

Brooks Instrument SLA6850V1EGB1A2A1
Mass Flow Controller



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\$1995.00

In Stock

Qty Available: 1

New From Surplus Stock

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Brooks® Delta Class Metal-Sealed Mass Flow Controllers and Meters Models SLA6850/51 to SLA6860-61

General Features:

- All-Metal seals, High leak integrity (less than 1×10^{-10} atm-cc/sec He)
- Industry leading sensor stability. Long term drift performance of < 0.2% per year. Increasing tool throughput by reducing maintenance and eliminating periodic recipe adjustment.
- Accuracy: $\pm 1\%$ of rate or (setpoint) including linearity.
- TruCal™ (option) process gas calibration available for a variety of gases. TruCal reduces measurement errors that result from the property differences between process gases and surrogate calibration gases, resulting in superior accuracy and performance!
- Digital software can store 10 selectable calibration and flow ranges. Spares inventories are reduced by limiting the number of individual MFCs required, lowering inventory holding costs.

Control Response:

- Settling Time of less than 800ms for all step changes.
- Proprietary Adaptive Valve Control algorithm assure that unexpected variations in process conditions do not cause flow to deviate from setpoint.
- Insensitive to mounting attitude

Analog I/O:

- 15-pin
- 0-5 Volt setpoint and flow signals
- Single sided +15 Volt DC power supply
- Separate 'valve-override' signal
- Compatible with Brooks' Model 0150 series secondary electronics



DeviceNet™ Communication Option:

- Easy Commissioning and Reduced System Wiring
- Accessibility of sensor, valve, calibration, tuning, diagnostic, and other internal data, to support fast commissioning and streamlining of controller insitu preventive maintenance.
- MAC-ID, Baudrate rotary switches, and two bi-color status LEDs - to ease setup and addressing as well as status confirmation.
- Standard Device-Profile, ODVA certified Semiconductor-SIG certified
- Capable of: Polled, Bit-Strobe, Cyclic, & Change-of-State messaging.



Model SLA6860D
EM Series Digital I/O
DeviceNet, MFM

DESCRIPTION

Brooks Instrument's Delta Class EM Series metal sealed thermal mass flow measurement and control product line offers unparalleled flexibility and performance. Our latest EM-family combines the benefits of the superior accuracy of the TruCal™ process gas calibration system with the rapid settling time achieved with Brooks' proprietary Adaptive Valve Control algorithm. The result is the most accurate, repeatable, and responsive controller on the market today!

Brooks now offers control interface with DeviceNet™, a high-speed (up to 500k baud) digital communication network adopted by the Semiconductor industry. Brooks' communications capabilities and device-profile have been certified by the ODVA (Open DeviceNet Vendors' Association). Other network protocols are in development. Talk to your Brooks representative about your specific needs.

The MFC's microprocessor uses a multi-point calibration curve, to deal with residual sensor non-linearity, yielding a highly accurate process signal. The microprocessor then executes Brooks' proprietary Adaptive Valve Control algorithm to rapidly adjust the valve actuation to match setpoint.

Process data and commands may be 'wired' using either traditional 5 volt analog connections or digital communications networks, the measurement and control performance is the same!

The SLA6800 family of products takes advantage of modular design in both mechanical and electrical construction. This modularity allows for simplified customer ordering and factory configuration, enabling Brooks to more easily meet the ever changing needs of our global customers. Brooks' production flexibility translates into reduced lead times for our customers. This flexibility allows for the efficient production of products using both traditional analog connections or leading edge network-communications protocols.

The SLA6800 series of controllers can directly replace existing analog products bringing with them greatly improved accuracy, utilizing multiple-point calibrations. Brooks' patented TruCal process is also available, in either analog or digital modes, reducing measurement errors resulting from property differences between process gases and the calibration gas. Analog and digital applications will see settling time improvements with an insensitivity to varying process conditions, due to Brooks' proprietary Adaptive Valve Control algorithm.

Analog I/O Pin Connections:

Signal:	15-pin D-conn
Setpoint/Command Common	1
Flow/Signal Out	2
+15 Vdc Power	5
Setpoint/Command In	8
Power Supply Common	9
Output Signal Common	10
+5 Vdc Reference	11
Valve Override	12
Calibration Select Pin	13
Chassis Ground	14
no-connections	3, 4, 6, 7, 15

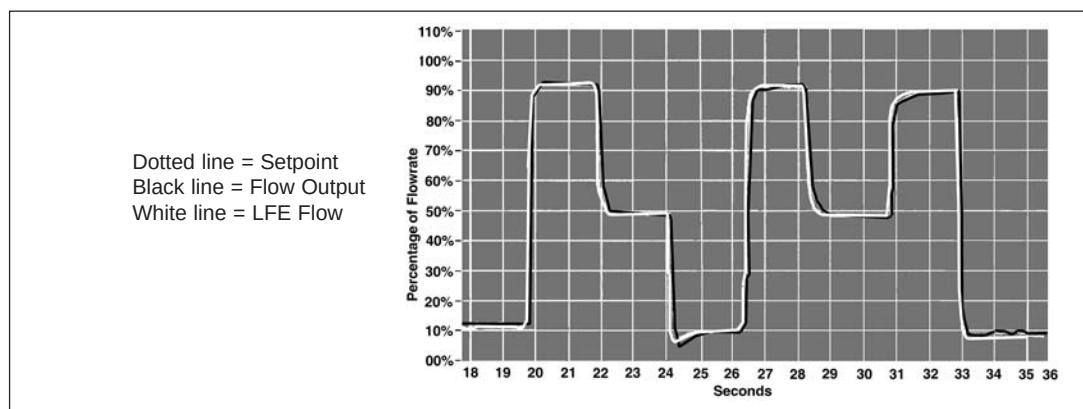


Figure 1 Response Chart

PERFORMANCE CHARACTERISTICS:

Flow Ranges**

Models SLA6850 & SLA6860
Any range from 0-3 sccm to 0-30,000 sccm N₂ eq.
Models SLA6851 & SLA6861
Any range from 20-100 slpm N₂ eq.
Up to 200 slpm H₂ flows possible (consult factory)
**Standard: 0° and 101kPa (760 Torr). Per SEMI Guideline E12-96.
For full scale flow rates greater than 50 sccm Nitrogen equivalent.

Control Range

(50:1) - elastomeric valve seat
(33:1) - 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 0.075% F.S. per °C
Span: Less than ±1% F.S. shift over 10-50°C range

Settling Time

Actual flow:
Less than 800 ms to within ±2% full scale of final value for
a 0-100% step per SEMI Guideline E17-91.
(See Figure 1)

RATINGS:

Operating Pressure

1500 psig maximum
150 psi (10.35 bar) maximum operating pressure
recommended for optimal performance

Pressure Differential Range

Model SLA6850
5-50 psid (3.45 bar max.)
Model SLA6851
10-50 psid (3.45 bar max.)
Minimum and Maximum pressure drop depends
on gas and full scale flow rate (consult factory)

Leak Integrity

Inboard to Outboard: 1x10⁻¹⁰ atm scc/sec Helium max.

Ambient Temperature Limits

Operating: 0°C to 60°C (32°F to 140°F)
Non-Operating: -25°C to 100°C (-13°F to 212°F)

Fluid Temperature Limits

0°C to 65°C (32°F to 149°F)

PHYSICAL:

Materials of Construction

316L Vacuum Arc Remelt (VAR), 316L, and high-alloy
ferritic stainless steel.
External/internal seals: Nickel
Valve seat: 316L stainless steel - standard
Internal Wetted Surface Finish: 32 Ra

Outline Dimensions

Refer to Figures 2-7.

Process Connections

1/4" male VCR™
CS Seal (SEMI spec. 2787.5 4/98)
C Seal (SEMI spec. 2787.1 4/98)

ELECTRICAL CHARACTERISTICS:

Electrical Connections

Analog I/O option: 15-pin, male
Digital I/O DeviceNet option: 5-pin Micro-Connector male,

Power Supply Voltage

Analog I/O option: +15 Vdc, ±5%
(traditional -15 Vdc pin is ignored)
Digital I/O DeviceNet option: nominal = 11-25 Vdc

Power Requirements	Watts, typ.	Watts, max.
Analog I/O option, no valve:	1.35	1.8
Analog I/O option, with valve:	2.6	4.0
Digital I/O DeviceNet option, no valve:	1.62	3.8
Digital I/O DeviceNet option, with valve:	4.9	7.6

Setpoint Input (Analog I/O option only)

0-5 Vdc: Input will accept signals to 5.5 Vdc (110% F.S.).
Input resistance: 360K ohm min.

Flow Output (Analog I/O option only)

0-5 Vdc into 2K ohm minimum load.
Output will indicate process variable up to 6 Vdc
(120% F.S.).

Valve Override Signal (Analog I/O option only)

Left floating/unconnected – instrument controls valve to
command setpoint
Connected to signal at or above 5.0 Volts
– valve is forced open
Connected to signal at or below 0.0 Volts
– valve is forced closed

5 Volt Reference Signal (Analog I/O option & 15 PIN only)

For use with potentiometer command setpoint input
±0.2%, into 1K ohm (minimum load)

Calibration-Select Signal (15 Pin Only)

Select one of ten gases and P.I.D. tuning settings in
analog mode.

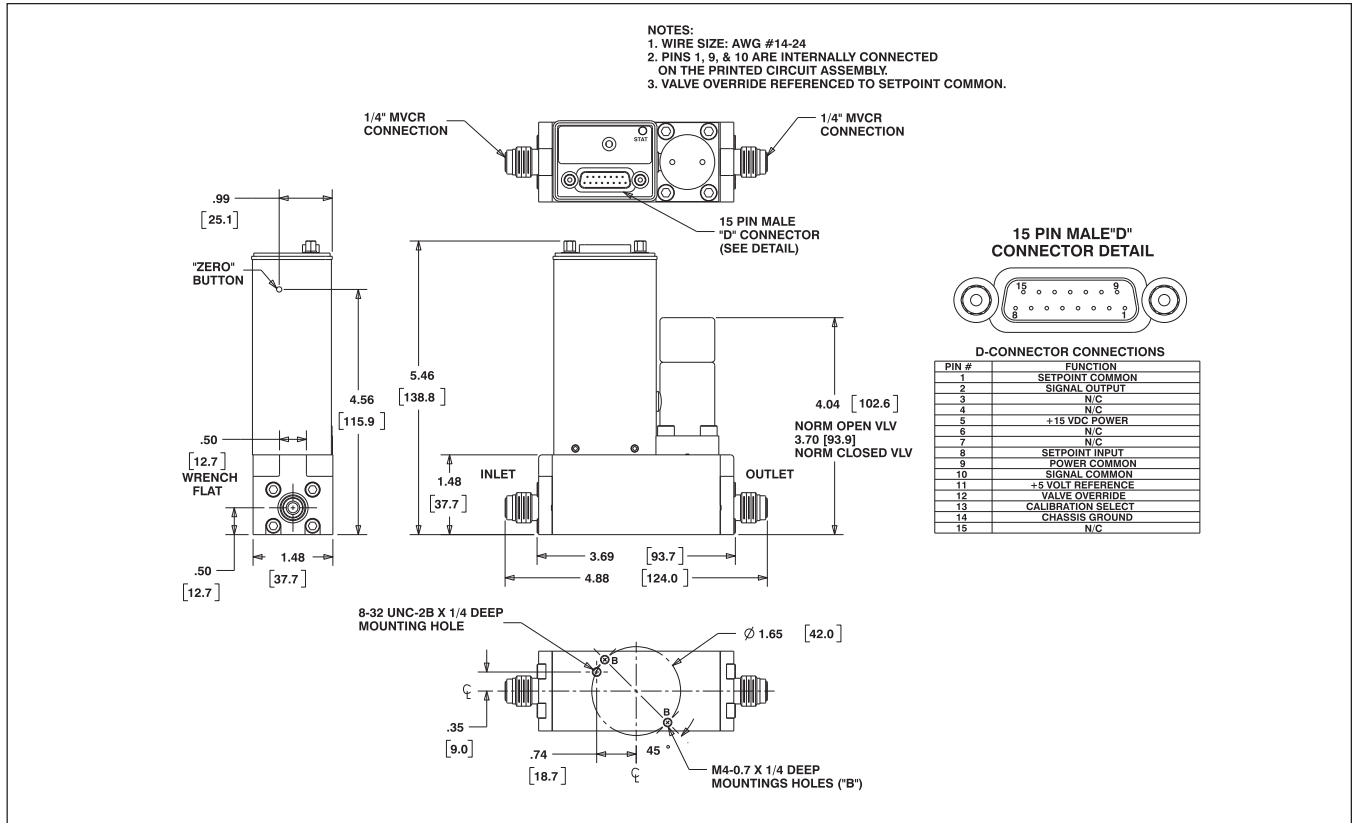


Figure 2 Models SLA6850 and SLA6860 Analog I/O Controller with 1/4" VCR Connections

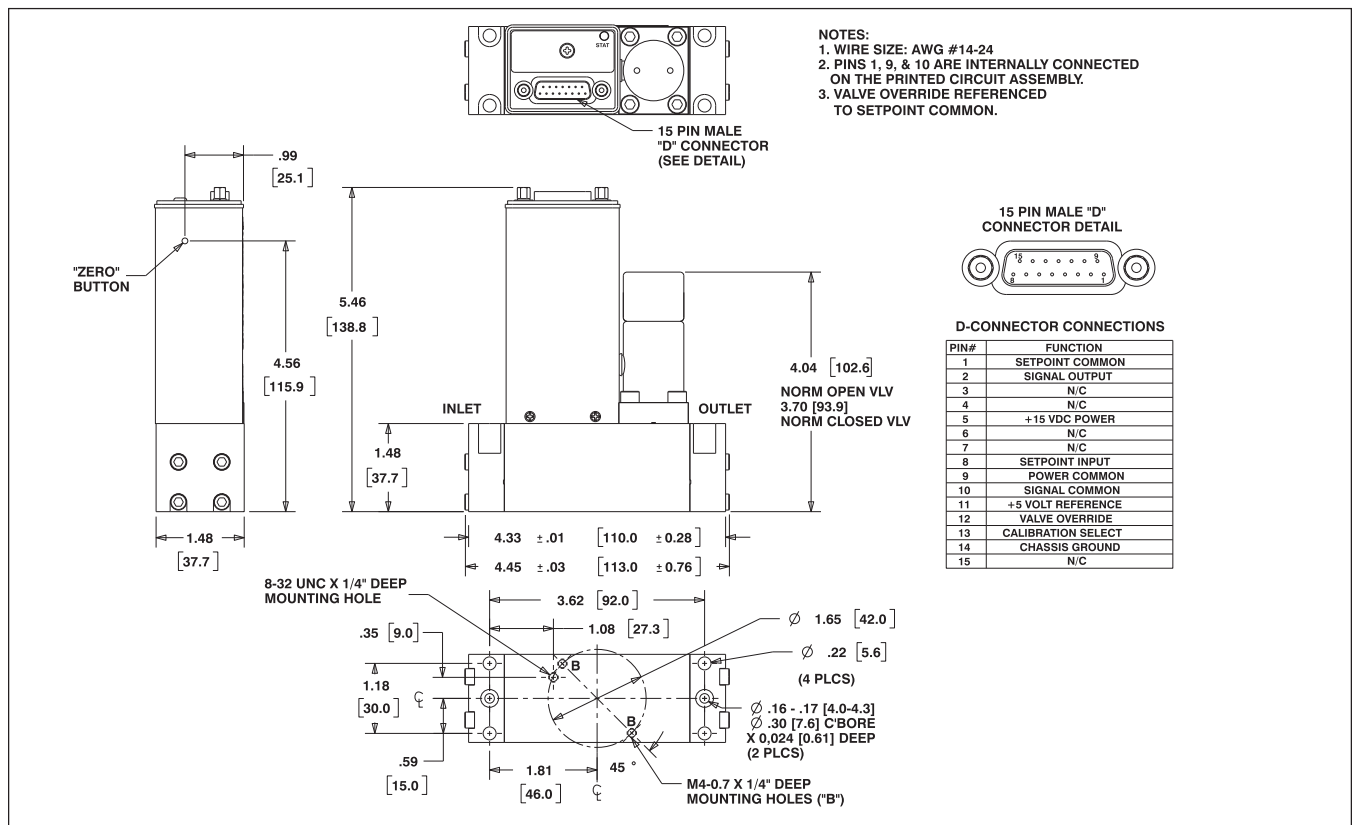


Figure 3 SLA6850 and SLA6860 Analog I/O Controller with Downport (IGS) 'C' or 'CS' Seal Connections

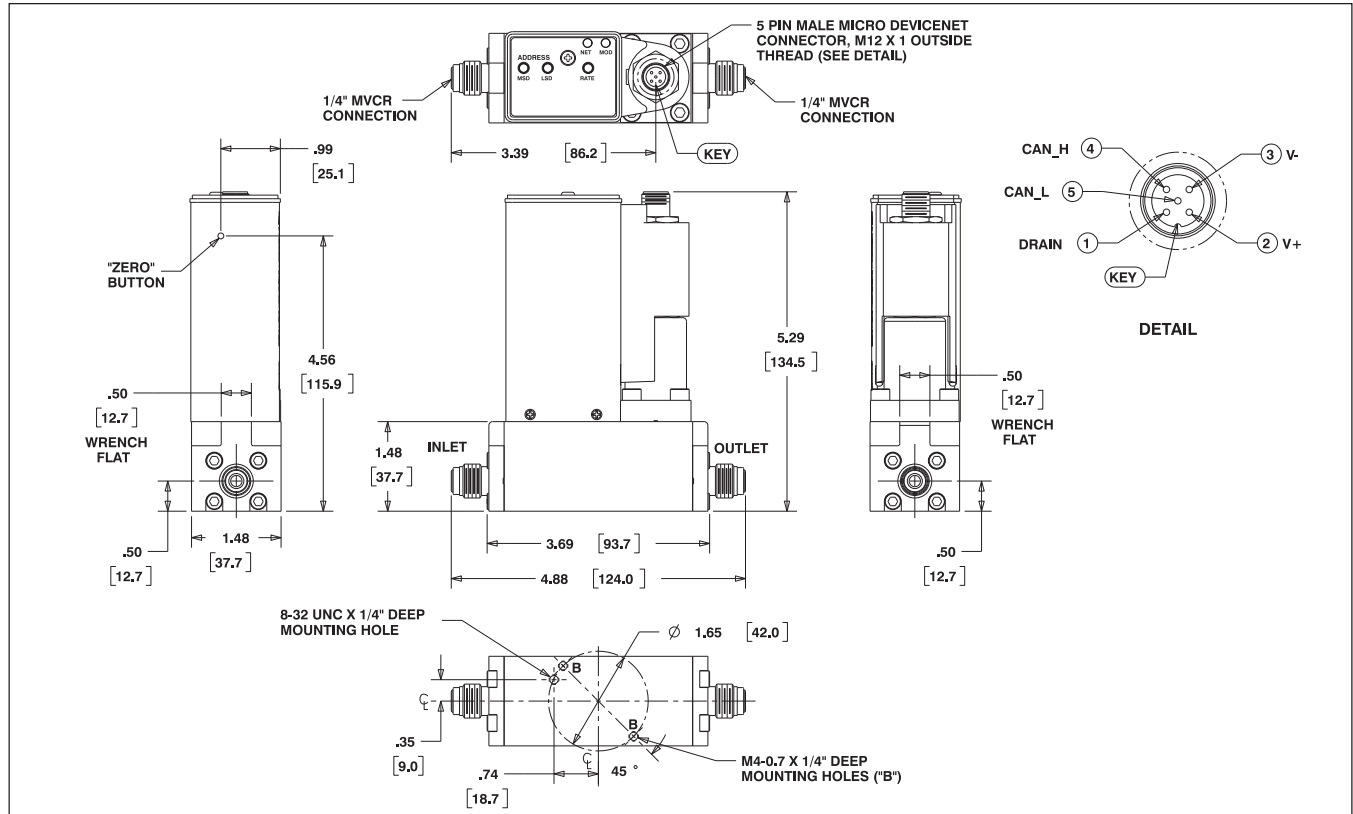


Figure 4 SLA6850 and SLA6860 Digital I/O DeviceNet Controller with 1/4" VCR Connections

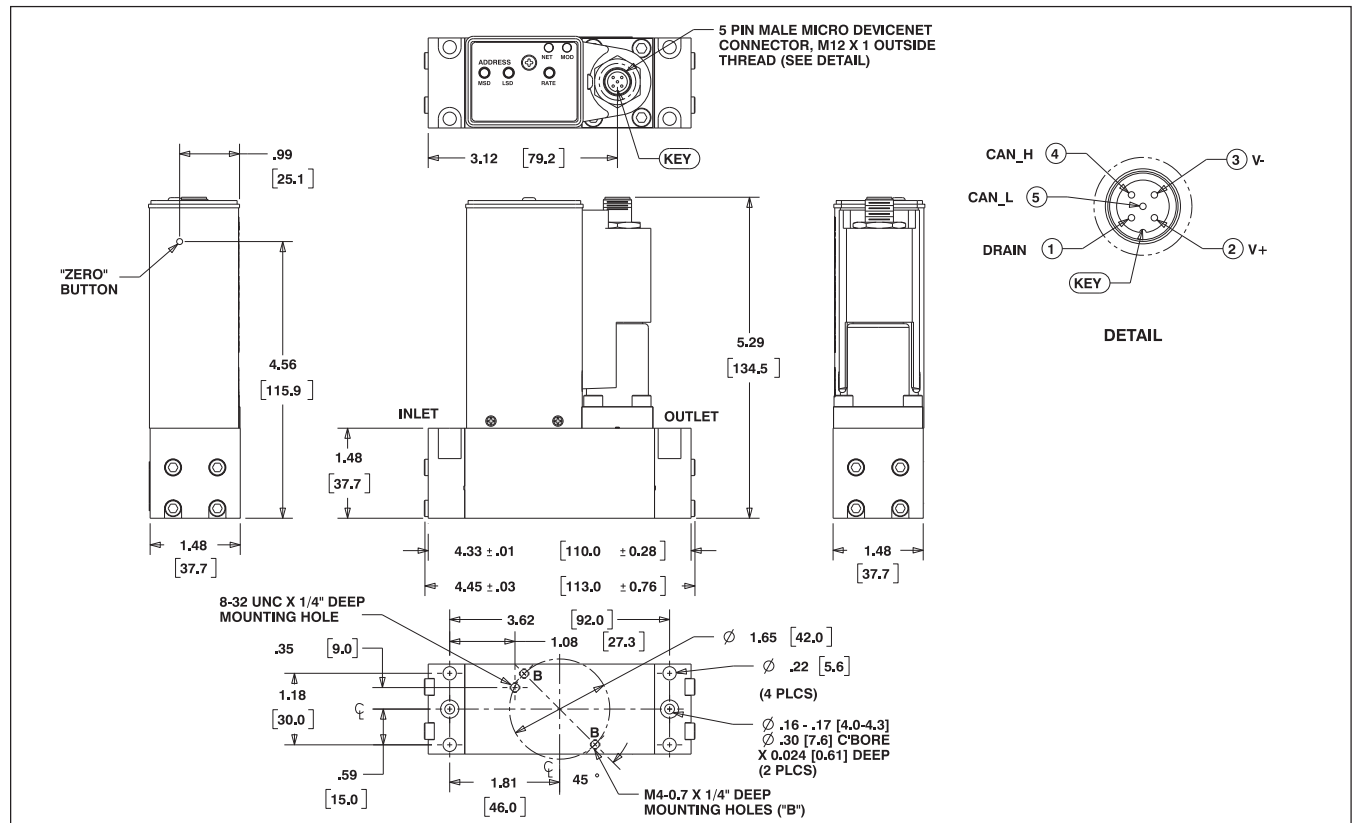


Figure 5 SLA6850 and SLA6860 Digital I/O DeviceNet Controller with Downport (IGS) 'C' or 'CS' Seal Connections

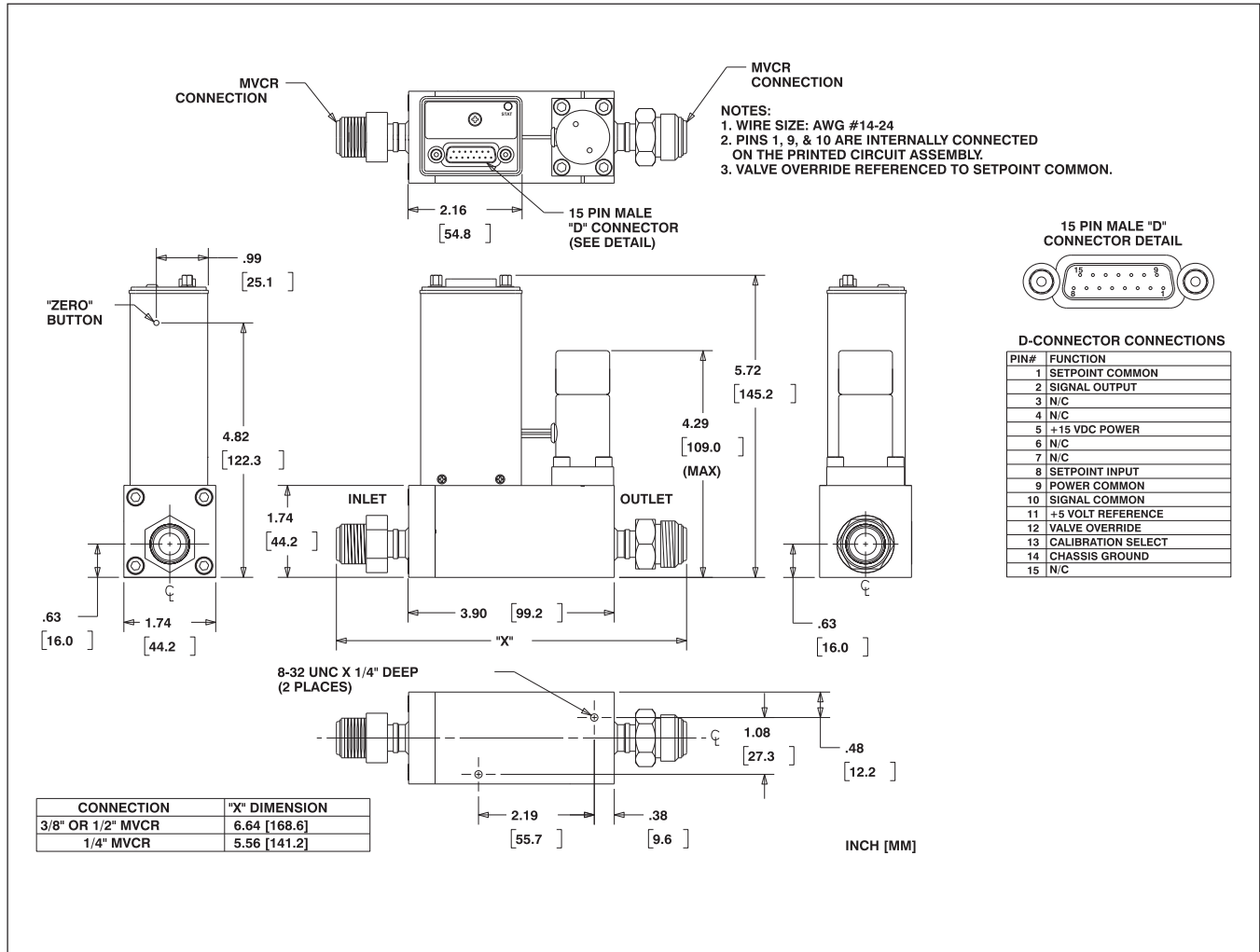


Figure 6 Models SLA6851 and SLA6861 Analog I/O Controller with 1/4" VCR Connections

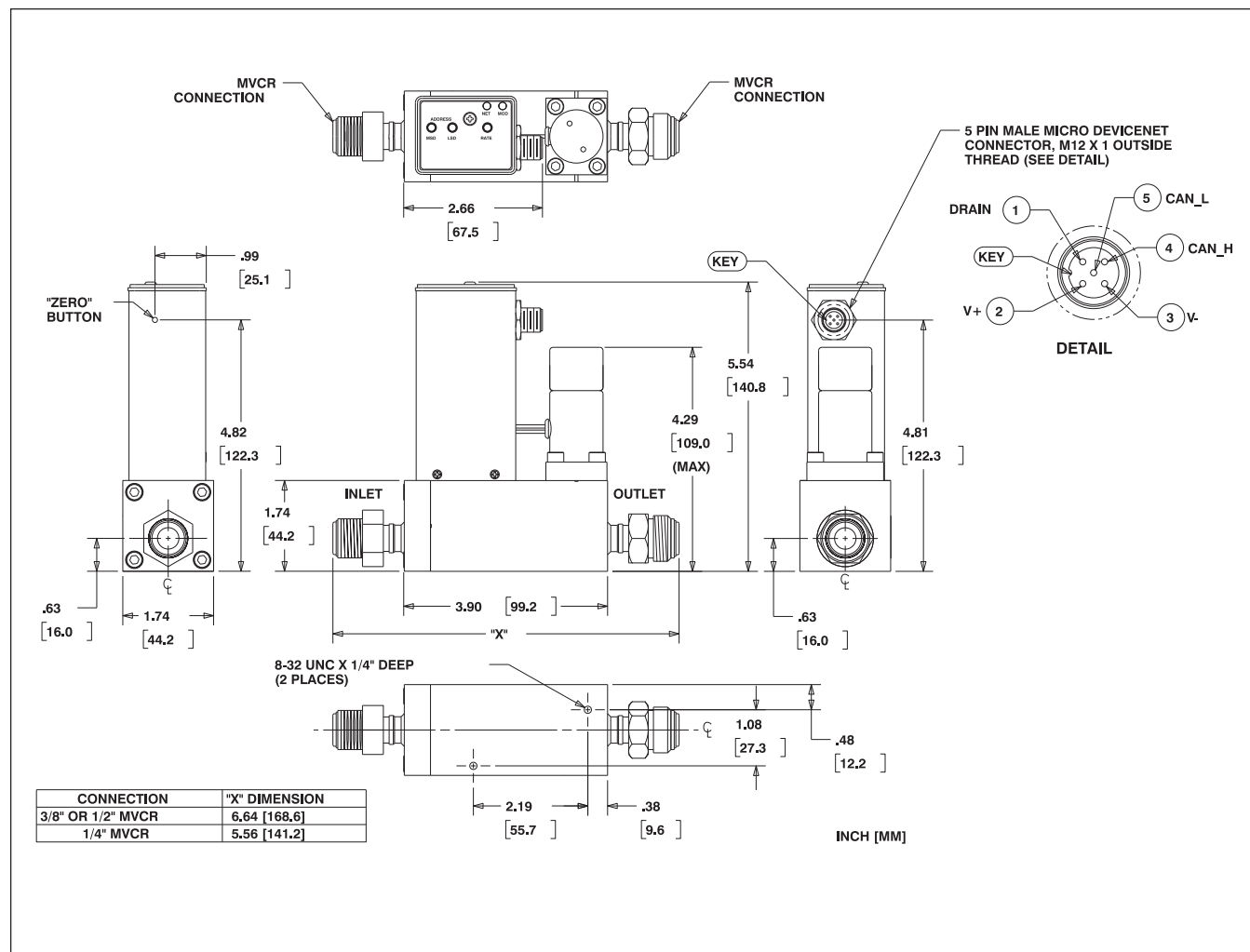


Figure 7 Models SLA6851 and SLA6861 DeviceNet I/O Controller with 1/4" VCR Connections

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Brooks is committed to assuring all of our customers receive the ideal flow solution 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. The primary standard calibration equipment to calibrate our flow products 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.

CUSTOMER 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.

HELP DESK

In case you need technical assistance:

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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.
ODVA	Open DeviceNet Vendors Association, Inc.
TruCal	Brooks Instrument, LLC
VCR	Cajon Co.



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