

# Brooks® Model SLA7840 Remote Transducer Pressure/Flow Controller

## General Features:

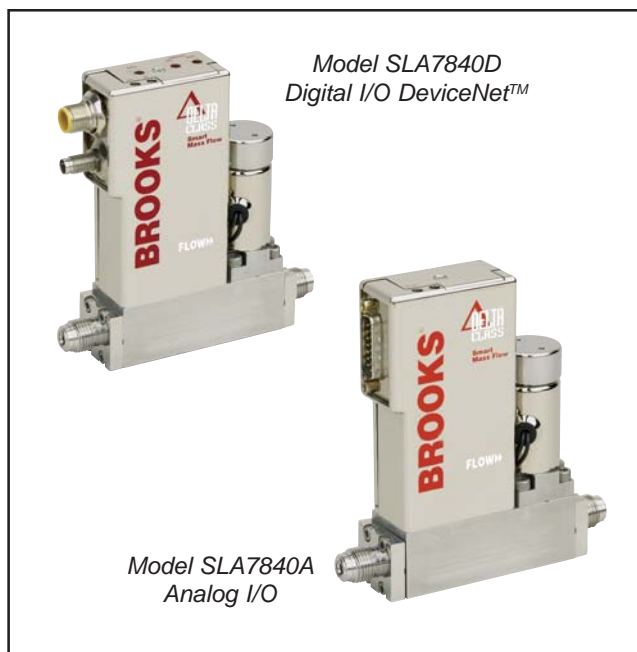
- 1-1/8" Mechanical Platform
- High Performance Co-Planar Valve
- All wetted parts 32 Ra maximum to maintain particle, moisture and contamination free process conditions
- All-Metal seals, High leak integrity (less than  $1 \times 10^{-10}$  atm-cc/sec He)
- Flow accuracy  $\pm 1\%$  of rate (or setpoint), including linearity to assure device is controlling precisely at desired level
- Digital Communication options offer easy commissioning and reduced system wiring
- Device can store 10 selectable calibrations and flow ranges
- CE Compliant

## 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 0254 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, baud rate rotary switches, and two bi-color status LEDs - to ease setup and addressing as well as status confirmation
- Vendor Specific Profile, ODVA certified
- Capabilities: Poll I/O, Cyclic, Change-of-State and explicit messaging



## Description

Brooks Instrument's Model SLA7840 is a 1-1/8" wide profile high purity metal sealed instrument that controls pressure while measuring flow rate. The Model SLA7840 receives a remote pressure transducer signal, and using adjustable integral PID control electronics and a control valve, maintains a desired set pressure. In addition to the pressure function, the Model SLA7840 provides a 0-5 V signal that is linear with mass flow rate. The Model SLA7840 can also be configured as a mass flow controller for calibration or test purposes.

## Superior Valve Technology

The co-planar valve offers unmatched performance. Due to its simplified construction, the valve exhibits superior repeatability, stability, and response time. Instruments are less sensitive to pressure variations in the process because of the larger valve control range. The co-planar valve also offers lower leak-by rates compared to other metal sealed controllers. These advancements ensure a more stable process over time.

## Model SLA7840

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### Highly Adaptable Configurations

The 1-1/8" body offers a compact, space saving footprint. The SLA7840 is easily retrofitable to existing gas box designs that utilize the traditional 1-1/2" body platform. Likewise, the all-digital electronics is adaptable and allows the SLA7840 to serve as a direct replacement for existing analog products bringing with it greatly improved accuracy and reliability.

### Broad Array of Communication Options

Brooks offers the Model SLA7840 with a traditional 0-5 volt analog option. 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 Model SLA7840 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 co-planar valve gives users the option to decrease the number of parts needed to control their entire process.

### Analog I/O Pin Connections:

PIN #	FUNCTION
1	SETPOINT/COMMAND COMMON
2	FLOW SIGNAL OUT
5	+15V DC POWER
8	SETPOINT/COMMAND IN
9	POWER SUPPLY COMMON
10	OUTPUT SIGNAL COMMON
11	+5V REFERENCE
12	VALVE OVERRIDE
13	MODE SELECT PIN
15	REMOTE SENSOR IN
3, 4, 6, 7, 14	NOT CONNECTED

### Specifications

#### Performance Characteristics:

#### Flow Ranges\*\*

Models SLA7840

Any range from 0-3 sccm to 0-30,000 sccm N<sub>2</sub> eq.

\*\*Standard: 0° and 101kPa (760 Torr). Per SEMI Guideline E12-96.

#### Flow Control Range

33:1

#### Flow Accuracy

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

#### Flow Repeatability

±0.20% of rate

#### Flow Temperature Sensitivity

Zero: Less than 0.035% F.S. per °C

Span: Less than 0.1% of rate per °C

#### Flow Settling Time

Actual flow:

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

#### Performance Characteristics:

#### Pressure Ranges

Dependent upon remote transducer, maximum 500 psig.

#### External Sensor Input

Suitable for pressure sensors with maximum 0-10 Vdc output signals.

#### Pressure Control Range

20:1

#### Pressure Settling Time

Less than 1 second typical for a 20-100% setpoint step with maximum 2% overshoot. Actual pressure response highly dependent on system design.

#### RATINGS:

#### Operating Pressure

500 psig maximum

#### Pressure Equipment Directive (PED) 97/23/EC:

Equipment falls under Sound Engineering Practice (SEP)

#### Leak Integrity

Inboard to Outboard: 1x10<sup>-10</sup> 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 Characteristics:

#### 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 maximum

**Outline Dimensions**

Refer to Figures 1 and 2.

**Process Connections**

1/4" male VCR™ (standard)  
 C Seal (SEMI 2787.1)  
 CS Seal (SEMI 2787.5)  
 W Seal (SEMI 2787.3)

**Electrical Characteristics:**

**Electrical Connections**

Analog I/O option: 15-pin D-Connector, male  
 DeviceNet I/O 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: 11-25 Vdc

**Power Requirements**

	Watts, typ.	Watts, max.
Analog I/O option, with valve:	3.6	4.0
DeviceNet I/O option, with valve:	6.9	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: 360 Kohm min.

**Flow Output (Analog I/O option only)**

0-5 Vdc into 2 Kohm minimum load.  
 Output will indicate process variable up to 5.5 Vdc (110% 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 (max. 16 Vdc)  
 – valve is forced open  
 Connected to signal at or below 0.0 Volts (min. -1 Vdc)  
 – valve is forced closed

**5 Volt Reference Signal (Analog I/O option)**

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

**Mode Select Signal (Analog I/O Only)**

Select whether to control in external sensor mode (pressure) or flow mode.  
 Open (disconnected) = unit operation in flow control mode  
 Closed (grounded) = unit operation in pressure control mode

**Remote Sensor Input**

0-10 Vdc: Input will accept signals to 10.2 Vdc.  
 Input resistance = 480 Kohm nominal.

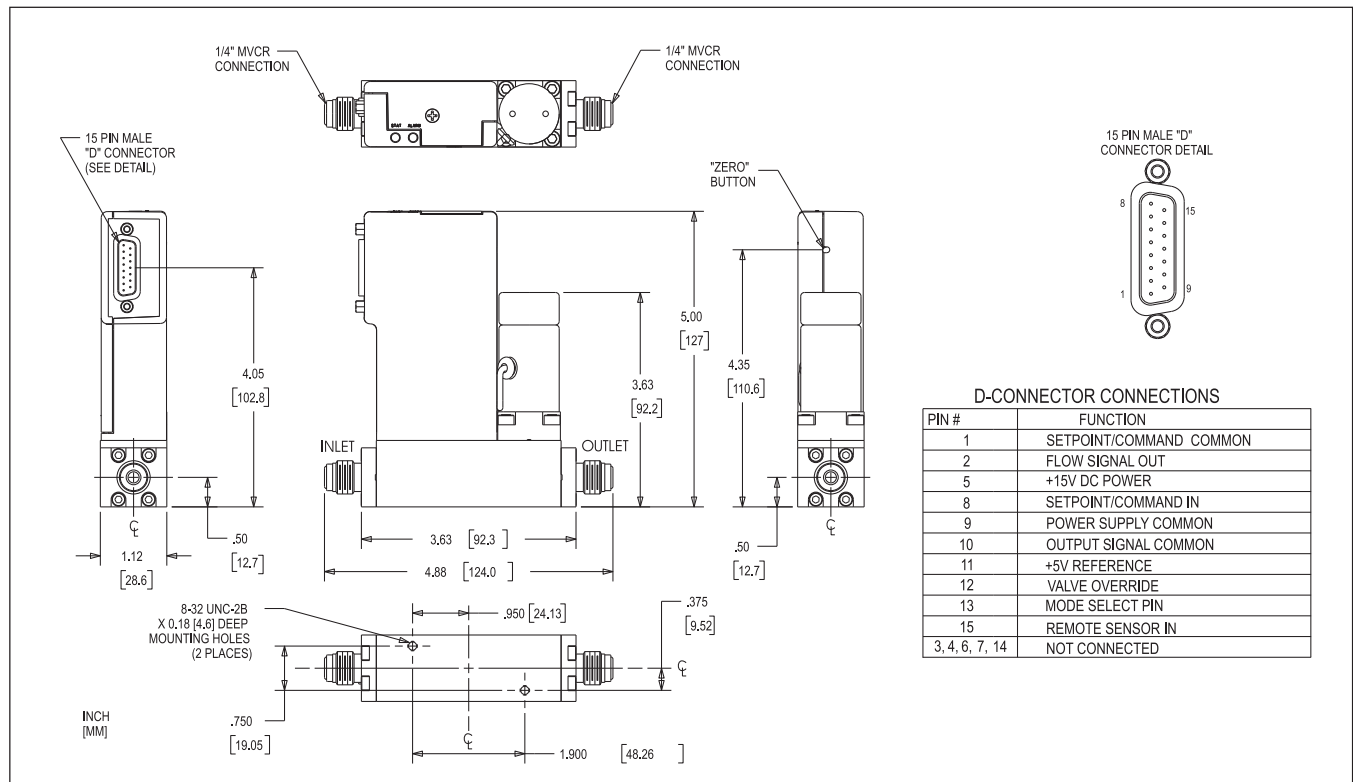


Figure 1 Model SLA7840A Analog I/O Controller with 1/4" VCR Connections

## Model SLA7840

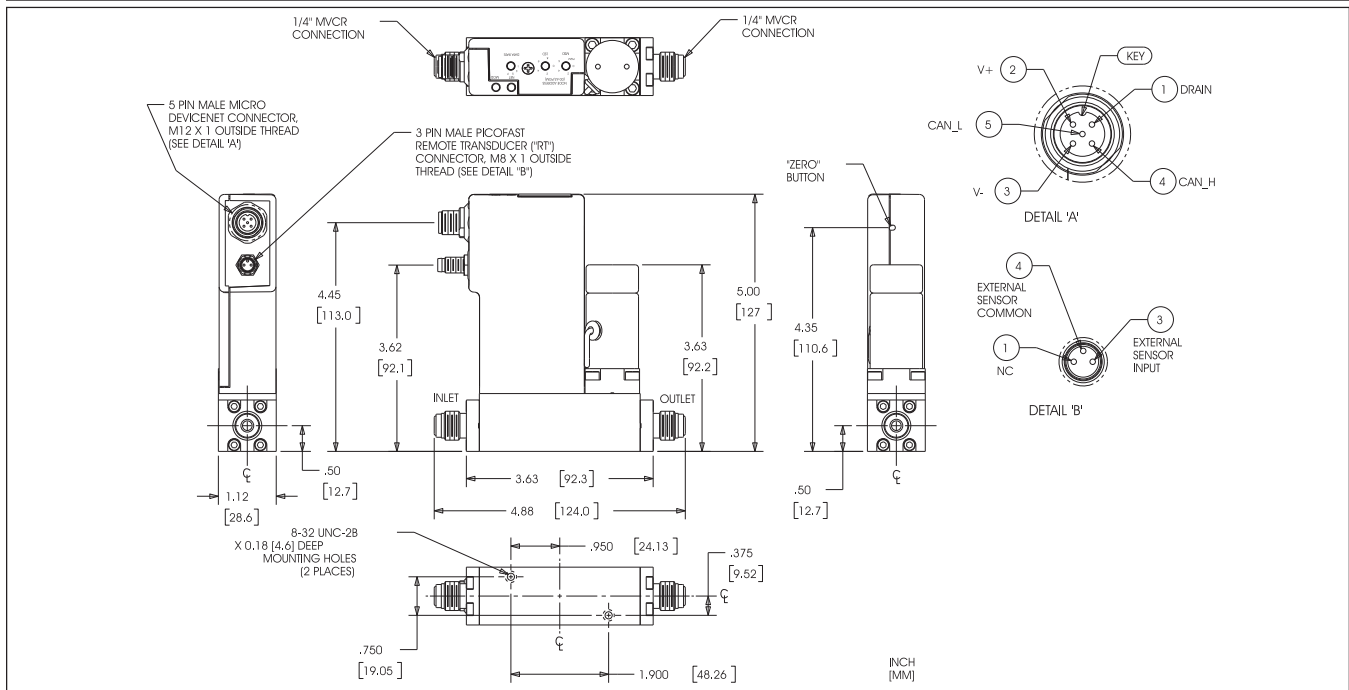


Figure 2 SLA7840D Digital I/O DeviceNet Controller with 1/4" VCR Connections

### BROOKS SERVICE AND SUPPORT

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](http://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, if necessary under in-situ conditions, and the results will be traceable to the relevant international quality standards.

### CUSTOMER SEMINARS AND TRAINING

- Brooks can provide customer seminars and dedicated training to engineers, end users and maintenance persons.

### HELP DESK

In case you need technical assistance:

Americas 1 888 554 FLOW  
 Europe +31 (0) 318 549 290  
 Asia +81 (0) 3 5633 7100

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.  
 VCR ..... Cajon Co.



**Brooks Instrument**  
 407 West Vine Street  
 P.O. Box 903  
 Hatfield, PA 19440-0903 USA  
 T (215) 362 3700  
 F (215) 362 3745  
 E-Mail [BrooksAm@BrooksInstrument.com](mailto:BrooksAm@BrooksInstrument.com)  
[www.BrooksInstrument.com](http://www.BrooksInstrument.com)

**Brooks Instrument**  
 Neonstraat 3  
 6718 WX Ede, Netherlands  
 T +31 (0) 318 549 300  
 F +31 (0) 318 549 309  
 E-Mail [BrooksEu@BrooksInstrument.com](mailto:BrooksEu@BrooksInstrument.com)

**Brooks Instrument**  
 1-4-4 Kitasuna Koto-Ku  
 Tokyo, 136-0073 Japan  
 T +81 (0) 3 5633 7100  
 F +81 (0) 3 5633 7101  
 E-Mail [BrooksAs@BrooksInstrument.com](mailto:BrooksAs@BrooksInstrument.com)

