

# CDI 25 Flowmeter

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## Installation and Operating Instructions

### Limitations and Cautions

CDI 25 flowmeters are not for use in hazardous areas or on pipes containing gasses other than air or nitrogen, at pressures from atmospheric to 200 psig. They are not designed for installation under pressure and they are not for use in control safety applications. The temperature compensation of the meters is suitable for use from 20 to 120°F (-7 to 49°C).

### Location

For accurate and reliable readings, the meters must be installed with adequate straight upstream pipe, and, in compressed-air applications, they must be installed downstream of a dryer.

Select a location with a straight run of pipe upstream equal to at least twenty times the diameter. If the meter is downstream of something that could distort or concentrate the flow, such as a sweep elbow, a partially-closed valve, an increase in pipe size or a hose, the run of pipe should be as long as possible; thirty times the diameter at a minimum. Five diameters of straight downstream pipe is sufficient, unless the meter is immediately upstream of something that would restrict the flow, such as a valve. Select a location that meets these requirements and also provides good visibility.

### 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 starting to drill the holes, make sure that the air pressure is completely bled down. Use the CDI 5200-DG drill guide. Secure the drill guide to the pipe with a C clamp, a hose clamp or a chain clamp. If using a C clamp, make sure that it is centered across the pipe. Drill the holes, remove the drill guide, and remove any burrs that were formed when you drilled the holes. If the pipe is rough near the holes, smooth it with a file.

Apply the "Holes in Pipe" 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 band clamps into the slots provided for them and then insert the probes into the holes in the pipe, with the flow arrow pointing in the proper direction. Engage and tighten the band clamps.

## Wiring the Meter

The meter requires 24 Volt dc power. Insert the power-supply cable through the grommet at the bottom of the meter. Connect the positive lead to the dc+ terminal, the negative lead to the dc- terminal and the shield, if one is present, to the gnd terminal. If you are using the wall-plug supply and adaptor cable provided by CDI, the band-marked lead (not the printed lead) is positive.

## Programming the Monitoring Functions

The meter has four display modes: rate, minimum, average and total. The display is controlled by a button on the underside of the meter. Pressing the button repeatedly will cycle the display through the four modes; LEDs above the digital display indicate which mode is active; when no LED is lit, the meter is in the rate mode.

### Minimum and Average Modes

The minimum and average functions look back over periods of time specified by the user. Each is based on 360 samples taken over the specified period of time. Minima and averages are calculated and stored for groups of 36 samples, so the displayed results are updated at an interval of one tenth of the period specified by the user. Thus, if the average is computed over 0.1 hour (six minutes), the flow will be sampled every second and the display will update every 36 seconds. Please note that, since the minimum and average are based on data stored in memory, they will not be meaningful until the specified period has elapsed.

### Total Mode

Cumulative air usage is displayed in thousands of cubic feet, or in cubic meters. The total is not resettable.

### Filter

A simple digital filter is provided for situations in which flow is continuously varying and a steady, filtered display is useful. If the filter factor is programmed to zero (see below) there is no filtering. If it is one, the current value is averaged in equal parts with the previous filtered value. If it is two, one quarter of the present value is added to three quarters of the previous filtered value, and so on, with factors available up to six. Filtered values are used in calculating minima and

averages. *Please note that the meter has limited sensitivity to very short pulses of air flow, and filtering or averaging the output does not alter this.*

### Alarms

If user-specified thresholds for minimum or average are exceeded, indicating excessive air usage, the corresponding LEDs will blink. These blinks are short, with the LED lit one eighth of the time. If the same LED is lit to indicate the current display mode, it will blink off for one eighth of the time.

### Units of Measure

Five options of units are available. Units should be set in accordance with local custom and should match the markings on the cover of the meter.

### Programming

With the meter displaying rate, press and hold the button. The minimum LED will light immediately; when the average LED lights, release the button. The display will now show two letters on the left and two digits, with or without a decimal point, on the right. The letters indicate which parameter is being programmed; the digits indicate the current value of the parameter. When a three-digit parameter is displayed, one of the letters will be overwritten. To advance the parameter, press and release the button; to advance the parameter rapidly, press and hold the button. To advance to the next parameter, just wait. Time is displayed in hours and tenths of hours.

symbol	meaning	description	range
<b>LL</b>	Low Limit	Threshold for minimum flow alarm	0.1 cfm to 99 cfm
<b>LP</b>	Low Period	Period over which minimum flow is calculated (hours)	0.1 hr to 24 hr
<b>AL</b>	Average Limit	Threshold for average flow alarm	0.1 cfm to 99 cfm
<b>AP</b>	Average Period	Period over which average flow is calculated (hours)	0.1 hr to 24 hr
<b>FF</b>	Filter Factor	Degree of filtering	0 – no filtering 6 – maximum filtering
<b>dd</b>	default display	0 – rate 1 – minimum	2 – average 3 – total
<b>du</b>	display units	Rate 0 – cfm 1 – Nm <sup>3</sup> /hr at 0 deg C 2 – Nm <sup>3</sup> /hr at 20 deg C 3 – Nm <sup>3</sup> /min at 0 deg C 4 – Nm <sup>3</sup> /min at 20 deg C	Total 1000 cuft m <sup>3</sup> at 0 deg C m <sup>3</sup> at 20 deg C m <sup>3</sup> at 0 deg C m <sup>3</sup> at 20 deg C

## Maintenance

If oil or dirt accumulates on the probes, the meter will read inaccurately. 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.

### Warranty

CDI warrants solely to the buyer that the Model 25 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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