

Model 310 Loop Powered Analog Output Transmitter Installation Guide

by Data Industrial

Mechanical installation

The Model 310 may be surface mounted onto a panel, attached to DIN rails using adapter clips or wall mounted using two optional enclosures.

Location

Although the Model 310 is encapsulated, all wiring connections are made to exposed terminals. The unit should be protected from weather and moisture in accordance with electrical codes and standard trade practices.

In any mounting arrangement, the primary concerns are ease of wiring and attachment of the programming cable.

The unit generates very little heat so no consideration need be given to cooling or ventilation.

Surface Mount Installation

The Model 310 may be mounted to the surface of any panel using double sided adhesive tape or by attaching fasteners through the holes in the mounting flanges of the unit.

Figure 1: Model 310 Dimensions

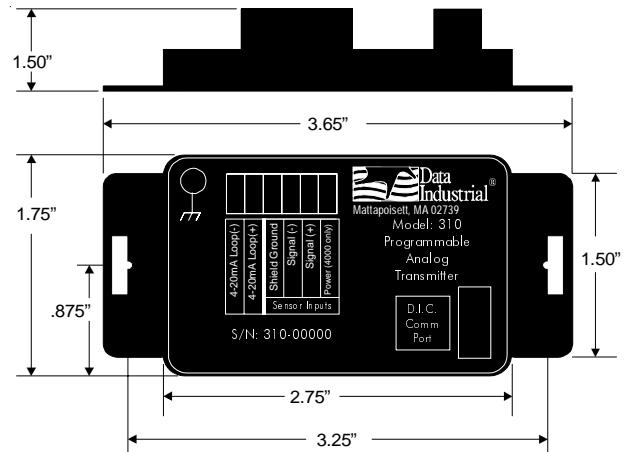
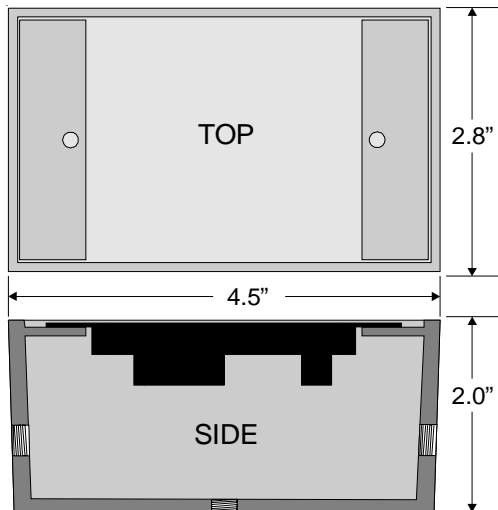


Figure 2: 310 Optional Enclosure Dimensions



DIN Rail Mounting

Optional clips snap onto the mounting flanges allowing the Model 310 to be attached to DIN 15, 32, 35 mm DIN rail systems.

Wall Mounting

Optional metal and plastic enclosures are available to mount the Model 310 to a wall when no other enclosure is used. The enclosure is first attached to the wall using fasteners through its mounting holes.

After wiring, the transmitter may be attached to the enclosure with the terminal headers facing in using the slots in the mounting flanges. As an alternate mounting arrangement, the Model 310 may be fastened to the box cover using double-sided adhesive tape.



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Model 310 Electrical Installation

Per standard wiring practices, the loop power must be off before making any wire connections. The terminal strips have removable plug-in connectors to make wiring easier.

1. Refer to Figure 3 for terminal connections.
2. As shown in figure 4, connect loop power supply positive (+) to Model 310 terminal marked 4-20mA loop (+).
3. Connect terminal marked 4-20mA loop (-) of Model 310 to positive (+) analog terminal of input device (Chart Recorder, PLC, etc.).
4. Connect negative (-) analog terminal of input device to loop power supply negative (-).
5. **If Wiring a Series 200 sensor**, connect the red wire (signal) to Signal (+) terminal, black wire (common) to Signal (-) terminal and the shield to Shield Ground terminal (Disregard shield for the IR sensors).

If Wiring a Series 4000 sensor, connect the clear wire (signal) to Signal (+) terminal, black wire (common) to Signal (-) terminal, shield wire to Shield Ground terminal, and red wire (power) to Power (4000 only) terminal.

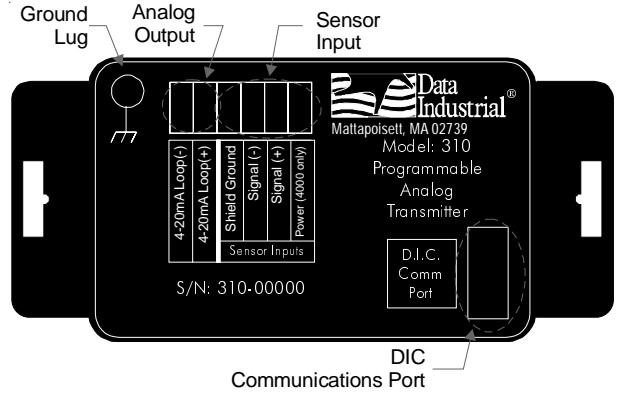
If wiring to a sine wave output sensor consult factory.

6. For maximum EMI Protection, connect Model 310 ground lug to panel ground. **See Note #1**
7. Ensure that all connections are tight, then plug connector into header.

Note #1:

Included with every Model 310 is a 310IK kit containing a screw, lock washer and ground lead to connect the Model 310 to Earth Ground. This will help prevent electrical interference from affecting the Model 310's normal operation.

Figure 3: Model 310 Terminal Locations



Side View - Typical 300 Series Removable Connector Wiring

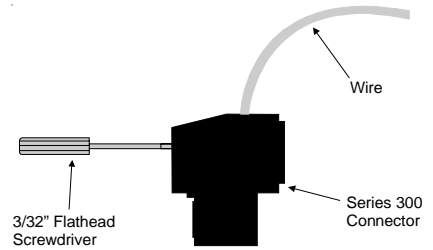
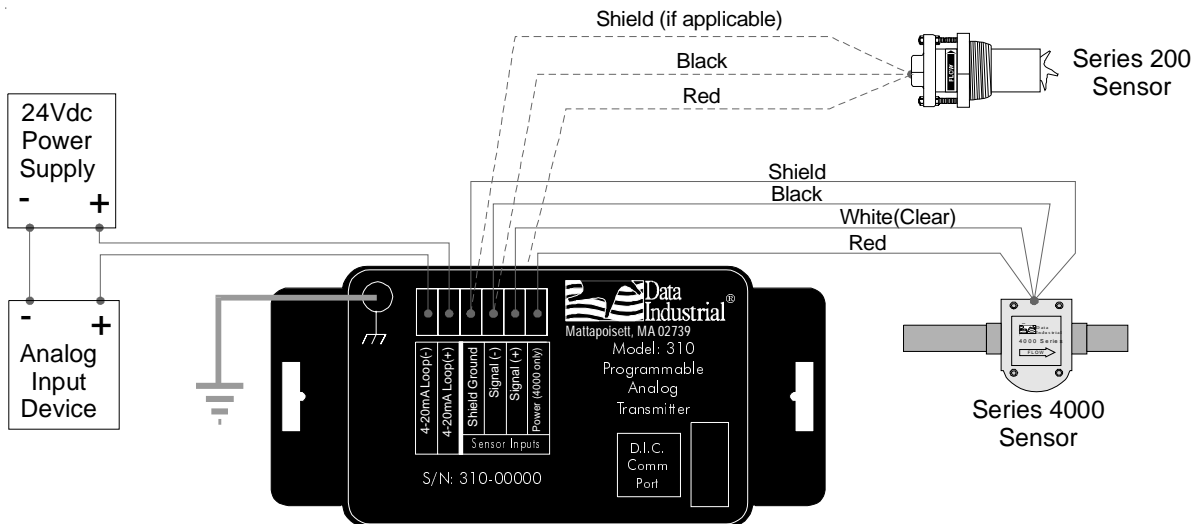


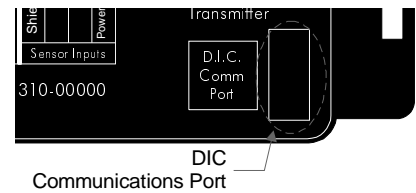
Figure 4: Model 310 Wiring to Analog Loop and Series 200 or Series 4000



Communications cable wiring

Field calibration requires a Data Industrial A310 Programming kit (consisting of a custom cable and software) and a PC running Windows® 9x, ME, NT, 2000 or XP. In order to program the Model 310 it must be connected to Loop-Power and the A301 cable must be connected between the Model 310 Comm port connector and an available DB9 COM port on a computer.

Location of the DIC Communication Port



Note:

The Data Industrial A301 Cable will work with all 300 Series products. However the older version of the cable (A300) does not have sufficient bandwidth to work with the newer 340 Series Transmitters or SDI Flow Sensors.

Data Industrial provides free programming software updates via the Internet for all of 300 Series devices. Go to www.dataindustrial.com for these updates.

Programming Software Installation

Floppy Installation

Place the software installation Disk 1 into the floppy drive and run the setup.exe program to install.

CDROM Installation

Place the software CD into the CDROM drive and it should autostart. Click programming software, then click the Model 310 and the software installation will begin.

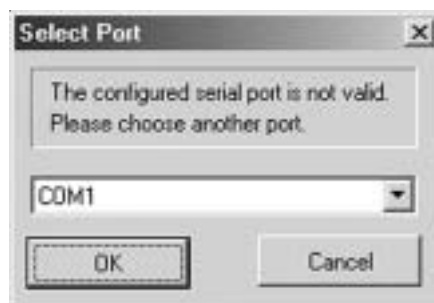
Web Installation

The Installation software can be found at the Data Industrial web site (www.dataindustrial.com) in the support section.

Model 310 Programming

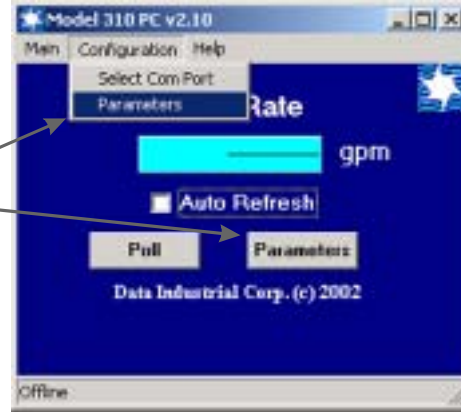
Programming the Model 310 is accomplished by installing the Data Industrial programming software on a computer and entering data on templates of the Windows® based program.

1. Install the 310 PC Interface Software into the computer.
2. Connect the computer to the Model 310 transmitter using the Data Industrial A301 communications cable. Plug A301 cable to the socket labeled "D.I.C Comm Port" taking care to properly align the tab on the plug and socket to maintain polarity then plug the DB9 connector of the Data Industrial A301 communications cable to an available PC com port that has the Model 310 software installed.
3. Connect the Model 310 transmitter to a powered 4-20mA loop. (if setting up in the office a 9-24VDC power source can be used to simulate the loop).
4. Open the interface software and select the appropriate COM PORT as shown in the dialog box below.

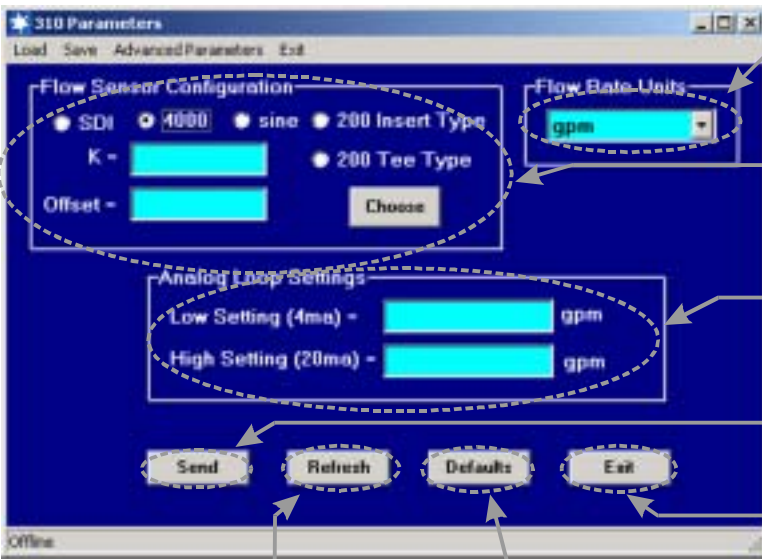


5. Open the Parameters Screen as shown below.

To go to calibration settings screen select "Parameters" from either place shown



6. Program using diagram below as a reference.



Step #1
Select Flow Rate Units.

Step #2
Select Sensor Type and Enter K and offset numbers.
See Note #1

Step #3
Enter 4mA Rate and 20mA Rate.

Step #4
Press **Send** to transmit calibration data to the 310.

Step #5
Press to exit Parameters screen and go back to the main screen.

Press to refresh the parameters screen with the current 310 settings.

Press to restore the factory defaults
To save the factory defaults Send must be pressed before values take effect.

Note #1

Sdi - If the SDI sensor type is selected the required K and offset values can be found the the SDI owners manual.

4000 - If the 4000 sensor type is selected, click the choose button and select the sensor from the pull down box that appears.

Sine - Provided for connection to sensors which have a sine wave output. Please consult sensor manufacturer for the calibration settings.

200 Insert Type - If the 200 Insert Sensor type is selected the required K and offset can be found the the 200 owners manual or if the manual is not handy the calculate button can be pushed and an inside pipe diameter can be entered and once calculate is pressed a K and offset will automatically be entered in.

200 Tee Type - If the 200 tee type is selected, click the choose button and select the sensor from the pull down box that appears.

Model 310 Specifications

Power Requirements:

Loop Input Voltage 9-35VDC

Input Frequency:

0.4 to 10 KHz

Load Resistance

Max 750Ω@24VDC

Output Response Time

Varies with filter

Temperature (operating):

-29°C to 70°C

-20°F to 158°F

Temperature (storage):

-40°C to 85°C

-40°F to 185°F

Accuracy

± 0.04% of reading over entire span

Linearity

0.1% of full scale

Warranty

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If Buyer or Purchaser wishes to make a claim hereunder, he shall send written notice of any defect within the warranty period, to "Seller" at the above address. "Seller" may at its sole option instruct Buyer to ship subject part, postage prepaid, to the "Seller" at above address or authorize a representative to inspect the part on site. "Seller" will at its sole option repair or replace any defective product covered by this warranty. If Buyer makes repairs or alterations to any product or part covered by this warranty without "Sellers" prior written approval, this warranty shall be null and void.

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