EXAIR ® *Corporation*

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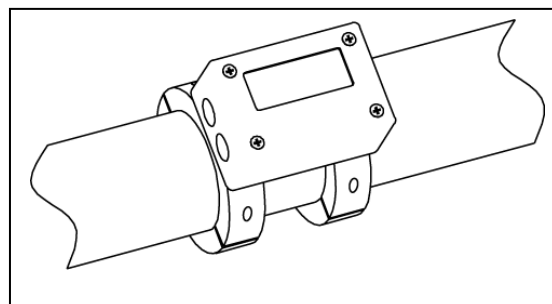
DIGITAL FLOWMETER
INSTALLATION & MAINTENANCE

Model		Model	
9090	0.5 – 25 SCFM through 1/2" Schedule 40 Pipe	9095	3 - 350 SCFM through 2" Schedule 40 Pipe
9091	0.6 – 40 SCFM through 3/4" Schedule 40 Pipe	9095-M3	3 - 595 m3/hr through Schedule 40 or EN10255 Pipe (diameters 57.4mm – 62mm)
9092	1 – 80 SCFM through 1" Schedule 40 Pipe	9096	5 – 500 SCFM through 2.5" Schedule 40 Pipe
9092-M3	Flow rates of 2-136 m3/hr through Schedule 40 or EN10255 Pipe (diameters 32.5mm – 35mm)	9097	7 - 700 SCFM through 3" Schedule 40 Pipe
9093	1 – 150 SCFM through 1-1/4" Schedule 40 Pipe	9098	15 - 1200 SCFM through 4" Schedule 40 Pipe
9094	2 - 200 SCFM through 1-1/2" Schedule 40 Pipe	9099	20 - 1500 SCFM through 5" Schedule 40 Pipe
		X121608	30 - 2000 SCFM through 6" Schedule 40 Pipe

Specifications	
Accuracy	5% of reading. Add 1% of full scale for air temperature between 40º to 120ºF (4º to 49ºC). Accuracy will be reduced when flow is outside the specified range.
Operating Pressure	30 to 140 PSIG for best accuracy – 200 PSIG max
Input Power	250 mA at 18 VDC / Power Adapter 120VAC
Wetted Materials	Stainless steel, gold, thermal epoxy and Viton (seal)
Ring Material	Aluminum
Display	Four-digit LED display
Compliance	CE and RoHS

Note: For use with compressed air and nitrogen only.

Application

The Digital Flowmeter may be used with either compressed air or nitrogen, at pressures from atmospheric to 200 PSIG. The air or nitrogen must be free of oil and suspended water droplets. Refer to the "Flowmeter Accuracy" above for the calibrated range of the particular meter. The meter will continue to read at much higher flow rates, but there may be significant inaccuracy.

Location

The Digital Flowmeter may not be installed in a hazardous location. For installation in areas exposed to moisture, please contact an Application Engineer regarding weather-resistant modifications. For best accuracy, the Digital Flowmeter should be installed with at least 30 diameters of straight pipe upstream and five diameters downstream. (Example: 30 diameters for a 1" Schedule 40 pipe = 30 X 1" = 30" of straight pipe.)

Avoid installing the Digital Flowmeter downstream of any item that could distort or concentrate the flow, such as a partially-closed valve, a regulator, a filter or moisture separator, two closely-spaced elbows in different planes, a long-radius elbow, an increase in pipe size or a curved hose. For these situations, allow at least 50 diameters of straight pipe between any such item and the meter. Select a location that meets these requirements and also provides good visibility from the plant floor.

Preparing the Holes
Shut down the compressed air system where the Digital Flowmeter will be installed and make sure that it will remain shut off during installation. Discharge the air from the pipe prior to drilling.

Mounting is easiest using the drill guide kit that includes a 3/16" drill bit and locating fixture. Secure the hole locating fixture to the pipe with a C-clamp, hose clamp, or a chain clamp. On pipes one inch and smaller, use the backing piece provided. If using a C-clamp, make sure that it is centered across the pipe. Drill the holes, making sure to go through one wall of the pipe only. Remove the hole locating fixture, and remove any burrs that were formed when drilling.

When the holes are drilled, metal shavings will enter the pipe. Make sure that filters or other provisions are present downstream to prevent the shavings from damaging downstream equipment, tools or products as well as considering any place where they could be blown out and cause an injury.

Installing the Meter
The probes of the Digital Flowmeter must be clean before inserting them into the pipe. Remove any oil or dirt using alcohol or a similar degreaser. Insert the probes into the holes of the pipe making sure the flow arrow is pointing in the proper direction. Tighten the screws carefully, alternating screws so that the two sides of the collars are pulled together evenly. If the LED display is upside down, remove the cover of the meter, gently pry the circuit board with the display loose, rotate it 180 degrees, and reinstall the cover. If the yellow caution label is not visible, apply the extra caution label from the bag of parts so it is in a visible location.

Power Supply
Use the 18 VDC power supply that is provided with the meter.

Milliamp Output
The mA- and mA+ terminals are optically isolated from the remainder of the circuit and may be wired as part of an externally-powered loop. When this is done, the jumper that is supplied with the meter must be removed. If you use an external supply, be sure that it has sufficient voltage to overcome an 8.2 volt drop within the meter in addition to any other voltage drops in the loop.

Alternatively, the meter's supply may be used to power the milliamp signal. Leave the jumper in place from the supply+ terminal to mA+. Wire from the mA- terminal to the positive side of the external receiver and from the negative side of the external receiver to the supply terminal. Note that the supply terminal is connected to the aluminum rings, and thus is normally connected to the pipe on which the meter is mounted.

Pulse Output
The pulse output is a transistor switch connected to the meter's negative supply. To use the output, connect it to an input of the receiving device (usually a counter or PLC) and connect a pull-up resistor from that input to a positive supply suitable for the receiving device. Also connect the negative supply terminal of the meter to the negative supply of the receiving device.

Serial Communication Option
The RS-485 signal used with the Serial Communication option is wired to the special Serial Communication display board. The two threaded openings in the meter enclosure permit the signal to be wired from meter to meter without external splices. Please refer to the data sheet for the Serial Communication option.

Button

LED

mA. pls DC. DSP
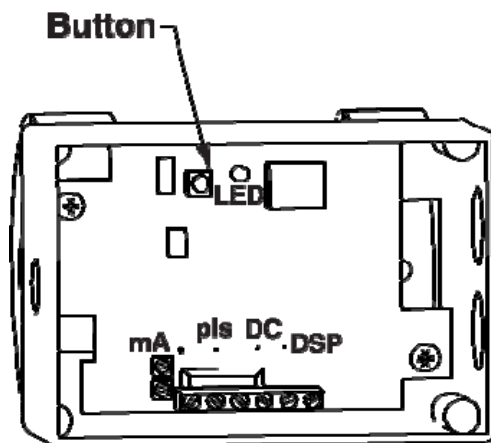
**Shown With Top Circuit
Board Removed For Clarity**

Using the Outputs

The milliamp output is scaled so that four milliamps corresponds to zero flow and 20 milliamps corresponds to a flow rate that is above the calibrated range. There are two ways to determine the flow rate corresponding to 20 milliamps for a particular meter. The first is to look at the sticker inside the meter; it gives both the calibrated full-scale flow and the milliamp range. The second way is to press the button on the main circuit board twice. On the first press, the display will indicate zero and the meter will put out four milliamps; and on the second press the display will indicate the full-scale value and the meter will put out 20 milliamps. The pulse output generates a square wave signal, sending five pulses for each cubic foot of air that passes through the meter. The LED blinks with the pulse output. At zero flow it may be on or off.

Maintenance

If oil or dirt accumulates on the probes, the meter will read low. For this reason, we recommend cleaning the probes from time to time. To clean the probes, wipe them with a cloth dampened with alcohol or a similar degreaser.

If you have any questions or problems, please contact:

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