



PC100 Series

# PC100 Series

Metal Sealed, Ultra-High Purity  
Pressure Controllers with Flow Measurement

PC100 Series serves a broad range of applications including electronic pressure regulation, bubbler head-pressure control, ballast gas pressure control, pressure balancing and dilution lines in deposition. Designed for semiconductor and MOCVD applications, PC100 Series delivers outstanding performance, reliability, and system simplicity to reduce gas consumption and associated abatement costs. Unlike traditional pressure control devices, the PC125 Pressure Controller leverages the mass flow measurement capability and accuracy of the GF100 Thermal Mass Flow Meter.

## Features and Benefits

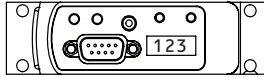
- High-purity, corrosion resistant metal sealed flow path
- Fast settling and response time for improved pressure control
- Upstream and downstream pressure control configurations
- Supports multiple connections: Analog 0-5 Vdc, RS485 and DeviceNet™ communication protocols
- High visibility LCD gives local indication of device performance
- Option for flow monitoring using ultra-stable thermal sensor
- User programmable start-up function for processes requiring a slow ramped pressure control
- In-line device evaluation and instantaneous troubleshooting resulting in reduced downtime
- Zero button to easily re-zero the device during scheduled maintenance
- Full scale ranges from 3 sccm to 10 slm (N<sub>2</sub> Equivalent)

# Product Specifications

	PC115XD	PC125XD	PC115XU
<b>Performance</b>			
Pressure Control Mode	Downstream		Upstream
Embedded Thermal Flow Sensor	Not Applicable	Ability to Monitor Flow	Not Applicable
Full Scale Range	3-10000 sccm N <sub>2</sub> Eq.	2600-10000 sccm N <sub>2</sub> Eq.	3-5000 sccm N <sub>2</sub> Eq.
<b>Pressure Reading</b>			
Accuracy	±1% of reading		
Zero Temperature Coefficient	±0.02% of F.S./°C		
Span Temperature Coefficient	±0.04% of reading/°C		
<b>Pressure Control</b>			
Measurement Range	2-100% F.S.		
Accuracy	<10% F.S. ±0.2% F.S., 10-100% F.S. ±1% F.S.		
Response Time	<1 sec typ. (excluding system time constant)		
<b>Flow Reading</b>			
Measurement Range	---	2-100% of F.S.	---
Accuracy	---	>35% ±1% of reading 2-35% ±0.35% F.S.	---
Repeatability	---	±0.2% of F.S.	---
Zero Temp. Coefficient	---	<0.05% of F.S./°C	---
Span Temp. Coefficient	---	<0.08% of reading/°C	---
Zero Stability	---	<0.5% per year	---
Valve Leak-by	<1% of F.S.		
<b>Ratings</b>			
Operating Temperature Range	10 to 50°C		
Transducer Pressure Range	1000 Torr		
Transducer Over Pressure Limit	2000 Torr		
Differential Pressure	45 psid max		150 Torr min
Leak Integrity (external)	1 x 10 <sup>-10</sup> atm. cc/sec He		
<b>Electrical</b>			
Electical Connection	RS485/Analog via 9-Pin "D" connector, DeviceNet™ via 5-pin "M12" connector	5-pin M12 Connector	RS485/Analog via 9-Pin "D" connector, DeviceNet™ via 5-pin "M12" connector
Digital Communications	RS485 (model specific), DeviceNet (model specific)	DeviceNet (model specific)	RS485 (model specific), DeviceNet (model specific)
Diagnostic/Service Port	RS485 via 2.5 mm jack		
Power Supply/Consumption	DeviceNet: 545mA max. @ +11-25 Vdc, 250 mA max. @ 24 Vdc RS485/Analog: 6 Watts max @ ±15 Vdc. (±10%) or +24 Vdc (±10%)	DeviceNet: 545mA max. @ +11-25 Vdc, 250 mA max. @ 24 Vdc	DeviceNet: 545mA max. @ +11-25 Vdc, 250 mA max. @ 24 Vdc RS485/Analog: 6 Watts max @ ±15 Vdc. (±10%) or +24 Vdc (±10%)
<b>Diagnostics &amp; Display</b>			
Status Light	MFC Health, Network Status		
Display Type	Top Mount Rotatable Integrated LCD (model specific)		
Viewing Distance Fixed	10 ft.		
Units Displayed	Resolution Flow (%), Temp. (°C), Pressure (Torr, psia, kPa)/0.1 (unit)		
<b>Mechanical</b>			
Valve Type	Normally Closed		
Wetted Materials	SEMI F20 HP Compliant, 316L VIM/VAR, 304 Stainless Steel, Hastelloy C-22		
Surface Finish	5µ inch Ra (0.1 µm Ra)		
<b>Compliance</b>			
EMC	Analog/RS485/DNET: EC Directive 2004/108/EC CE: EN61326: 2006 (Fcc Part 15 & Canada IC-subset of CE testing) EtherCAT: EMC Directive 2014/30/EU Evaluation Standard EN61326-1:2013		
Environmental Compliance	RoHS Directive (2011/65/EU & 2015/863/EU) REACH Directive EC 1907/2006		

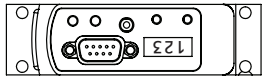
## Base I/O Options

**PDC Ordering Code G1**  
Description: Industry standard Analog / RS485 interface



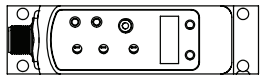
Pin No.	Signals
1	Valve Control
2	Output (0-5 Vdc)
3	+15 Vdc +24 Vdc
4	Pwr Com NC
5	-15 Vdc Pwr Com
6	Setpoint (0-5 Vdc)
7	Signal Common
8	RS-485 (DX+)
9	RS-485 (DX-)

**PDC Ordering Code GX**  
Description: OEM specific Analog / RS485 interface. Display and top plate re-oriented 180°



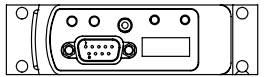
Pin No.	Signals
1	Valve Control
2	Output (0-5 Vdc)
3	+15 Vdc +24 Vdc
4	Pwr Com NC
5	-15 Vdc Pwr Com
6	Setpoint (0-5 Vdc)
7	Signal Common
8	RS-485 (DX+)
9	RS-485 (DX-)

**PDC Ordering Code DX**  
Description: Industry standard ODVA compliant DeviceNet interface



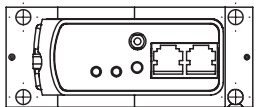
M12 Pin No.	Signals
1	Drain
2	V+ (11-25 Vdc)
3	V-
4	CAN-H
5	CAN-L

**PDC Ordering Code TX**  
Description: Industry standard Analog only interface



Pin No.	Signals
1	Valve Control
2	Output (0-5 Vdc)
3	+15 Vdc +24 Vdc
4	Pwr Com NC
5	-15 Vdc Pwr Com
6	Setpoint (0-5 Vdc)
7	Signal Common
8	No Connection
9	No Connection

**PDC Ordering Code SX**  
Description: Industry standard Analog 9-Pin Sub D connector and dual RJ11 RS485 ports

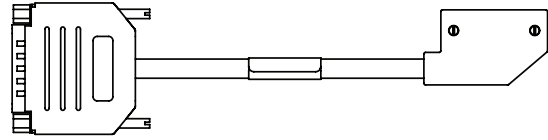


D-Sub Pin No.	Signals
1	Valve Control
2	Output (0-5 Vdc)
3	+15 Vdc +24 Vdc
4	Pwr Com NC
5	-15 Vdc Pwr Com
6	Setpoint (0-5 Vdc)
7	Signal Common
8	Signal Common
9	Valve Test Point

RJ11 J2 Pin No.	Signals
3	RS-485 (DX-)
4	RS-485 (DX+)

All Base I/O options include:  
Diagnostic port communication RS485 via 2.5mm jack

## I/O Options Using Base Model and Adapter Cable



A range of low profile adapter cables have been developed to support replacing older generation PC's with different pinout configurations. The base PC will be either a G1 or SX configuration, depending on the product being replaced.

**PDC Ordering Code UX**  
Description: SX base I/O with 7003550 adapter

Pin No	Signals
9	VALVE OFF
6	OUTPUT ( 0-5 VDC )
4	+15 VDC +24 VDC
7	PWR COM NC
11	-15 VDC PWR COM
15	SETPOINT ( 0-5 VDC )
1,13,14	SIGNAL COMMON
2	ZERO ALARM
12	VALVE TEST POINT
8	CASE GROUND
3,5,10	NO CONNECTION

**PDC Ordering Code: EX**  
Description: GX base I/O with 7003083 adapter

Pin No	Signals
J	VALVE OFF
3	OUTPUT ( 0-5 VDC )
4	+15 VDC +24 VDC
2	PWR COM NC
F	-15 VDC PWR COM
A	SETPOINT ( 0-5 VDC )
B,C,10	SIGNAL COMMON
1	CASE GROUND
5, 6, 8, 9	NOT CONNECTED
I, D, E, H	NOT CONNECTED
7,G	KEY WAY

RJ11 J2 Pin No	RJ11 J3 Pin No	Signals
3	3	RS-485 (DX-)
4	4	RS-485 (DX+)

**PDC Ordering Code: FX / JX**  
Description: SX base I/O with 7003069 (FX)/7001814 (JX) adapter

Pin No	Signals
1	VALVE CONTROL*
2	OUTPUT ( 0-5 VDC )
3	+15 VDC +24 VDC
4	PWR COM NC
5	-15 VDC PWR COM
6	SETPOINT ( 0-5 VDC )
7	SIGNAL COMMON
8	SIGNAL COMMON
9	VALVE TEST POINT

**PDC Ordering Code: BX**  
Description: G1 base I/O with 7003590 adapter for compatibility with 15-Pin D

Pin No	Signals
12	VALVE OVERRIDE
2	OUTPUT ( 0-5 VDC )
5	+15 VDC +24 VDC
9	PWR COM NC
6	-15 VDC PWR COM
8	SETPOINT ( 0-5 VDC )
1,10	SIGNAL COMMON
3,4,7,11	NO CONNECTION
13,14,15	NO CONNECTION

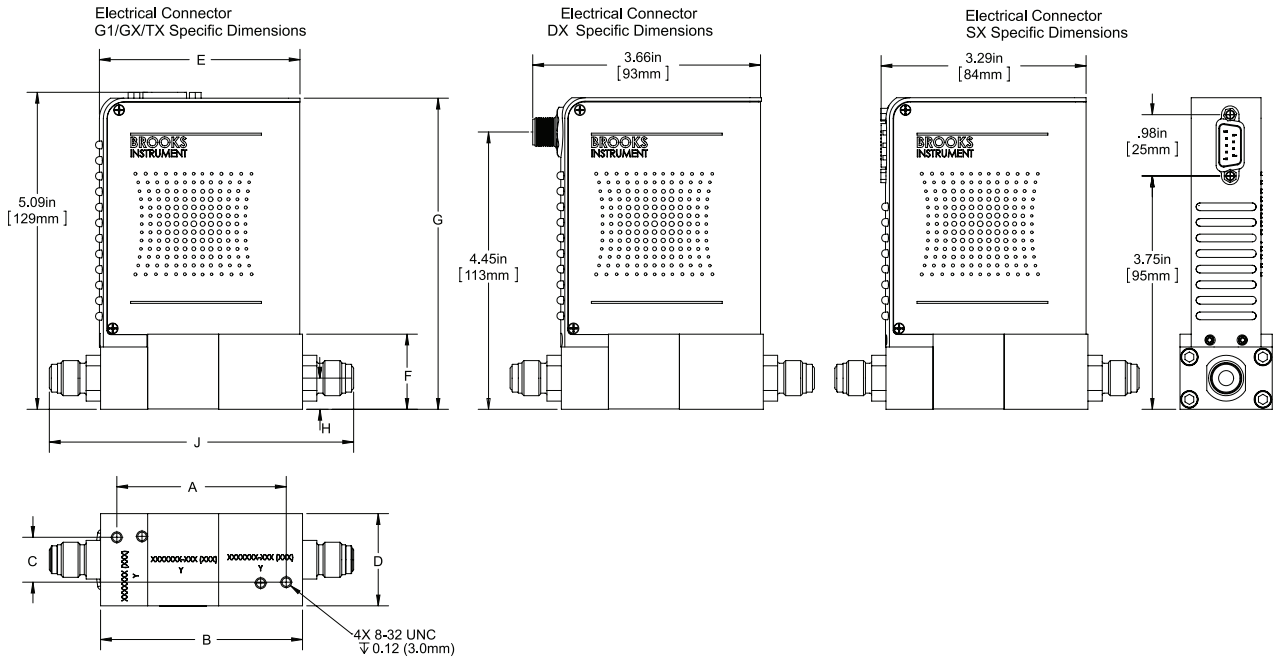
**PDC Ordering Code: KX**  
Description: G1 base I/O with 7003298 adapter

Pin No	Signals
3	VALVE CONTROL
2	OUTPUT ( 0-5 VDC )
7	+15 VDC +24 VDC
5	PWR COM NC
6	-15 VDC PWR COM
8	SETPOINT ( 0-5 VDC )
11,12	SIGNAL COMMON
15	CASE GROUND
1, 4, 9, 10, 13, 14	NO CONNECTION

Other adapter options are available for the PC100 Series. Please contact Brooks Customer Service for more information.

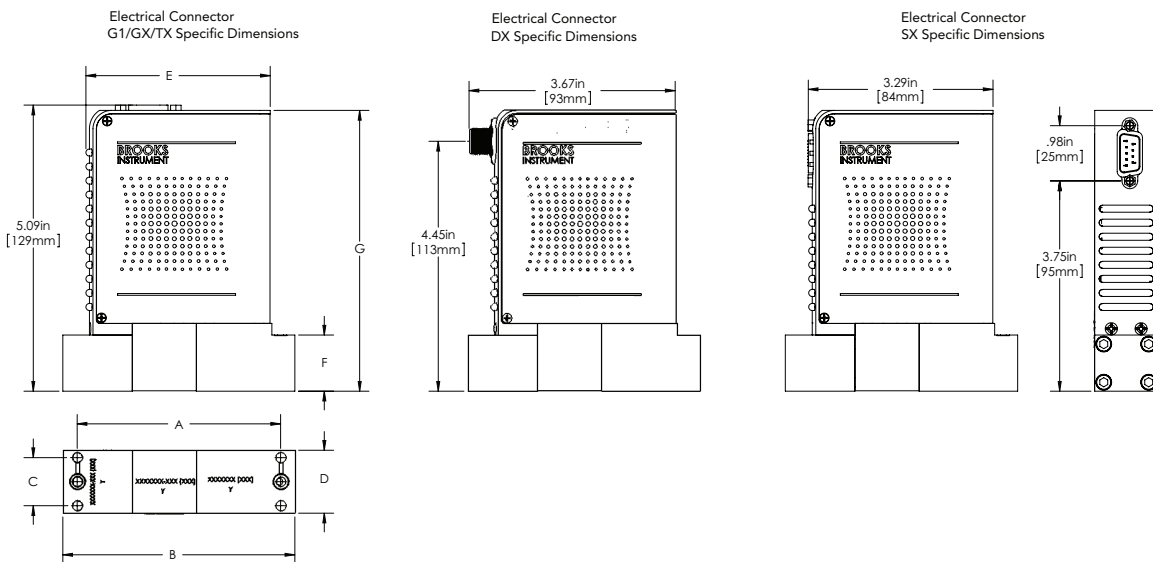
# Product Dimensions

## PC100 Series - VCR® Configuration



Fitting Option Code	VCR	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F	Dim G	Dim H	Dim J
VX	1/4"	69mm [2.72in]	82mm [3.24in]	18mm [0.72in]	38mm [1.48in]	83mm [3.28in]	31mm [1.21in]	127mm [5.0in]	13mm [0.50in]	124mm [4.88in]

## PC100 Series - Downport Configurations



Fitting Option Code	Seal Type	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F	Dim G
CX	C-SEAL	92mm [3.62in]	105mm [4.13in]	22mm [0.86in]	28mm [1.12in]	83mm [3.28in]	25mm [1.00in]	127mm [5.00in]
WX	W-SEAL	92mm [3.62in]	105mm [4.13in]	22mm [0.86in]	28mm [1.12in]	83mm [3.28in]	25mm [1.00in]	127mm [5.00in]
LX	C-SEAL	92mm [3.62in]	105mm [4.13in]	22mm [0.86in]	28mm [1.12in]	83mm [3.28in]	25mm [1.00in]	127mm [5.00in]

Code Description	Code Option	Option Description								
I. Base Model Code	PC115	Pressure Controller								
	PC125	Pressure Controller with Flow Meter								
II. Configurability	X	Specific Gas and Range Required								
III. Flow Direction	U	Upstream Pressure Control Mode (For PC115 Only)								
	D	Downstream Pressure Control Mode (For PC125 and PC115)								
IV. Full Scale Pressure Range	1000	Full Scale Pressure Transducer Range, 1000 Torr								
V. Full Scale Measurement Unit	T	Torr								
VI. Reference Pressure	0045	Downstream Pressure Condition, psia - Default Setting								
	0004	Upstream Pressure Condition, psia - Default Setting								
VII. Pressure Measurement Unit	P	PSIA								
VIII. Pressure Options	XXXXXXX	Specific Gas Code (H <sub>2</sub> , N <sub>2</sub> , He, Ar) & Range, i.e. "0013" = Nitrogen and "010L" = 10 slpm								
IX. Fitting	VX	1 1/8" body width, 1/4" VCR male								
	CX	1-1/8" body width, 92mm C Seal								
	WX	1-1/8" body width, 92mm W Seal								
	LX	1-1/8" body width, 92mm C Seal w/Poke Yoke								
X. Communications/Connector	BX	Cable adapter to 15 pin D Brooks*								
	EX	Cable adapter to Card Edge (w/out VTP), RS485 through RJ11 jacks*								
	FX	Cable adapter with 9 pin STEC pin-out & jack screws (w/ VTP)*								
	GX	9 pin D with RS485; display and overlay 180° orientation*								
	G1	9 pin D with RS485*								
	JX	Cable adapter with 9 pin STEC pin-out & jack screws (w/ VTP)*								
	KX	Cable adapter to MKS 15 pin D*								
	SX	9 pin D with STEC pin-out (w/ VTP)*								
	TX	9 pin D with UDT9 pin-out*								
	UX	Cable adapter to 15 pin D (w/ VTP)*								
		Option	Power On State	Full Scale Setting	Full Scale Setting	Full Scale Setting	Poll I/O Instance Producer	Poll I/O Instance Consumer	Poll I/O 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 Customer Special Request								
XI. Customer Special Request	XXXX	Customer Special Request Number								
XII. Reference Temperature	000	0°C Reference Calibration (Standard) - Default Setting								
XIII. Firmware	XXX	Firmware Revision								
	LFW	Latest Firmware Revision								
	CSR	Firmware Defined by Customer Special Request in Section XI								

\* For PC115 Only

### 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	D0	-	XXXX	-	000	-	LFW

# Service and Support

Brooks is committed to assuring all of our customers receive the ideal pressure controllers 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](http://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.

## 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

Brooks ..... Brooks Instrument, LLC  
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*Beyond Measure*