

1 Charge batteries for 12 hours

- 1.1 Plug in the battery charger or the power connection from the fan.
- 1.2 Install 4 NiMH AA batteries.
- 1.3 Press **[On]** **[Exit]** to start the DM-2 and to clear the intro screen.
- 1.4 Charge batteries until full (up to 12 hr.) and disconnect the battery charger.



See: QuickGuide-DM2MkII

2 Set up the building

- 2.1 Close the outside doors and windows.
- 2.2 Open all interior doors leading to conditioned spaces.
- 2.3 Shut off HVAC (exhaust fans, dryers, A/C, furnaces).
- 2.4 Turn gas hot water to pilot.
- 2.5 Place paper over any open ashes.
- 2.6 Select doorway for door panel.



3 Connect the DM-2

- 3.1 Remove the fan from its case, close the lid.
- 3.2 Place DM-2 on top of the fan case.
- 3.3 Connect the yellow and red tubes to the yellow and red ports. Connect the yellow control cable as shown.



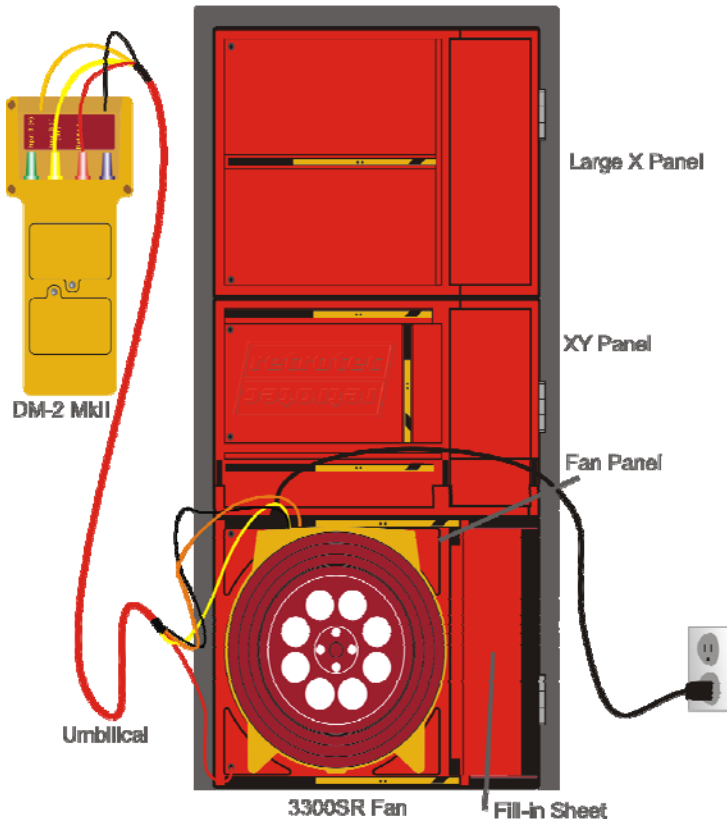
Note Run the DM-2 on batteries until the indicator displays 1/4 charge, and then recharge fully, to increase battery life.

See: QuickGuide-DM2MkII

4 Install modular door panel

- 4.1 Unpack the door panels.
- 4.2 Install the panels securely on the door frame.

See: QuickGuide-DoorPanel-Modular



- Read and experiment with each step
- To perform automatic or multi-point tests*, refer to the Door Fan Software Manual and the DM-2 Operator's Manual

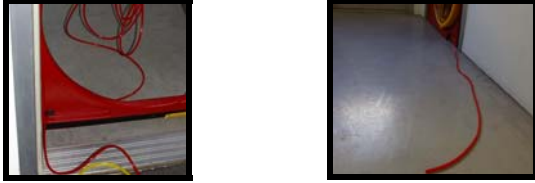
*Tests for CGSB 149, LEED, ASTM E778, ASTM 1827, EN13829, and ATTMA TS-1 may require more elaborate steps and training. This guide is intended for familiarization with the controls.

For the latest Retrotec documentation, visit us at:
<http://www.retrotec.com/info/>

5 Pass red tube through panel

Pass the red tube from the DM-2 through the panel and toss the end away from the fan's airstream.

Note Water in the tube will result in erroneous readings.



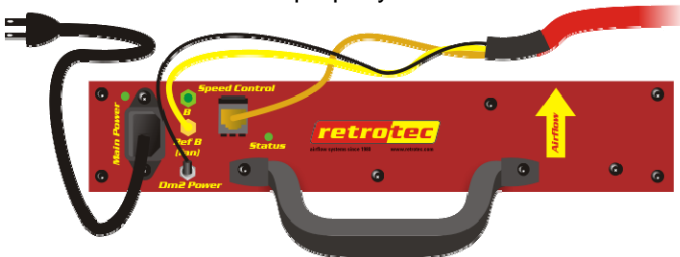
6 Install fan

- 6.1 Hook the bottom of the fan inside the panel.
- 6.2 Align the notch on the upper rim of the fan with the corresponding slot.
- 6.3 Gently push the fan into position and rotate it slightly until the fan top is level with the floor.
- 6.4 Attach the fan safety strap.



7 Make fan top connections

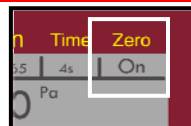
- 7.1 Plug power cord into fan top and wall outlet. Green Power light indicates good connection.
- 7.2 Status light flashes green because no DM-2 is connected.
- 7.3 Connect the yellow tube and control cable to fan top. Status light becomes steady green when DM-2 is properly connected.



- 7.1 The Status light turns red if DM-2 control of the fan is interrupted. Reconnect the DM-2, and press **[Exit]** to reset the light to green.
- 7.2 DM-2 power cord does not need to be plugged in unless batteries need charging.

8 Zero gauge

Auto Zero 6 Press **[Auto Zero]**. When "on" is displayed, the gauge will zero itself every 8 seconds.



Note When "On", the gauge will zero itself every 8 seconds.
Tip Normally, **[Auto Zero]** should be left "On"; turn off to save battery power.

9 Set time averaging

- Time Avg 5**
- 9.1 Press **[Time Avg]** as needed, until "PrA" varies by less than 1Pa.
 - 9.2 Wait for twice the time average setting before taking a reading.

Example: Set **[Time Avg]** to "8s" then watch for 16 seconds.

- Tip** 1s, 2s, 4s, 8s updates every 1 second(s),
 10s, 20s, 1min, 2min updates every 10 seconds.
Tip Use longer time averaging in windy conditions.

10 Measure bias pressure

- Baseline 4**
- 10.1 Prior to each test, and with the fan covered, press **[Baseline]** to begin averaging the bias pressure.
 - 10.2 Press **[Enter]** after about 60 seconds to capture the "Baseline".
 - 10.3 After each test, press **[Exit]** to clear baseline.



Note The value displayed under "Baseline" will be subtracted from the pressure reading on Channel PrA.

11 Set fan model on DM-2

- Device 0** Press **[Device]** until "Retrotec 2000" is displayed.

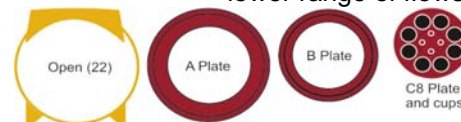


Tip Disable the other devices using **[Setup]** to prevent the incorrect flow curves from being accidentally accessed.

See: QuickGuide-DM2MkII

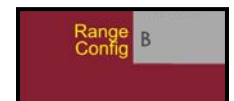
12 Set Range Plates and configuration

- Range Config 2**
- 12.1 Remove range plates to get a higher range of flows, add plates for a lower range of flows.



- 12.2 Start with Range B by removing the C8 Plate.
- 12.3 Press **[Range Config]** until the DM-2 displays Range Config "B".

See: QuickGuide-Fan-RangeConfig-2000&3000



13 Choose results

- Mode 1**



- 13.1 Press **[Mode]** to cycle through the enabled results.
- 13.2 Press **[Mode]** until "Flow" appears.

See: QuickGuide-DM2MkII

14 Set fan speed



- 14.1 Press **[Set Speed] [10-100] [Enter]** on the DM-2 to set any speed from 10 to 100%.

Example: Press **[Set Speed] [25] [Enter]** to set the fan speed to 25%.

Tip Monitor "PrA" to ensure that the pressure does not exceed 90Pa.

Tip Press **[Exit]** to turn the fan off.

- 14.2 Press **[Jog/Hold]** until "Jog" appears. This enables manual fan speed adjustment.

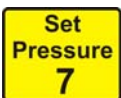


- 14.3 Use **[▲] [▼]** to adjust the fan speed up or down.

Tip Click once to change speed by 1%, hold button to increment by 5%.

15 Set pressure automatically

- 15.1 Press **[Set Pressure] [10-90] [Enter]**. The DM-2 will control the fan to achieve the set pressure.



Example: Press **[Set Pressure] [50] [Enter]** to instruct the DM-2 to attempt to achieve 50Pa building pressure.

- 15.2 Press **[Jog/Hold]** until "Jog" appears, to enable manual pressure adjustment.

Tip Click once to change pressure by 5 Pa, hold to increment by 10 Pa.

Tip Press **[Exit]** to turn the fan off.

"Too Low" is displayed

If the pressure (PrA) has been reached, but "Too Low" appears, the fan is running too slowly to measure flow.



1. Press **[Exit]** to stop the fan.
2. Add the next smaller range plate.
3. Change the **[Range Config]** to match.
4. Restart the fan and try again.

Cannot reach target pressure (50Pa)

If the fan reaches 100% speed before reaching the target "PrA" pressure:

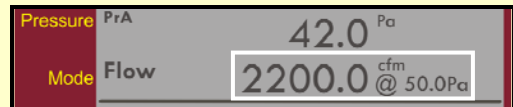
1. Press **[Exit]** to stop the fan.
2. Remove a range plate, and change the **[Range Config]** to match.



3. Start the fan and try again.

Still cannot achieve target pressure

If the fan reaches 100% speed before reaching the target "PrA" pressure and all of the range plates have been removed:

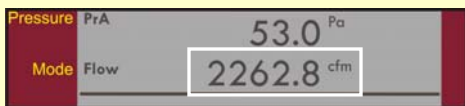


Press **[@ Pressure]** to calculate the flow required to establish the target pressure.

Example: 2200 cfm is the flow rate that would occur at 50 Pa even though only 42 Pa was achieved.

16 Flow at the pressure on channel "PrA"

- 16.1 Press **[@ Pressure]** until "@..." disappears. Flow is now calculated at the pressure displayed.



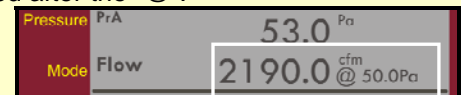
Example: 2262.8 cfm is the flow rate that occurred when a test pressure of 53.0 Pa was achieved.

Tip CFM50 or cfm at 50 Pa is commonly used in the USA. Simply establish 50 Pa and read the flow.

Tip The default @ Pressure settings can be changed by using **[Setup]**.

17 Viewing flow at another pressure

- 17.1 Press **[@ Pressure]** until "@..." appears. Flow is now calculated at the pressure displayed after the "@".

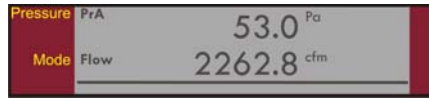
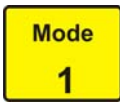


Example: 2190 cfm is the flow rate that would occur if the exact test pressure of 50 Pa was achieved.

Tip It is difficult to achieve an exact test pressure especially under windy conditions. Use "@ Pressure" to improve accuracy; flow at the pressure following the "@" sign will be displayed.

Tip In **[Set Pressure]** mode, the "@ Pressure" can change according to the target pressure which is very useful when setting several different test pressures.

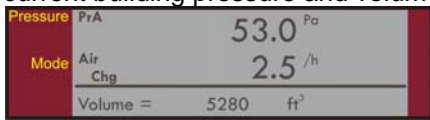
18 Flow (optional result)



- 18.1 Press **[Mode]** until “Flow” is displayed.
- 18.2 The DM-2 displays the current building pressure and flow.

19 Air changes per hour (optional result)

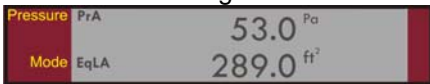
- 19.1 Press **[Mode]** until “Air Chg” is displayed.
- 19.2 Press **[Enter]** to input a new volume.
- 19.3 Input the building volume using the keypad and press **[Enter]** to save.
- 19.4 The DM-2 displays the air changes at the current building pressure and volume.



Tip Change the units for volume in **[Setup]**.

20 Leakage area (optional result)

- 20.1 Press **[Mode]** until “EqLA” or “EfLA” appears.
- 20.2 The DM-2 displays the building pressure and the selected leakage area.



Note **Equivalent Leakage Area (EqLA)** is used in many countries and standards to describe the leakage area in terms of one large hole in a flat surface. Unlike flow, EqLA is fairly consistent at different test pressures.

Note **Effective Leakage Area (EfLA)** is a different measure of leakage area used by LEED and some other standards. It is usually calculated at 4Pa. While EfLA can be read directly from the DM-2, an accurate result will require a multi-point test.

21 Other results (optional)

- 21.1 Press **[Mode]** to scroll through the remaining modes.
- 21.2 Press **[Setup]**, scroll to **Mode Setup**, and press **[Enter]** to enable/disable other modes or units such as:

Flow / area used by:

- ATTMA TS-1 (m³/h/m² at 50Pa)
- ASHRAE 90.1 (cfm/ft² at 75Pa)
- National Building Code (l/s/m² at 75Pa)



Leakage area / area used by:

- CGSB (cm² EqLA/m²)
- LEED (in² EfLA/ 100 ft²)



Note Area can be either the floor area of the building or the surface area of the building and is changed in the first menu displayed when **[Setup]** is pressed.

22 Software results (optional)

- 22.1 Press **[Mode]** until “PrB” appears.
- 22.2 Input “PrA” and “PrB” into the software.
- 22.3 Continue to press **[Mode]** to display Flow.



Note Most software applications require building and fan flow pressures to be input from the gauge in Pa.

Tip Most multi-point tests are best done entering pressures, in Pa, from both channels. In some cases flow or EqLA may be entered. In these cases, the range displayed on the DM-2 must match the range plate installed on the fan.

23 Pressurization testing (optional)

- 23.1 Remove the fan from the door and install it so that it is blowing towards you.

- 23.2 The DM-2 automatically calculates the correct flow using only the Red and Yellow tubes, regardless of the testing direction.



Note Testing with the fan turned around normally requires the addition of an additional reference tube. The Retrotec DM-2 does not require this tube.

24 Field gauge check recommended weekly

- 24.1 Insert a T in the yellow tube.
- 24.2 Connect the red and yellow ports to the T.
- 24.3 Increase the fan speed and compare PrA and PrB.
- 24.4 Disconnect tubes from yellow and red ports and connect them to green and blue ports.
- 24.5 Repeat the test.
- 24.6 Values should be within 1% of each other.



25 Field system check recommended

- 25.1 Perform a door fan test on the building and record the EqLA.
- 25.2 Install cardboard in upper part of doorway with a 20 x 20 inch hole cut in it.
- 25.3 Perform a second door fan test on the building and record the EqLA.
- 25.4 The first result should be within 10% of the second results, minus 400 in².

