

Installation Instructions for 180 Series Mass Flow Controllers

SAFETY

1. Apply power only after checking the wiring diagrams (on reverse and in Instruction Manual).
2. Apply gas flow only after checking plumbing connections for leaks. Sierra recommends checking for leaks with a pressure-decay test. As these instruments are NEMA 6 / IP67 rated, a liquid leak detector may also be used.

INSTALLATION

3. **Consult the instrument's Data Label (on the rear of the instrument)** for ALL proper operating parameters. Note the orientation as well and install the instrument in this position. If the information on the Data Label does not match your process conditions, contact your Representative or Sierra Instruments.
4. **Install a 10 micron in-line filter upstream of your instrument.** If the gas contains any moisture, the moisture must be removed. Particles larger than 60 microns and moisture may damage your instrument.
5. **Mechanical mounting:** Flow direction is indicated on the large front label. The weight of the instrument is 10 lbs (4.5 kg)—be certain it is properly supported. 4 mounting screw holes are supplied on the bottom of the instrument. 2 are metric M6, 2 are SAE 8-32. See drawing in Technical Data Sheet for details.
6. **DO NOT APPLY POWER TO THE OUTPUT LOOP** on units equipped and calibrated for a 4-20 mA output signal. This is NOT a loop-powered device. Damage will occur.
7. **If your instrument has the WT option,** attach the water-tight cable to the electrical connector on the inlet side. Connect the wires in this cable per the diagram on reverse. **You do not need to open the instrument if you have ordered the WT option.**
8. **If your instrument does NOT have the WT option,** all electrical connections, including power, are applied via the terminal strip which is located INSIDE the waterproof enclosure. You may run your wiring into the instrument via standard conduit (attach to our 1/2" FNPT port) or through our cable gland (option GLAND). Both are located on the inlet side of the enclosure.
 - a) Remove the top section of the enclosure by unscrewing the 4 mounting bolts on the top of the instrument (bolt size SAE 7/16"). Gently pry the top section off the instrument (not the complete cover, just the top section). Do not remove the O-ring seal around the perimeter of the enclosure.
 - b) If using conduit, run your wires through the conduit, connect the conduit to our 1/2" FNPT port on the inlet side of the instrument, then pass your wires into the instrument toward the terminal strip (at the top). If using the cable gland, run your shielded cable with a diameter of 0.20-0.35" (5-9 mm) through the special gland on the side of the enclosure (cable with a smaller ID may allow liquid to enter the instrument and cause permanent damage).
 - c) Separate your individual wires (16-28 gauge required) and connect to the terminal strip on the top of the upper circuit board. Wire per the diagrams on reverse". Note that this terminal strip is unique to the 180 Series instruments and different than the description in the 100 Series Instruction Manual.
 - d) When wiring is completed, secure the conduit to the enclosure in a watertight fashion or tighten the cable gland fitting so that it grasps your cable securely. Failure to seal the conduit to the enclosure or to tighten the fitting can permit liquid to enter the electronic compartment and damage the instrument.
 - e) Install the top section of the enclosure taking care not to pinch the O-ring seal or any of your wires. Insert and tighten the 4 mounting bolts. Failure to install these bolts correctly can permit liquid to enter the electronic compartment and damage the instrument.

OPERATION

9. **Apply the gas** listed on the Data Label to the inlet at the recommended pressure (listed on the Data Label/calibration certificate). Note that all flow controllers are shipped with a zero set point so the valve will not open until commanded to do so.
10. **Apply power per the instructions: 24 Vdc, 600 mA, regulated (500 mA MINIMUM).**
11. **Apply the control setpoint correctly.** Your controller (Model C180) has been factory configured to receive a control signal (setpoint) in the form defined per your original order. This may be digital (RS-232) or analog (one of 4 choices). You may change the setpoint signal at your facility using the supplied Smart-Trak Software or the Remote Pilot Module (if ordered). Your setpoint and output choices include 0-5, 0-10 or 1-5 Vdc, 4-20 mA or digital control (RS-232). See the Instruction Manual for details. Electric connections for RS-232 are on the terminal strip. If you ordered the Remote Pilot Module, a short cable located under the terminal strip can be extended to easily connect the Module.
12. **DO NOT LEAVE A SETPOINT APPLIED FOR AN EXTENDED PERIOD OF TIME TO A CONTROLLER WHEN THE GAS SUPPLY IS SHUT DOWN OR BLOCKED.** The instrument will become hot to the touch and damage may result. Instead, consult the Operator's Manual for use of the "Valve Close" feature which allows you

to disable the valve while maintaining the setpoint signal. This may be set using the Smart-Trak Software or an external analog signal. See Chapters 3 and 5 in the Instruction Manual for details.

13. An **ANNUAL factory evaluation and calibration** is recommended.

HELP

Contact your local Sierra Instruments Distributor or contact one of our offices:

Telephone Technical Support:

SIERRA USA: +1 800-866-0200 OR +1 831-373-0200

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SIERRA Asia: +8620 3435 4870

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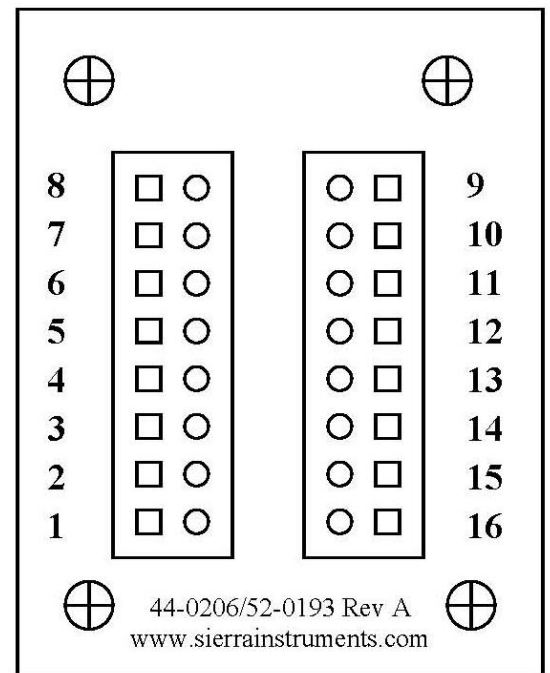
SIERRA USA: service@sierrainstruments.com

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Wiring Functions and Locations

Terminal Strip PCA Pin Configuration (inside the enclosure)

<i>Pin #</i>	<i>Function</i>	<i>Wire Color with optional WT cable</i>
1.	Analog Ground	Brown
2.	0-5 VDC Output (or 0-10, 1-5 VDC)	Red
3.	Analog Ground	Orange
4.	Valve Override (purge)	NOT CONNECTED
5.	Power Return (-)	Yellow
6.	Power Input (+)	Green
7.	RS-232 Transmit (out)	Purple
8.	Setpoint	Blue
9.	Not Used	NOT CONNECTED
10.	Analog Ground	Gray
11.	Reference Voltage (5 VDC External Setpoint & Valve Purge)	NOT CONNECTED
12.	Valve Override (shut)	Black
13.	RS-232 Receive (in)	Pink
14.	4-20 mA Output	White
15.	Chassis (Earth) Ground	Tan (light Brown)
16.	Not Used	NOT CONNECTED



Note: Pins 1, 3, 5, and 10 are connected together inside the instrument. Sierra recommends individual wires.

In the Series 180 instrument with WT option only, the 2 pins for Valve Purge are not connected at the factory. To activate this feature, open the top of the enclosure and move any 2 wires you are not using to the proper terminal strip location.

Valve Purge

Terminal Pin # 4

5Vdc ref voltage

Terminal Pin # 11 (useful to activate Valve Purge function)