DS-TMF-SLA5800-Series-RevB-MFC-eng
June, 2014

Data Sheet

SLA5800 Series

Thermal Mass Flow

Model SLA5850

Elastomer Sealed, Digital, Thermal Mass Flow Meters and Controllers

Overview

The SLA5800 Series mass flow meters and mass flow controllers have gained broad acceptance as the standard for accuracy, stability and reliability. These products have a wide flow measurement range and are suitable for a broad range of temperature and pressure conditions making them well suite for applications in chemical and petrochemical research, laboratory, analytical, fuel cell and life science among others.

Highlights of the SLA5800 Series mass flow products include: industry leading long term stability, accuracy backed by superior metrology systems and methods using primary calibration systems directly traceable to international standards, and a broad range of analog and digital I/O options to suite virtually any application. An independent diagnostic/service port permits users to troubleshoot or change flow conditions without removing the mass flow controller from service.

Product Description

The SLA5800 Series provides a highly configurable platform based on a simple modular architecture. The SLA5800 Series feature set was carefully selected to enable drop-in replacement and upgrade of many brands of mass flow controllers. With the wide range of options and features available, the SLA5800 Series provides users with a single platform to support a broad range of applications.

Features and Benefits

Features	Benefits
Industry leading long term sensor stability	Increased system uptime and reduced cost of ownership by reducing maintenance and eliminating periodic recipe adjustments and/or recalibrations
User accessible service port	Simplified installation, start-up, troubleshooting and access to diagnostics provides maximum uptime
Advanced diagnostics	Ensures device is operating within user specified limits for high process yield uptime
Superior valve technology	Minimum leak-by, wide turndown, fast response and superior corrosion resistant materials 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	Easy-to-service elastomer sealed design provides for factory or field service maximizing uptime and reducing total cost of ownership

Product Description

Advanced Thermal Flow Measurement Sensor

Brooks' sensor technology combines:

- Excellent signal to noise performance for improved accuracy at low setpoints
- Superior long-term stability through enhanced sensor manufacturing and burn in process
- Isothermal packaging to reduce sensitivity to external temperature changes

Advanced Diagnostics

The mass flow controller remains the most complex and critical component in gas delivery systems. When dealing with highly toxic or corrosive gases, removing the mass flow controller to determine if it is faulty should be the last resort. In response to this, Brooks pioneered smarter mass flow controllers with embedded self test routines and introduced an independent diagnostic/service port to provide the user with a simple interface, for troubleshooting without disturbing flow controller operation.

Wide Flow Range

The SLA5800 Series covers an extremely broad range of flow rates. Model SLA5850 can have a full scale flow as low as 3 ccm. With a high turndown ratio of 100:1 for any full scale range from 1-50 lpm N2 equivalent and 50:1 turndown for all other flow rates, accurate gas flow can be measured or controlled down to 0.06 ccm! Model SLA5853 can monitor or control gas flows up to 2500 lpm.

Fast Response Performance

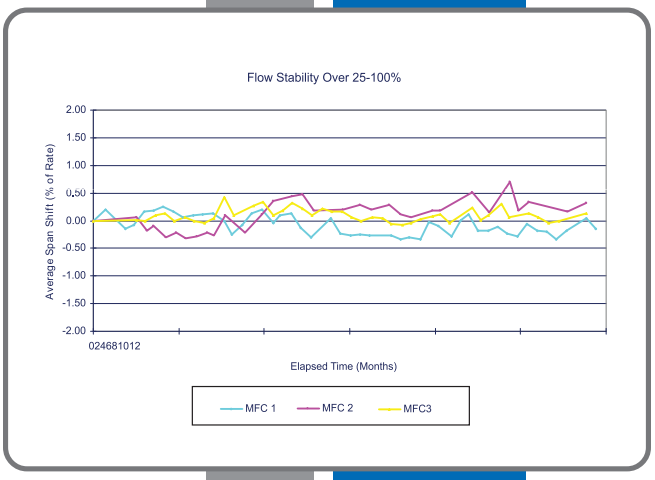
The all-digital electronics and superior mechanical configuration in the SLA5800 Series provide for ultra fast response characteristics.

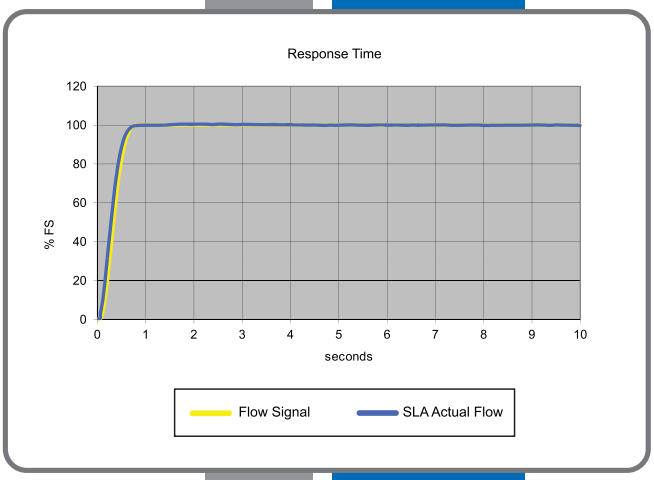
Broad Array of Communication Options

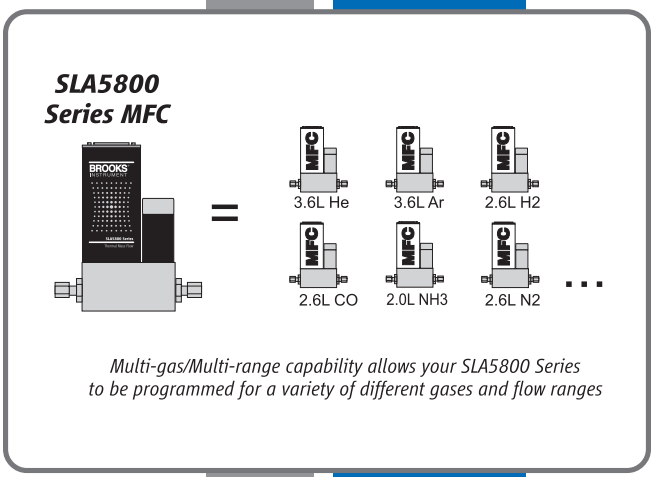
Brooks offers traditional 0-5 volt and 4-20mA analog options as well as RS-485 digital communications ("S-protocol", based on HART) Brooks also offers control interfaces via digital network protocols like DeviceNet, a high speed (up to 500k baud) digital communication network, and Profibus. Brooks' communication capabilities and device-profiles have been certified by the ODVA (Open DeviceNet Vendor's Association) and the ITK (Interoperability Test Kit). Other network protocols are in development. Talk to your Brooks representative about your specific needs.

Multi-gas/Multi-range Capabilities

The SLA5800 Series multi-gas and multi-range capabilities reduce inventory. Storage and pre-programming of up to 6 gas calibrations easily permits users to switch between different gasses and ranges on a single device.







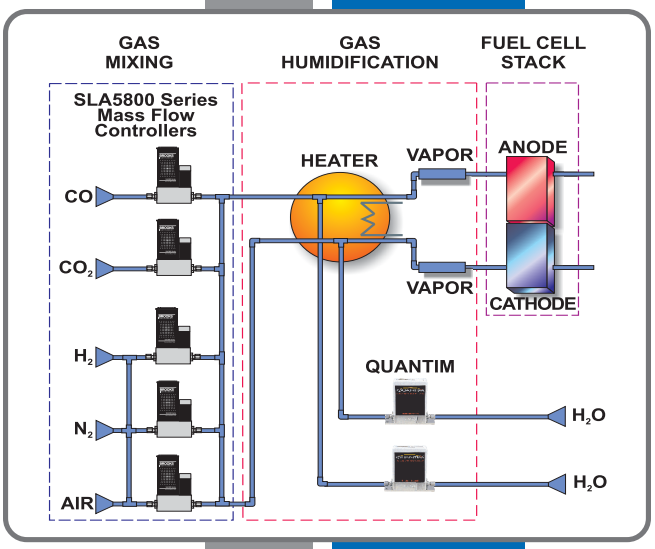
Multi-gas/Multi-range capability allows your SLA5800 Series to be programmed for a variety of different gases and flow ranges

Product Applications

Fuel Cell Test Stand

Fuel cell test stands are used to measure the efficiency of the fuel cell. These devices rely on stable, accurate mass flow controllers with wide turndown and fast response. High-performance Brooks' products are ideal for this application.

Brooks' digital gas mass flow controllers can respond to a setpoint change in less than 1 second. The SLA5800 Series provides excellent response, a wide dynamic flow and pressure range, and extremely stable, low zero drift operation.



Catalyst Research

The challenge is scaling up the catalyst process from the laboratory to the pilot plant and, ultimately, to production levels. It is imperative that the amount of feed flowing through the research catalyst bed be precisely measured so that the conversion rate and selectivity can be accurately calculated and scaled up successfully.

Brooks' SLA Series thermal mass flow controllers and Quantim® Series Coriolis mass flow controllers have been selected by many companies involved in catalyst research because these instruments provide exceptional precision, wide dynamic range, and superb stability. The SLA5800 Series' improved turndown ratio and reduced sensitivity to external temperature changes makes it ideal for critical measurements where the composition or thermal properties of the feeds vary. Both series are available for extremely high pressure service, have appropriate area classifications, and are offered with a variety of wetted materials. The 0254 secondary electronics may be used to provide power, set point, and local display.

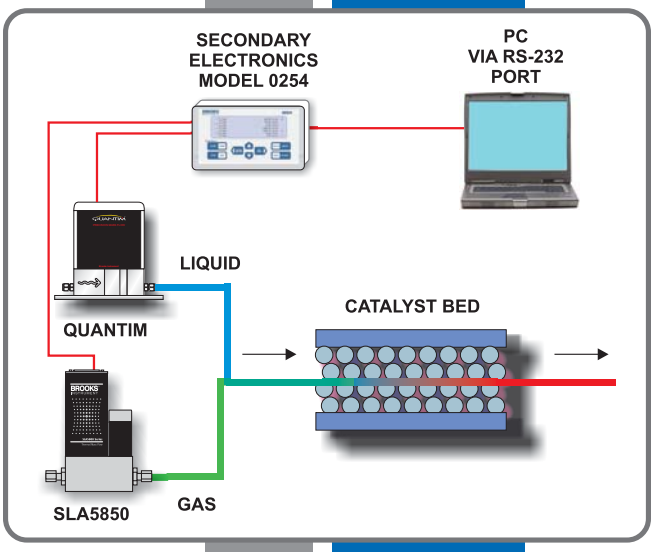
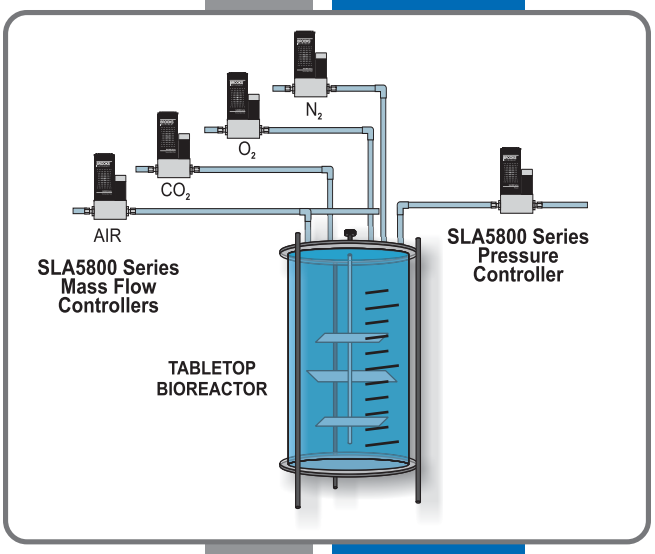


Table Top Bioreactors

Brooks has earned a leading reputation in controlling of gas flows for bioreactor applications.

The 1350 and 1355 Sho-Rate™ variable area flow meters with integral needle valves are ideal for small systems with manual gas adjustment. For applications where dissolved oxygen and pH control are more critical, mass flow controllers provide the next level of precision and automation. Brooks offers a wide range of solutions including multiple gas calibrations on the SLA5800 Series. With optional digital communication protocols and other features offered by the SLA5800 Series, it is ideally suited for the table top bioreactor.



Product Specifications

Flow Ranges and Pressure Ratings:

Mass Flow Controller Model	Mass Flow Meter Model	Flow Ranges N2 Eq. Ratings		Pressure Unit psi/bar		PED Module H Category
		Min. F.S.	Max. F.S.	Standard	Optional	
SLA5850	SLA5860	0.003	50 lpm	1500 psi/100 bar	4500 psi/310 bar	SEP
SLA5851	SLA5861	15	100 lpm*	1500 psi/100 bar	NA**	SEP
SLA5853	SLA5863	100	2500 lpm	1000 psi/70 bar	NA	1 for all 150 lb flanges 2 for all other connections

* 200 lpm of H2 possible, 600 lpm of H2 possible with decreased accuracy
** 4500 psi/310 bar available as a special on the SLA5861 only

Performance

	SLA5850/60	SLA5851/61	SLA5853/63
Flow Accuracy*	±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)		±0.9% of S.P. (20-100% F.S.), ±0.18% of F.S. (2-20% F.S.) up to 1100 lpm ±1.0% of F.S. from 1100 lpm up to 2500 lpm
Control Range	100:1 for F.S. from 1-50 lpm (50:1 for all other F.S. flows)		
Repeatability & Reproducibility	0.20% S.P.		
Linearity	Included in accuracy		
Response Time (Settling Time within ±2% F.S. for 0-100% command step)**	< 1 second		< 3 seconds
Zero Stability	< ± 0.2% F.S. per year		
Temperature Coefficient	Zero: <0.05% of F.S. per °C. Span: <0.1% of S.P. per °C		
Pressure Coefficient	±0.03% per psi (0-200 psi N2)		
Attitude Sensitivity	<0.2% F.S. maximum deviation from specified accuracy after re-zeroing		

Ratings

Operating Temperature Range	0-65°C (32-149°F)		
Minimum Pressure Differential (Controllers)	5 psi/0.35 bar	10 psi/0.69 bar	Min.: 7.5 psi/0.52 bar at 500 lpm Min.: 14.5 psi/1.00 bar at 1000 lpm Min.: 35.0 psi/2.41 bar at 2500 lpm
Maximum Pressure Differential (Controllers)	Application specific up to 1500 psi/103.4 bar	50 psi/3.45 bar	300 psi/20.0 bar
Leak Integrity (external)	$1x10^{-9}$ atm. cc/sec He		

Mechanical

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

* Flow accuracy N_2 equivalent typical ** Response time can be improved upon request

Diagnostics

Status Lights	MFC Health, Network Status
Alarms*	Sensor Output, Control Valve Output, Over Temperature, Power Surge/Sag, Network Interruption
Diagnostic/Service Port	RS485 via 2.5mm jack

* Alarm modes are dependent on the communications interface. These are described in the corresponding digital communication interface manual.

Certifications

Mark	Agency	Certification	Applicable Standard	Status
CE	CE	EMC Directive 2004/108/EC	EN:61326-1:2006	Pass
c UL us	UL (Recognized)	Class I, Div 2, Group A, B, C, D	CSA C22.2 NO. 213-M1987	Pending
Ex	ATEX	II 3 G Ex nA IIC T4 Gc	EN 60079-0:2012 EN 60079-15:2010	Pending
IECEx	IECEx	II 3 G Ex nA IIC T4 Gc	IEC 60079-0:2011 IEC 60079-15:2010	Pending

Electrical Specifications

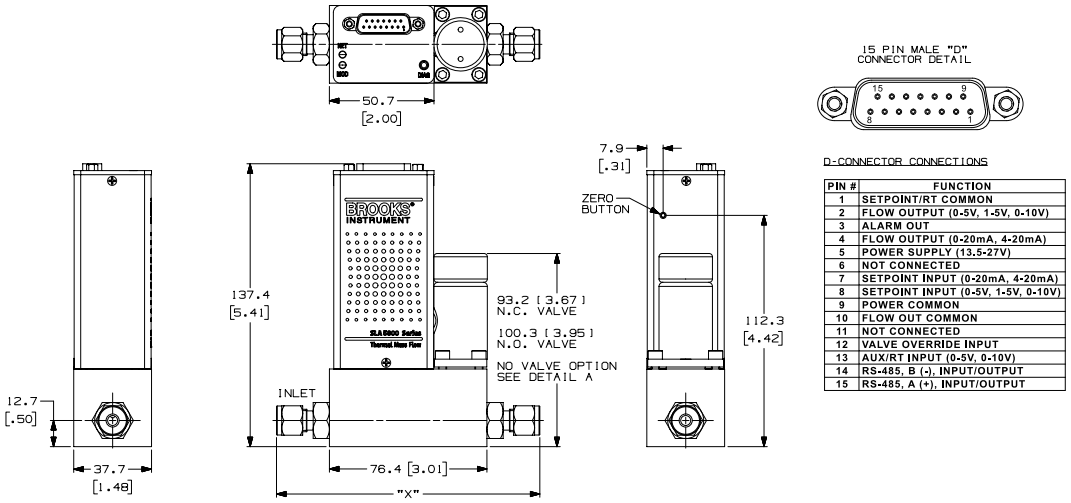
Communication Protocol	RS485	Profibus®	DeviceNet™
Electrical Connection	1 x 15-pin Male Sub-D, (A)	1 x 15-pin Male Sub-D/ 1 x 9-pin Female Sub-D	1 x M12 with threaded coupling nut (B)
Analog I/O	0-5 V, 1-5 V, 0-10 V, 0-20 mA, 4-20 mA		N/A
Power Max./Purge	From +13.5 Vdc to +27 Vdc		From +11 Vdc to +25 Vdc
Power Requirements Watts, Max.	Valve Orifice > 0.032": 8 W Valve Orifice ≤ 0.032": 5 W Without Valve: 2 W		Valve Orifice > 0.032": 10 W Valve Orifice ≤ 0.032": 7 W Without Valve: 4 W
Voltage Set Point Input Specifications			
Nominal Range	0-5 Vdc, 1-5 Vdc or 0-10 Vdc		N/A
Full Range	(-0.5)-11 Vdc		N/A
Absolute Max.	18 V (without damage)		N/A
Input Impedence	>990 kOhms		N/A
Required Max. Sink Current	0.002 mA		N/A
Current Set Point Input Specifications			
Nominal Range	4-20 mA or 0-20 mA		N/A
Full Range	0-22 mA		N/A
Absolute Max.	24 mA (without damage)		N/A
Input Impedence	100 Ohms		N/A
Flow Output (Voltage) Specifications			
Nominal Range	0-5 Vdc, 1-5 Vdc or 0-10 Vdc		N/A
Full Range	(-1)-11 Vdc		N/A
Min Load Resistance	2 kOhms		N/A
Flow Output (Current) Specifications			
Nominal Range	0-20 mA or 4-20 mA		N/A
Full Range	0-22 mA (@ 0-20 mA); 3.8-22 mA (@ 4-20 mA)		N/A
Max. Load	380 Ohms (for supply voltage: < 16 Vdc) 580 Ohms (for supply voltage: ≥ 16 Vdc)		N/A
Analog I/O Alarm Ouput*			
Type	Open Collector		N/A
Max. Closed (On) Current	25 mA		N/A
Max. Open (Off) Leakage	1µA		N/A
Max. Open (Off) Voltage	30 Vdc		N/A
Analog I/O Valve Override Signal Specifications**			
Floating/Unconnected	Instrument controls valve to command set point		N/A
VOR < 0.3 Vdc	Valve Closed		N/A
1 Vdc < VOR < 4 Vdc	Valve Normal		N/A
VOR > 4.8 Vdc	Valve Open		N/A
Input Impedence	800 kOhms		N/A
Absolute Max. Input	(-25 Vdc) < VOR < 25 Vdc (without damage)		N/A

*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.

** 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.

Product Dimensions

SLA5850, Thru-Flow, RS485



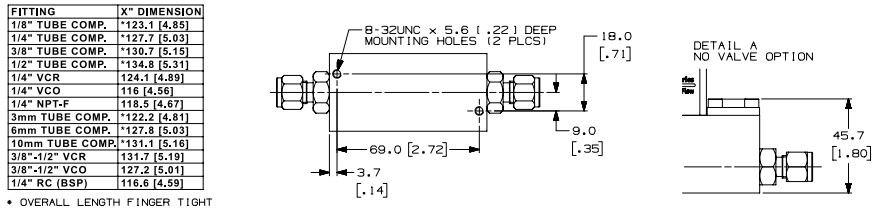
D-CONNECTOR CONNECTIONS

PIN #	FUNCTION
1	SETPOINT/RT COMMON
2	FLOW OUTPUT (0-5V, 1-5V, 0-10V)
3	ALARM OUT
4	FLOW OUTPUT (0-20mA, 4-20mA)
5	POWER SUPPLY (13.5-27V)
6	NOT CONNECTED
7	SETPOINT INPUT (0-20mA, 4-20mA)
8	SETPOINT INPUT (0-5V, 1-5V, 0-10V)
9	POWER COMMON
10	FLOW OUT COMMON
11	NOT CONNECTED
12	VALVE OVERRIDE INPUT
13	AUX/RT INPUT (0-5V, 0-10V)
14	RS-485, B (-), INPUT/OUTPUT
15	RS-485, A (+), INPUT/OUTPUT

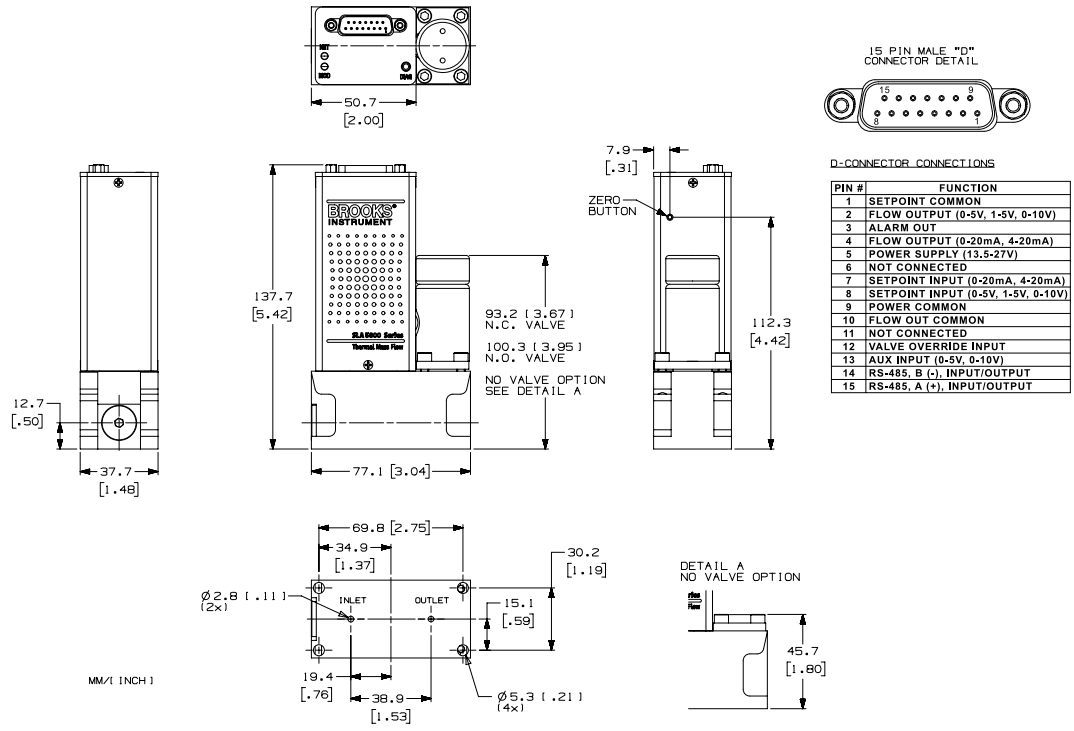
FITTING	X" DIMENSION
1/8" TUBE COMP.	*123.1 [4.85]
1/4" TUBE COMP.	*127.7 [5.03]
3/8" TUBE COMP.	*130.7 [5.15]
1/2" TUBE COMP.	*134.8 [5.31]
1/4" VCR	124.1 [4.89]
1/4" VCO	116 [4.56]
1/4" NPT-F	118.5 [4.67]
3mm TUBE COMP.	*122.2 [4.81]
6mm TUBE COMP.	*127.8 [5.03]
10mm TUBE COMP.	*131.1 [5.16]
3/8"-1/2" VCR	131.7 [5.19]
3/8"-1/2" VCO	127.2 [5.01]
1/4" RC (BSP)	116.6 [4.59]

* OVERALL LENGTH FINGER TIGHT

MM/[INCH]



SLA5850, Downport, RS485



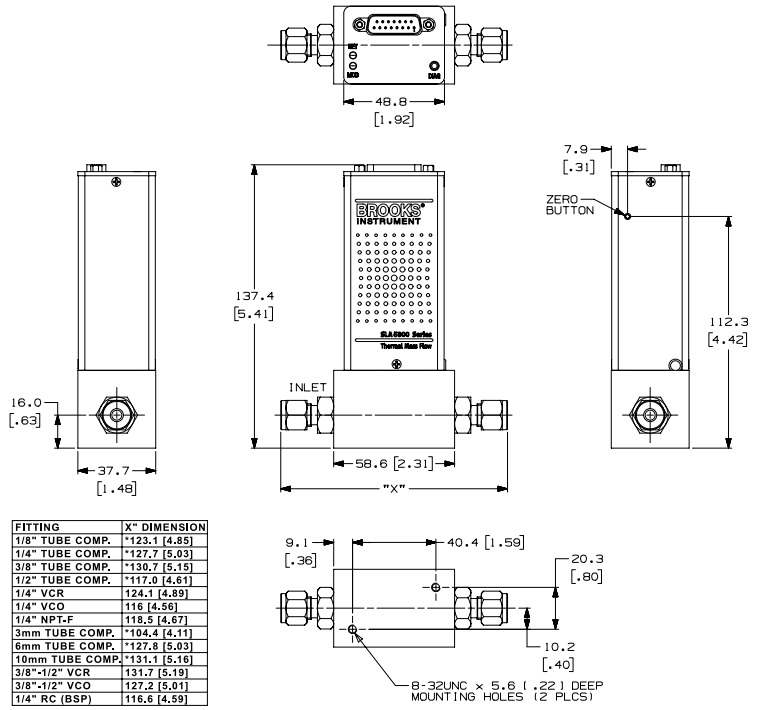
D-CONNECTOR CONNECTIONS

PIN #	FUNCTION
1	SETPOINT COMMON
2	FLOW OUTPUT (0-5V, 1-5V, 0-10V)
3	ALARM OUT
4	FLOW OUTPUT (0-20mA, 4-20mA)
5	POWER SUPPLY (13.5-27V)
6	NOT CONNECTED
7	SETPOINT INPUT (0-20mA, 4-20mA)
8	SETPOINT INPUT (0-5V, 1-5V, 0-10V)
9	POWER COMMON
10	FLOW OUT COMMON
11	NOT CONNECTED
12	VALVE OVERRIDE INPUT
13	AUX INPUT (0-5V, 0-10V)
14	RS-485, B (-), INPUT/OUTPUT
15	RS-485, A (+), INPUT/OUTPUT

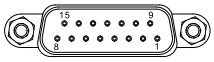
MM/[INCH]

Product Dimensions (continued)

SLA5860, Thru-Flow, RS485



15 PIN MALE "D"
CONNECTOR DETAIL



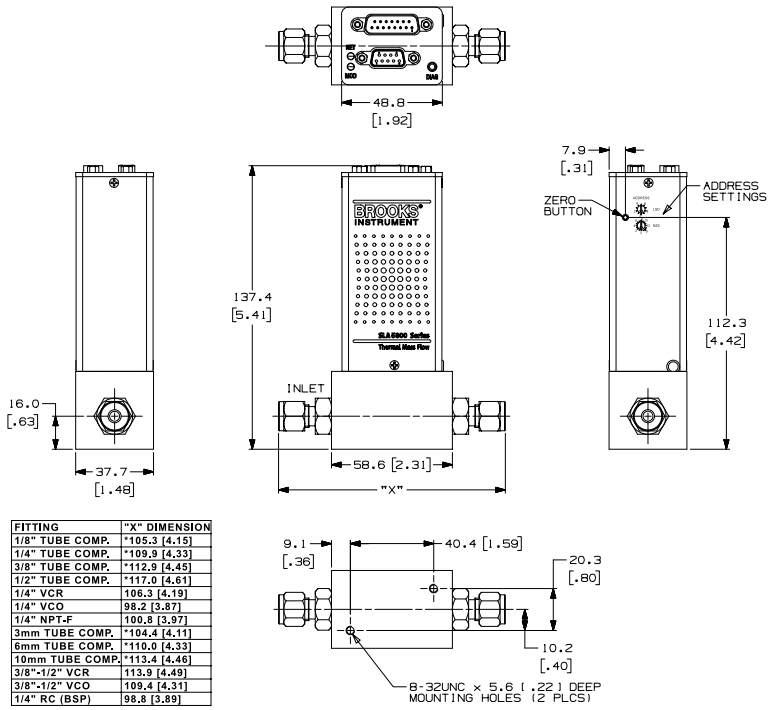
D-CONNECTOR CONNECTIONS

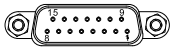
PIN #	FUNCTION
1	SETPOINT COMMON
2	FLOW OUTPUT (0-5V, 1-5V, 0-10V)
3	ALARM OUT
4	FLOW OUTPUT (0-20mA, 4-20mA)
5	POWER SUPPLY (13.5-27V)
6	NOT CONNECTED
7	SETPOINT INPUT (0-20mA, 4-20mA)
8	SETPOINT INPUT (0-5V, 1-5V, 0-10V)
9	POWER COMMON
10	FLOW OUT COMMON
11	NOT CONNECTED
12	VALVE OVERRIDE INPUT
13	AUX INPUT (0-5V, 0-10V)
14	RS-485, B (-), INPUT/OUTPUT
15	RS-485, A (+), INPUT/OUTPUT

FITTING	X" DIMENSION
1/8" TUBE COMP.	*123.1 [4.85]
1/4" TUBE COMP.	*127.7 [5.03]
3/8" TUBE COMP.	*130.7 [5.15]
1/2" TUBE COMP.	*117.0 [4.61]
1/4" VCR	124.1 [4.89]
1/4" VCO	116 [4.56]
1/4" NPT-F	118.5 [4.67]
3mm TUBE COMP.	*104.4 [4.11]
6mm TUBE COMP.	*127.8 [5.03]
10mm TUBE COMP.	*131.1 [5.16]
3/8"-1/2" VCR	131.7 [5.19]
3/8"-1/2" VCO	127.2 [5.01]
1/4" RC (BSP)	116.6 [4.59]

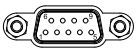
* OVERALL LENGTH FINGER TIGHT
MM/(INCH)

SLA5860, Thru-Flow, Profibus





15-PIN SUB-D MALE CONNECTOR	
PIN #	FUNCTION
1	SETPOINT COMMON
2	FLOW OUTPUT (0-5V, 1-5V, 0-10V)
3	ALARM OUT
4	FLOW OUTPUT (0-20mA, 4-20mA)
5	POWER SUPPLY (13.5-27V)
6	NOT CONNECTED
7	SETPOINT INPUT (0-20mA, 4-20mA)
8	SETPOINT INPUT (0-5V, 1-5V, 0-10V)
9	POWER COMMON
10	FLOW OUT COMMON
11	NOT CONNECTED
12	VALVE OVERRIDE INPUT
13	AUX INPUT (0-5V, 0-10V)
14	NOT CONNECTED
15	NOT CONNECTED



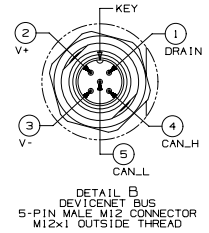
9-PIN SUB-D FEMALE CONNECTOR	
PIN #	FUNCTION
1	NOT CONNECTED
2	NOT CONNECTED
3	RXD/TXD - B - red wire
4	NOT CONNECTED
5	GROUND
6	+5Vdc
7	NOT CONNECTED
8	RXD/TXD - A - green wire
9	NOT CONNECTED

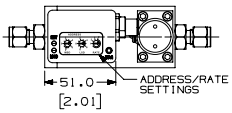
FITTING	"X" DIMENSION
1/8" TUBE COMP.	*105.3 [4.15]
1/4" TUBE COMP.	*109.9 [4.33]
3/8" TUBE COMP.	*112.9 [4.45]
1/2" TUBE COMP.	*117.0 [4.61]
1/4" VCR	106.3 [4.19]
1/4" VCO	98.2 [3.87]
1/4" NPT-F	100.8 [3.97]
3mm TUBE COMP.	*104.4 [4.11]
6mm TUBE COMP.	*110.0 [4.33]
10mm TUBE COMP.	*113.4 [4.46]
3/8"-1/2" VCR	113.9 [4.49]
3/8"-1/2" VCO	109.4 [4.31]
1/4" RC (BSP)	98.8 [3.89]

* OVERALL LENGTH FINGER TIGHT
MM/(INCH)

Product Dimensions (continued)

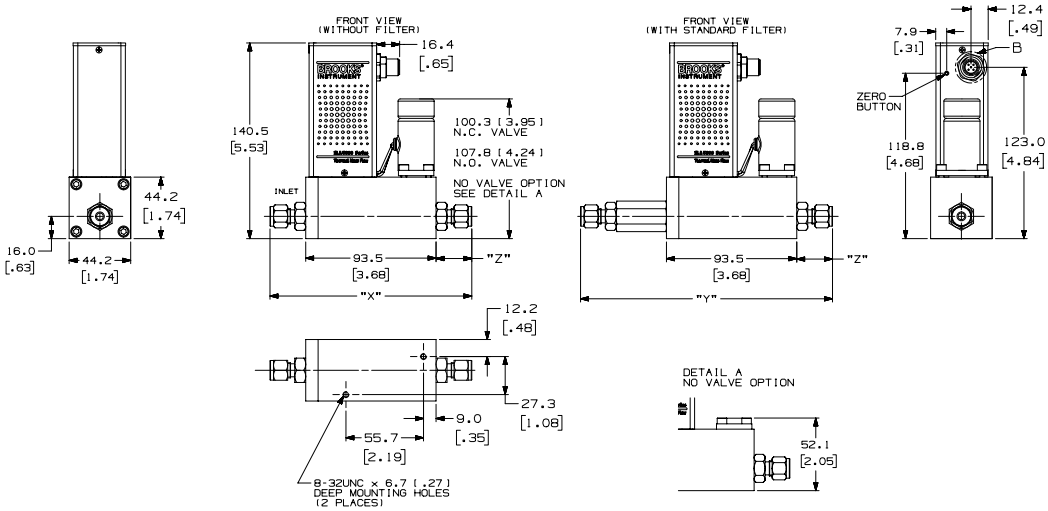
SLA5851, Thru-Flow, DeviceNet



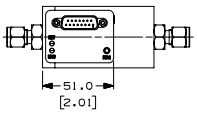


FITTING	"X" DIMENSION (Without Standard Filter)	Y" DIMENSION (With Standard Filter)	"Z" DIMENSION
9/16"-18 UNF	93.5 [3.68]	129.5 [5.10]	N/A
1/4" TUBE COMP.	•144.8 [5.70]	•180.8 [7.12]	•25.7 [1.01]
3/8" TUBE COMP.	•147.9 [5.82]	•183.9 [7.24]	•27.2 [1.07]
1/2" TUBE COMP.	•152.0 [5.98]	•188.0 [7.40]	•29.2 [1.15]
1/4" VCR	141.3 [5.56]	177.3 [6.98]	23.9 [0.94]
1/4" VCO	133.2 [5.24]	169.2 [6.66]	19.8 [0.78]
1/4" NPT	135.7 [5.34]	171.7 [6.76]	21.1 [0.83]
6mm TUBE COMP.	•144.9 [5.71]	•180.9 [7.12]	•25.7 [1.01]
10mm TUBE COMP.	•148.3 [5.84]	•184.3 [7.26]	•27.4 [1.08]
3/8"-1/2" VCR	148.9 [5.86]	184.9 [7.28]	27.7 [1.09]
1/4" RC (BSP)	133.7 [5.27]	169.7 [6.68]	20.1 [0.79]

• OVERALL LENGTH FINGER TIGHT — MM/[INCH]

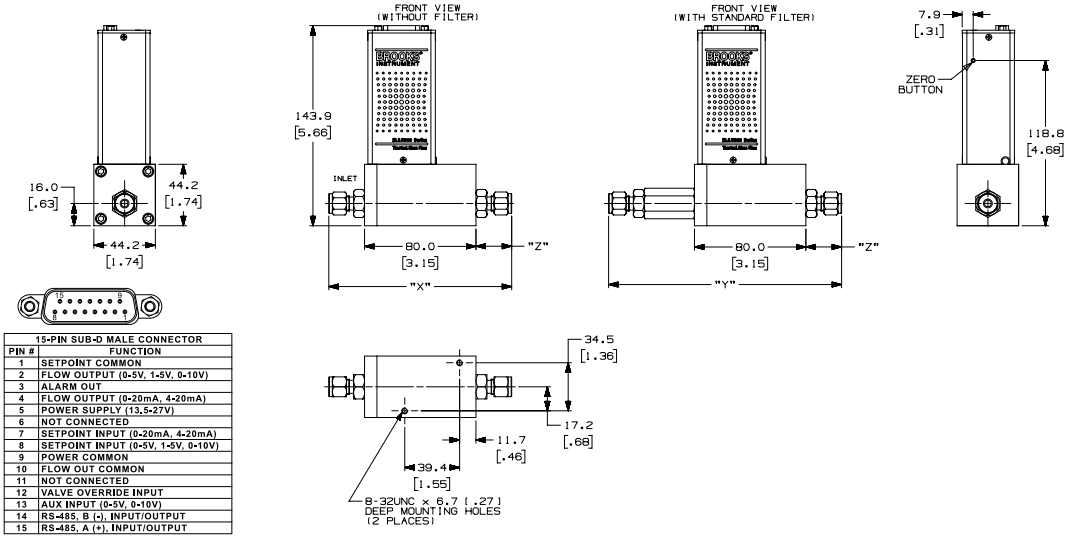


SLA5861, Thru-Flow, RS485



FITTING	"X" DIMENSION (Without Standard Filter)	Y" DIMENSION (With Standard Filter)	"Z" DIMENSION
9/16"-18 UNF	80.0 [3.15]	116.0 [4.57]	N/A
1/4" TUBE COMP.	•131.3 [5.17]	•167.3 [6.59]	•25.7 [1.01]
3/8" TUBE COMP.	•134.4 [5.29]	•170.4 [6.71]	•27.2 [1.07]
1/2" TUBE COMP.	•138.4 [5.45]	•174.4 [6.87]	•29.2 [1.15]
1/4" VCR	127.8 [5.03]	163.8 [6.45]	23.9 [0.94]
1/4" VCO	119.6 [4.71]	155.6 [6.13]	19.8 [0.78]
1/4" NPT	122.2 [4.81]	158.2 [6.23]	21.1 [0.83]
6mm TUBE COMP.	•131.3 [5.17]	•167.3 [6.59]	•25.7 [1.01]
10mm TUBE COMP.	•134.9 [5.31]	•170.9 [6.73]	•27.4 [1.08]
3/8"-1/2" VCR	135.4 [5.33]	171.4 [6.75]	27.7 [1.09]
1/4" RC (BSP)	120.2 [4.73]	156.1 [6.15]	20.1 [0.79]

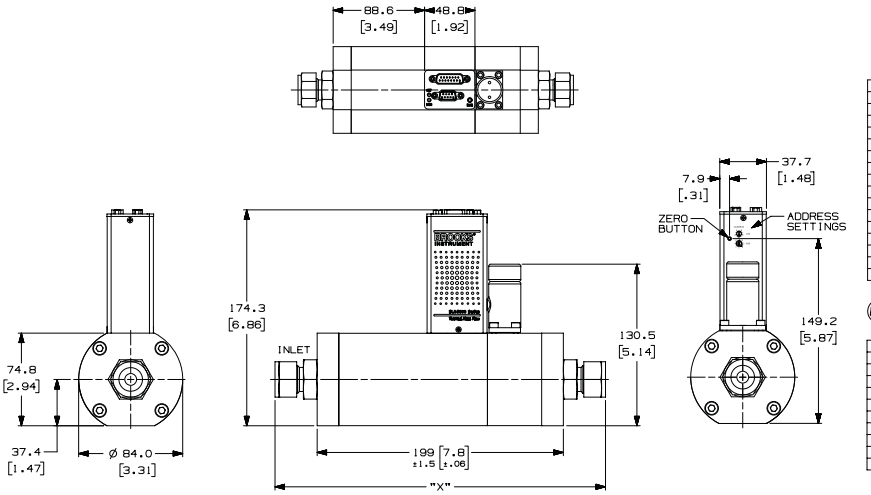
• OVERALL LENGTH FINGER TIGHT — MM/[INCH]



15-PIN SUB-D MALE CONNECTOR	
PIN #	FUNCTION
1	SETPOINT COMMON
2	FLOW OUTPUT (0-5V, 1-5V, 0-10V)
3	ALARM OUT
4	FLOW OUTPUT (0-20mA, 4-20mA)
5	POWER SUPPLY (13.5-27V)
6	NOT CONNECTED
7	SETPOINT INPUT (0-20mA, 4-20mA)
8	SETPOINT INPUT (0-5V, 1-5V, 0-10V)
9	POWER COMMON
10	FLOW OUT COMMON
11	NOT CONNECTED
12	VALVE OVERRIDE INPUT
13	AUX INPUT (0-5V, 0-10V)
14	RS-485, B (-), INPUT/OUTPUT
15	RS-485, A (+), INPUT/OUTPUT

Product Dimensions (continued)

SLA5853, Thru-Flow, Profibus



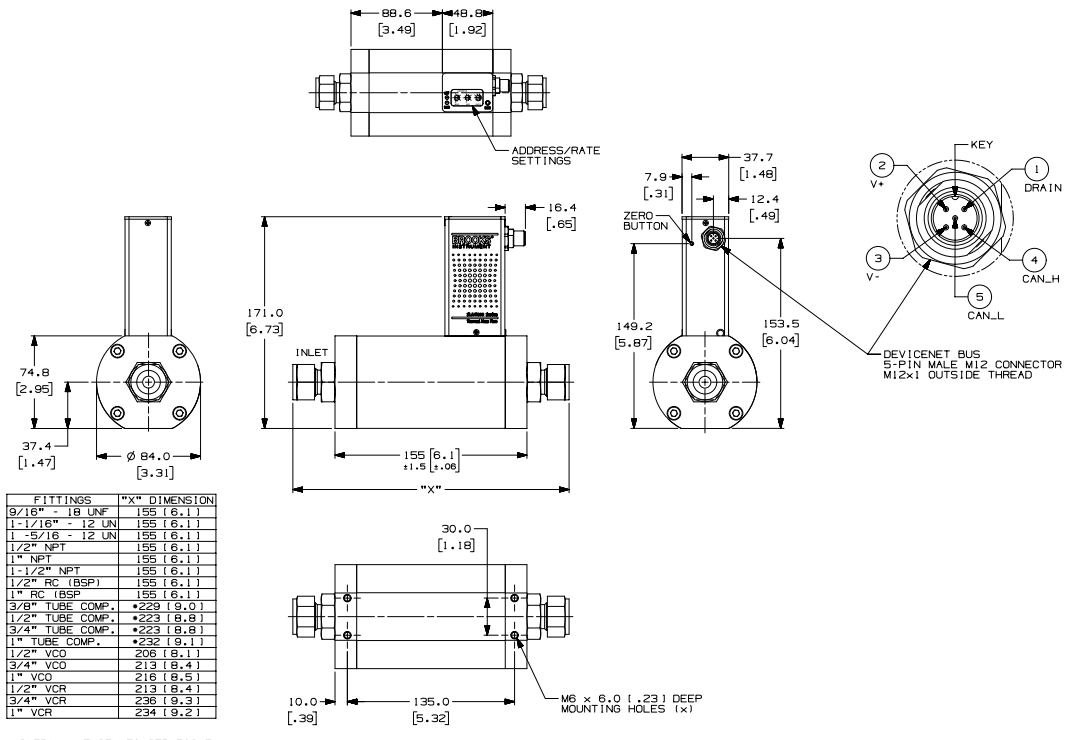
15-PIN SUB-D MALE CONNECTOR	
PIN #	FUNCTION
1	SETPOINT COMMON
2	FLOW OUTPUT (0-5V, 1-5V, 0-10V)
3	ALARM OUT
4	FLOW OUTPUT (0-20mA, 4-20mA)
5	POWER SUPPLY (13.5-27V)
6	NOT CONNECTED
7	SETPOINT INPUT (0-20mA, 4-20mA)
8	SETPOINT INPUT (0-5V, 1-5V, 0-10V)
9	POWER COMMON
10	FLOW OUT COMMON
11	NOT CONNECTED
12	VALVE OVERRIDE INPUT
13	AUX INPUT (0-5V, 0-10V)
14	NOT CONNECTED
15	NOT CONNECTED

9-PIN SUB-D FEMALE CONNECTOR	
PIN #	FUNCTION
1	NOT CONNECTED
2	NOT CONNECTED
3	RXD/TXD - B - red wire
4	NOT CONNECTED
5	GROUND
6	+5Vdc
7	NOT CONNECTED
8	RXD/TXD - A - green wire
9	NOT CONNECTED

FITTINGS	"X" DIMENSION
9/16" - 18 UNF	199 [7.8]
1-1/16" - 12 UN	199 [7.8]
1 -5/16 - 12 UN	199 [7.8]
1/2" NPT	199 [7.8]
1" NPT	199 [7.8]
1-1/2" NPT	199 [7.8]
1/2" RC (BSP)	199 [7.8]
1" RC (BSP	199 [7.8]
3/8" TUBE COMP.	•253 [10.0]
1/2" TUBE COMP.	•267 [10.5]
3/4" TUBE COMP.	•267 [10.5]
1" TUBE COMP.	•274 [10.8]
1/2" VCO	249 [9.8]
3/4" VCO	257 [10.1]
1" VCO	259 [10.2]
1/2" VCR	257 [10.1]
3/4" VCR	279 [11.0]
1" VCR	278 [10.9]

• OVERALL LENGTH FINGER TIGHT
MM/[INCH]

SLA5863, Thru-Flow, DeviceNet



FITTINGS	"X" DIMENSION
9/16" - 18 UNF	155 [6.1]
1-1/16" - 12 UN	155 [6.1]
1 -5/16 - 12 UN	155 [6.1]
1/2" NPT	155 [6.1]
1" NPT	155 [6.1]
1-1/2" NPT	155 [6.1]
1/2" RC (BSP)	155 [6.1]
1" RC (BSP	155 [6.1]
3/8" TUBE COMP.	•229 [9.0]
1/2" TUBE COMP.	•223 [8.8]
3/4" TUBE COMP.	•223 [8.8]
1" TUBE COMP.	•232 [9.1]
1/2" VCO	208 [8.1]
3/4" VCO	213 [8.4]
1" VCO	216 [8.5]
1/2" VCR	213 [8.4]
3/4" VCR	236 [9.3]
1" VCR	234 [9.2]

• OVERALL LENGTH FINGER TIGHT
MM/[INCH]

Model Code

Code	Description	Code Option	Option Description
I.	Base Model Numbers	SLA	Smart Link Advantage
II.	Package / Finish Specifications	58	Standard Elastomer Series
III.	Function	5	Mass Flow Controller
		6	Mass Flow Meter
IV.	Gas or Range	0	3 ccm - 50 lpm
		1	20 - 100 lpm
		3	100 - 2500 lpm
V.	Digital I/O Communication	A	None (select applicable analog I/O)
		D	DeviceNet I/O (with 5-pin micro connector)
		P	Profibus (2x sub-D)
		S	RS485 (select applicable analog I/O)
VI.	Mechanical Connection (Body size 0 & 1 only)	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
		1S	Elastomer downport
		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	1/4" RC (BSP) w/Filter
		Y1	3mm tube compression w/Filter
VI.	Mechanical Connection (Body size 3 only)	2A	Without adapters, 9/16" - 18 UNF
		2B	1-1/16"-12 SAE/MS
		2C	3/8" tube compression
		2D	1/2" tube compression
		2E	3/4" tube compression
		2F	1" tube compression
		2G	1/2" NPT (F)
		2H	1" NPT (F)
		2J	1-1/2" NPT (F)
		2K	1/2" VCO
		2L	3/4" VCO
		2M	1/2" VCR
		2N	1/2" RC (BSP)
		2P	1" RC (BSP)
		2R	1-5/16"-12 SAE/MS
		2S	1" VCO
		2T	3/4" VCR
		2U	1" VCR
		3A	DIN DN15 PN40 Flange
		3B	DIN DN25 PN40 Flange
		3C	DIN DN40 PN40 Flange
		3D	DIN DN15 PN40 Flange
		3E	ANSI 1/2" 150# RF Flange
		3F	ANSI 1/2" 300# RF Flange
		3G	ANSI 1" 150# RF Flange
		3H	ANSI 1" 300# RF Flange
		3J	ANSI 1-1/2" 150# RF Flange
		3K	ANSI 1-1/2" 300# RF Flange

Model Code (continued)

Code	Description	Code Option	Option Description
VII.	O-ring Material	**A**	Viton
		B	Buna
		C	PTFE
		D	Kalrez
		E	EPDM
		J	FDA/USP Class VI - Viton
		L	FDA/USP Class VI - EPDM
VIII.	Valve Seat	**A**	None (Sensor only)
		B	Viton (for body size 3, diaphragm material = PTFE)
		C	Buna (for body size 3, diaphragm material = PTFE)
		D	Kalrez (for body size 3, diaphragm material = PTFE)
		E	EPDM (for body size 3, diaphragm material = PTFE)
		F	PTFE
		G	Metal (for body size 3, diaphragm material = PTFE)
IX.	Valve Type	**0**	None (Sensor only)
		1	Normally closed
		2	Normally closed (Pressure diff. >30 psig (2 bar))
		3	Normally closed (Pressure diff.<30 psig (2 bar))
		4	Normally closed - high pressure
		5	Normally open
X.	Analog I/O Communications	**A**	None - Digital Communications only
		B	0-5 Volt 0-5 Volt 15-pin D-conn
		C	4-20 mA 4-20 mA 15-pin D-conn
		L	1-5 Volt 1-5 Volt 15-pin D-conn
		M	0-20 mA 0-20 mA 15-pin D-conn
		0	0-10 Volt 0-10 Volt 15-pin D-conn
		1	0-5 Volt 4-20 mA 15-pin D-conn
		2	0-5 Volt 0-20 mA 15-pin D-conn
		3	4-20 mA 0-5 Volt 15-pin D-conn
		4	0-20 mA 0-5 Volt 15-pin D-conn
		9	0-10 Volt 0-5 Volt 15-pin D-conn
XI.	Power Supply Inputs	**1**	±15 Vdc
		2	24 Vdc
XII.	Output Enhancements	**A**	Standard response
		B	Fast response
XIII.	Certification	**1**	Safe Area

Sample Standard Model Code

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
SLA	58	5	0	A	1A	A	B	1	B	1	A	1