI: 64 bar (d) P-812CI: 100 bar (d) P-822CI: 200 bar (d)
Max. flow	approx. 20 l_n/min N_2
Control stability	≤ ± 0,1% FS (typical for 100 ml_n/min N_2 at specified process volume)
Temperature range	-10…+70°C
Temperature sensitivity	< ± 0,1% FS/°C
Leak integrity (outboard)	tested < 2 x 10^{-9} mbar l/s He
Attitude sensitivity (at 90° change)	< 0,3 mbar
Warm-up time	negligible

Mechanical parts	
Material (wetted parts)	stainless steel 316L or comparable
Process connections	compression type or face seal couplings
Seals 64/100 bar version	static and plungers: Viton® / EPDM / Kalrez®
Seals 200 bar version	static: Viton®, plungers: FKM
Ingress protection (housing)	IP65

Electrical properties			
Power supply	+15…24 Vdc ±10%		
Power consumption (based on N/C valve)	Supply	at voltage I/O	at current I/O
	15 V	290 mA	320 mA
	24 V	200 mA	215 mA
Extra for fieldbus: (if applicable) PROFIBUS DP	add 53 mA (15 V supply) or 30 mA (24 V supply)		
DeviceNet™ /CANopen®	add 48 mA (24 V supply)		
Analog output (0…100%)	0…5 (10) Vdc, min. load impedance > 2 kΩ; 0 (4)…20 mA (sourcing), max. load impedance < 375 Ω		
Analog setpoint (0…100%)	0…5 (10) Vdc, min. load impedance > 100 kΩ; 0 (4)…20 mA, load impedance ~250 Ω		
Digital communication	standard: RS232 options: PROFIBUS DP, DeviceNet™, CANopen®, Modbus RTU/ASCII, FLOW-BUS		

Electrical connection	
Analog, RS232	8 DIN (male);
PROFIBUS DP	bus: 5-pin M12 (female); power: 8 DIN (male)
Modbus-TCP, EtherNet/IP, POWERLINK, EtherCAT®, PROFINET	bus: 2 x 4-pin M12 (female) (in/out); power: 8 DIN (male)
DeviceNet™, CANopen®	5-pin M12 (male)
Modbus-RTU/ASCII, FLOW-BUS	5-pin M12 (male)

Technical specifications subject to change without notice.

Calibration

References verified by an ISO 17025 calibration laboratory, directly traceable to Dutch and international standards.

Models and pressure ranges

Process Pressure Controller (PPC)

Models	Pressure ranges (abs/rel)	
P-802CI	Min. 17,5…350 mbar	Max. 3,2…64 bar
P-812CI	Min. 3,2…64 bar	Max. 5…100 bar
P-822CI	Min. 5…100 bar	Max. 10…200 bar

Model number identification

P-NNNAA - AAA - A A A - N N N - A - A A - A A A

Base model
See above

Sensor code
Factory selected

Communication (I/O)

A	RS232 + analog (n/c control)
B	RS232 + analog (n/o control)
C	RS232 + POWERLINK (n/c control)
D	RS232 + DeviceNet™ (n/c control)
E	RS232 + DeviceNet™ (n/o control)
I	RS232 + EtherNet/IP (n/c control)
J	RS232 + EtherNet/IP (n/o control)
K	RS232 + CANopen® (n/c control)
L	RS232 + CANopen® (n/o control)
M	RS232 + Modbus-RTU/ASCII (n/c control)
N	RS232 + Modbus-RTU/ASCII (n/o control)
O	RS232 + POWERLINK (n/o control)
P	RS232 + PROFIBUS DP (n/c control)
Q	RS232 + PROFIBUS DP (n/o control)
R	RS232 + FLOW-BUS (n/c control)
S	RS232 + FLOW-BUS (n/o control)
T	RS232 + EtherCAT® (n/c control)
U	RS232 + EtherCAT® (n/o control)
V	RS232 + PROFINET (n/c control)
W	RS232 + PROFINET (n/o control)
X	RS232 + Modbus-TCP (n/c control)
Y	RS232 + Modbus-TCP (n/o control)

Analog output

A	0…5 Vdc
B	0…10 Vdc
F	0…20 mA_{dc} sourcing
G	4…20 mA_{dc} sourcing

Supply voltage

D	+15…24 Vdc

Connections (in/out/relief)

1	⅛" OD compression type
2	¼" OD compression type
3	6mm OD compression type
8	¼" Face seal male
9	Others

Seals

V	Viton®
E	EPDM®
K	Kalrez (FFKM)

Controller mode

A	Analog control
D	Digital control

Integrated comm. mode

A	RS232 – FLOW-BUS (ProPar)
B	RS485 – FLOW-BUS
C	RS485 – Modbus RTU
D	RS485 – Modbus ASCII

Configurable I/O
Factory selected