

**OPERATING
INSTRUCTIONS**



**DIGITAL ANEMOMETER
MODEL DCFM8906**

CFM AIR FLOW METER



A. MEASURING AIR VELOCITY (SINGLE POINT) FEET PER MINUTE (FPM)

1. Press the ON/OFF button and turn meter on. Meter will show full display when first powered on.
2. Unit is ready for use when LCD display shows “vel” at upper left corner and temperature at lower right corner.

B. CONTINUOUS MOVING AVERAGE

The meters displays continuous moving average for up to two (2) hours

1. Power the unit on.
2. Place sensor in front of air flow source.
3. Press *MIN/MAX REC* key and unit will begin to display moving average. The Meter will record the reading every second.
4. Press *HOLD* prior to moving instrument away from air flow source to store readings.

C. MIN/MAX/AVG READING ON A SINGLE POINT

To obtain MIN/MAX/AVG readings on a single point:

1. Power unit on.
2. Place sensor in front of air flow source.
3. Press *MIN/MAX REC SINGLE POINT* key. The unit will begin to record readings.
4. Press *HOLD* prior to moving instrument away from air flow source to store readings.
 - a) Press the *MIN/MAX* key once and the screen will display AVG velocity readings under REC.
 - b) Press the *MIN/MAX* key again and AVG disappears.
 - c) Press the *MIN/MAX* key again to display MIN velocity readings next to REC.
 - d) Press the *MIN/MAX* key again to display MAX velocity readings.
 - e) Press the *MIN/MAX* key again to display current velocity.
5. To clear the current MIN/MAX average readings, turn off the power or press and hold the *MIN/MAX REC* key until unit beeps twice, then release. This will clear the stored readings.

D. AIR VELOCITY AVERAGE FOR MULTIPLE POINTS

1. Power the unit on and position the vane at the first point to be measured.
2. As soon as the first measurement is completed press the *HOLD* key until you hear a single beep, then release. The display will show “Hold” above the reading
3. Press the *MIN/MAX* key. When you will hear a single beep release the button. The display will show a digit (1-8). This number represents the point that is being recorded.
4. Repeat this process until all desired points have been measured and recorded. A maximum of 8 points may be recorded at one time.
5. Once all measurements have been recorded press *AVERAGE* key, The unit will display the average air velocity reading and the number of points measured.

E. NON-SLEEP MODE - (BYPASS AUTO POWER OFF)

1. Power unit off
2. Press *ON* and *HOLD* at the same time
3. Release *ON* only
4. When an “n” appears on the LCD release the *HOLD* key. The instrument will now remain on until the OFF button is pressed.

F. CHANGING THE SETTINGS FOR IMPERIAL OR METRIC

The default setting for the measuring unit of air velocity is feet/min and the unit of temperature is °F. You can change the measuring units to meter/sec and °C by following these steps:

1. Press *ON* and *AVERAGE* at the same time.
2. Release *ON* first then *AVERAGE*. The LCD will show "ft/min" (default) on the upper right corner and "°F" on the lower right corner in small print.
 - a) Press *HOLD* key to change the measuring units to metric system; press *AVERAGE* key for imperial measuring units
 - b) Press the *MIN/MAX REC* key and an "S" will show on the LCD. Press *HOLD* to confirm and save the changed value. At this time, the baud rate "2400" (default) appears on the screen to be followed by section G, step 1 for changing RS-232 output (if necessary)

G. SETTING THE RS-232 OUTPUT (OPTIONAL ACCESSORY)

By following the steps under section E you will see a "2400" number on the screen. This is the default setting of the baud rate for the RS232 output. You can change the setting to "1200" by following these steps:

1. After following steps 1 & 2 in section E press the *HOLD* key. The setting can be changed back to "2400" by pressing the *AVERAGE* key
2. Please remember to save your changes by pressing the *MIN/MAX REC* key. An "S" is displayed on the screen. Press the *HOLD* key to confirm and save the changed value. The meter will return to air velocity mode automatically

H. AUTO POWER OFF

The unit will turn off automatically after 20 minutes to save the battery. This will be preceded by 3 beeps. Press the ON key and the unit will resume operation.

I. MEASURING FEET/MIN, MPH, KNOTS, M/S, KM/H

1. IN IMPERIAL: Press the *SEL: MPH/H•KNOT* key and the reading will change from ft/min to mil/h to knots in turn.
2. IN METRIC: Press the *SEL: MPH/H•KNOT* key and the reading will change from m/s to km/h to knots in turn.

J. DIRECT MEASURING OF AIR FLOW (SINGLE POINT) CFM

Air velocity measurement is calculated by multiplying the air velocity readings by the free area dimensions. Free area is usually published by the grill or register manufacturer you are servicing. You must determine the free area of the air source before entering it into the meter.

1. Power unit on
2. Press *MODE* once (you will hear one beep). Meter will display "AREA" in upper case lettering and "1.111" will appear. The first digit will be flashing.
3. Press the *HOLD* key to increase the number.
4. Press the *AVERAGE* key to advance to next number. Follow Step 3 and repeat.
- 5 Press the *MODE* key once all digits have been entered. The word "flow" will appear.

K. CALCULATING FREE AREA

If the free area is not published by the grille manufacturer use one of the following formulas to determine the correct value:

- 1) For square or rectangular grills: **Length x Width ÷ 144**
- 2) For round grills: **Radius² x π (3.1415) ÷ 144**

The meter is now ready to measure air flow (CFM). To clear the memory of the current multi-point average readings, press and hold the *AVERAGE* key until the unit beeps twice, then release. The unit must be in velocity/FPM mode in order to clear current average readings.

L. OBTAINING AIR FLOW (CFM) AVERAGE FOR MULTI-POINTS

Complete steps 1-4 in section D

Once all multi-point averages are determined:

1. Press *MODE* key once to confirm that the correct free area setting is locked into the instrument (if the free area needs adjustment, make the necessary changes now)
2. Once the free area setting is correct, press *MODE* key again to enter air flow mode
3. Unit will now display average air flow reading and number of points measured.

The meter's free area dimension has been set to 1.111 square feet which is the most commonly used free area dimension in the USA. If you want to measure the air flow for a single point without changing the area dimension:

1. Power the unit on and position the fan
2. Press the *MODE* key twice. You will then be in the air flow (CFM) mode The air flow displayed is equal to the current air velocity reading (FPM x Free Area=CFM) times the 1.111 square feet.

We would suggest to set the free area dimensions before you start measuring the air velocity so after you measure the air velocity you can jump to the air flow mode to view the cubic feet per minute without further changing of the free area dimensions.

TROUBLESHOOTING

LOW BATTERY: indicates battery is low. Please replace with a new 9-volt battery.

NOTE

On initial startup the unit will display flow, area. ft/mph, knots, mil/h, cfm, km/h and cms.

SPECIFICATIONS:

<u>Air Flow Range</u>	<u>Resolution</u>	<u>Accuracy</u>
80 - 5900 ft/min	1	±3% FS
0.4 - 35 m/sec	0.01	±3% FS
<u>Temperature</u>	<u>Resolution</u>	<u>Accuracy</u>
+14 °F to 122 °F	0.1	±2.0 °F
-10 °C to 50 °C	0.1	±1.0 °C

Battery Life: 100 Hours

Display type: LCD

Display Size: 1-1/4" x 1-5/8" (37 x 42 mm)

Maximum Reading: 9999

Dimensions (L x W x D): 7-1/4" x 3" x 1-3/4" (133 x 76 x 45 mm)

Fan Diameter: 2-7/8" (70 mm)

RS232 Output Format: TXXX. XF, VXXXXFTM/TXXX.XC, VXXXXMPS

Auto Power Off: 20 minutes

Data Hold

FREE AREA CALCULATION

SUPPLY OR RETURN

FOR MODELS DCFM8901 & DCFM8906

Inches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1	0.01	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.19
2	0.01	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.13	0.14	0.15	0.17	0.18	0.19	0.21	0.22	0.24	0.25	0.26	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.38
3	0.02	0.04	0.06	0.08	0.10	0.13	0.15	0.17	0.19	0.21	0.23	0.25	0.27	0.29	0.31	0.33	0.35	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56
4	0.03	0.06	0.08	0.11	0.14	0.17	0.19	0.22	0.25	0.28	0.31	0.33	0.36	0.39	0.42	0.44	0.47	0.50	0.53	0.56	0.58	0.61	0.64	0.67	0.69	0.72	0.75
5	0.03	0.07	0.10	0.14	0.17	0.21	0.24	0.28	0.31	0.35	0.38	0.42	0.45	0.49	0.52	0.56	0.59	0.63	0.66	0.69	0.73	0.76	0.80	0.83	0.87	0.90	0.94
6	0.04	0.08	0.13	0.17	0.21	0.25	0.29	0.33	0.38	0.42	0.46	0.50	0.54	0.58	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.92	0.96	1.00	1.04	1.08	1.13
7	0.05	0.10	0.15	0.19	0.24	0.29	0.34	0.39	0.44	0.49	0.53	0.58	0.63	0.68	0.73	0.78	0.83	0.88	0.92	0.97	1.02	1.07	1.12	1.17	1.22	1.26	1.31
8	0.06	0.11	0.17	0.22	0.28	0.33	0.39	0.44	0.50	0.56	0.61	0.67	0.72	0.78	0.83	0.89	0.94	1.00	1.06	1.11	1.17	1.22	1.28	1.33	1.39	1.44	1.50
9	0.06	0.13	0.19	0.25	0.31	0.38	0.44	0.50	0.56	0.63	0.69	0.75	0.81	0.88	0.94	1.00	1.06	1.13	1.19	1.25	1.31	1.38	1.44	1.50	1.56	1.63	1.69
10	0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63	0.69	0.76	0.83	0.90	0.97	1.04	1.11	1.18	1.25	1.32	1.39	1.46	1.53	1.60	1.67	1.74	1.81	1.88
11	0.08	0.15	0.23	0.31	0.38	0.46	0.53	0.61	0.69	0.76	0.84	0.92	0.99	1.07	1.15	1.22	1.30	1.38	1.45	1.53	1.60	1.68	1.76	1.83	1.91	1.99	2.06
12	0.08	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.83	0.92	1.00	1.08	1.17	1.25	1.33	1.42	1.50	1.58	1.67	1.75	1.83	1.92	2.00	2.08	2.17	2.25
13	0.09	0.18	0.27	0.36	0.45	0.54	0.63	0.72	0.81	0.90	0.99	1.08	1.17	1.26	1.35	1.44	1.53	1.63	1.72	1.81	1.90	1.99	2.08	2.17	2.26	2.35	2.44
14	0.10	0.19	0.29	0.39	0.49	0.58	0.68	0.78	0.88	0.97	1.07	1.17	1.26	1.36	1.46	1.56	1.65	1.75	1.85	1.94	2.04	2.14	2.24	2.33	2.43	2.53	2.63
15	0.10	0.21	0.31	0.42	0.52	0.63	0.73	0.83	0.94	1.04	1.15	1.25	1.35	1.46	1.56	1.67	1.77	1.88	1.98	2.08	2.19	2.29	2.40	2.50	2.60	2.71	2.81
16	0.11	0.22	0.33	0.44	0.56	0.67	0.78	0.89	1.00	1.11	1.22	1.33	1.44	1.56	1.67	1.78	1.89	2.00	2.11	2.22	2.33	2.44	2.56	2.67	2.78	2.89	3.00
17	0.12	0.24	0.35	0.47	0.59	0.71	0.83	0.94	1.06	1.18	1.30	1.42	1.53	1.65	1.77	1.89	2.01	2.13	2.24	2.36	2.48	2.60	2.72	2.83	2.95	3.07	3.19
18	0.13	0.25	0.38	0.50	0.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13	2.25	2.38	2.50	2.63	2.75	2.88	3.00	3.13	3.25	3.38
19	0.13	0.26	0.40	0.53	0.66	0.79	0.92	1.06	1.19	1.32	1.45	1.58	1.72	1.85	1.98	2.11	2.24	2.38	2.51	2.64	2.77	2.90	3.03	3.17	3.30	3.43	3.56
20	0.14	0.28	0.42	0.56	0.69	0.83	0.97	1.11	1.25	1.39	1.53	1.67	1.81	1.94	2.08	2.22	2.36	2.50	2.64	2.78	2.92	3.06	3.19	3.33	3.47	3.61	3.75
21	0.15	0.29	0.44	0.58	0.73	0.88	1.02	1.17	1.31	1.46	1.60	1.75	1.90	2.04	2.19	2.33	2.48	2.63	2.77	2.92	3.06	3.21	3.35	3.50	3.65	3.79	3.94
22	0.15	0.31	0.46	0.61	0.76	0.92	1.07	1.22	1.38	1.53	1.68	1.83	1.99	2.14	2.29	2.44	2.60	2.75	2.90	3.06	3.21	3.36	3.51	3.67	3.82	3.97	4.13
23	0.16	0.32	0.48	0.64	0.80	0.96	1.12	1.28	1.44	1.60	1.76	1.92	2.08	2.24	2.40	2.56	2.72	2.88	3.03	3.19	3.35	3.51	3.67	3.83	3.99	4.15	4.31
24	0.17	0.33	0.50	0.67	0.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50	2.67	2.83	3.00	3.17	3.33	3.50	3.67	3.83	4.00	4.17	4.33	4.50
25	0.17	0.35	0.52	0.69	0.87	1.04	1.22	1.39	1.56	1.74	1.91	2.08	2.26	2.43	2.60	2.78	2.95	3.13	3.30	3.47	3.65	3.82	3.99	4.17	4.34	4.51	4.69
26	0.18	0.36	0.54	0.72	0.90	1.08	1.26	1.44	1.63	1.81	1.99	2.17	2.35	2.53	2.71	2.89	3.07	3.25	3.43	3.61	3.79	3.97	4.15	4.33	4.51	4.69	4.88
27	0.19	0.38	0.56	0.75	0.94	1.13	1.31	1.50	1.69	1.88	2.06	2.25	2.44	2.63	2.81	3.00	3.19	3.38	3.56	3.75	3.94	4.13	4.31	4.50	4.69	4.88	5.06
28	0.19	0.39	0.58	0.78	0.97	1.17	1.36	1.56	1.75	1.94	2.14	2.33	2.53	2.72	2.92	3.11	3.31	3.50	3.69	3.89	4.08	4.28	4.47	4.67	4.86	5.06	5.25
29	0.20	0.40	0.60	0.81	1.01	1.21	1.41	1.61	1.81	2.01	2.22	2.42	2.62	2.82	3.02	3.22	3.42	3.63	3.83	4.03	4.23	4.43	4.63	4.83	5.03	5.24	5.44
30	0.21	0.42	0.63	0.83	1.04	1.25	1.46	1.67	1.88	2.08	2.29	2.50	2.71	2.92	3.13	3.33	3.54	3.75	3.96	4.17	4.38	4.58	4.79	5.00	5.21	5.42	5.63
31	0.22	0.43	0.65	0.86	1.08	1.29	1.51	1.72	1.94	2.15	2.37	2.58	2.80	3.01	3.23	3.44	3.66	3.88	4.09	4.31	4.52	4.74	4.95	5.17	5.38	5.60	5.81
32	0.22	0.44	0.67	0.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33	3.56	3.78	4.00	4.22	4.44	4.67	4.89	5.11	5.33	5.56	5.78	6.00
33	0.23	0.46	0.69	0.92	1.15	1.38	1.60	1.83	2.06	2.29	2.52	2.75	2.98	3.21	3.44	3.67	3.90	4.13	4.35	4.58	4.81	5.04	5.27	5.50	5.73	5.96	6.19
34	0.24	0.47	0.71	0.94	1.18	1.42	1.65	1.89	2.13	2.36	2.60	2.83	3.07	3.31	3.54	3.78	4.01	4.25	4.49	4.72	4.96	5.19	5.43	5.67	5.90	6.14	6.38
35	0.24	0.49	0.73	0.97	1.22	1.46	1.70	1.94	2.19	2.43	2.67	2.92	3.16	3.40	3.65	3.89	4.13	4.38	4.62	4.86	5.10	5.35	5.59	5.83	6.08	6.32	6.56
TO CALCULATE C.F.M.																											
1 FIND LONGEST SUPPLY OR RETURN DIMENSION ON LEFT COLUMN.																											
2 READ NUMBERS HORIZONTALLY TO SHORTEST SUPPLY OR RETURN DIMENSION ON TOP ROW																											
3 MULTIPLY NUMBER FOUND BY F.P.M TO DETERMINE C.F.M.																											