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Find the *Brooks Instrument SLA7851DZ80* at our website: *Click HERE*

Brooks® Models SLA7850 - SLA7860 Mass Flow Controllers and Meters

General Features:

- 1.125" Mechanical Platform
- High performance coplanar valve
- All wetted surfaces are 32 Ra to maintain particle, moisture and contamination free process conditions.
- All-Metal seals, High leak integrity (less than $1x10^{-10}$ atm-cc/sec He)
- Industry leading sensor stability. Long term drift performance of < 0.2% per year.
- Accuracy: ±1% of rate or (setpoint) including linearity.
- Digital Communication options offer easy commissioning and reduced system wiring.
- Device can store10 selectable calibration and flow ranges.

Control Response:

- Fast Settling Time for all step changes. Valve response can also be ramped to tailor MFC's performance to process requirements.
- Insensitive to mounting attitude.

Analog I/O:

- 9-pin D-connector or 15-pin D-Connector
- 0-5 Volt setpoint and flow signals.
- Single sided power supply, (13.5 -27 Vdc range),15 Vdc nominal
- Separate 'valve-override' signal.
- Compatible with Brooks Model 0254 secondary electronics.

Digital Communication Options:

DeviceNet™

- ODVA™ Certified MFC Device Profile
  - Semiconductor SIG Certified
- Capable of: Poll I/O, Cyclic and Change of State Messaging
- Accessibility of sensor, valve, calibration, tuning, diagnostic, and other internal data, to support fast commissioning
- MAC-ID and Baudrate rotary switches, and two bi-color status LEDs

HART® based RS-485 multidrop

- Via Brooks S-Protocol



Model SLA7850S
Analog I/O 15-pin
D-Connector
VCR Fittings



Model SLA7850S
Analog I/O 9-pin
D-Connector
VCR Fittings



Model SLA7850D
Digital I/O DeviceNet
Downport

Description

Brooks Instrument's SLA7800 Series is a 1.125" wide profile high purity metal sealed thermal mass flow measurement and control instrument, which offers unparalleled flexibility and performance. The SLA7800 Series is designed for use in advanced gas handling systems. The result is the most accurate, repeatable, and responsive device on the market today!

Superior Valve Technology

The coplanar valve offers unmatched performance. Due to its simplified construction, the valve exhibits superior repeatability, stability, and response time.

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Highly Adaptable Configurations

The 1.125" body offers a compact, space saving footprint. The SLA7800 Series is easily retrofitable to existing gas box designs that utilize the traditional 1.5" MFC body platform. Likewise, the all-digital electronics is adaptable and allows the SLA7800 Series to serve as a direct replacement for existing analog products bringing with them greatly improved accuracy and reliability.

Broad Array of Communication Options

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

Reduced Cost of Ownership

The SLA7800 Series allows multi-gas and multi-range capabilities to reduce customer inventory. Storage and pre-programming of up to 10 gas calibrations easily permits users to switch between different gases and ranges on a single device. Also, the greater control range provided by the coplanar valve gives users the option to decrease the number of parts needed to control their entire process.

Specifications

PERFORMANCE CHARACTERISTICS:

Flow Ranges

Models SLA7850/SLA7860
Any range from 0-3 sccm to 0-50 slpm N_2 eq.

Control Range

(50:1) - metal valve seat

Accuracy

±1.0% of rate, including linearity (20% to 100% F.S.), ±0.2% of F.S. (below 20% full scale.)

Repeatability

±0.20% of rate

Temperature Sensitivity

Zero: Less than 0.035% F.S. per °C
Span: Less than 0.1% of rate per°C

Settling Time

Less than 1 sec to within ±2% full scale of final value for a 0-100% step per SEMI Guideline E17-91.

Analog I/O Pin Connections for 9-pin D-Connector:

Function	9-pin D-conn
Valve Override, Input	1
Flow Signal, 0-5 volt, Output (+)	2
Power Supply, +13.5 Vdc to +27 Vdc (+)	3
Power Supply, Common (-)	4
Not Connected	5
Setpoint, 0-5 Vdc, Input (+)	6
Flow Signal, Common Output, (-)	7
Setpoint, Command Input (-)	8
Not Connected	9

Analog I/O Pin Connections for 15-pin D-Connector:

Function	15-pin D-Conn
Setpoint, Common Input (-)	1
Flow Signal, 0-5 volt, Output (+)	2
TTL Alarm, open collector, Output (+)	3
Flow Signal, 4-20 mA, Output (+)	4
Power Supply, +13.5 Vdc to +27 Vdc(+)	5
Not Connected	6
Setpoint, 4-20 mA, Input (+)	7
Setpoint, 0-5 Vdc, Input (+)	8
Power Supply, Common (-)	9
Flow Signal, Common, Output, (-)	10
Reference, +5 Vdc, Output (+)	11
Valve Override, Input	12
Calibration Select, Input	13
RS-485 Common B (-)	14
RS-485 Common A (+)	15

Valve Leak-By: < 0.5% F.S.

RATINGS:

Pressure Equipment Directive (PED) 97/23/EC
See Table 1 Below:

Table 1 PED Rating

Mass Flow Controller	Flow Ranges N2 Equivalent Ratings			Pressure	PED Module H Category
Models	**Min. f.s.**	**Max f.s.**	**Unit**	**Bar**	
SLA7850/ SLA7860	3.0	50,000	sccm	100 Bar	SEP

Mounting Attitude Sensitivity
0.2% of FS maximum deviation after rezeroing
Leak Integrity
Inboard to Outboard: less than $1x10^{-10}$ atm scc/sec Helium max.

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Ambient Temperature Limits
Operating: 0°C to 65°C (32°F to 149°F)
Non-Operating: -25°C to 100°C (-13°F to 212°F)

Maximum Operating Pressure Range
1500 psig (10,342 kPa) maximum
150 psig (106.2 kPa) and below recommended for best performance.

Differential Pressure Range
5 - 50 psid (broader depending on customer conditions; consult factory for details.)
(34.5 - 344.7 kPa)
(259 - 2586 torr)

*For flows above 30 slpm N_2 eq., 30 psid minimum required.
*Standard temperature and pressure are in accordance with SEMI Standard E12-96: 0°C and 101.32 kPa (760 torr).

PHYSICAL:

Materials of Construction
316L Vacuum Arc Remelt (VAR), 316L, and high-alloy ferritic stainless steel.
External/internal seals: Nickel
Valve seat: 17-7PH stainless steel - standard

Process Connections
1/4" male VCR™ (standard)
CS Seal (SEMI 2787.5 or SEMI F82-0304 R1-1)
C Seal (SEMI 2787.1 or SEMI F82-0304 R1-2)
W Seal (SEMI 2787.3 or SEMI F82-0304 R1-3)

Outline Dimensions
Refer to Figures 1 through 7.

ELECTRICAL CHARACTERISTICS:

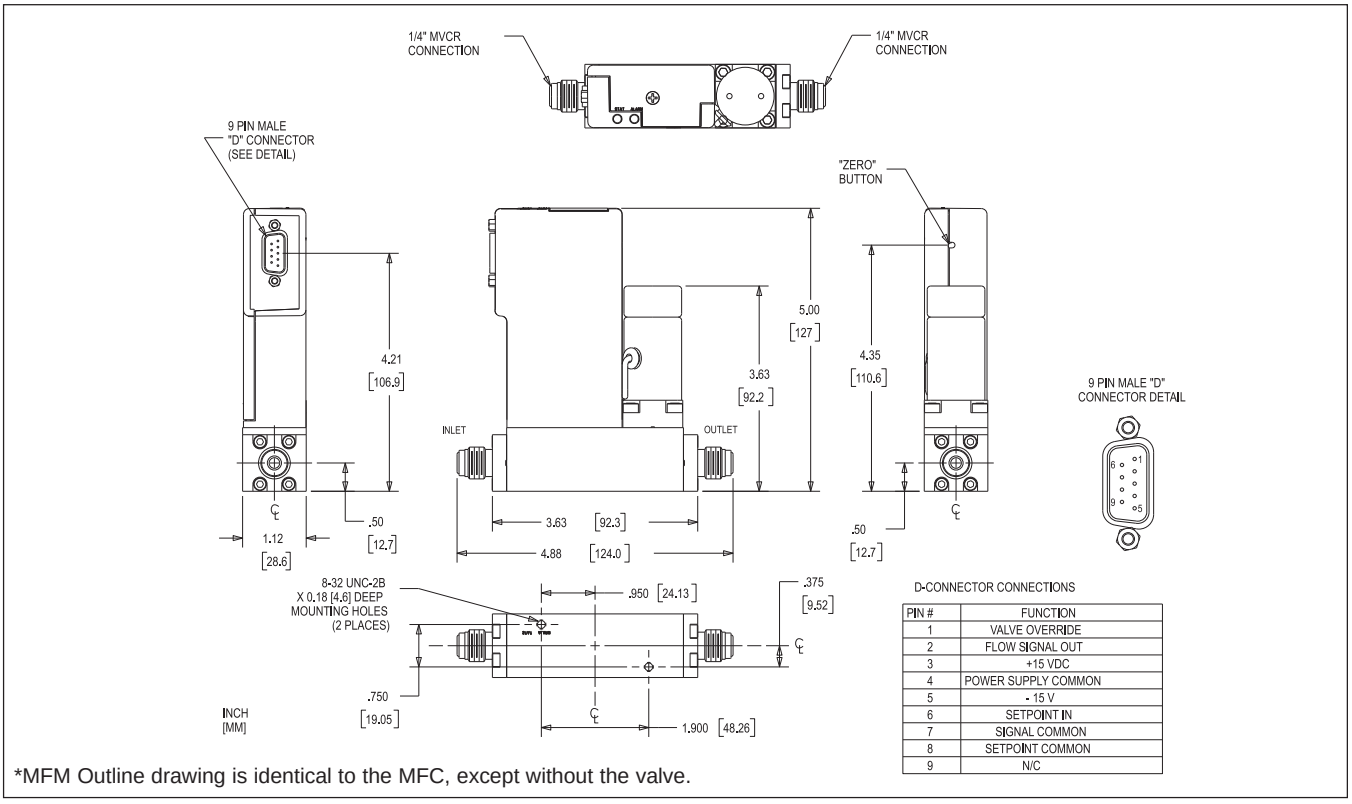
Electrical Connections
Analog I/O option: 9-pin or 15 pin D-Connector, male
DeviceNet I/O option: 5-pin Micro-Connector, male
RS-485 option: 15 pin D-Connector, male

Power Supply Voltage
Analog I/O option: 13.5 Vdc to 27 Vdc
(traditional -15 Vdc pin is ignored)
DeviceNet I/O option: nominal = 11-25 Vdc

Power Requirements

	Watts, typ.	Watts, max.
Analog I/O or RS-485 option, with valve: VIN = 27 Vdc Valve = Full Open	4.2	4.6
DeviceNet I/O option, with valve: VIN = 25 Vdc Valve = Full Open	6.3	6.9

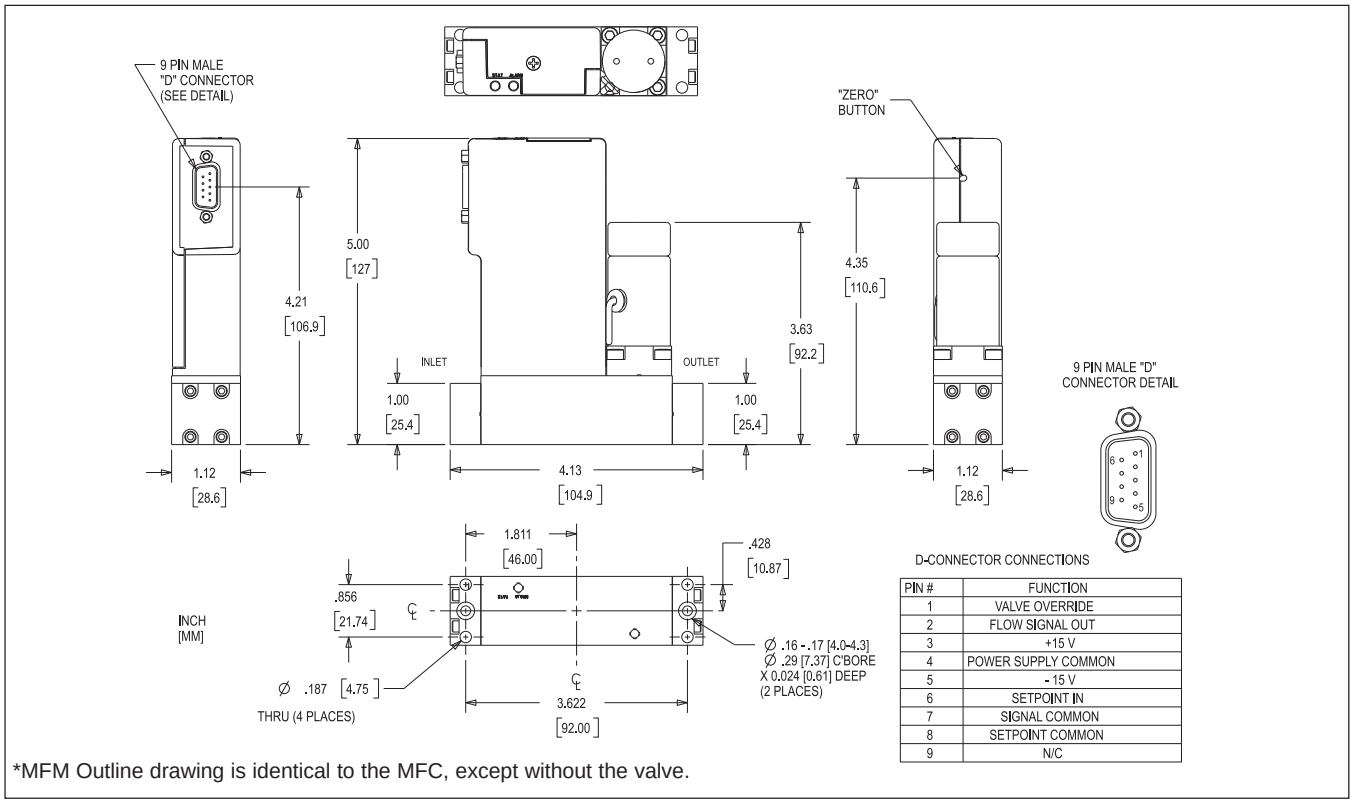
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PIN #	FUNCTION
1	VALVE OVERRIDE
2	FLOW SIGNAL OUT
3	+15 VDC
4	POWER SUPPLY COMMON
5	- 15 V
6	SETPOINT IN
7	SIGNAL COMMON
8	SETPOINT COMMON
9	N/C

*MFM Outline drawing is identical to the MFC, except without the valve.

Figure 1 Model SLA7850S MFC Analog I/O 9-pin D-Connector with VCR Fittings.

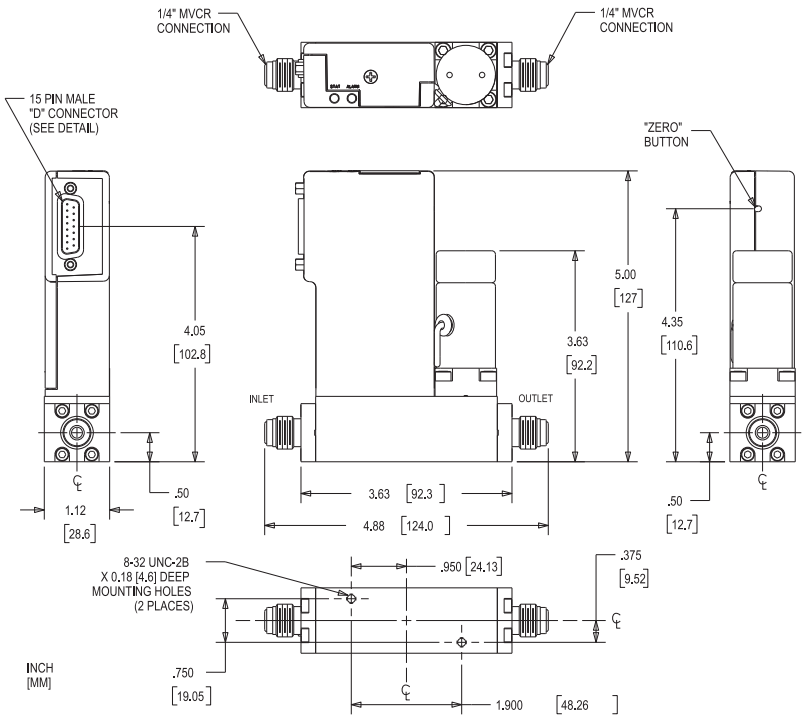


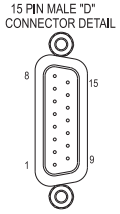
PIN #	FUNCTION
1	VALVE OVERRIDE
2	FLOW SIGNAL OUT
3	+15 V
4	POWER SUPPLY COMMON
5	- 15 V
6	SETPOINT IN
7	SIGNAL COMMON
8	SETPOINT COMMON
9	N/C

*MFM Outline drawing is identical to the MFC, except without the valve.

Figure 2 Model SLA7850S MFC Analog I/O 9-pin D-Connector with Downport Connections (C-seal).

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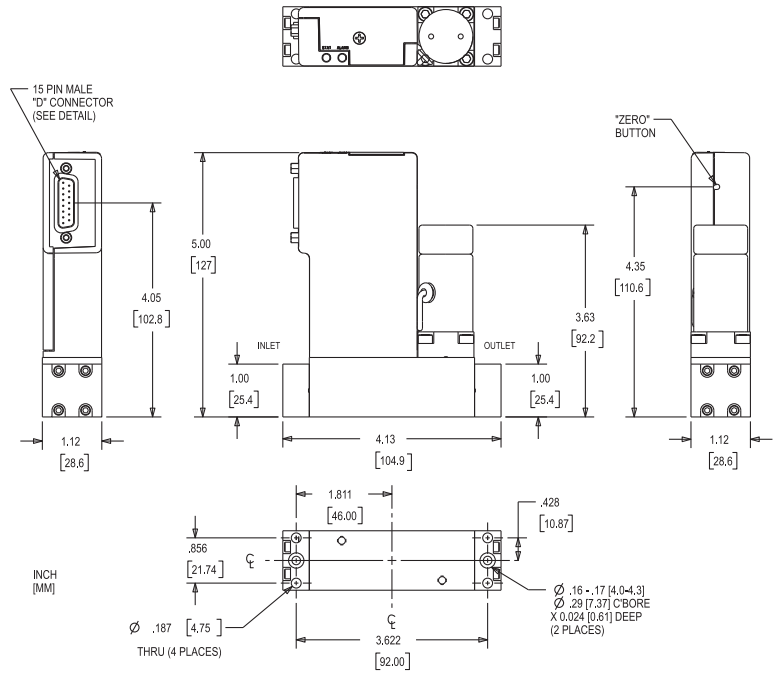


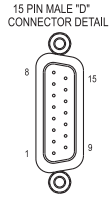
D-CONNECTOR CONNECTIONS

PIN #	FUNCTION
1	SETPOINT, COMMON , INPUT (-)
2	FLOW SIGNAL, 0 (1)-5 VDC, OUTPUT (+)
3	TTL ALARM, OPEN COLLECTOR, OUTPUT
4	FLOW SIGNAL, 0 (4)-20 MA, OUTPUT (+)
5	POWER SUPPLY, +15 VDC TO +28 VDC
6	NOT CONNECTED
7	SETPOINT, 0 (4)-20 MA, INPUT (+)
8	SETPOINT, 0 (1)-5 VDC, INPUT (+)
9	POWER SUPPLY COMMON (-)
10	FLOW SIGNAL OUTPUT COMMON (-)
11	REFERENCE, +5 VDC, OUTPUT
12	VALVE OVERRIDE INPUT
13	CALIBRATION SELECT INPUT
14	RS-485, B (-), INPUT/OUTPUT
15	RS-485, A (+), INPUT/OUTPUT

*MFM Outline drawing is identical to the MFC, except without the valve.

Figure 3 Model SLA7850S MFC Analog I/O 15-pin D-Connector with VCR Fittings.





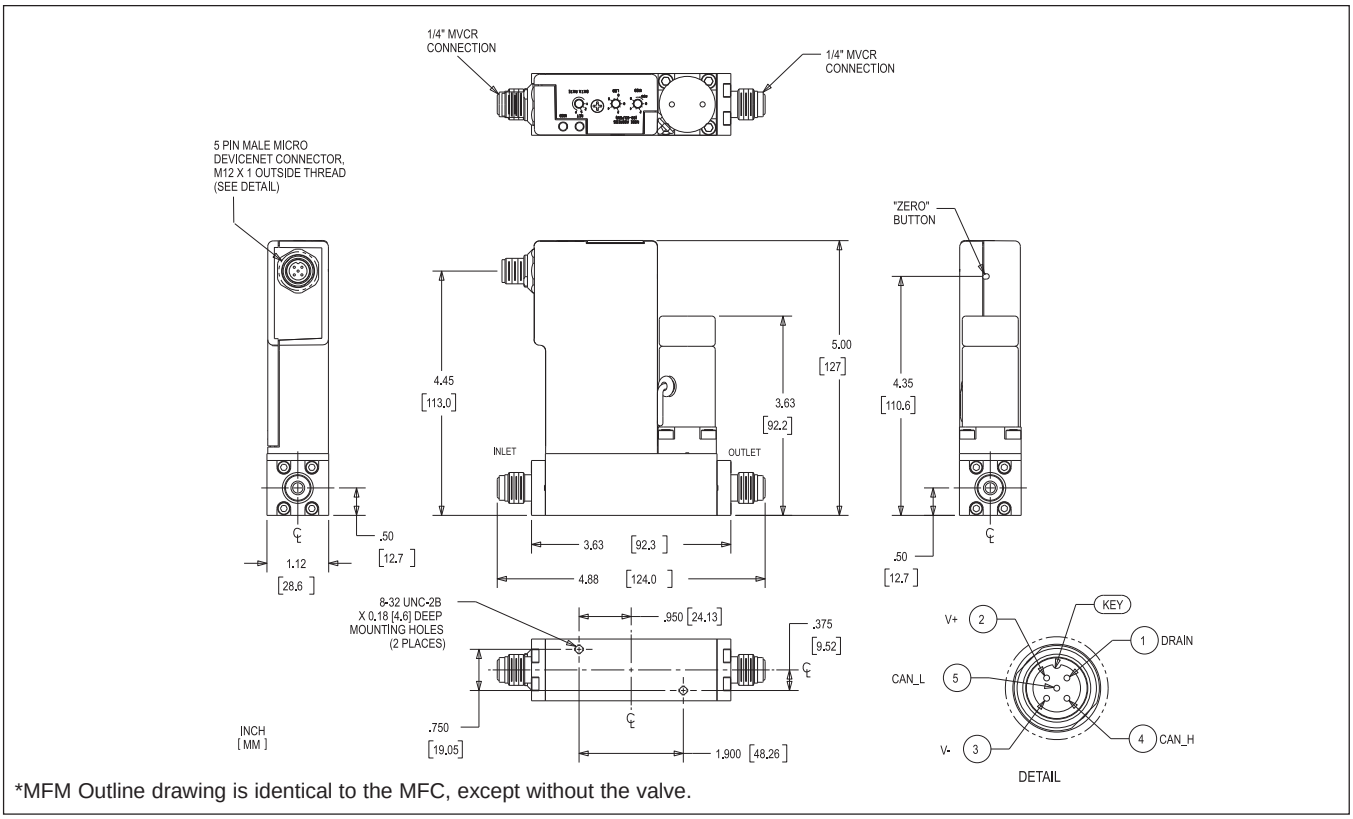
D-CONNECTOR CONNECTIONS

PIN #	FUNCTION
1	SETPOINT, COMMON , INPUT (-)
2	FLOW SIGNAL, 0 (1)-5 VDC, OUTPUT (+)
3	TTL ALARM, OPEN COLLECTOR, OUTPUT
4	FLOW SIGNAL, 0 (4)-20 MA, OUTPUT (+)
5	POWER SUPPLY, +15 VDC TO +28 VDC
6	NOT CONNECTED
7	SETPOINT, 0 (4)-20 MA, INPUT (+)
8	SETPOINT, 0 (1)-5 VDC, INPUT (+)
9	POWER SUPPLY COMMON (-)
10	FLOW SIGNAL OUTPUT COMMON (-)
11	REFERENCE, +5 VDC, OUTPUT
12	VALVE OVERRIDE INPUT
13	CALIBRATION SELECT INPUT
14	RS-485, B (-), INPUT/OUTPUT
15	RS-485, A (+), INPUT/OUTPUT

*MFM Outline drawing is identical to the MFC, except without the valve.

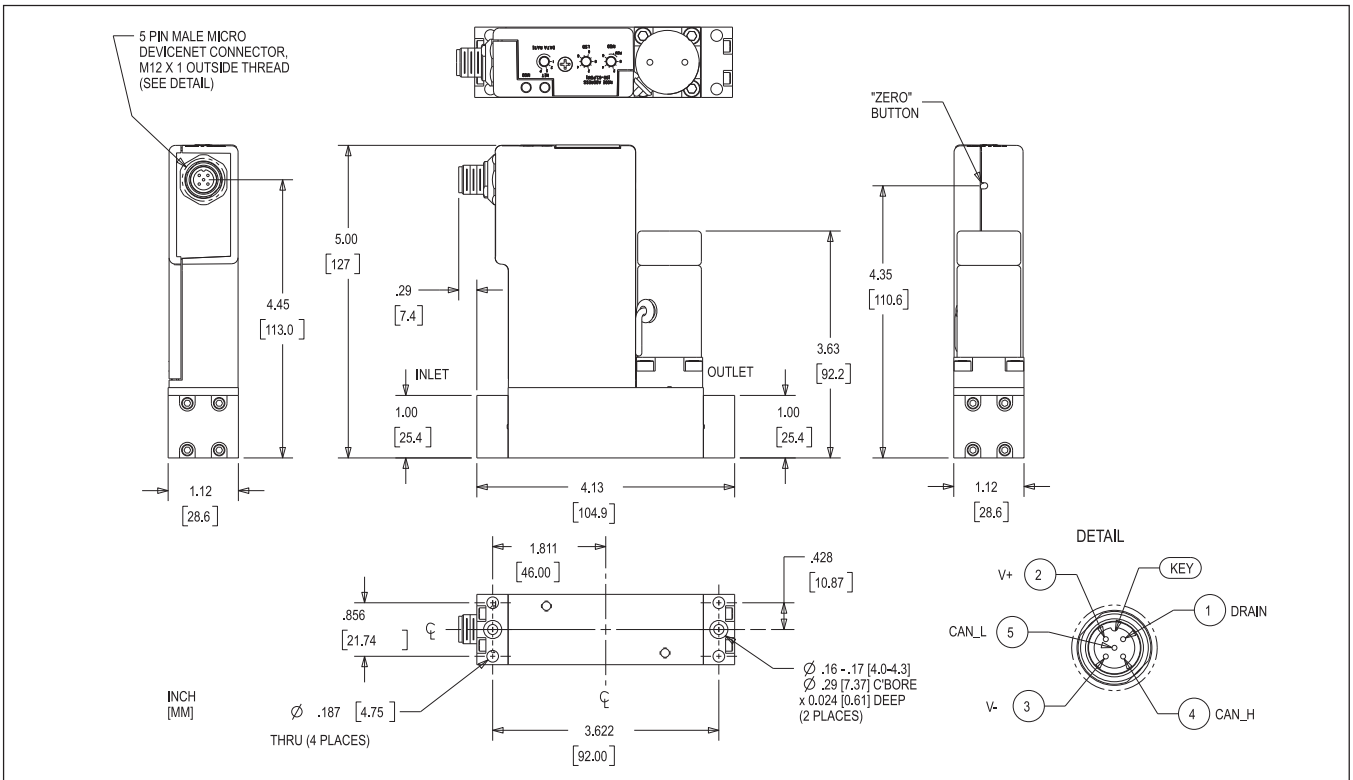
Figure 4 Model SLA7850S MFC Analog I/O 15-pin D-Connector with Downport Connections (C-seal).

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*MFM Outline drawing is identical to the MFC, except without the valve.

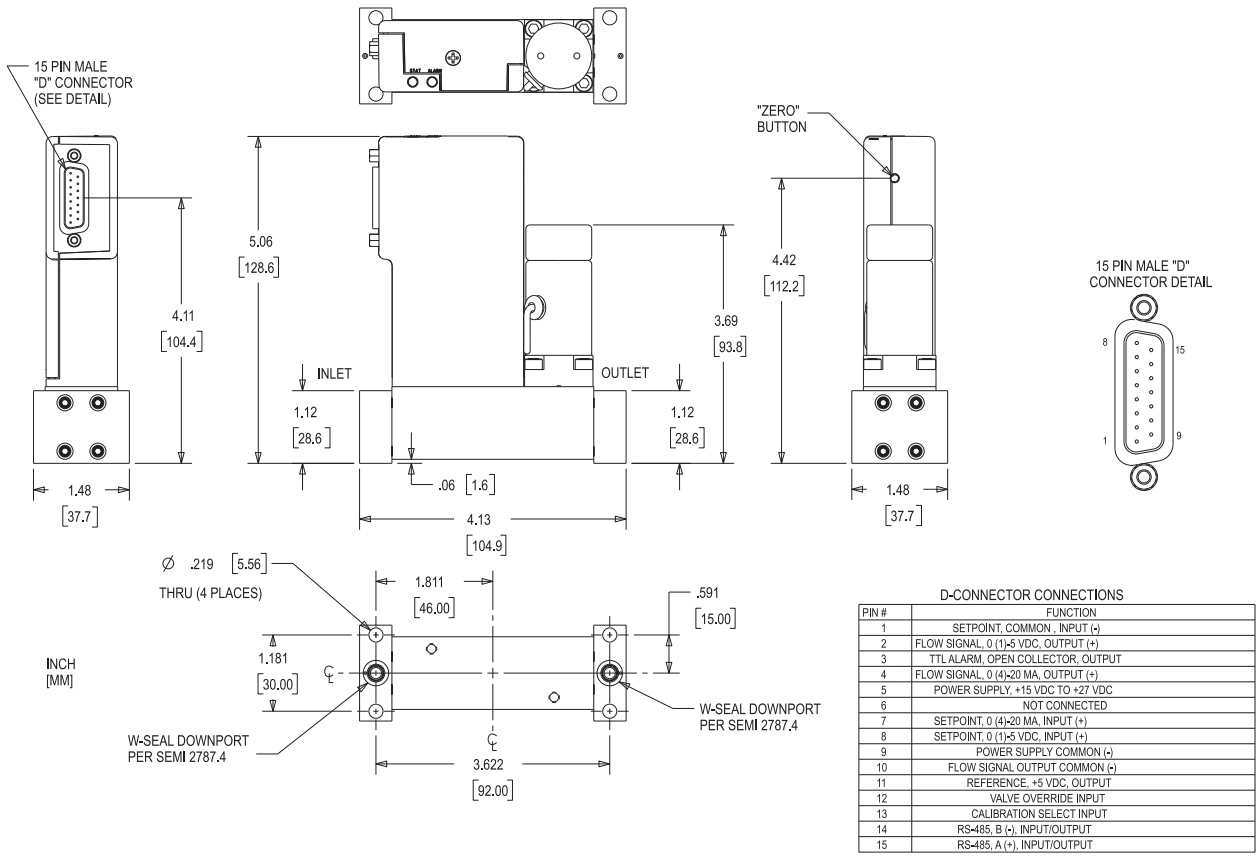
Figure 5 Model SLA7850D MFC DeviceNet Digital I/O with VCR Fittings.



*MFM Outline drawing is identical to the MFC, except without the valve.

Figure 6 Model SLA7850D MFC DeviceNet Digital I/O with Downport Connections (C-seal).

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D-CONNECTOR CONNECTIONS

PIN #	FUNCTION
1	SETPOINT, COMMON , INPUT (-)
2	FLOW SIGNAL, 0 (1)-5 VDC, OUTPUT (+)
3	TTL ALARM, OPEN COLLECTOR, OUTPUT
4	FLOW SIGNAL, 0 (4)-20 MA, OUTPUT (+)
5	POWER SUPPLY, +15 VDC TO +27 VDC
6	NOT CONNECTED
7	SETPOINT, 0 (4)-20 MA, INPUT (+)
8	SETPOINT, 0 (1)-5 VDC, INPUT (+)
9	POWER SUPPLY COMMON (-)
10	FLOW SIGNAL OUTPUT COMMON (-)
11	REFERENCE, +5 VDC, OUTPUT
12	VALVE OVERRIDE INPUT
13	CALIBRATION SELECT INPUT
14	RS-485, B (-), INPUT/OUTPUT
15	RS-485, A (+), INPUT/OUTPUT

*MFM Outline drawing is identical to the MFC, except without the valve.

Figure 7 Model SLA7850S MFC 15-pin D-Connector Analog I/O with 1-1/2" Downport Connections (W seal).

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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.

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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
DeviceNet ..... Open DeviceNet Vendors Association, Inc.
HART ..... HART Communications Foundation
ODVA ..... Open DeviceNet Vendors Association, Inc.
VCR ..... Cajon Co.

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