

Beyond Measure

SLA5810/20/40 SLAMF10/20 Series

Elastomer Sealed, Digital, Upstream, Downstream, and Remote Transducer Pressure Controllers

The SLA Series pressure controllers and pressure controlling flowmeters have gained broad acceptance as the standard for accuracy, stability and reliability. Based on the core control technology present in our industry-leading thermal mass flow controllers, SLA pressure controllers are able to control the pressure of a gas based on a set point signal by replacing the thermal mass flow sensor with a pressure sensor. They have a wide pressure measurement and control range and are suitable for a broad range of operating conditions making them well suited for applications in thin film processes, chemical and petrochemical research, laboratory, analytical, fuel cell and life sciences among others.



Features	Benefits
Closed Loop Control	Eliminates droop & hysteresis associated with traditional mechanical spring diaphragm pressure regulators
User Accessible Service Port	Simplified installation, start-up, troubleshooting and access to diagnostics provides maximum uptime
Wide Pressure Range Capabilities	Ability to control up to 4500 psig, giving it one of the widest pressure ranges on the market today
Advanced Diagnostics	Ensures device is operating within user specified limits for high process yield and maximum uptime
Superior Valve Technology	Minimum leak-by, maximum turndown, fast response reduces overall gas panel cost and increases throughput
Adaptable Mechanical Configurations	Easily retrofit to existing systems
Primary Standard Calibration Systems	Ensures measurement accuracy is traceable to international standards
Simple Modular Design and Reducing Total Cost of Ownership	Easy-to-service elastomer sealed design provides options for factory or field service maximizing uptime
IP66 and Hazardous Area Enclosure	Available on SLAMF for hosedown, washdown & hazardous area applications
Hazardous Area Approvals	Designed to operate in non-incendive (Division 2/Zone 2) environments

Product Specifications

Flexible Pressure Control Capabilities

SLA Series pressure controllers can be built for both upstream pressure control and downstream pressure control. These designations are determined by the location of the vessel where the pressure is being controlled. Our upstream pressure controllers can also be considered back pressure regulators, and our downstream pressure controllers can also be considered pressure regulators. In addition, a remote transducer configuration can be used to combine the benefits of pressure control and flow measurement.



Product Specifications

Flow Ranges and Pressure Ratings:

Pressure Controller Model Pressure Controller Model		Flow Ranges	N ₂ Eq. Ratings	Minimum Full Scale Pressure	Maximum Full Scale Pressure	PED Module H
		Min. F.S.	Max. F.S.	Standard	Standard	Category
SLA5810/SLAMF10	Downstream	0.003	50 ¹	1 psi	1500 psia / 103 bara	SEP
3LA3010/3LAIVIF10	(Pressure Regulator)	0.1	10	1500 psi	4500 psia / 310 bara	JLF
SLA5820/SLAMF20	Upstream (Back	0.003	50 ¹	1 psi	1500 psia / 103 bara	SEP
SLAS620/SLAWF20	Pressure Regulator)	0.1	10	1500 psi	4500 psia / 310 bara	SEP
SLA5840	Remote Transducer Upstream & Downstream	0.003 0.1	50 10	10 psi 1500 psi	1500 psia / 103 bara 4500 psia / 310 bara	SEP

 1 Please see sizing tool for flow limitations < 10 psi F.S. pressure

	SLA58510/20 & SLAMF10/20	SLA5840	
Performance			
Pressure Accuracy (Including linearity and Hysteresis)	±0.25% of Transducer F.S., F.S. > 300 psia ±0.12% of Transducer F.S., F.S. ≤ 300 psia	Dependent on Remote Pressure Transducer	
Flow Accuracy (N ₂ eq.)	N/A	±0.9% of S.P. (20 - 100% F.S.) ±0.18% of F.S. (2 - 20% F.S., 1 - 20% F.S. from 1 - 50 lpm)	
Control Range	20:1 Typical - Application specific		
Repeatability & Reproducibility	0.20% S.P.		
Linearity	Included in accuracy		
Response Time (Settling Time within ± 2% F.S. for 0 - 100% command step)	System dependent	<1 second	
Zero Stability	< <u>+</u> 0.001% F.S. per 30 days	Dependent on Remote Pressure Transducer	
Temperature Coefficient	< <u>+</u> 0.1% F.S. per °C	Dependent on Remote Pressure Transducer	
Pressure Coefficient (Flow Measurement Only)	N/A	±0.03% per psi (0 - 200 psi N ₂)	
Attitude Sensitivity	The accuracy of the Pressure Sensor is not attitude dependent		

Ratings

Operating Temperature Range	(-14) - 65°C (7 - 149°F) ³		
Transducer Pressure Ratings	15 psia / 1.03 bara for <15 psia F.S. 15 psia / 1.03 barg for <15 psig F.S. 100 psia / 6.9 bara for <100 psia F.S. 100 psia / 6.9 bara for 15 - 100 psig F.S. 300 psia / 20.7 bara for 100 - 300 psia F.S. 300 psig / 20.7 barg for 100 - 300 psig F.S. 3000 psia / 206.9 bara for 300 - 3000 psia F.S. 4500 psia / 310.3 bara for 3000 - 4500 psia F.S.	Dependent on Remote Pressure Transducer	
Leak Integrity (External)	1x10 ^{.9} atm. cc/sec He		

Mechanical	
Valve Type	Normally Closed, Normally Open
Primary Wetted Materials	316L Stainless Steel, High Alloy Stainless Steel, Viton® fluoroelastomers. Optional Buna-N, Kalrez®, Teflon®/Kalrez®, and EPDM

-				
1.0	iag	no	c†ı	CC
	iag	110	30	Co

Status Lights	MFC Health, Network Status	
Alarms ²	Sensor Output, Control Valve Output, Over Temperature, Power Surge/Sag, Network Interruption	
Diagnostic / Service Port RS485 via 2.5 mm jack (Located under the top cover in SLAMF version)		

² Alarm modes are dependent on the communications interface. These are described in the corresponding digital communication interface manual.
³ Hazardous area certifications have a temperature range limitation of 0 - 65°C.

Product Specifications

Electrical Specifications

Electrical Specifications			
	RS485	Profibus®	DeviceNet ^{® 6}
Communication Protocol			
Electrical Connection (SLA58XX)	1 x 15-pin Male Sub-D, (A) 1 x 9-pin Female Sub-D		1 M12 with threaded coupling nut (B)
Electrical Connection (SLAMF)	PG11 Cable Gland, 1/2" NPT	N/A	
Analog I/O	0 - 5 V, 1 - 5 V, 0 - 10 \	/, 0 - 20 mA, 4 - 20 mA	N/A
Power Max. / Purge		dc to +27 Vdc	From +11 Vdc to +25 Vdc
Power Requirements Watts, Max.	Valve Orifice ≤0	.032": 8.7 Watts .032": 5.2 Watts	Valve Orifice >0.032": 10 Watts Valve Orifice ≤0.032": 7 Watts
Voltage Setpoint Input Specification			
Nominal Range		/dc or 0 - 10 Vdc	N/A
Full Range		11 Vdc	N/A
Absolute Max		ut damage)	N/A
Input Impedance	>990	kOhms	N/A
Current Setpoint Input Specification			
Nominal Range	4 - 20 mA c	or 0 - 20 mA	N/A
Full Range	0 - 2	2 mA	N/A
Absolute Max	24 mA (with	out damage)	N/A
Input Impedance	100 (N/A	
Flow Output (Voltage) Specification	IS		
Nominal Range	0 - 5 Vdc, 1 - 5 \	N/A	
Full Range	(-1) - 1	I1 Vdc	N/A
Min Load Resistance	2 kC	N/A	
Flow Output (Current) Specification	IS		
Nominal Range	0 - 20 mA or 4 - 20 mA		N/A
Full Range	0 - 2	0 - 22 mA	
Max. Load	380 Ohms		N/A
Analog I/O Alarm Output ⁴			
Туре	Open C	Collector	N/A
Max. Closed (On) Current	25	mA	N/A
Max. Open (Off) Leakage	1μΑ		N/A
Max. Open (Off) Voltage	30	N/A	
Analog I/O Valve Override Signal S	pecifications ⁵		
Floating / Unconnected	Instrument controls val	N/A	
VOR < 0.3 Vdc	Valve	Closed	N/A
0.3 Vdc < VOR < 4.8 Vdc	Und	efined	N/A
VOR > 4.8 Vdc	Valve	e Open	N/A
Input Impedance	60 k	Ohms	N/A
Absolute Max. Input	(-25 Vdc) < VOR < 25	5 Vdc (without damage)	N/A

 $^4\,$ The Alarm Output is an open collector or "contact type" that is CLOSED (on) whenever an alarm is active.

The Alarm Output may be set to indicate any one of various alarm conditions. ⁵ The Valve Override Signal (VOR) is implemented as an analog input which measures the voltage at the input and controls the

valve based upon the measured reading as shown in this section. ⁶ Available on SLA5810/20/40 only.



Note: Aux. Input only used for Remote Transducer Pressure Controllers.

3/8" - 1/2" VCO 128.8mm [5.07in] * Overall length finger tight



Note: Aux. Input only used for Remote Transducer Pressure Controllers.

3/8" - 1/2" VCO * Overall length finger tight

128.8mm [5.07in]



1/4" RC-F (BSP) 1 * Overall length finger tight

184.8mm [7.28in]

174.2mm [6.86in]

3/8" - 1/2" VCO

SLAMF10/20 - Thru-Flow, Profibus





Dim X

*180.7mm [7.12in]

*185.3mm [7.30in]

*188.4mm [7.42in]

*192.4mm [7.58in]

181.8mm [7.16in]

173.6mm [6.84in]

176.2mm [6.94in]

*185.4mm [7.30in]

*188.8mm [7.43in]

189.4mm [7.46in]

184.8mm [7.28in]

174.2mm [6.86in]





<i>i</i> (A-LINE
4 B-LINE	5 SHIEL	
16.2 [.64]		
	◀-49.5-► [1.95]	

SHOWN WITH COVER REMOVED	
	0

TOP VIEW

Terminal	Description	
1	Power Supply (13.5 - 27 V)	
2	Valve Override Input	
3	Power Common	
4	Aux Common	
5	Aux Input (0 - 5 V, 0 - 10 V)	
Terminal	Profibus M12 Connector Wire to Terminals 6-10	
6	P5V (Brown)	
7	RXD/TXD - B-Line (RED)	
8	Ground (Blue)	
9	RXD/TXD - A-Line (Green)	
10	Shield (Gray)	

Note: Aux. Input only used for Remote Transducer Pressure Controllers.

1/4" RC-F (BSP) 1 * Overall length finger tight

Fitting

1/8" Tube Comp.

1/4" Tube Comp. 3/8" Tube Comp.

1/2" Tube Comp.

1/4" VCR

1/4" VCO

1/4" NPT-F

6mm Tube Comp. 10mm Tube Comp.

3/8" - 1/2" VCR

3/8" - 1/2" VCO

Model Code

Code Description	Code Option	Option Description
I. Base Model Code	SLA	Smart Link Advantage
II. Configurability	58	Standard Elastomer Series
	MF	Standard Elastomer Series (NEMA 4X/IP66 Housing)
III. Function	1	Downstream Pressure Controller
	2	Upstream Pressure Controller
	4	Remote Transducer Pressure Controller (SLA58XX Only)
IV. Gas or Range	0	3 ccm - 50 lpm
V. Digital I/O Communication	А	None (select applicable analog I/O)
(SLA58XX Pressure Controllers)	Р	Profibus (5-pin female M12, M20 x 1.5 conduit)
	R	Profibus (5-pin female M12, PG11 cable gland)
	Т	Profibus (5-pin female M12, 1/2" NPT (F) conduit)
	S	RS485 (select applicable analog I/O)
VI. Mechanical Connection	1A	Without adapters, 9/16" - 18 UNF
	1B	1/4" tube compression
	1C	1/8" tube compression
	1D	3/8" tube compression
	1E	1/4" VCR
	1F	1/4" VCO
	1G	1/4" NPT
	1H	6mm tube compression
	1J	10mm tube compression
	1L	3/8"-1/2" VCR
	1M	3/8"-1/2" VCO
	1P	1/2" tube compression
	1T	1/4" RC (BSP)
	1Y	3mm tube compression
	B1	1/4" tube compression w/filter
	C1	1/8" tube compression w/filter
	D1	3/8" tube compression w/filter
	E1	1/4" VCR w/filter
	F1	1/4" VCO w/filter
	G1	1/4" NPT w/filter
	H1	6mm tube compression w/filter
	J1	10mm tube compression w/filter
	L1	3/8"-1/2" VCR w/filter
	M1	3/8"-1/2" VCO w/filter
	P1	1/2" tube compression w/filter
	T1 Y1	1/4" RC (BSP) w/filter 3mm tube compression w/filter
VII. O-Ring Material	А	Viton
	В	Buna
	С	PTFE
	D	Kalrez
	E	EPDM
	J	FDA/USP Class VI - Viton
	L	FDA/USP Class VI - EPDM
	L	

Model Code

Code Description IX. Valve Type		ode Option Option Description					
A. valve type	1	Normally Closed (≤1500 psi)					
	4	Normally Closed High Pressure (1500 - 4500 psi)					
	5	Normally Open (SLA5810/20 Only) (≤1500 psi)					
X. Analog I/O Communications	A	None - Digit	al Communicat	ions Only			
(SLA58XX Pressure Controllers)	B	None - Digital Communications Only 0 - 5 Volt 0 - 5 Volt					
	C	4 - 20 mA	4 - 20 mA				
		1 - 5 Volt					
			1 - 5 Volt				
	M	0 - 20 mA	0 - 20 mA				
	0	0 - 10 Volt	0 - 10 Volt				
	1	0 - 5 Volt	4 - 20 mA				
	2	0 - 5 Volt	0 - 20 mA				
	3	4 - 20 mA	0 - 5 Volt				
	4	0 - 20 mA	0 - 5 Volt				
	9	0 - 10 Volt	0 - 5 Volt				
X. Analog I/O Communications	٨	New Divit					
(SLAMFXX Pressure Controllers)	A	-	al Communicat	-			
	E	4 - 20 Ma	0 - 5 Volt	PG11 Gland			
	F	0 - 5 Volt	0 - 5 Volt	PG11 Gland			
	G	4 - 20 mA	4 - 20 mA	PG11 Gland			
	H	0 - 5 Volt	4 - 20 mA	PG11 Gland			
		0 - 5 Volt	0 - 20 mA	PG11 Gland			
	J	0 - 5 Volt	0 - 5 Volt	1/2" NPT (F) Conduit			
	K	4 - 20 mA	4 - 20 mA	1/2" NPT (F) Conduit			
	N	0 - 5 Volt	4 - 20 mA	M20 x 1.5 Conduit			
	0	0 - 5 Volt	0 - 20 mA	M20 x 1.5 Conduit			
	P	4 - 20 mA	0 - 5 Volt	M20 x 1.5 Conduit			
	Q	0 - 20 mA	0 - 5 Volt	M20 x 1.5 Conduit			
	R	1 - 5 Volt	1 - 5 Volt	PG11 Gland PG11 Gland			
	S	0 - 20 mA 1 - 5 Volt	0 - 20 mA 1 - 5 Volt				
	T			1/2" NPT (F) Conduit			
	U	0 - 20 mA	0 - 20 mA	1/2" NPT (F) Conduit			
	V	0 - 5 Volt	0 - 5 Volt	M20 x 1.5 Conduit			
	W	1 - 5 Volt 0 - 20 mA	1 - 5 Volt	M20 x 1.5 Conduit			
	X		0 - 20 mA	M20 x 1.5 Conduit M20 x 1.5 Conduit			
	Y 7	4 - 20 mA	4 - 20 mA				
	Z	0 - 20 mA	0 - 5 Volt	PG11 Gland			
	5	0 - 5 Volt	4 - 20 mA	1/2" NPT (F) Conduit			
	6	0 - 5 Volt	0 - 20 mA	1/2" NPT (F) Conduit			
	8	4 - 20 mA	0 - 5 Volt	1/2" NPT (F) Conduit			
	0	0 - 20 mA	0 - 5 Volt	1/2" NPT (F) Conduit			
KI. Power Supply Inputs	1	+15 Vdc					
	2	24 Vdc					
KII. Output Enhancements	A	Standard Res	sponse				
XIII. Certification	1	Safe Area					
	2	For Zone II A	tex / IECEx				

Sample Model Code

1			IV	V	VI	VII	VIII	IX	Х	XI	XII	XIII
SLA	58	5	0	Α	1A	А	В	1	В	1	Α	1

Certifications

Certifications - SLA58XX

Mark	Agency	Certification	Applicable Standard	Details
	UL (Recognized)	Class I, Div 2, Group A, B, C, D Class I, Zone 2, IIC T4 Class II, Zone 22	UL & CSA Standards	E73889 Vol 3, Sec 4
×3	ATEX	II 3 G Ex nA IIC T4 Gc	EN 60079-0:2012 EN 60079-15:2010	KEMA 04ATEX 1118X
	IECEx	II 3 G Ex nA IIC T4 Gc	IEC 60079-0:2011 IEC 60079-15:2010	IECEx DEK 14.0072X
ß	KOSHA	Ex nA IIC T4		15-AV4BO-0641 15-AV4BO-0640
CE	CE	EMC Directive 2014/30/EU Directive 2011/65/EU	EN:61326-1:2013	EMC RoHS

Certifications - SLAMFXX

Mark	Agency	Certification	Applicable Standard	Details
c FL us	UL (Recognized)	Class I, Div 2, Group A, B, C, D Class I, Zone 2, IIC T4 Class II, Zone 22 IP66	UL & CSA Standards	E73889 Vol 3, Sec 4
	UL (Listed)	Class I, Div 2, Group A, B, C, D Class I, Zine 2, IIC T4 Class II, Zone 22 IP66	UL & CSA Standards	E73889 Vol 1, Sec 25
(Ex)	ATEX	II 3 G Ex nA IIC T4 Gc II 3 D Ex tc IIIC T 85°C Dc IP66	EN 60079-0:2012 + A11:2013 EN 60079-15:2010 EN 60079-31:2014	KEMA 04ATEX1290 X
	IECEx	Ex nA IIC T4 Gc Ex tc IIIC T 85°C Dc IP66	IEC 60079-0:2011 + Corr. 2012 + Corr. 2013 IEC 60079-15:2010 IEC 60079-31:2013	IECEx KEM 07.0043X
s	KOSHA	Ex nA IIC T4 Ex tD A22 IP66 T85°C	The Ministry of Employment and Labor Notice No. 2013-34 Article 34 of the Industrial Safety and Health	15-AV4BO-0638 15-AV4BO-0639 16-AV4BO-0328X 16-AV4BO-0327X
CE	CE	EMC Directive 2014/30/EU Directive 2011/65/EU	EN:61326-1:2013	EMC RoHS

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.



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