

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	Benefits
Enhanced Diagnostics and User Interface	Instantaneous troubleshooting and in-line evaluation resulting in limited service interruption and reduced downtime
High Purity Flow Path	Faster dry-down during purge steps
Field Proven Design	Stable and precise control Flow purge gases to maintain stable environment
Various Full Scale Ranges and Gases	Flexible to user applications with various full scale pressure ranges, gases, flows
Digital Pressure Control	Fast response and settling time for improved pressure control
Various Fittings and Communication	Allows for excellent product with drop in functionality
User Programmable Start-up Function	Slow ramped pressure control

Product Specifications

	PC115XD	PC125XD	PC115XU
Performance¹			
Pressure Control Mode	Downstream		Upstream
Embedded Thermal Flow Sensor	Not Applicable		Ability to Monitor Flow
Full Scale Pressure Range	100 Torr	1000 Torr	
Full Scale Range	10-2000 sccm	10-10000 sccm	2600-10000 sccm
10-5000 sccm	10-250 sccm		
Pressure Reading			
Accuracy	100 Torr: 2-20% F.S. = $\pm 0.2\%$ F.S., ≥ 20 -100% reading = $\pm 1\%$ reading 1000 Torr: $\pm 1\%$ of reading		
Zero Temperature Coefficient	$\pm 0.02\%$ of F.S./°C		
Span Temperature Coefficient	$\pm 0.04\%$ of reading/°C		
Pressure Control			
Measurement Range	2-100% F.S.		
Accuracy	100 Torr: <25% F.S. = $\pm 0.25\%$ F.S., 25-100% F.S. = $\pm 1\%$ S.P. 1000 Torr: <10% F.S. = $\pm 0.2\%$ F.S., 10-100% F.S. = $\pm 1\%$ S.P.		
Response Time	<1 sec typ. (excluding system time constant)		
Flow Reading			
Measurement Range	---	2-100% of F.S.	---
Accuracy	---	>35% $\pm 1\%$ of reading 2-35% $\pm 0.35\%$ F.S.	---
Repeatability	---	$\pm 0.2\%$ 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.		
Ratings			
Operating Temperature Range	10 to 50°C		
Transducer Pressure Range	100 Torr	1000 Torr	100 Torr
Transducer Over Pressure Limit	2000 Torr		
Differential Pressure	45 psid max		150 Torr min
Leak Integrity (external)	1×10^{-10} atm. cc/sec He		
Electrical			
Electrical 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	Analog/DeviceNet: RS485 via 2.5mm jack		
Power Supply / Consumption	DeviceNet: 545mA max. @ +11-25 Vdc, 250 mA max. @ 24 Vdc RS485/Analog: 6 Watts max @ ± 15 Vdc. ($\pm 10\%$) or +24 Vdc ($\pm 10\%$)	DeviceNet: 545mA max. @ +11-25 Vdc, 250 mA max. @ 24 Vdc RS485/Analog: 6 Watts max @ ± 15 Vdc. ($\pm 10\%$) or +24 Vdc ($\pm 10\%$)	DeviceNet: 545mA max. @ +11-25 Vdc, 250 mA max. @ 24 Vdc RS485/Analog: 6 Watts max @ ± 15 Vdc. ($\pm 10\%$) or +24 Vdc ($\pm 10\%$)

¹ Based on factory N₂ calibration

Product Specifications

PC115XD	PC125XD	PC115XU
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Diagnostics & Display

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)

Mechanical

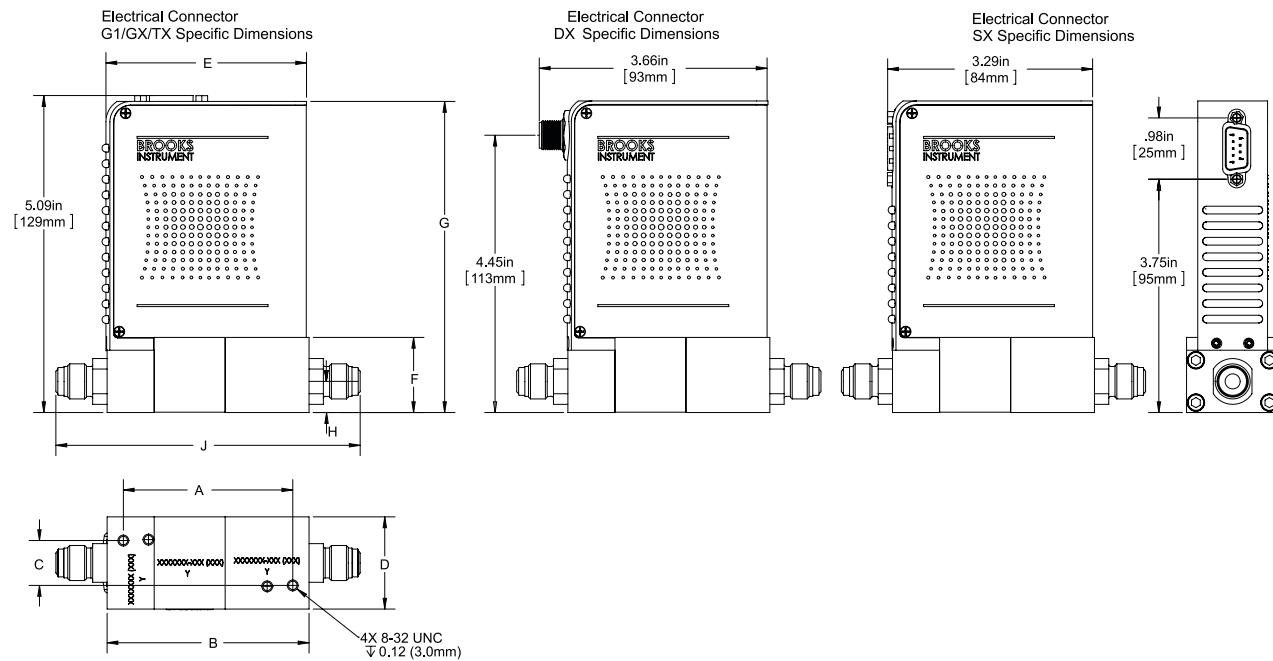
Valve Type	Normally Closed
Wetted Materials	SEMI F20 HP Compliant, 316L VIM/VAR, 304 Stainless Steel, Hastelloy C-22
Surface Finish	5µ inch Ra (0.1 µm Ra)

Compliance

EMC	Analog/RS485/DNET: EC Directive 2004/108/EC CE: EN61326: 2006 (FCC Part 15 & Canada IC-subset of CE testing),
Environmental Compliance	RoHS Directive (2011/65/EU & 2015/863/EU) REACH Directive EC 1907/2006

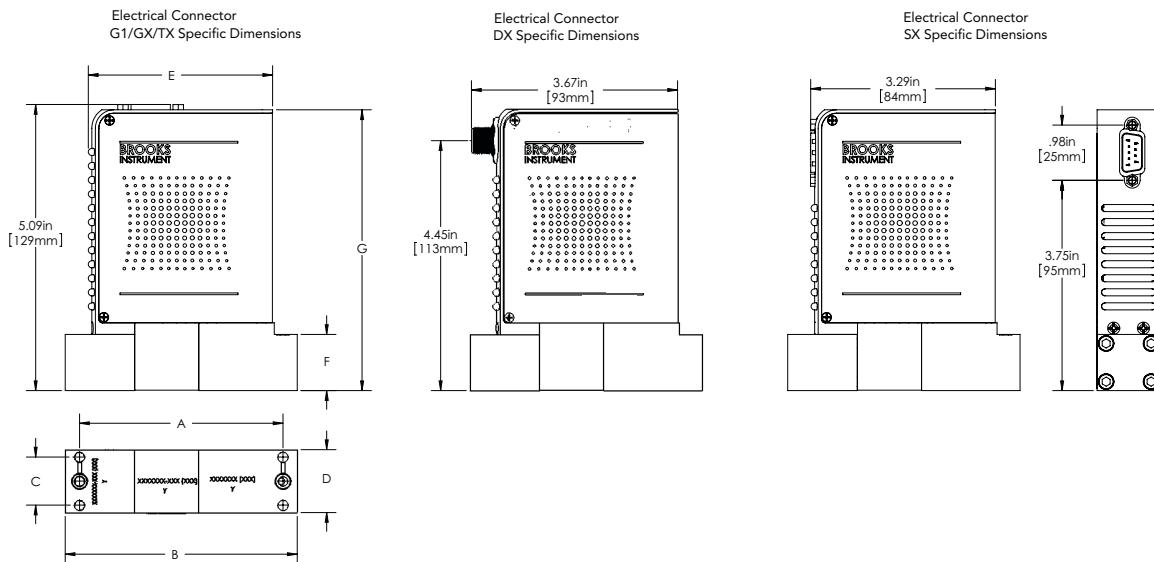
Product Dimensions

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 [5.00in]	13mm [0.50in]	124mm [4.88in]

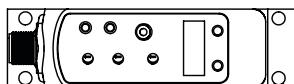
Downport Configurations



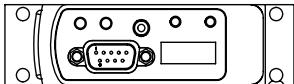
Fitting Option Code	Seal Type	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F	Dim G
CX	C-SEAL	92mm [3.62in]	105mm [4.13in]	22mm [0.86in]	28mm [1.12in]	83mm [3.28in]	25mm [1.00in]	127mm [5.00in]
WX	W-SEAL	92mm [3.62in]	105mm [4.13in]	22mm [0.86in]	28mm [1.12in]	83mm [3.28in]	25mm [1.00in]	127mm [5.00in]
LX	C-SEAL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

Product Connections

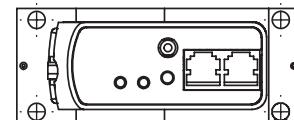
Base I/O Options



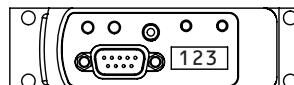
Description: Industry standard ODVA compliant DeviceNet interface



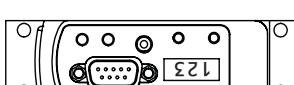
Description: Industry standard Analog only interface



Description: Industry standard Analog 9-Pin Sub D connector and dual RJ11 RS485 ports



Description: Industry standard Analog / RS485 interface



Description: OEM specific Analog / RS485 interface. Display and top plate re-oriented 180°

Model Code Option: DX

Pin	Description	
1	Drain	
2	V+	(11-25 Vdc)
3	V-	
4	CAN-H	
5	CAN-L	

Model Code Option: TX

Pin	Description	
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	

Model Code Option: SX

Pin	Description	
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 Pin	Description	
3	RS-485 (DX-)	
4	RS-485 (DX+)	

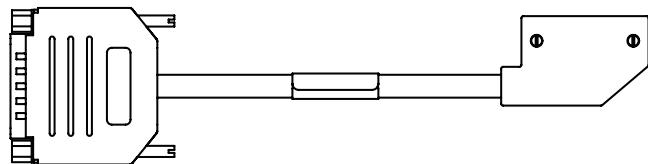
Model Code Option: G1

Pin	Description	
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-)	

Model Code Option: GX

Pin	Description	
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-)	

Adapter Cables with Base I/O Option



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 G1, GX or SX configuration, depending on the product being replaced. Other adapter options are available for the PC100 Series. Please contact Customer Service for more information.

Model Code Option: UX

Pin	Description	
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	

Model Code Option: FX/JX

Pin	Description	
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	

Description: SX base I/O with 7003069 (FX)/7001814 (JX) adapter

Model Code Option: KX

Pin	Description	
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	

Model Code Option: BX

Pin	Description	
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	

Description: G1 base I/O with 7003590 adapter

Model Code Option: EX

Pin	Description	
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	Zero Alarm	
5,6,8,9	No Connection	
I,D,E,H	No Connection	
7,G	Key Way	
J2	J3	
3	3	Rs-485 (Dx-)
4	4	Rs-485 (Dx+)

Description: GX base I/O with 7003083 adapter

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*							
	D	Downstream Pressure Control Mode							
IV. Full Scale Pressure Range	0100	Full Scale Pressure Transducer Range, 100 Torr							
	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. Full Scale Gas and Flow Range	XXXX XXXX	Specific Gas Code (H ₂ , N ₂ , He, Ar) & Range, i.e. "0013" = Nitrogen and "010L" = 10 slpm							
IX. Fittings	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/Connectors	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	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							

* For PC115 Only

Model Code

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

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 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

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Global Headquarters

Brooks Instrument
407 West Vine Street
Hatfield, PA
19440-0903 USA

Toll-Free (USA): 888-554-FLOW
T: 215-362-3500

BrooksAM@BrooksInstrument.com

A list of all Brooks Instrument locations and contact details can be found at www.BrooksInstrument.com

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