Protecting your laboratory environment

LABCONCO®

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Guardian™ Digital Kit No 3908800, 02 or 3908801, 03

Guardian Digital 1000 Operation

The Guardian Digital Airflow Monitor consists of the airflow sensor, the Alarm Unit and the 15 VDC power supply. For 115V operation the alarm unit is powered by plugging the power supply into the factory-prepared digital airflow monitor socket. For 230V operation, the Alarm Unit is powered by plugging the power supply into a building outlet. The alarm has "Enter", "+", and "-" buttons to program the monitor. There is also a green LED "SAFE", yellow LED "CAUTION", and red LED "LOW" with audible alarm for airflow conditions. The audible alarm can be permanently muted if desired. The Guardian Digital 1000 Airflow Monitor displays a face velocity value, provides an RS232 communications port to a PC or building computer system, can be configured for external input connections such as night setback or external alarm and provides up to three output relays that can be configured. For complete detailed information, please refer to the separate Labconco 1000 Alarm User's Manual provided with the enclosure.

Installation Procedure

1. The enclosure comes prepared to except the Guardian™ Digital airflow monitor system.

2. First remove the large 1.19" dia. gray hole plug. See Figure 1. See Figure 2 only to reference internal assembly of the airflow monitor. Locate the elbow, locknut, and washer and install it in the 1.19" dia. hole per Figure 1 and Figure 2. The enclosure baffle pivots down to install the elbow, washer and locknut.

3. Cut the 1" hose supplied with the kit to 10.5" approximate length and install it between the airflow sensor and the elbow.

4. Secure the Guardian Digital alarm to the enclosure with double stick tape as shown in Figure 3. The airway passage between the alarm module and the enclosure is now complete.

5. Locate the metal hose cover and install with double stick tape per Figure 3. (Omit this step on the Protector Work Stations.)

6. Locate the power supply transformer. One end should already be connected to the two-pin connector labeled 15 VDC on the back of the alarm module and through the strain relief bushing. If disconnected, then reconnect to power the airflow monitor. Plug the 115V power supply into a standard 115V duplex receptacle, the back of the accessory FilterMate portable exhauster or the back of the accessory light. For 230V, plug into a standard receptacle with your specific outlet plug. **(It is recommended that the airflow monitor be connected directly to the FilterMate switched auxiliary outlet so the airflow monitor is powered at the same time.)**
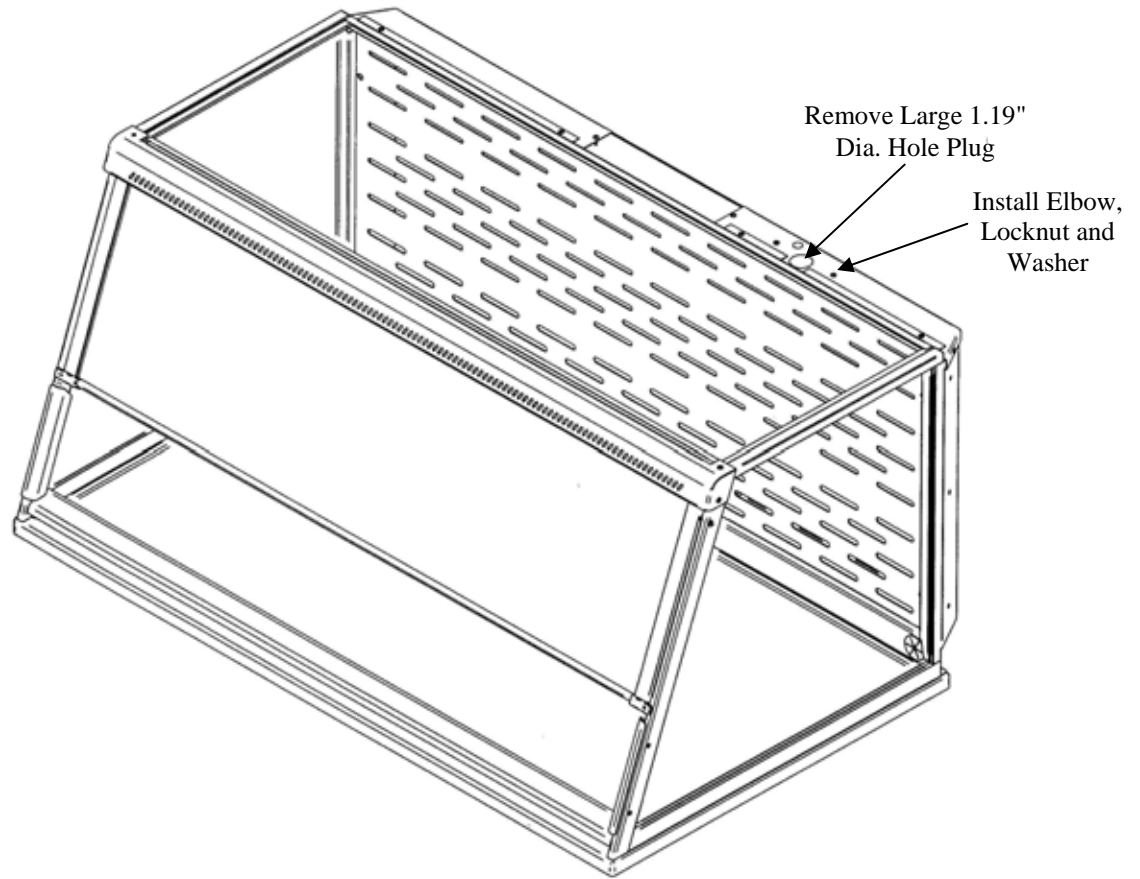
7. Installation is now complete.

Remove Large 1.19"
Dia. Hole Plug

Install Elbow,
Locknut and
Washer

Figure 1
Hole Plug and Mounting Screws Location

Airflow
Sensor

Display
Digital 1000
Monitor
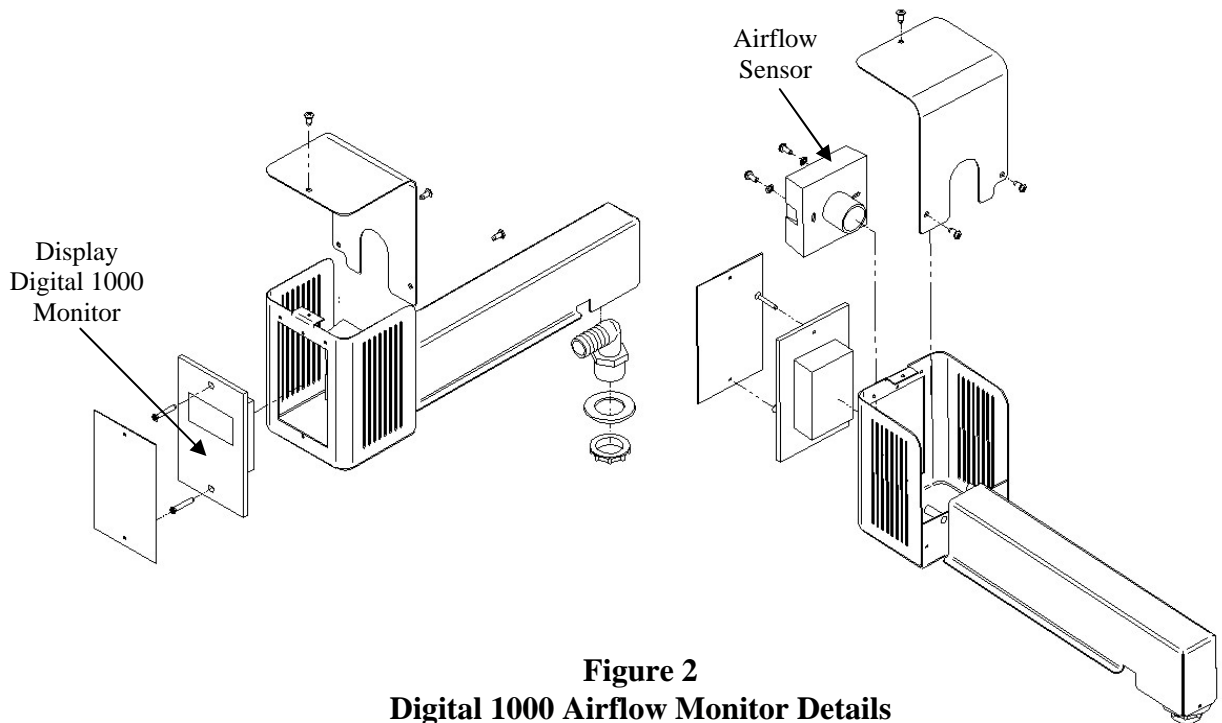
Figure 2
Digital 1000 Airflow Monitor Details

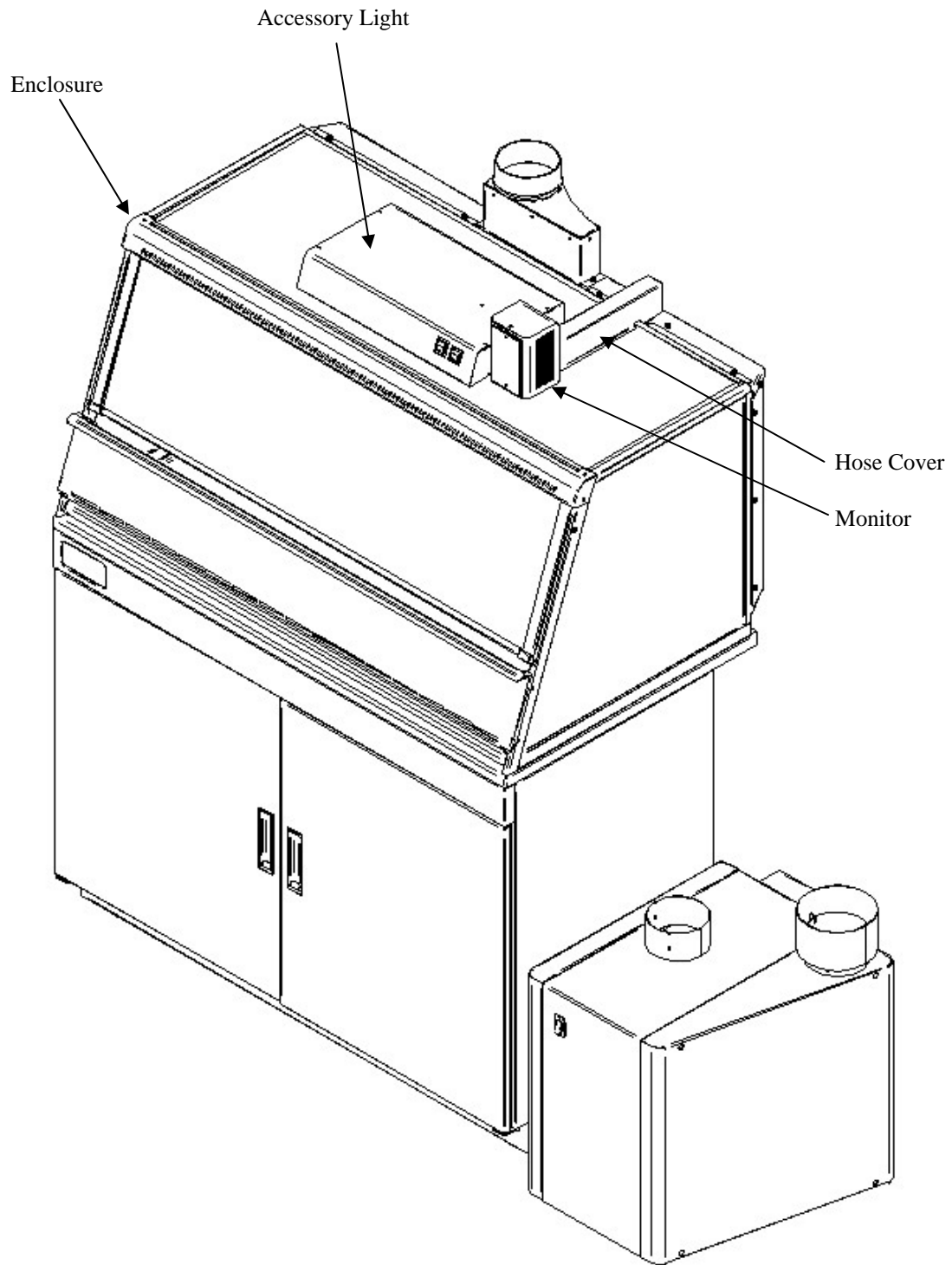Accessory Light

Enclosure

Hose Cover

Monitor

Figure 3
Digital 1000 Airflow Monitor Installation

Digital 1000 Calibration

1. Calibrate the airflow monitor according to the instruction manual that comes with the kit. To successfully calibrate, it will be necessary to change the face velocity by adjusting the airflow exhaust volume. The exhaust volume can be adjusted with the speed control on the FilterMate or by using an adjustable damper on the exhaust blower. Typical calibration conditions are set at face velocity air sample differences of at least 20 feet per minute. The airflow monitor is factory set to be calibrated with a difference of at least 50 fpm and can be changed by changing the "lower/higher air sample difference". The following suggested in flow face velocity speeds are recommended to successfully calibrate. Typical low air alarms are set 10-20 fpm below operational speeds. Follow Step 2 below and review the Labconco 1000 Alarm User's Manual that comes with the airflow monitor.

Low Air Alarm Set Point	Enclosure Operating In flow Speed	Low Calibration Set Point	High Calibration Set Point
40 - 50 fpm	60 fpm	40 - 60 fpm	100 – 120 fpm
60 - 70 fpm	80 fpm	50 - 90 fpm	100 – 150 fpm
80 – 90 fpm	100 fpm	50 – 110 fpm	100 – 170 fpm

2. Go to setup and then CAL CONFIG MENU and change the "lower/higher air sample difference" to 20 fpm. This will allow you to successfully calibrate with values of a minimum of 20 fpm difference.

3. While in CAL CONFIG MENU, change the "sensor difference" from 10% to 3%.

4. While in CAL CONFIG MENU, adjust the red low air alarm to the desired setting such as 55 fpm. Then adjust the yellow "CAUTION or WARNING" to 59 fpm. Then adjust the "CAUTION or WARNING" air reset to 3 fpm. This sets the alarm condition.

5. To complete the CAL CONFIGURATION, be sure to enter "DONE".

6. To start the calibration mode, use the Labconco 1000 Manual and enter "CALIBRATION" mode on the display from the SETUP menu.

7. Follow the instructions on the display and alter the low exhaust volume with the speed control on the FilterMate or exhaust damper. Measure the average face velocity and enter the low value on the display. Be careful not to block the opening. The low exhaust volume calibration will take about 5 seconds.

8. Now alter the high exhaust volume with the speed control on the FilterMate or exhaust damper. Measure the average face velocity and enter the high value on the display. The high value must be at least 20 fpm greater than the low value. The high exhaust volume calibration will take about 5 seconds.

9. Be sure to enter "DONE" after successfully completing the low and high calibration set points.

10. Once calibration is completed, go to "RUN" and hit "ENTER". The value should read close to the high calibration set point.

11. To lower the face velocity to the operating point, simply alter the exhaust volume with the speed control on the FilterMate or exhaust damper. Then recheck the face velocity with an anemometer to confirm the display on the digital airflow monitor.

Digital 1000 Alternate Calibration Procedure - Constant Volume Conditions

1. To successfully calibrate, it will be necessary to change the face velocity by opening and closing the enclosure's sash. The airflow monitor is factory set to be calibrated with a difference of at least 50 fpm and can be changed by adjusting the "lower/higher air sample difference". The in flow face velocity speeds provided in the chart below are suggested to successfully calibrate the Digital 1000.

2. Before proceeding with calibration, it will first be necessary to configure the airflow monitor. Go to the setup and then CAL CONFIG MENU and adjust the "lower/higher air sample difference" to 10 fpm. This will allow you to successfully calibrate with minimum difference values of 10 fpm.

3. While in CAL CONFIG MENU, change the "sensor difference" from 10% to 3%.

4. While in CAL CONFIG MENU, adjust the red low alarm to the desired setting (See the chart below for range and suggested settings). Then adjust the yellow "CAUTION or WARNING" to the desired setting (See the chart below for range and suggested settings). Then adjust the "CAUTION or WARNING" air reset to 3 fpm. This sets the alarm condition.

CAUTION WARNING "YELLOW LED" Setting		LOW ALARM "RED LED" Setting		Low Calibration Set Point *Sash Open* (fpm)		High Calibration Set Point or Enclosure Operating Inflow Speed *Sash Closed*
Range *user defined* (fpm)	Suggested Set Point (fpm)	Range *user defined* (fpm)	* Suggested Set Point (fpm)	8" Sash Height	10" Sash Height	
43 – 53	51	40 – 50	48	27	23	60 fpm
63 – 73	67	60 – 70	64	37	30	80 fpm
83 - 93	83	80 - 90	80	47	37	100 fpm

* Because of airflow fluctuations in a typical laboratory environment Labconco suggests setting the "RED LED" low alarm set point to 20% below the enclosure's operating speed.

5. To complete the CAL CONFIGURATION, be sure to enter "DONE". If needed, *refer to the Configuration procedure provided on the following page for additional details.*

6. To start the calibration mode, enter "CALIBRATION" mode on the display from the SETUP menu.

7. Follow the instructions on the display and simulate the low exhaust volume by fully opening the sash. You may measure the average face velocity for the low calibration set point or utilize the calculated value provided in the chart above. The average face velocity for the low set point is accurately measured by dividing the opening of the enclosure into equal area grids consisting of at least 9 data collection points and measuring the velocity at the center of each grid with a calibrated thermo anemometer. Enter the low value on the display. Be careful not to block the opening. The low exhaust volume calibration will take about 5 seconds.

8. Now simulate the high exhaust volume by fully closing the sash to its normal operating position. Measure the average face velocity for the high calibration set point to confirm that the source of constant air volume is providing the desired face velocity for the enclosure. The average face velocity for the high set point is accurately measured by dividing the opening of the enclosure into equal area grids consisting of at least 3 data collection points and measuring the velocity at the center of each grid with a calibrated

thermo anemometer. Enter the high value set point on the display. The high value must be at least 10 fpm greater than the low value. The high exhaust volume calibration will take about 5 seconds.

9. Be sure to enter "DONE" after successfully completing the low and high calibration set points.

10. Once calibration is completed, go to "RUN" and hit "ENTER". The value should read close to the high calibration set point.

11. With the sash fully open, the Digital 1000 monitor should go into "RED LED" low air alarm if successfully calibrated.

Digital 1000 Alternate Configuration Procedure (for Constant Volume Conditions)

Note: Enter Button stores information and +/- Buttons allow for scrolling.

1. Push the "ENTER" Button on the face of the alarm until the "SET UP" Menu is displayed.
2. Scroll to "SET UP" and hit "ENTER".
3. The PASSWORD MENU displays (The Password is 0000). Press the ENTER button repeatedly until the CAL CONFIG MENU is displayed.
4. In the CAL CONFIG MENU set the following:

CALIBRATION - CONFIGURATION MENU	SETTINGS
DISPLAY UNITS	FPM
LOW AIR ALARM "RED LED"	* 48 FPM (60 fpm Operating inflow)
	* 64 FPM (80 fpm Operating inflow)
	* 80 FPM (100 fpm Operating inflow)
LOW AIR CUTOFF	OFF
WARNING AIR ALARM "YELLOW LED"	* 51 FPM (60 fpm Operating inflow)
	* 67 FPM (80 fpm Operating inflow)
	* 83 FPM (100 fpm Operating inflow)
WARNING AIR RESET	3 FPM
HIGH AIR ALARM	OFF
LOWER AIR SAMPLE FLUCTUATIONS	OFF
HIGHER AIR FLUCTUATIONS	3%
LOWER / HIGHER AIR SAMPLE DIFFERENCE	3%
WARN TO ALARM AIR TIME	10 SECONDS
ALARM TO WARN AIR TIME	3 SECONDS
SHOW AIR FLOW	ON
SHOW TIME LINE OFF = DISPLAYS BAR GRAPH	OFF
AUDIBLE ALARM	ENABLED
SENSOR DIFFERENCE	2%

* (Suggested Air Alarm Settings) Refer to the chart on the previous page for a range of air velocity settings that may be used.

5. To complete the CAL CONFIG, be sure to enter "DONE". You are returned to the Main Menu.

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If you have questions that are not addressed in this manual, or if you need technical assistance, contact Labconco's Customer Service Department or Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811, between the hours of 7:00 a.m. and 6:00 p.m., Central Standard Time.