

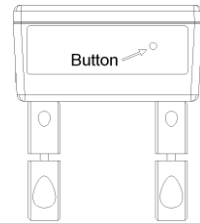
# Customization of CDI 5000 Series Rev. 3 Flowmeters

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Customization of the display is done using a button on the front of the meter. Customization of the meter itself, including the outputs, filtering and measurement parameters, is done using an optional customization cable and software available from the CDI Meters website.

## Customizing the Display

The button controlling the display is indicated by a circle on the front of the meter, as the meter is seen with the display right-side up. Press this button while applying power to the meter. The letters “AC” for access code will appear. Repeatedly press the button until the number 4 appears. Wait a few seconds with the button not pressed, and the letters “dd” for default display will appear. Select the desired display mode as follows:



0. Rate
1. Daily usage
2. Cumulative usage

Wait, and the letters “dp” for decimal point will appear. Locate the decimal point for the daily usage and cumulative usage modes. The letters “du” for display units will now appear. Select the units as follows:

0. Rate in scfm; daily usage and cumulative usage in 1000 ft<sup>3</sup>.
1. Rate in m<sup>3</sup>/min (cubic meters per minute); daily usage and cumulative usage in 1000 cubic meters
2. Rate in m<sup>3</sup>/hr (cubic meters per hour); daily usage and cumulative usage in 1000 cubic meters

Then wait with the button not pressed, and the display will revert to normal operation.

# Customizing the Meter

## Installing the Software and the Configuration Cable

Download and install the software from the CDI website, [www.cdimeters.com/CDIMSWeb/](http://www.cdimeters.com/CDIMSWeb/). Plug the configuration cable into a serial port in your computer; allow time for the computer to recognize and install the cable and its associated comm port.

## Connecting to the Meter

Once you have the cable connected and the software running, open the meter and remove the display (no need to unplug). With the meter not powered, plug the configuration cable into the five-pin connector inside the meter. The white mark on the cable should be toward the white dot on the circuit board. If you would like to change the units of measure displayed on the computer screen, do so now. Next, click the “connect” button in the software. The software will indicate “Meter connected OK” and display the configuration parameters read from the meter.

## Setting the Parameters

To change the parameters, change the values on the screen and then write them back to the meter by selecting *meter/write parameters*. To restore the factory default values, select *meter/restore defaults*. The parameters can be displayed without connecting to a computer by using the button on the main circuit board, as discussed on the last page.

The parameters:

- 1 Milliamper Scaling (*default units: scfm*)  
The milliamper scale value is the flow corresponding to an output of 20 mA; 4 mA always represents no flow. While the milliamper scale value can be set as high as desired, the meter’s accuracy is reduced above its recommended operating range and at very high flow rates, its output may plateau, not changing with increasing flow. The default value is the maximum of the meter’s recommended operating range.
- 2 Pulse Scaling (*default units: scf*)  
The pulse scale factor is the quantity, or mass, of air corresponding to one pulse of the output; the default value is one standard cubic foot.
- 3 High Threshold (*default units: scfm*)  
The pulse output becomes a threshold output if the high threshold is set above zero. In this mode, the output turns on when the flow rises above the high threshold and turns off when it drops below the low threshold. The default value is zero.
- 4 Low Threshold (*default units: scfm*)  
(see above) The default value is zero; it must be set above zero, but

below the high threshold, for normal operation of the output in the threshold mode.

- 5 Application Pipe Inside Diameter (*default units: mm*)  
When meters are installed on pipes whose inside diameters differ from those of the pipes on which they were calibrated, the resulting error can be reduced by adjusting this value. Doing this will not compensate for differences in the distance the probes project into the pipe, or for differences in wall roughness, but it will reduce the error caused by small differences in pipe inside diameter. By default, this is set to the calibration pipe inside diameter.
- 6 Calibration Pipe Inside Diameter (*default units: mm*)  
(see above) This value is set at the time of calibration.
- 7 Application Pressure (*default units: psia*)  
Due to small shifts in the properties of air with pressure, the meter's output increases by about two percent for every increase in pressure of 100 psi. This shift is small enough that for most compressed-air applications close to 100 psig, no adjustment is necessary. However, if the meter will be used at pressures above 200 psig or at atmospheric pressure, an adjustment is warranted. Please note that the application pressure is entered as absolute pressure (psia), not as gauge pressure (psig).
- 8 Filter Factor  
In most air metering applications, the indicated flow fluctuates both because of turbulence and because of actual variations in flow. An averaged, or filtered, value is easier to read and more meaningful. The meter applies a simple digital filtering routine, giving a time constant in response to a step change in flow as follows:

factor	1	2	3	4	5	6
time const.	0.7 sec.	1.7 sec.	3.7 sec.	7.7 sec.	16 sec.	32 sec.
factor	7	8	9	10	11	12
time const.	1.1 min.	2.1 min.	4.3 min.	9 min.	17 min.	34 min.

- 9 Reference Temperature (*default units: °C*)  
There are several units of mass of standard air in use; they differ in the temperature and pressure at which the standard is defined. CDI flowmeters always take 14.7 psia as the pressure. The temperature is set, by default, to 20°C and this is appropriate for most applications. DIN standard 1343 specifies a temperature of 0°C and 14.7 psia (101.325 kPa) while ISO 2533 specifies 15°C and 14.7 psia. The meter can be set to read in accordance with either of these standards by setting the appropriate reference temperature.
- 10 Firmware Revision

## Reading the parameters without the cable

Set the display to read in scfm and set the default display to 0 (rate). Then lift out the display board and press the button on the circuit board below. Each time the button is pressed, a sequence number, given above, will appear after a slight delay. When the button is released, the corresponding value will appear. Units of measure will be the default units shown for the various parameters. On the first press a sequence number of zero will appear and a zero will be displayed when the button is released. On the second press, a sequence number of one will appear and the corresponding value will be the milliamp full-scale value. On subsequent presses of the button, the display will continue through the listed parameters. To return to normal operation, wait 30 seconds.

## Checking the Milliamp Output

On the first press of the button inside the meter (discussed above) the meter will display zero and output 4 mA, corresponding to zero flow. On the second press, the meter will display the milliamp full-scale value and output 20 mA. Subsequent presses of the button will generate 12 mA, then the value corresponding to current flow.

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