

PC100 Series PC115/PC125

Pressure



PC100 Series

Ultra-High Purity Digital Pressure Control Devices

Overview

Brooks Instrument's PC100 Series pressure control and flow measurement devices deliver outstanding performance, reliability, and system simplicity. Built on the proven, advanced technology of the GF100 Series mass flow controllers, process throughput and yield are maximized while process costs are reduced. The PC100 Series is designed for semiconductor, MOCVD, and other pressure control applications that require a high purity all-metal flow path.

High Purity Flow Path

The Brooks PC100 Series has an all metal, corrosion resistant Semi F20 compliant wetted flow path with highly corrosion resistant Hastelloy® C-22 valve seat and jet orifice.

- Overall reduced surface area and un-swept volumes allow for faster dry-down during purge steps
- Long-term thermal or pressure sensor and device stability maximizes yield and throughput

Advanced Thermal Flow Measurement Sensor

The PC125 with embedded flow meter includes a proprietary highly corrosion resistant Hastelloy C-22 sensor. The enhanced sensor manufacturing and burn in process incorporate a unique orthogonal sensor mounting orientation to eliminate sensor drift caused by valve heating effects and eliminate thermal siphoning effects. This unique sensor configuration includes an optimized temperature profile for gases prone to thermal decomposition. This design results in:

- Enhanced signal to noise performance for improved accuracy at low set points
- Superior reproducibility at elevated temperatures through new isothermal packaging and onboard conditioning electronics with ambient temperature sensing and compensation
- Improved long-term stability

Enhanced Diagnostics and User Interface

The Brooks PC100 Series provides for in-line device evaluation and instantaneous troubleshooting resulting in limited service interruption and reduced downtime.

- Independent diagnostic/service port
- High visibility LCD display with easy accessible push button for local indication of Flow (%), Temperature (°C), Torr/Pressure (PSIA/kPa) and Network Address
- Zero button easily re-zeros the device during scheduled maintenance. Zero button will zero pressure transducer or the thermal sensor, depending on what is visible on the display.

Communication Interfaces

The PC100 Series supports DeviceNet™ communication protocol. DeviceNet is a multi-drop connection that allows a maximum of 64 devices to be connected on the same network. Brooks Instrument's DeviceNet profile has been certified by the ODVA™ (Open DeviceNet Vendor's Association).

Product Features

The Brooks PC100 Series digital pressure control with patented flow sensor combined with a high speed ARM processor and fast acting diaphragm-free valve assembly enables:

- Faster response and settling time for improved pressure control
- Reduced diverted gas consumption and associated abatement costs
- User programmable start-up function for processes requiring a slow ramped pressure control

Product Specifications

Performance	PC115	PC125
Embedded Thermal Flow Sensor:	No	Yes
Pressure Control Mode:	Downstream and Upstream	Downstream
Full Scale Range:	o Min Flow Range: 0-20 sccm H2; 0-20 sccm N2 o Max Flow Range: 0-5 slm H2; 0-5 slm N2	10 slm N2 and H2

Pressure Reading

Reference:	Downstream: 34 to 100 psia Upstream: 0 Torr to 350 Torr	34 to 100 psia
Accuracy:	±1% of reading	
Zero Temp. Coefficient:	±0.02% of F.S./°C	
Span Temp. Coefficient:	±0.04% of reading/°C	

Pressure Control

Range:	Downstream: >20 Torr to 100% F.S. Upstream*: >150 Torr to 100% F.S.	>20 Torr to 100% F.S.
*Upstream controller turndown is directly tied to reference pressure. Control range is assuming hard vacuum on the outlet and 150 Torr min DP to achieve max flow.		
Accuracy:	<10% F.S. = ±0.2% of F.S. >10% to 100% = ±1% of reading	
Response Time:	<1 sec typ. (excluding system time constant)	

Flow Reading

Measurement Range:	N/A	2 to 100% of F.S.
Accuracy:	N/A	±1% of reading > 35% F.S. ±0.35% of F.S. 2 to 35% F.S.
Repeatability:	N/A	±0.2% of F.S.
Resolution:	N/A	±0.1% of F.S.
Zero Temp. Coefficient:	N/A	<0.05% of F.S./°C
Span Temp. Coefficient:	N/A	<0.08% of reading/°C
Zero Stability:	N/A	<0.5% per year
Valve Leak-by:	<1% of orifice F.S. (N2 @ 25 psig inlet to atm.)	

Ratings

Operating Temperature Range:	10 to 50°C	
Transducer Pressure Range:	1000 Torr F.S.	
Transducer Over Pressure Limit:	2 x F.S. range	
Differential Pressure:	Upstream min DP 150 Torr; Downstream max DP 45 psid	Max DP 45 psid
Leak Integrity (external):	1 x 10 ⁻¹⁰ atm. cc/sec He	

Electrical

Digital Communication:	DeviceNet	
Electrical Connection DeviceNet:	via 5-pin "M12" connector	
Diagnostic/Service Port:	RS485 via 2.5 mm jack	
Power Supply/Consumption	DeviceNet: 545 mA max. @ +11-25 Vdc	

Diagnostics & Display

Status Lights:	MFC Health, Network Status	
Display Type:	Top Mount Rotatable Integrated LCD	
Viewing Distance Fixed:	10 feet	
Units Displayed:	Resolution Flow (%), Temp. (°C), Pressure (Torr, psia, kPa)/0.1 (unit)	

Mechanical

Valve Type:	Normally Closed	
Wetted Materials:	SEMI F20 HP Compliant, 316L VIM/VAR, Hastelloy C-22, 316L Stainless Steel, 304	
Surface Finish:	5µ inch Ra (0.1 µm Ra)	

Compliance

EMC:	EMC Directive 2014/30/EU CE: EN61326-1: 2013	
Environmental Compliance:	RoHS Directive (2011/65/EU) REACH Directive EC 1907/2006	

Model Code

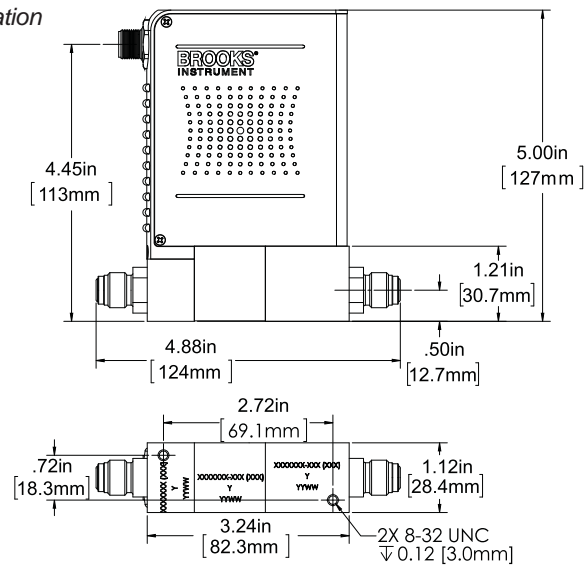
Code Description	Code Option	Option Description							
I. Base Model Code	PC115	Pressure Controller, N2 & H2 at flow rates 0 to 5 slpm							
	PC125	Pressure Controller with Flow Meter, N2 & H2 at 10 SLPM only							
II. Configurability	X	Specific Gas and Range Required							
III. Flow Direction	U	Upstream (For PC115 only)							
	D	Downstream (For PC125 and PC115)							
IV. Full Scale Pressure	1000	Full Scale Pressure							
V. Pressure Measurement	T	Torr							
VI. Reference Pressure	0045	Reference Pressure - Downstream (psia) (default)							
	0004	Reference Pressure - Upstream (psia) (default)							
VII. Pressure Measurement	P	PSIA							
VIII. Gas and Flow Rate Options	0013 010L	N2 at 10 slpm (PC125)							
	0007 010L	H2 at 10 slpm (PC125)							
	XXXX XXXX	Specific Gas (H2 & N2 only), and flow rate 0 to 5 slpm for PC115							
IX. Fitting	VX	1 1/8" body width, 1/4" VCR male							
X. Communications/Connector	Option	Power On State	Full Scale Setting	Full Scale Setting	Full Scale Setting	Poll IO Instance Producer	Poll IO Instance Consumer	Poll IO State Transition	External Baud Rate
	D0	Idle	Count	Integer	6000h	2	7	Executing	500KB
	D1	Idle	Count	Integer	6000h	21	7	Executing	500KB
	D2	Idle	SCCM	Float	7FFFh	13	19	Executing	500KB
	D3	Idle	Count	Integer	6000h	22	7	Executing	500KB
	D4	Executing	Count	Integer	6000h	22	8	Executing	500KB
	D5	Idle	Count	Integer	6000h	6	8	Executing	500KB
	D6	Idle	Count	Integer	7FFFh	3	7	Executing	500KB
	D7	Idle	Count	Integer	7FFFh	6	8	Executing	500KB
	D8	Idle	Count	Integer	6000h	3	7	Executing	500KB
	D9	Executing	Count	Integer	6000h	2	7	Executing	500KB
	DA	Idle	Count	Integer	7FFFh	22	7	Executing	500KB
	DB	Idle	Count	Integer	6000h	22	8	Executing	500KB
	DC	Idle	Count	Integer	7FFFh	3	7	Idle	500KB
	DD	Executing	Count	Integer	7FFFh	22	8	Executing	500KB
	DE	Executing	SCCM	Float	6000h	15	19	Executing	500KB
DX	To be defined by CSR								
XI. CSR	XXXX	Customer Special Request Number							
XII. Reference Temperature	000	0 Degree C Reference							
XIII. Firmware	XXX	Locked in Firmware Revision							
	LFW	Latest Firmware							
	CSR	Firmware defined by CSR							

Sample Model Code

I	II	III		IV	V	VI	VII		VIII		IX	X		XI		XII		XIII
PC125	X	D	-	1000	T	0045	P	-	0013 010L	-	VX	DO	-	XXXX	-	000	-	108

Product Dimensions

PC100 Series - VCR® Configuration



Brooks Service and Support

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards. Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required. For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

CUSTOMER SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users, and maintenance persons. Please contact your nearest sales representative for more details.

Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

TRADEMARKS

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