

This Quick Start Guide applies to the following Brooks product(s):  
 • E-Series: 5850E, 5851E, 5853E, 5860E, 5861E, 5863E  
 • I-Series: 5850I, 5851I, 5853I, 5860I, 5861I, 5863I  
 • S-Series: 5850S, 5851S, 5853S, 5860S, 5861S, 5863S  
 • SLA58xx-Series: SLA5850, SLA5851, SLA5853, SLA5860, SLA5861, SLA5863

In an effort to be more eco-friendly, Brooks is no longer supplying printed instruction manuals with the product shipments to reduce our paper consumption.

For your product's complete instruction manual, please download it at [www.BrooksInstrument.com/documentation](http://www.BrooksInstrument.com/documentation)

Dear Customer,

Thank you for your purchase. We appreciate this opportunity to service your flow measurement and control needs with a Brooks Instrument device. Brooks' award-winning meters and controllers consistently rank at the top of their category for accuracy, reliability and user preference, as judged by the audience that matters - real users of flow instrumentation, like you.

But Brooks' products are only half of the story. You are backed by Brooks' unsurpassed local technical expertise in virtually every corner of the planet. Your local Brooks product and application specialist is truly your "partner in flow". They have been extensively trained to help you select the optimal solutions for your flow measurement or control needs and offer years of experience solving application problems just like yours.

Should you require any additional information concerning Brooks' products and services, please contact your local Brooks Sales and Service office listed on the back cover of this guide.

Sincerely,  
 Brooks Instrument

Visit us online at [www.BrooksInstrument.com](http://www.BrooksInstrument.com)

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 Reference: 834z986



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CAUTION

- Incorrect voltage will cause flowmeter damage or failure.
- If your mass flow product operates with current I/O it is an input sinking device. Do not use a current sinking PLC output card.
- If your mass flow product operates with current I/O it sources its own 4-20mA output signal. Do not source this output with an external supply.

WARNING

- Read all instructions prior to installing, operating and servicing this product. Follow all warnings, cautions and instructions marked on and supplied with this product.
- Install your equipment as specified in the installation instructions in the appropriate instruction manual and per local and national codes. Connect all products to the proper electrical and pressure sources.
- Ensure that all equipment doors are closed and protective covers are in place except when maintenance is being performed by qualified persons, to prevent electrical shock and personal injury.
- Do not operate this instrument in excess of the specifications marked on and supplied with this product. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.
- Before operating the device, ensure all electrical connections have been properly terminated.
- If it becomes necessary to remove the device from the system, power to the device must be disconnected.
- If it becomes necessary to remove the device from the system after exposure to toxic, pyrophoric, flammable or corrosive gas, purge the device thoroughly with a dry inert gas such as nitrogen before disconnecting the gas connections. Failure to correctly purge the device could result in fire, explosion or death. Corrosion or contamination of the device upon exposure to air may also occur.

## Quick Start Guide

### SLA5800 Series, E-Series, i-Series, S-Series Thermal Mass Flow Controllers & Meters

Thermal Mass Flow



## Step 1: Location/Orientation

The instrument may be located anywhere in the process line, as long as the following conditions are met:

- Ambient temperature must remain between 0° and 65°C (32°F and 149°F).
- The instrument (cable connections, wiring compartments and/or conduit openings) should be accessible for service.

The instrument can be mounted in any orientation. Its best if the mounting orientation matches the orientation specified on the Calibration Data Sheet. Refer to Figure 1 for the different mounting options:

1

**Attitude #1**  
 Flow: Horizontal  
 Mount: Base Down

1

**Attitude #2**  
 Flow: Vertical  
 Mount: Inlet Up

1

**Attitude #3**  
 Flow: Horizontal  
 Mount: Either Side Down

1

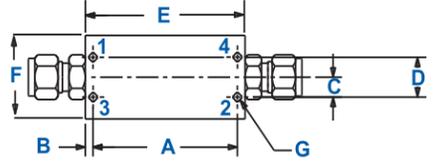
**Attitude #4**  
 Flow: Vertical  
 Mount: Inlet Down

1

**Attitude #5**  
 Flow: Horizontal  
 Mount: Upside Down

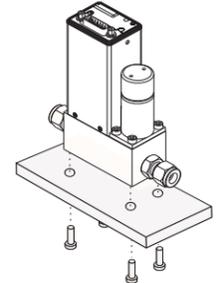
## Step 2: Mounting

### 2-A1 Dimensions and Mounting Hole Locations for Flow-Thru Devices



See Dimensions in Table 2-A2

Mounting the Device to a Plate, Shelf or Panel

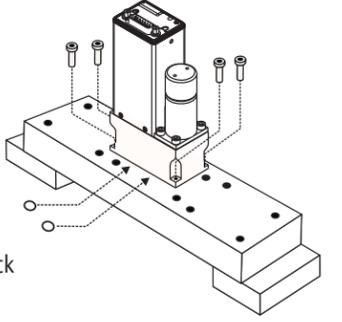
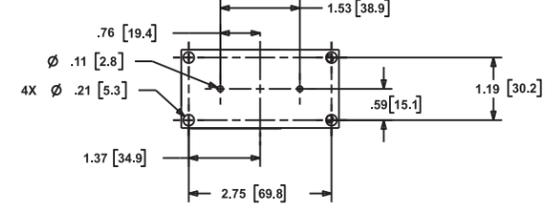


## Step 2: Mounting (continued)

### 2-A2 Mounting Hole Locations by Model for Flow-Thru Devices

Inch [mm]		A	B	C	D	E	F	G
Model	Hole Locations							
5850E, i, S / SLA5850	1, 2	2.72 [69.0]	0.14 [3.7]	0.35 [9.0]	0.71 [18.0]	3.01 [67.4]	1.48 [37.7]	8-32 UNC x 17/64 Deep
5851E, i, S / SLA5851	3, 4	2.19 [55.7]	1.14 [28.8]	0.69 [17.5]	1.08 [27.4]	3.69 [93.5]	1.74 [44.2]	8-32 UNC x 1/4 Deep
5853E, i, S / SLA5853	1, 2, 3, 4	7.0 [179]	0.39 [10]	0.6 [15.2]	1.2 [30.5]	7.8 [199]	3.3 [84]	M6 x 0.23 ±0.008 Deep
5860E, i, S / SLA5860	3, 4	1.59 [40.4]	0.36 [9.1]	0.40 [10.2]	0.80 [20.3]	2.31 [58.6]	1.48 [37.7]	8-32 UNC x 7/32 Deep
5861E, i, S / SLA5861	3, 4	1.55 [39.4]	1.14 [28.8]	0.68 [17.3]	1.36 [34.5]	3.15 [80.0]	1.74 [44.2]	8-32 UNC x 17/64 Deep
5863E, i, S / SLA5863	1, 2, 3, 4	5.3 [135]	0.39 [10]	0.6 [15.2]	1.2 [30.5]	6.1 [155]	3.3 [84]	M6 x 0.23 ±0.008 Deep

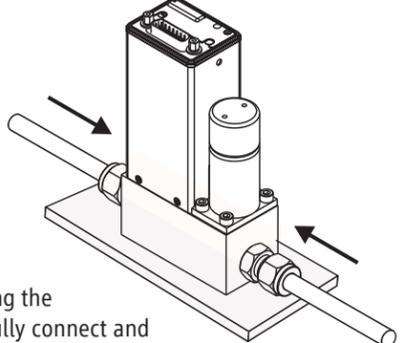
### 2-B Dimensions and Mounting Hole Locations for ISA SP76 Downported Devices



Mounting the Device to a Gas Stick

## Step 3: Gas Connections

### 3



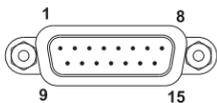
After mounting the device, carefully connect and tighten the process lines. Ensure the fittings are leak-free.

## Step 4: Electrical Connections

Identify your device, connector type and input/output signal type. Locate the appropriate electrical hook-up information in Sections 4-1 thru 4-6.

### 4-1

#### Analog RS232 or RS485 15-Pin D-Connector

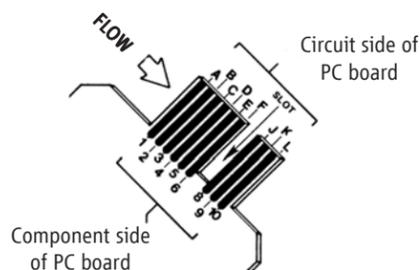


PIN NO.	SLA5800 Series, Rev B	SLA5800 Series, Rev A	5800 E-Series	5800 I-Series	5800 S-Series	Meter
1	Setpoint, Common Input (-)	Setpoint, Common Input (-) for Voltage or Current	Setpoint, Common Input (-)	Setpoint, Common Input (-) for Voltage or Current	Setpoint, Common Input (-) for Voltage or Current	Not Connected
2	Flow Signal 0(1)-5 Volt, 0-10 Vdc (Option), Output (+)	Flow Signal 0(1)-5 Volt, Output (+)	Flow Signal 0-5 Volt Output (+)	Flow Signal 0-5 Volt Output (+)	Flow Signal 0(1)-5 Volt, Output (+)	*
3	TTL Alarm, Open Collector, Output (+)	TTL Alarm, Open Collector, Output (+) Maximum 30 Vdc 25 mA	Not Connected	Not Connected	TTL Alarm, Open Collector, Output (+) Maximum 30 Vdc 25 mA	*
4	Flow Signal, 0(4)-20 mA, Output (+)	Flow Signal, 0(4)-20 mA, Output (+)	Valve Off	Flow Signal, 4-20 mA, Output (+)	Flow Signal 0(4)-20 mA, Output (+)	*
5	Power Supply, +13.5 Vdc to +27 Vdc (+)	Power Supply, +13.5 Vdc to +27 Vdc (+) SLA5851: 22 to 27 Vdc (+)	Power Supply, +15 Vdc +/-5%	Power Supply, +15 Vdc to +28 Vdc (+) 5851i: 22.5 to 28 Vdc (+)	Power Supply, +15 Vdc to +28 Vdc (+)	*
6	Not Connected	Not Connected	Power Supply, -15 Vdc +/-5%	Not Connected	Required for Model 5851S or Normally Open Valve Power Supply, -15 Vdc +/-5%	*
7	Setpoint, 0(4)-20 mA, Input (+)	Setpoint, 0(4)-20 mA, Input (+)	Valve Test Point See manual for details.	Current Setpoint Input*	Setpoint, 0(4)-20 mA, Input (+)	Not Connected
8	Setpoint, 0(1)-5 Volt, 0-10 Vdc, Input (+)	Setpoint, 0(1)-5 Volt, Input (+)	Setpoint, 0-5 Volt, Input (+)	Setpoint, 0-5 Volt, Input (+)	Setpoint, 0(1)-5 Volt, Input (+)	Not Connected
9	Power Supply, Common (-)	Power Supply, Common (-)	Power Supply, Common (-)	Power Supply, Common (-)	Power Supply, Common (-)	*
10	Flow Signal, Output Common (-)	Flow Signal, Output Common (-)	Flow Signal, Output Common (-)	Flow Signal, Output Common (-)	Flow Signal, Output Common (-)	*
11	Not Connected	Reference, +5 Vdc, Output (+)	Reference, +5 Vdc, Output (+)	Reference, +5 Vdc, Output (+)	Reference, +5 Vdc, Output (+)	Not Connected
12	Valve Override, Input	Valve Override, 4.8 - 25 Vdc to open, Short to ground to close, Float for normal operation	Valve Override, +15 Vdc to open, -15 Vdc to close, Float for normal operation	Valve Override 15 - 28 Vdc to open Short to ground to close Float for normal operation	Valve Override, 15 - 28 Vdc to open, Short to ground to close, Float for normal operation	Not Connected
13	Reserved for Pressure Controllers, RT Input, 0-15 Vdc, 0-10 Vdc, Input (+)	Calibration Selection, Input See manual for hook up and resistor values	Not Connected	Not Connected	Not Connected	*
14	RS-485, Common B (-)	RS-485, Common B (-) Input/Output	Chassis Ground	Chassis Ground	RS-232 RxD/RS-485 A- *	*
15	RS-485, Common A (+)	RS-485, Common A (+) Input/Output	Remote Transducer Input*	Not Connected	RS-232 TxD/RS-485 A+ *	Not Connected
Notes:	Reference X-DPT-RS485-SLA5800-SLAMf-Series-RevB-MFC-eng Instruction Manual for complete digital protocol details for this device	Reference X-DPT-S-Protocol-for-SLA-Series-eng Instruction Manual for complete digital protocol details for this device	*Jumper Selectable	*Jumper Selectable	*Specify at time of order. Reference X-DPT-S-Protocol-for-S-Series-eng Instruction Manual for complete digital protocol details for this device	* Same as Controller

Notes: 1) The term common and return (-) are used interchangeably.  
2) Cable shield tied to chassis ground in meter / controller connector. Make no connection on customer end.  
3) All power leads must be connected to power supply.  
4) For SLA Rev B, Calibration Selection possible via digital input and/or BSS Software

### 4-2

#### Analog 20-pin Card Edge Connector

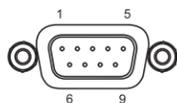


5800 E-Series	Card Edge	5800 E-Series
Chassis Ground	1 A	Setpoint, 0-5 Volt, Input (+)
Flow Signal Output Common (-)	2 B	Setpoint, Common Input (-)
Flow Signal 0-5 Volt Output (+)	3 C	Power Supply, Common (-)
Power Supply, +15 Vdc +/-5%	4 D	Valve Test Point. See manual.
Remote Transducer Input	5 E	Not Connected
Not Connected	6 F	Power Supply, -15 Vdc +/-5%
Slot	7 H	Slot
Not Connected	8 J	Not Connected
Valve Override, +15 Vdc open, -15 Vdc close, Float normal	9 K	Not Connected
+5 Volt Reference* or Valve Return* or Not Used	10 L	Valve Off

\* Jumper selectable

### 4-3

#### Profibus® 9-Pin D-Connector



PIN NO.	Signal	Function	
		SLA RevB, 5800S-Series Profibus DP Connector	EN 50170 Standard Definition
1	Shield	Connected to Housing	Shield/Protective ground
2	M24	Not Connected	Ground of 24 Vdc Power Supply
3	RxD/TxD-P	RxD/TxD-A+	
4	CNTR-P	Not Connected	Control Signal for Repeaters (Direct Control)
5	GRND	Digital Ground for Terminating resistance	
6	VP	Digital +5 Vdc Supply for Terminating resistance	
7	P24	Not Connected	24 Vdc Power Supply
8	RxD/TxD-N	RxD/TxD-A-	
9	CNTR-N	Not Connected	Control Signal for Repeaters (Direct Control)

Signals in bold type face are mandatory according to EN 50170. Signal names are according to EN 50170.

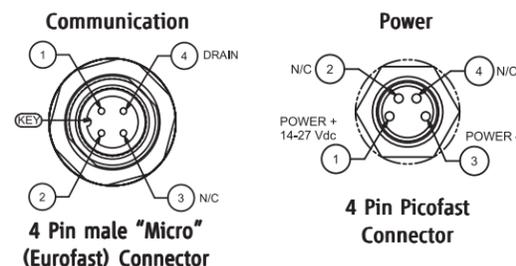
See Step 4: Section 4-1, 15 Pin D-Connector and reference the column labeled "5800S-Series" or "SLA5800 Series RevB" for information on second connector.

Reference X-DPT-Profibus-DP-Interface-eng, X-DPT-Profibus-DP-Analog-Interface-eng or X-DPT-Profibus-SLA5800-SLAMf-Series-MFC-eng Instruction Manual(s) for complete digital or analog protocol details for this device.

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### 4-4

#### FOUNDATION Fieldbus™

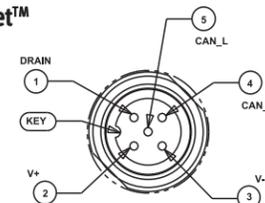


Reference X-DPT-FOUNDATION Fieldbus-SLA5800-SLAMf Series-eng Instruction Manual for complete digital protocol details for this device.

### 4-5

#### DeviceNet™

#### 5 Pin "Micro" Connector

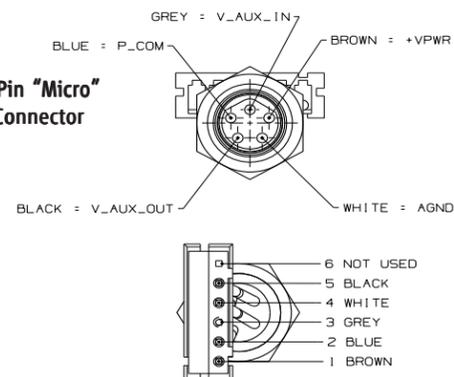


Reference X-DPT-DeviceNet-Digital-MFC-eng or X-DPT-DeviceNet-SLA5800-SLAMf-Series-RevB-MFC-eng Instruction Manual(s) for complete digital protocol details for this device.

### 4-6

#### EtherCAT®

#### 5 Pin "Micro" Connector



Reference X-DPT-EtherCAT-SLA58xx-SLAMfxx-Series-RevB-MFC-eng Instruction Manual for complete digital protocol details for this device.

## Step 5: Zeroing Procedure

To assure measurement accuracy, the instrument must be zeroed to the operational installation conditions:

1. Apply power to instrument for approximately 45 minutes to reach a stable thermal condition prior to applying flow.
2. Flow the process fluid into the instrument and allow sufficient time for the sensor to reach normal operating temperature.
3. Close the shutoff valve downstream to eliminate any pressure differential across the instrument.
4. After confirming a NO flow condition check the flow signal.

Signal Type	Recommended Zero Limits
0-5 Vdc	0.000 Vdc ± 10 mV
1-5 Vdc	1.000 Vdc ± 10 mV
0-10 Vdc	0.000 Vdc ± 10 mV
0-20 mA	0.000 mA ± 40 micro Amps
4-20 mA	4.000 mA ± 40 micro Amps

5. Rezero the device as required.

Product Family	Zeroing Method
SLA-Series	Zero Button* or Brooks Service Suite™ Software
E-Series	Potentiometer
i-Series	Potentiometer
S-Series	Zero Button or Smart Control Software

6. For SLA devices please note the following:

- The zeroing process takes approximately 30 seconds. Status light will flash red during zeroing process.
- A solid Green LED means a successful zero.
- A solid Red LED means an unsuccessful zero. If a solid Red LED is indicated, recycle power and repeat zeroing procedure or contact the Technical Service Group at Brooks Instrument.

## Step 6: Operation

After the flow meter or flow controller has been installed in the system it is ready for operation.

**Meter:** The meter will provide a flow signal proportional to the full scale flow of the device as indicated on the device label.

**Controller:** You must provide a setpoint/command signal to the controller. The controller will read the setpoint signal and will automatically adjust the valve to the appropriate position to achieve the desired flow and will provide a flow signal proportional to the full scale flow of the device as indicated on the device label.

## Equipment Receipt and Return Procedures

### Receipt of Equipment

If the packing case is damaged, the local carrier should be notified at once regarding their liability. Carefully remove the equipment from the packing case and inspect for damage or missing parts. If damaged, please contact Brooks Instrument at one of the locations listed on the back of this Quick Start Guide.

### Return Shipment

Please note that prior to returning any instrument to the factory Brooks Instrument requires the completion of Form RPR003-1, a Brooks Instrument Decontamination Statement, as well as a Materials Safety Data Sheet (MSDS) for fluid(s) used in the instrument. Copies of these forms can be found online at [BrooksInstrument.com/service-support](http://BrooksInstrument.com/service-support) along with complete details on how to process your return shipment or you can contact your nearest Brooks location for the necessary forms and instruction.

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