

### Warranty

CDI warrants solely to the buyer that the flowmeter shall be free from defects in materials and workmanship, when given normal, proper and intended usage, for three years from the date of purchase. During the warranty period, CDI will repair or replace (at its option) any defective product at no cost to the buyer. The foregoing warranty is in lieu of any other warranty, express or implied, written or oral (including any warranty of merchantability or fitness for a particular purpose). CDI's liability arising out of the manufacture, sale or supplying of the flowmeter, whether based on warranty, contract, tort or otherwise, shall not exceed the actual purchase price paid by the buyer, and in no event shall CDI be liable to anyone for special, incidental or consequential damages.

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# CDI 6400 Flowmeter

## Installation and Operating Instructions

### Application

The meter may be used with either compressed air or Nitrogen, at pressures from atmospheric to 200 psig. Under some circumstances, the meters may be applied at higher pressures. Please refer to information on the HP option. The air or Nitrogen must be free of oil and suspended water droplets. In a compressed-air system, the meter should be downstream of a dryer. Refer to the data sheet 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 meter must not be installed in a hazardous location. The meter may be installed outdoors, but exposure of the pipe on which the meter is mounted to sun and temperature extremes may result in some loss of accuracy. For best accuracy, the meter should be installed with at least 20 diameters of straight pipe upstream and three diameters downstream. Avoid installing the meter 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. Allow at least 30 diameters of straight pipe between any such item and the meter. Select a location that meets these requirements and also provides good visibility of the meter. In an outdoor installation, if possible, shade the meter from direct sunlight.

### Preparing the Holes

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 equipment or product or being blown out and causing injury.

Shut down the air and make sure that it will remain shut off while the meter is being installed. Before drilling the holes, make sure that the air pressure is completely bled down. The 6000-series meters use the 5000-series drill guides. For the larger 6400 meters, the drill guide is a half ring with two drill bushings mounted in it. Secure this half ring in place by bolting it to the back half ring that came with the meter. For the smaller meters, the drill guide is an aluminum block with two drill bushings, the 5400-S-DG. Secure the drill guide to the pipe with a C clamp, a band clamp or a chain clamp. A universal drill guide, similar to the small

drill guide, is also available that can be used with all 6400 sizes. After mounting the drill guide, drill the holes, remove the drill guide, and remove any burrs that were formed when you drilled the holes.

Apply the “drilled hole” decal so that it will be hidden when the meter is in place but will be revealed when it is removed.

## Installing the Meter

Make sure the probes are clean. If there is any oil or dirt on them, clean them with alcohol or a similar degreaser. Insert the probes into the holes in the pipe, with the flow arrow pointing in the direction of flow. Tighten the screws carefully, alternating screws, so that the two sides of the collar are pulled together evenly. If the display is not horizontal, or if the wiring openings are not oriented as desired, remove the cover of the meter and then, using a magnetic screwdriver, remove the four screws in deep recesses that hold the housing to the mounting plate. Rotate the housing as desired, being careful not to turn it more than 180 degrees, and re-install the four screws. Next, wire the meter, as discussed below, and then re-install the display, making sure it engages the four small tabs in the aluminum support, and re-install the cover. If the yellow caution label is not visible, apply the extra caution label from the bag of parts in a visible location.

## Wiring the Meter

### POWER

Connect the meter to a 24 Volt +/- 15 percent dc supply with a capacity of at least 250 mA, using the dc+ and dc- terminals. The meter has a 500 mA fuse; a spare is provided with the meter. The meter may, alternatively, be powered from a remote display, as noted below. Unlike the 5000-series meters, the 6000-series meters do not connect electrically to the pipes on which they are mounted. The potential difference between the meter and the pipe must not exceed 250 Volts.

### REMOTE DISPLAY

If you are using a Summing Remote Display (6000-SRD), or an Averaging Remote Display, connect the three display terminals in the meter to the corresponding terminals in the remote display. The meter may be powered from the remote display if the connecting cable is 22 gauge or larger and the distance is no greater than 30 meters or 98 feet.

### MILLIAMPER 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 DC+ 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 DC- terminal.

### PULSE OUTPUT

The pulse output is an open-drain output, that 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 pullup 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. If an isolated relay contact is required, install the CDI 5200-IPO isolated pulse output and wire it to the receiving device.

## Using the Outputs

The milliamp output is scaled so that four milliamps corresponds to zero flow and 20 milliamps corresponds to a milliamp full-scale value that is above the calibrated range. The meter will display the milliamp full-scale value for a few seconds on startup. It will also display it if the button on the main (lower) circuit board is pressed twice

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. It may be found that the system is clean enough that cleaning is not needed.