
OMNIGUARDTM CELLULAR

Manometer / Differential Pressure Recorder
With Cellular and Enterprise WiFi Communication



Owner's Manual V1.70

**ENGINEERING
SOLUTIONS** INC

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Omniguard Cellular[™]

Manometer / Differential Pressure Recorder
with Cellular and WiFi Communication

Introduction

The *Omniguard Cellular* is the latest version in the *Omniguard*[™] series of differential pressure recorders (manometers) first introduced over 20 years ago by Engineering Solutions Inc.

The *Omniguard*'s newest enhancements and features:

- Built-in Cellular Wireless Modem and WiFi Module automatically sends Status reports & Job Logs to off-site personnel via email and text messaging using the Verizon Wireless network.
- Mobile App available for iOS[™] and Android[™]
- Advanced pressure measurement technology with NIST Certificate of Accuracy.
- 4.3" Color LCD with touchscreen, easy to read and even easier to use.
- Multilingual - English, French and Spanish language operation (French and Spanish Owner's Manuals available at www.omniguard.com).
- 4MB of secure log space.
- Internal rechargeable 3.7 volts Li-ion type battery provides 4-6 hours of portable operation.
- International power supply, 85-240 VAC 50-60Hz 10W max.

Unpacking

The *Omniguard* is shipped complete and ready to use. When unpacking the unit, please check for the following items:

- Roll of thermal paper (installed)
- USB Cable 6 ft A-B Male-Male
- 10 ft. inlet pressure tubing
- Owner's Manual
- NIST Certificate of Accuracy

Save the shipping box and packing material, in the event the unit must be shipped to another location or for service. If you are missing any items shown on the packing list, or if you have any questions regarding your *Omniguard*, please call your dealer or Engineering Solutions at (206) 241-9395.

The Registration Card must be filled out and returned to activate the 12 month limited warranty.

Features

- Real-time differential monitoring of containment vacuum or pressure level.
- Extremely simple to setup and use, with on screen help.
- Log and track by Jobs. Stores multiple jobs, each with unique Job Name and starting/ending dates.
- Remote communication of Alarms and Job Logs to off site personell
- Contractor name appears in all Job Logs.
- Programmable high and low alarm settings.
- Large window in the case lid allows viewing pressure reading and monitoring status with lid closed to prevent damage to unit.
- Touchscreen controls, extremely easy to use & set up.
- Internal memory stores pressure readings and alarm occurrences with a date/time-stamp for up to 6 months, complete record of operation available for printing and transfer to computer.
- Built-in hanging clip keeps the *Omniguard* away from possible damage while allowing easy viewing of the screen.
- Totally self-contained unit, all necessary parts store securely inside the lid.
- Temperature compensation circuitry ensure accuracy of measured pressure readings under all job site conditions.
- Pressure readings displayed in Inches WC, Millimeters WC or Pascals.
- USB Type A port supports multiple peripherals and accessories including USB flash drive, cellular wireless modem and remote auxiliary alarm.
- USB Type B port supports PC communication for transferring job logs to a computer.
- Audible and visual alarm systems with Alarm Mute function.
- Operating temperature range 30°- 130°F.
- 85 - 240VAC, 50-60 Hz, power supply operation (10W max).
- Internal rechargeable 3.7 volts Li-ion type battery provides 4-6 hours of portable operation.
- 1 Year Limited Warranty.

Accessories

- Remote auxiliary alarm with high intensity strobe light and 95db alarm & 25 ft. cable (requires USB Port Adapter).
- Cellular Wireless Modem for non-Verizon Wireless networks alerts off-site personnel via e-mail or text message during alarm

Section 1: Basic Care

The *Omniguard* is built and engineered to provide you with dependable performance for years to come. Following these basic guidelines will insure that you get maximum use from your *Omniguard*. Once the unit is set up, field operation is easy. Complete reports are virtually automatic, providing the most accurate records of your job site conditions available.

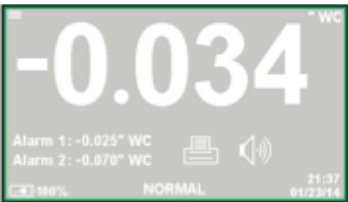
- This unit is designed to measure differential pressure only from +0.250" to -0.250" WC (optional pressure ranges are available).

Caution: Never apply pressure to the inlet port by mouth or with any other strong pressure device.

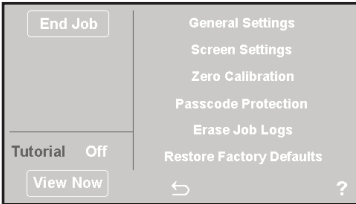
High pressure will permanently damage the sensor!!

- Use only *Omniguard* thermal printer paper (other thermal paper will not work).
- Always store the unit away from sources of excessive temperature, dust and moisture.
- * When in use, close the lid to protect the *Omniguard* from damage. Route the pressure tubing & power cord through the slot on the side of the case.
- Never attempt to repair or modify any of the internal components of the unit.
- Protect the unit from strong shocks or vibrations. Be sure the lid is securely closed whenever transporting or hanging the unit.
- Be sure to plug your *Omniguard* into a power supply that complies with the National Electrical Code. Keep all connections dry. As with any electrical device, this unit has the potential to cause an electrical shock hazard.
- If your unit must be shipped at any time to another location or for service, use the original packing material and shipping box for optimum protection during shipping.

Section 2: Navigating the LCD Touchscreen



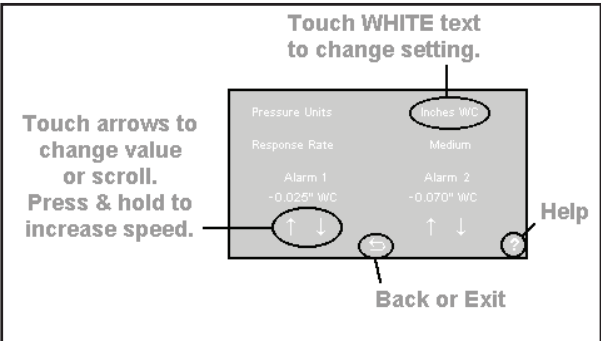
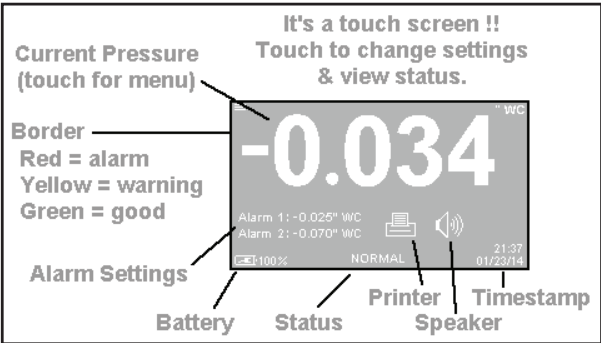
Home Screen
-Indicates monitoring status.
-Touch the icons to access or change the individual settings.



Main Menu
-Touch the menu item to access system settings.
-Start or End a Job.
-View Tutorial screens & enable/disable showing

Tutorial Screens

The Omniguard display is now a touchscreen! Touch the screen where indicated to view and change settings, or to see Help.



Screen Icons

Touch for Main Menu.

Touch to exit or return to previous screen.

Touch to scroll thru menu, Job Logs, reports or Help.

Touch for item specific Help. Touch again for Help menu.

Indicates the battery life remaining & charging status.

Touch to arm or disarm the audible alarm - mutes during an Alarm condition.

Touch for Alarm 1: -0.025" WC

Touch for Alarm 2: -0.070" WC

Monitoring Status: **NORMAL**
START JOB
WAITING FOR PRESSURE
NORMAL
APPROACHING ALARM
ALARM

Touch for Printer settings.

Printer On

Printer Off

Printer Off (battery powered)

-Printer Lid Open

-No Paper

Network Communication Settings Icons

Cellular Modem connected.

Cellular Modem off.

Cellular Modem error - not activated or network not detected.

WiFi connected with full signal

WiFi ON - No Wifi log in informati on, or no signal in range

WiFi error - can not connect to wifi network

Front Panel Icons

Inlet Nozzles

Ambient (Reference)

Containment

Power On/Off

USB Port Status Icons

Connected to PC

USB Port Adapter connected.








USB Flash Drive connected.

USB Flash Drive error - full or write protected.

Analyzing device.

Section 3: Quick Setup & Usage



This section is a quick reference for using your *Omniguard*.

1. Find a safe place for the *Omniguard* outside the containment area. Plug the power cord into an AC power outlet.
2. Connect one end of tubing to the  nozzle. Secure the other end of pressure tubing inside the containment area.
3. Press the  button to turn on the *Omniguard*.
4. A quick start tutorial will explain how to use the touchscreen. Touch anywhere on the screen to go to tutorial screen 2. Touch the  icon to exit the tutorial and go to the Home screen.
5. To get a printed copy of the Job Log, touch the  icon.
6. Touch **START JOB** at the bottom of the screen to begin a new job. On the next screen, confirm **Start New Job** and enter a job name, then touch the  icon.
7. Check Alarm 1 & 2 settings by touching the Alarm settings displayed on the Home screen. Adjust as needed by touching the arrows to change the value up or down.
8. On any screen touch  to get help about that screen. Touch  again to go to the general Help menu.

Once a job has been started, the status will indicate **WAITING FOR PRESSURE** until containment pressure reaches the normal operating window (a pressure reading that is between the Alarm settings). When reached, the status will change to **NORMAL** and a **green** border will appear indicating that the *Omniguard* is now in its normal operation mode. The logging & printing pressure readings begins when the **NORMAL** status is achieved.

During normal operation, the highest and lowest pressure readings will be logged into memory and printed with a time/date stamp **every 15 minutes** (the default Normal Operation Log Rate).

If the monitored pressure then goes **outside** the operating window, the unit will go into alarm mode. The alarm will sound, the status will change to **>>ALARM<<** and a **red** border will appear on the screen. The log and print rate of the pressure readings will increase to **every 15 seconds** (the default Alarm Condition Log rate).

To mute the alarm during an alarm condition, touch the  icon once. The icon will change to  and the alarm will remain muted until the alarm condition is over.


Hanging the *Omniguard*

The *Omniguard* can be hung on a wall for easy viewing and to keep it off of the floor, away from possible damage. Hanging the *Omniguard* by the clip allows the cover to close, protecting the unit from water damage while allowing the monitoring screen to be viewed through the window on the cover. The pressure tubing and AC cord should exit the case thru the foam slot, then the cover should be latched closed to protect the unit from damage.

Caution: *Only hang the Omniguard from a sturdy hook. A fall could damage the unit and disrupt accurate pressure measurements.*



Loading the Thermal Printer Paper

Caution : *Only use Omniguard thermal printer paper! Thermal paper prints on one side only. If the paper roll is installed incorrectly, the printer will be able to advance the paper but will not be able to print on it.*

1. Use the pull lever to pull up on the paper lid and remove the lid from the front panel.
2. Install the paper roll in the printer lid using the 2 tabs to secure both ends of the roll to the printer lid. Ensure the paper roll is mounted to paper lid so the paper unrolls from the bottom.
3. Reinstall paper lid in to the front panel, hold on to loose end of paper roll while reinstalling the printer lid so there is a small lip of paper sticking out of the paper feed slot.
4. The printer is now ready to print, the icon on the home screen will change to .

Note: *To preserve the life of the printer and prevent damage during shipping or transporting, move the printer lid clip to the horizontal position, so it is overlapping the edge of the printer lid to secure it in place.*


Section 4: Detailed Operation

The *Omniguard* monitors and records (logs) the differential pressure between the  **nozzle** and the  **nozzle (Reference)**.

In abatement applications, the *Omniguard* should be located outside the containment area and not in any antechambers (i.e. shower or changing room). This allows a supervisor or hygienist to monitor pressure readings without entering the containment area.


Work Area Setup (see Appendix C for more details)

The *Omniguard* should be placed on a solid (non-vibrating) surface, excessive vibrations disrupt accurate pressure measurement.

1. The intake end of the pressure tubing must be located a **minimum of 5 feet away from** any openings or HEPA fan/filter units. Choose a location away from excessive dust or moisture.
2. Cut a 1/2" slit in the polyethylene barrier and feed approximately 1 ft. of pressure tubing through it. Tape the tubing securely to the polyethylene.
3. Connect the free end of the tubing securely over the  **nozzle**. Be careful not to turn the nozzle.
4. Route the tubing and AC cord through the foam notch area on the upper right corner of the case. Close the lid to protect the *Omniguard* from damage, (be careful to not pinch the tubing or AC cord).
5. The maximum hose length is limited to 70 ft (for 3/16"ID hose). Lengths beyond 70 ft can degrade reading accuracy.


Caution: It is important that there be no kinks or sharp bends in any part of the tubing. Any blockage could inhibit accurate recording of the pressure in the containment area.

Power-Up

To use the *Omniguard*, plug the power cord into a standard wall outlet providing 115-230 VAC, 50-60 Hz and press the power  button. The first time that a new *Omniguard* is turned on, the settings will be at default values.

Initial Power-Up

Note: The first time the Omniguard is turned on, the touchscreen will need to be calibrated. The screen will display a small box with an X in the middle of it. Touch the X and continue until the calibration is completed. Touchscreen calibration will need to be done if the Omniguard is reset to factory default settings.

A quick start tutorial will explain how to use the touchscreen. Touch anywhere on the screen to go to tutorial screen 2. Touch the  icon to exit the tutorial and go to the Home Screen.

Set the Time & Date and Alarm 1 & Alarm 2 settings because they are set at the factory defaults. The Time & Date will only need to be set once. The Alarm 1 & Alarm 2 settings may need to be adjusted for each Job's requirements. For asbestos removal, the Alarm 1 & Alarm 2 settings should be in negative units when used to monitor a negative (vacuum) containment area. For positive pressure applications, use positive units for the Alarm settings.

*Note: The Alarm 1 & 2 settings and the Time & Date are displayed in **yellow** on the Home screen until they have been changed from factory defaults.*

Normal Power-Up Sequence

A diagnostic test will automatically run and the *Omniguard* will then immediately begin to monitor containment pressure. The status will indicate **START JOB**. Touch **START JOB** to begin actively monitoring a new job.

*Note: If the Omniguard was actively monitoring a Job when it was turned off, it will automatically resume monitoring the current Job. **POWER OFF** followed by the time-stamp will print. Otherwise **AC MODE** or **POWER FAIL** will print, indicating that an AC power failure occurred. Either message will be followed by the time-stamp.*

Once the *Omniguard* is actively monitoring a Job, the status will indicate **WAITING FOR PRESSURE** until the containment pressure has reached the operating window. The Job Name, time-stamp and Alarm settings will be printed.

*Note: Logging and printing of monitored pressure readings does **not** begin until the containment pressure has reached the operating window and the status indicates **NORMAL**.*


Reminder: Be sure the Alarm 1 and Alarm 2 settings are correct for your job site requirements!

Once the containment pressure reaches the operating window (the area between the Alarm 1 and Alarm 2 settings) the status changes from **WAITING FOR PRESSURE** to **NORMAL** and a **green** border will appear around the screen. **NORMAL OP** is then printed along with a time-stamp.


The screen border will change from **green** to **yellow** and the status changes to **APPROACHING ALARM** to warn of an impending Alarm condition when the pressure is within 0.005"WC of the Alarm settings.

Starting/Ending A Job


Pressing **START JOB** will not erase any previous job logs, nor will it alter any other settings (such as the Alarm settings). The log for the previous job can be printed at any time.

*Note: It is a good idea to print a report of the previous job before starting a new job. A report for the previous job may be printed at a later time by touching  on the Home screen, choose the report you want and touch **Print**.*

To start a new job --

1. If the *Omniguard* is not currently monitoring a job, the status will indicate **START JOB** at the bottom of the Home screen. Touch **START JOB**, then confirm you want to start a new job.
2. Enter the new Job Name, then touch  to save it and start monitoring. The Job Name, time-stamp and current alarm settings will be logged and printed.

To end the current job --

1. From the Home screen, touch  in the upper left-hand corner to go to the Main menu.
2. From the Main Menu, touch **End Job**, then confirm you want to end the job by touching **End Job** again.

Example of Job Summary Report, after **End Job** is pressed --

Job Summary Report _____



Alarm Settings Screen

Alarm 1 & Alarm 2 Settings: The operating window is the area between the Alarm 1 and Alarm 2 settings. These settings can be set anywhere within the operating range of the unit; +/- 0.250" WC in increments of 0.005"WC. The *Omniguard* can also operate in units of mmWC or Pascals. (See *Pressure Units*.)

Alarm 1: Upper limit of operating window. (default is -0.025" WC)
Alarm 2: Lower limit of operating window. (default is -0.050" WC)

The *Omniguard* can be used in both positive and negative pressure monitoring applications.

Negative Pressure Application -- Asbestos or lead abatement

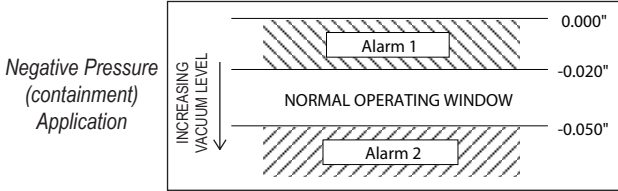
Example settings: **Alarm 1 @ -0.020" WC**
Alarm 2 @ -0.050" WC

Positive Pressure Application -- Clean room or HVAC system

Example settings: **Alarm 1 @ +0.050" WC**
Alarm 2 @ +0.025" WC

Alarm Settings & Operating Window

This is an example of a setting for negative containment with an operating window of -0.020" to -0.050" WC (Alarm 1 & 2 settings).



Pressure Units: (default is Inches WC)

- Choices are **Inches WC** (" WC), **millimeters WC** (mmWC) or **Pascals** (Pa).

Response Rate: (default is Medium)

- Choices are **Slow**, **Medium**, **Fast**.
- Determines how quickly the *Omniguard* will react to pressure changes. Reduce this setting if the job site conditions are fluctuating rapidly and can cause false alarms, such as high wind.

To change the settings --

1. To change the Pressure Units or the Response Rate, tap the current setting to scroll through the choices until the desired setting is shown.
2. To change the Alarm 1 or Alarm 2 settings, touch the arrows beneath the appropriate setting. Hold the arrow to go faster. New values are automatically saved.



Touch  to return to the Main Menu.

Once the containment pressure reaches the operating window, the status will indicate **NORMAL** and logging will begin.

Alarm Condition

Once the containment pressure reaches the operating window, the *Omniguard* status will indicate **NORMAL** and the alarms will be


armed. If the containment pressure rises or falls **outside** the operating window, the following will occur:


1. Internal alarm and the Remote Auxiliary Alarm (if present) will sound and will remain active until **the alarm is muted** by touching the  icon on the Home screen. The icon will change to  to indicate it is muted. Once the alarm condition is over and the *Omniguard* returns to Normal operation the alarm will automatically re-arm.
2. Any other accessory devices (Telephone Autodialer or Cellular Wireless Modem) will also activate and will remain active until the containment pressure is restored and the *Omniguard* returns to Normal operation.
3. As the containment pressure nears the alarm settings, the *Omniguard* will indicate that it is nearing an alarm condition. The border around the screen will change from **green** to **yellow**, and the status will change to **APPROACHING ALARM**.
4. As the pressure continues to move outside the operating window (Alarm settings), the alarm will sound and a **red** border will appear around the screen and the status will change to **>>ALARM<<**.
5. The *Omniguard* will log & print which Alarm, 1 or 2 was exceeded. The Log Rate will increase to the Alarm Condition rate. Pressure readings will be time-stamped as they are saved and printed.


When the containment pressure returns to within the normal operating window, the *Omniguard* will log and print **NORMAL OP** with a time-stamp. The alarm and accessories (if present) will turn off (or re-arm if they have been muted), also a Normal Operation status message will be sent to off-site personnel if the Cellular Wireless Modem is present. The screen border will change back to **green** and the status will indicate **NORMAL**.

Audible Alarm Mute, Disable & Re-arming

The speaker icon on the Home screen indicates if the internal audible alarm (and optional Remote Auxiliary Alarm if present) is armed, disabled or muted. The audible alarm is automatically armed when the *Omniguard* is turned On. Touch the speaker icon to change between armed and disabled, and to mute during an **ALARM** condition.


 **Audible Alarm Armed (and Remote Auxiliary Alarm)**
Armed, speaker sounds during an **ALARM** condition.

 **Audible Alarm Disabled (and Remote Auxiliary Alarm)**
Disabled, speaker will not sound during an **ALARM** condition.

 **Audible Alarm Muted (and Remote Auxiliary Alarm)**
Muted during the **ALARM** condition, automatically re-arms when containment pressure returns to operating window, status **NORMAL**.

Printer Settings & Reports Screen

The *Omniguard* maintains a log of all recorded data, alarm messages and changes in operational settings. The current Job or any previous Job (or portions of those jobs) and the *Omniguard's* Configuration Report can be viewed or printed at any time.

Touch the printer icon  at the Home screen to go to the Printer Settings & Reports screen.



Note: Lid is open or paper is empty.

Note: The icon indicates that the printer is disabled while it is powered by the battery. Plug the AC cord of the *Omniguard* into an electrical outlet to re-enable the printer.

To view or print the current Job Log --



Touch the  icon at the Home screen.

Touch the **Job Name & Duration** (white text) to change the report's duration, then touch **Print** or **View**.

3. Scroll thru the report using the arrows (if viewing).

4. Touch  to return to the Home screen.

To view or print a previous Job Log or the Configuration Report --

1. From the Printer Settings screen, touch **Other Report/Log**. Use

Example of Typical Job Log Printout

Typical startup sequence

Setting changes print for verification

Containment pressure reached
operating window... status is NORMAL

Alarm Condition (Alarm 1 tripped)

Back into NORMAL operation

New Date prints at midnight

Sign-off header

POWER OFF		
10-21-14 19:48:39		
CURRENT JOB		
Johnson Bldg		
OMNIGUARD		
10-25-14 05:02:20		
ALARM 1 @ -0.025" WC		
ALARM 2 @ -0.100" WC		
NEW TIME		
05:38:00		
NEW ALARM 2		
-0.090" WC		
NORMAL OP 05:51:24		
TIME	HI"WC	LO"WC
05:05	-0.032	-0.028
05:21	-0.031	-0.027
05:36	-0.033	-0.028
ALARM 1 @ -0.025" WC		
05:51:26	-0.012" WC	
05:51:41	-0.002" WC	
NORMAL OP 08:51:55		
TIME	HI"WC	LO"WC
09:05	-0.032	-0.028
10-27-14		
TIME	HI"WC	LO"WC
00:05	-0.032	-0.028
JOB REPORT		
10-27-14 08:33:24		
JOB NAME:		
Johnson Bldg		
CONTRACTOR:		
Acme Abatement		
SUPERVISOR:		

the arrows to scroll through the available reports & logs. Tap the **Name** of the report to view it or print it.


2. The selected item will appear on the screen to view, use the arrows to scroll thru the report. Touch **Print** at any time to print it.

Cancel printing by touching anywhere on the screen.

General Settings Screen


In the General Settings screen the following can be set:

- Contractor Name
- Time & Date
- Log Rates

To go to the General Settings screen touch the  icon in the upper left-hand corner of the Home screen, then touch **General Settings**.

Contractor Name: *The Omniguard can store the name of the Contractor that is using the unit. The Contractor Name is shown in all Job logs and printed reports. Only one name can be stored.*


To set the Contractor Name --

1. Go to the General Settings screen from the Home screen as described above.
2. To the right of **Contractor Name** will be "Your Name" or the previously entered contractor name in white text.
3. Touch "Your Name" and the Keyboard screen will appear.
4. Use the alpha-numeric keyboard to enter the contractor name.
5. When the entire name has been entered, touch  to return to the previous screen. The new contractor name will be shown.

Touch  to return to the Main Menu.

Time & Date: The time and date are used as a reference time-stamp for all logged events.

To change the Time & Date --

1. Go to the General Settings screen by touching the  icon in the Home screen, then touch **General Settings**.
2. Touch the arrows to adjust the time minute by minute. Hold the arrow to increase the speed of adjustment.
3. To set the date, simply touch the white text indicating the month, day, or year. The value will change each time you tap. Once the desired value is shown, the change is automatically saved.

Touch  to return to the Main Menu.

Log Rates: The logging and printing of pressure readings begins once the pressure reaches the normal operating window (status indicates

NORMAL). There are two rates at which logging occurs


Normal Operation: (default is 15 min.)

- Setting choices are **5, 15, 30** minutes of **Off**.
- When set to **Off**, *Omniguard* will only log & print pressure readings during an Alarm Condition.

Alarm Condition: (default is 15 sec.)

- Setting choices are **15 sec, 30 sec, 1 min** or **2 min**.


To change the Log Rates --

1. Go to the General Settings screen by touching the icon  in the Home screen, then touch **General Settings**.
2. Touch the current Log Rate setting (white text) to change value.
3. The value will change each time you tap. Once the desired value is shown, the change is automatically saved.


Touch  to return to the Main Menu.

Screen Settings (including Touchscreen Calibration)

To adjust the Screen Brightness --

1. From the Home screen, touch  to go to the Main menu.
2. From the Main menu, touch **Screen Settings**.
3. Touch the current **Screen Brightness** setting to adjust to the desired brightness level.

To Calibrate the Touchscreen --



1. From the Home screen, touch  to go to the Main menu.
2. From the Main menu, touch **Screen Settings**.
3. Touch **Calibrate Touchscreen** to begin the calibration process.
4. A white box with an **X** in the middle of it will appear. With the tip of the finger or by pressing gently with a stylus, touch the **X**. The get closer to touching the center of **X**, the better.
5. Repeat this process 3 more times, until the *Omniguard* shows the calibration is completed.

Zero Calibration

The *Omniguard* does not require calibration between jobs. Internal temperature compensation and other circuitry provides unsurpassed accuracy over a 30° - 130° Fahrenheit range.

Note: A soft clicking sound is made by the Omniguard as it is constantly compensating for zero offset drift due to changes in barometric (atmospheric) pressure. Annual NIST calibration verification is recommended.

To manually reset the zero point --

1. Disconnect the pressure tubing from both inlet nozzles.
1. From the Home screen, touch  to go to the Main menu.
2. From the Main menu, touch **Zero Calibration**.
4. Touch **Calibrate Now**. (If Passcode Protection is **On**, Omniguard will prompt for the Passcode.)
5. When the calibration is complete the screen will read **Calibrate Zero Done**.
6. Touch  to return to the Main menu.

***Note:** Allow the Omniguard to warm up for 15 minutes prior to zero calibrating. This permits the pressure sensor to stabilize its readings. Zero calibration can only be done when the pressure tubing is **not attached to the unit**.*

Passcode Protection


The passcode protection feature allows the site manager to assign a passcode that prevents unauthorized changes to the Omniguard's settings. Once enabled, the passcode must be entered to change any setting. Settings may be viewed without the passcode.

Passcode Protection : (default is Off)

Passcode : (default is 0 0 0 0)


- A passcode is always required to **Erase Job Logs** and **Restore Factory Defaults**.
- Master passcode is 5 5 5 5

To set and activate Passcode Protection --



1. From the Home screen, touch  to go to the Main menu.
2. From the Main menu, touch **Passcode Protection**.
3. Touch **Off** to enable or **On** to disable **Passcode Protection**.

***Note :** Disabling Passcode Protection requires knowing and entering the Passcode.*

To change the Passcode --

1. From the Passcode Protection screen, touch the ******** to go to the passcode entry screen.
2. Type in the current passcode followed by , to be allowed to

create a new passcode.



3. Type in the new passcode using the alpha-numeric keypad and press  when done.
4. Re-enter the passcode and press  to confirm it.

***Note :** In case the passcode is lost or forgotten, it can be changed using the Master passcode.*

Erase Job Logs

This function will completely *erase all Job Logs*, the Passcode is required to use this function.


To Erase Job Logs --

1. From the Home screen, touch  to go to the Main menu.
2. From the Main menu, touch **Erase Job Logs**.
3. Touch **Clear Log Now** and enter the Passcode (required).
4. Screen shows Clearing job logs..., then Done when completed.
5. Touch  to return to the Main menu.

Restore Factory Defaults

This function will completely *erase all Job Logs and restore all settings to the factory defaults* (except Time & Date), including the Passcode. The Passcode is required to use this function.

To Restore Factory Defaults --

1. From the Home screen, touch  to go to the Main menu.
2. From the Main menu, touch **Restore Factory Defaults**.
3. Touch **Factory Default** and enter the Passcode (required).
4. Screen goes blank, then shows **Omniguard** and **Initializing** (the power on screen).
5. Touchscreen calibration is required. A white box with an **X** in the middle of it will appear. With the tip of the finger or by pressing gently with a stylus, touch the **X**. The closer to touching the center of **X**, the better.
6. Repeat this process 3 more times, until the Omniguard shows the calibration is completed.


***Note:** The Alarm 1 & 2 settings are displayed in **yellow** on the Home screen until they have been changed from factory defaults.*

Using Help





To obtain help for a specific screen --

1. If the screen has an **?** icon in the corner, the touch the **?** icon to


see Help about the current screen.

2. Touch  to return to the previous screen.

To go to the general Help menu --

1. If the screen has an  icon in the corner, touch the  icon to see Help about the current screen. Touch the  icon again to go to the general Help menu.
3. Use the arrows to scroll thru the Help topics.
4. Touch the topic title to view detailed Help about it.
5. Touch  to return to the previous screen.

USB Ports

The *Omniguard* has two USB ports located by the  icon. A chart showing all of the USB device icons is on page 6.

The top port supports the following devices:

- USB Flash Drive
- Remote Auxiliary Alarm (requires USB Port Adapter)
- Telephone Autodialer (requires USB Port Adapter)
- Cellular Wireless Modem (requires a USB Port Adapter)

The bottom port, is used to communicate between a PC and the *Omniguard*.

Communication

The *Omniguard* has a built-in USB port to connect to a PC. Before a PC can communicate with an *Omniguard*, download and install the Windows® compatible Omniguard Communication software from our web site at www.Omniguard.com. Detailed instructions for installation and operation of the software are included with the download.

Plug the flat rectangular end of the USB cable into a PC and the square end into the bottom USB port of the *Omniguard*.

Once connected, you can --

- Transfer the current Job Log or all Job Logs to the PC.
- Configure and set up multiple *Omniguards*, using the software to upload configuration settings

Transferring a Job Log to a PC

The Job Logs stored in the *Omniguard's* memory can be transferred to a PC for permanent storage, statistical analysis and summary report generation. Job Logs transferred to a PC can be reviewed and reprinted any number of times.

To transfer a Job Log --

1. Install the Communication program on your computer.
2. Plug the USB cable (included with your *Omniguard*) into the lower

USB port on the *Omniguard*

3. Plug the other end of the cable into the appropriate USB port on your PC.
4. Follow the instructions in the Communication program to transfer the Job Log.
5. Once transferred to the PC, Job Logs can be exported in a tab separated format so they can be imported into Microsoft Excel for charting and analysis.

USB Flash Drive – Data Collection

The upper **USB** port on the *Omniguard* allows a Supervisor to gather Job Logs at the job site using a USB Flash Drive. The logs can be viewed later on a PC using the Omniguard Communication software available free @ www.Omniguard.com.

Transferring the Job Logs to a USB Flash Drive

The Job Logs stored in the *Omniguard's* memory are copied as a single Log file to a USB Flash Drive. The Omniguard Communication software can read the Log file and separate it back into individual Job Logs for storage on your PC. Each time a USB Flash Drive is inserted into an *Omniguard*, all Job Logs are copied to the drive.

To transfer Job Logs --

1. The *Omniguard* must be turned on and displaying the current pressure (at Home screen).
2. Plug the USB Flash Drive into the upper **USB** port on the *Omniguard*. The flash drive icon should appear and the *Omniguard* will automatically begin to download all job logs. This could take several minutes before completing.
3. When the transfer is complete the screen will show the name of the new Log file created on the flash drive. The file name will consist of the last 6 digits of the *Omniguard* serial number followed by a letter. Each file also has the time & date it was copied onto the flash drive.

Example: If the Omniguard 5 serial number is G506932, the first Log file will be 506932.OGL. The second file will be 506932A.OGL, the third file will be 506932B.OGL, etcetera. The Log files are stored in the folder OMNIGUARD in the sub-folder LOGS.

To complete the transfer to the PC, insert the USB Flash Drive into an open USB port on the PC. Using the Omniguard Communication software, select "Open Log..." from the "File" menu. Navigate to the USB Flash Drive, select the "OMNIGUARD\LOGS" folder and open the appropriate Log file.

Message Rate




The Message Rate setting is the minimum amount of time the Telephone Autodialer or Cellular Wireless Modem must wait between multiple alarms before dialing or sending an new alert message in response to a new alarm condition. This setting is to prevent multiple alert messages from being when the job site is experiencing rapid alarm occurrences due to windy (or other) conditions.

The setting can only be viewed and changed when a USB Port Adapter is connected to an *Omniguard*.

Message Rate: (default is 10 min.)

- Choices are 5 min, 10 min or 15 min.

To change the Message Rate --


1. Plug the Autodialer into the USB Port Adapter, then connect the USB Port Adapter to the *Omniguard* with the USB cable provided. The screen should display the USB Port Adapter icon  on the Home Screen.
2. Press  to go to the Message Rate screen.
3. Touch the current rate (white text) to toggle through the Message Rate choices.
4. Touch  to save the setting return to the Home screen.

Cellular Communication Set Up and Operation





The *Omniguard Cellular* has a built-in Cellular Wireless Modem that will automatically send status report updates (including Power, Alarm, Normal Operation and Job Logs) to off-site personnel via cell phone text messaging and email. 24 Hour Job Logs are sent on a daily basis, eliminating the need to visit the job site to manually download logs. Job Logs are received via email as an attachment and can be viewed with any text editor.

2 years of cellular connectivity on the Verizon network is included with the purchase of a new *Omniguard Cellular*. After the initial 2 year subscription period, there is an annual subscription available to continue the service.

To activate your cellular communication service, or renew your annual service, log in to www.engsolinc.com and fill out and submit the Cellular Activation Form, or call 206-241-9395 and contact the sales department. Please allow 24-48 hours for activation or renewal to take effect.

After the *Omniguard Cellular* is activated with Verizon, the cell modem will automatically connect to the Verizon network when the *Omniguard* is turned on. If the *Omniguard* has never connected with the network, a prompt will be displayed during the initial start up. At the prompt, press **Connect** to connect your *Omniguard's* cell modem to the network, or you can press  to skip connecting to the cellular network.




To set up Cellular Communication

- 1) From the Home Screen, touch  to go to the Network Communication screen.
- 2) The network status is in the top left corner of the screen. Touch **Off** to toggle through the Network options until you reach **Cellular**.
- 3) On the top right corner of the  screen, **Initializing...** is displayed while attempting to connect to the Verizon cellular network. When connected the **Signal** strength percentage will display.
- 5) Touch  to return to the Cellular Communication screen.
Touch  again to return to Home Screen.

WiFi Communication Set Up and Operation

The *Omniguard Cellular* has a built in Wifi Module that will that will automatically send status report updates (including Power, Alarm, Normal Operation and Job Logs) to off-site personnel via cell phone text messaging and email. 24 Hour Job Logs are sent on a daily basis, eliminating the need to visit the job site to manually download logs. Job Logs are received via email as an attachment and can be viewed with any text editor.

To set up WiFi Communication

- 1) From the Home Screen, touch  to go to the Network Communication screen.
- 2) The network status is in the top left corner of the screen. Touch **Off** to toggle through the Network options until you reach **WiFi** or **WiFi+**
- 3) To enter the Wifi Network information, press the **WiFi** button in the lower left hand corner. You will need to enter the Network Name and Password to connect to the local Wifi network.
- 4) Confirm if **WiFi** is an enterprise network.
- 5) Enter user name.
- 6) On the top right corner of the screen, **Initializing...** is displayed while attempting to connect to the WiFi network. When connected the **Signal** strength percentage will display.
- 7) Touch  to return to the Cellular Communication screen.
Touch  again to return to Home Screen.





Entering Contact information for Remote Communication Recipients

To send text messages to Cell Phones, use the 10 digit wireless number without dashes combined with the domain for the phones's network to create an email address as shown below.

Example: **8881234567@txt.att.net** is the email address for 888-123-4567 on the AT&T cellular network.

Domains for major wireless network providers are listed below. Domains for networks not shown can be found online.

Alltel Wireless	@sms.alltelwireless.com
AT&T Wireless	@txt.att.net
Boost Mobile	@myboostmobile.com
Consumer Cellular	@txt.att.net
Cricket	@sms.mycricket.com
Metro PCS	@mymetropcs.com
Sprint (PCS)	@messaging.sprintpcs.com
	@pm.sprintpcs.com
Sprint (Nextel)	@page.nextel.com
Straight Talk	@vtext.com
T-Mobile	@tmomail.net
US Cellular	@email.uscc.net
Verizon	@vtext.com
Verizon	@vtext.com
Virgin Mobile	@vmobl.com

- 1) From the Network Communication Screen, enter an **E-mail Address** (or **Cell Phone Number** texting address) plus an optional **Name** for up to 4 personnel to be remotely notified.
- 2) Check the boxes to the left of the **Email Address** for each email address to receive **Status Updates** or **Job Logs** or both.
- 3) Press **Test** to send emails, confirm emails were received by all personnel listed. **Test** emails have the Subject: "Testing"
- 4) Press **Option** to choose which type of **Status Updates** will be emailed. Touch the box to select. Status Update emails have the Status Message + Job Name + Omniguard Serial Number in the email Subject. This allows receiving personnel to easily automatically sort incoming emails into appropriate inboxes.
 - a. Power Status
 - b. Waiting for pressure (every 60 min)
 - c. Alarms and Alarm Updates (every 15 min)
 - d. Normal Operation Updates (every 60 min)
- 5) Touch   to choose when the 24 Hour Job Log will be sent.
- 6) Touch  to return to the Cellular Communication screen.
Touch  again to return to Home Screen.

E-mail Message Examples

Test Messages:		
Job Log Test	You will be receiving Logs Messages for job "Job A." Omniguard # C501234	
Status Message Test	You will be receiving Status Messages from this Omniguard. Omniguard # C501234	
Status Messages:		
Waiting for Pressure	JOB: Job A STATUS: Waiting Pressure PRESSURE: 0.079" WC Omniguard # C501234	
Alarm	** ALARM ** JOB: Job A ALARM 1: 0.040" WC 15:19:11 0.045" WC Omniguard: # C501234	
Normal	JOB: Job A 20:38 0.000 0.000 Omniguard: # C501234	
Power Change	JOB: Job A AC POWERED BATTERY 10% Omniguard: # C501234	Job A BATTERY POWERED BATTERY 97% Omniguard: # C501234

Omniguard Mobile App

You can view activity updates and job logs transmitted by the Omniguard using the Omniguard Mobile app for iOS and Android devices. Search for "Omniguard Mobile" in the Apple App Store or Google Play Store or scan the QR code below.




To Monitor using the Omniguard Mobile App

- 1) Scan the QR code to download the Omniguard Mobile App from the App Store or Google Play
- 2) Once the App has been downloaded to your mobile device, open the app and follow the prompts to create a username and password.
- 2) To add an Omniguard to the App, press the **Add** button in the upper right hand corner.
- 3) Enter your Omniguard Serial Number and IMEI Number and press **OK**
- 4) You will now see the Omniguard information on the home screen, repeat this process to monitor multiple Omniguard in one location

Section 5: Accessories

Remote Auxiliary Alarm

The Remote Auxiliary Alarm is a combination high-intensity strobe light and 95db audible alarm on a 25 foot cable that connects to the *Omniguard* **USB** connector using the optional USB Port Adapter. The Remote Auxiliary Alarm plugs into the **Aux Alarm** port on the USB Port Adapter which in turn is connected to the **USB** port using the USB cable (included with the *Omniguard*).

In an alarm condition, the Remote Auxiliary Alarm will activate. It may be muted by touching the  icon. The Remote Auxiliary Alarm will only re-arm once the unit has returned to normal operation.

Cellular Wireless Modem for non-Verizon Wireless Networks

By using the optional Cellular Wireless Modem and USB Port Adapter, the *Omniguard* Cellular can access cellular wireless networks other than Verizon to automatically send alarm and job reports to cell phones and email accounts. In addition, the *Omniguard* can respond to requests for information from wireless cell phones and via e-mail.

Wireless communication requires a specially configured MultiTech MultiModem cellular wireless modem. This modem is similar to a cell phone. It has a phone number and requires an active cell phone account with SMS texting support, using either a traditional plan with monthly payments or a prepaid plan. Contact Engineering Solutions for more information on acquiring a cellular wireless modem.

Master Cell Phone Numbers –

Two cell phone numbers can be programmed directly into the *Omniguard*. A text message will be sent to each phone number when the *Omniguard* enters Normal operation and when an Alarm condition occurs. The **Message Rate** setting determines the minimum time between Alarm notification messages, this is to prevent frequent messages if the unit is going in and out of the Alarm condition.

Phone numbers programmed directly into the *Omniguard* will also receive a Daily Summary report, indicating how long the *Omniguard* was in Normal operation, the number of alarms and the total time the unit was in the Alarm condition. The Daily Summary is sent at 5:30pm each day unless a Notify List has been selected (see below).

Notify Lists –

In addition to the two Master Cell Phone Numbers, the *Omniguard* can also send alerts to personnel contained in a Notify List. The *Omniguard* can store up to four Notify Lists, only one can be active at a time. A Notify List contains a list of wireless phone numbers **and** e-mail addresses for a specific group of off-site personnel. Each Notify List allows different phone numbers and/or e-mail addresses for Alarm and Normal Operation notification and for Reports. The Lists also allow the report notification time to be changed.

*Notify Lists can **only** be created and programmed into the Omniguard using the Omniguard Communications PC software. See the Help that comes with the software for more information on setting up Notify Lists.*

Request Job Site Status via Cell Phone or E-mail –


It is possible to request status information from an *Omniguard* connected to a cellular wireless modem. A text message or e-mail is sent to the *Omniguard* which replies with the report type requested. The available reports include a Daily Summary, overall Job Summary, Current Status and Settings.

To get a complete list of reports the *Omniguard* can provide send a text message or e-mail with a "0" (zero) in the body of the message.

Text messages sent to the *Omniguard* must be in the "short message" (SMS) format and are sent to the phone number of the wireless modem. E-mail messages sent to the *Omniguard* must be in plain text format and should be sent to the e-mail address provided by the wireless service provider. The message format is shown below, where "nnnnnnnnnn" is the 10-digit phone number of the cellular modem, with area code first (no hyphens or spaces).

For T-Mobile use "nnnnnnnnn@tmomail.net",
for AT&T use "nnnnnnnnn@mmode.com".



To configure and test the Cellular Wireless Modem setup --

1. Connect the modem's serial cable to the **SERIAL** port on the USB Port Adapter and to the modem.
2. Connect the USB Port Adapter to the *Omniguard* **USB** port using the USB cable (included with the *Omniguard*).
3. Plug in the modem power adapter to turn the modem on. The Wireless Modem icon should appear on the screen of the *Omniguard* (it may take 2 minutes to connect).
4. Touch  to access the Wireless Modem set up menu.
5. Use the keyboard to enter in the Master Cell Phone Numbers.
6. If a Notify List has been uploaded to the *Omniguard* by the *Omniguard* Communication Software, choose which Notify List to use by touching the List Name to toggle through the available Lists (if a Notify List has not been uploaded, the Text/Email list will say "None").
7. Set the Text/Email Notification Rate by touching the current rate.
The Default is set to 10 minutes. (The choices are 5, 10, and 15 minute intervals).
8. After the setting have been entered, touch Test Modem to ensure the Wireless Cellular Modem is communicating properly with the Master cell phone numbers and personnel on the Notify List. After confirmation of receiving the Test text message, touch anywhere on the screen to exit to the Home Screen.

Appendix A : Troubleshooting

If you experience problems with your *Omniguard*, use this section to try to resolve the problem. For additional information consult with your dealer or call Engineering Solutions at (206) 241-9395 (8:00 a.m.-12:00 noon, 12:30-4:30 p.m. Pacific Time) and ask for Technical Support, or e-mail techsupport@engsolinc.com.

Problem: The unit does not display the proper pressure.

Solution: Check to see that the tubing is connected properly to the top  nozzle. The bottom  nozzle should not be connected.

Solution: Make sure that the tubing does not have a kink or a sharp bend.

Solution: Make sure that you are using the correct 3/16" ID tubing size, and the end of the tubing on the inlet nozzle is not worn. If it is worn or loose, cut off 1" of the tube using a sharp knife and reinsert on the inlet nozzle.

Solution: Make sure that the tubing connection into the containment area is properly placed and secured as described in Section 4: Work Area Setup.

Problem: Excessive momentary alarms.

Solution: Adjust Alarm 1 & 2 settings to allow for normal air pressure fluctuations caused by entries into work area or other equipment. Make sure that you are within the minimum negative air pressure requirements.

Remedy: If you suspect that wind may be causing rapid pressure fluctuations, reduce the setting for Response Rate (see Section 4: Detailed Operation).

Problem: Printer is not working properly or paper is empty.



Solution: The icon indicates printer is disabled. Turn **On** the printer by touching the icon and then touching **Off**.



Solution: The icon indicates printer is disabled because *Omniguard* is unplugged and powered by battery. Plug the *Omniguard* power cord into an AC outlet, printer will activate automatically.



Solution: No paper or open lid. After the paper jam is added or lid is closed, turn **On** the printer by touching the icon and then touching **Off**.

Caution: Do not apply oil or grease to the printer, as this will attract dirt and debris and could damage the printer mechanism.

Solution: Thermal paper allows printing on only one side. If incorrectly installed, the printer will be able to advance paper but cannot print on it. Make sure that paper is loaded properly as described in Section 3: Loading the Thermal Printer Paper.

Problem: *OMNIGUARD* status does not indicate NORMAL operation when turned on, and does not print.

Solution: For normal operation, the monitored pressure must be between the Alarm 1 and Alarm 2 settings. When the *Omniguard* is first turned on, the containment pressure will not likely be between the Alarm 1 & 2 settings, and the *Omniguard* will not log or print the pressure readings. The *Omniguard* will begin logging and printing the pressure readings only after the containment pressure has reached the Normal operating window.

Shipping & Repair

Please call the Engineering Solutions technical support department for a return authorization. A Return Material Authorization number (RMA #) will be assigned to aid in tracking your unit.

You may also e-mail techsupport@engsolinc.com.

Send the entire unit, enclosing a brief explanation of the problem along with your company name, address, phone number and name of the individual responsible for the unit. **The RMA# must be clearly marked on the outside of the box.** No COD's will be accepted. If the original packing materials are not available, package the unit securely in a sturdy container with enough padding to surround the unit on all sides. The unit should not be able to be shift after packing. Engineering Solutions will not be responsible for any damage which may occur.

Ship To: Engineering Solutions, Inc.
 1201 Monster Rd SW, Suite 240
 Renton WA, 98057 USA
 (206) 241-9395

Appendix B: Specifications

Differential Pressure Range: +/-0.250"WC (+/-6.35 mmWC,+/-62.5 Pascals)

Accuracy: +/-0.003" WC or +/-1 % of reading, whichever is greater

Resolution: +/-0.001" WC, (+/-0.05mm WC, 0.5 Pascals)

Burst Pressure: 3 psi (20 kPa) on either inlet nozzle

Pressure Units: " WC (inches Water Column), mmWC (millimeters Water Column), or Pa (Pascals)

Date (Log) Storage: 4 MB non-volatile memory

Display: 4.3" Color Touchscreen LCD (480 x 272 pixels)

Internal Clock: The internal clock is powered by a self-charging lithium-ion battery that provides clock operation when AC power is not present

Printer: 20 character wide thermal printer (uses 2.2" wide thermal printer paper)

Pressure Reading Log Rates (Log Rate):

Normal Operation -- Highest and lowest pressure readings are logged & printed at intervals of 5, 15, 30 minutes or OFF

Alarm Condition -- Highest and lowest pressure readings are logged & printed at intervals of 15, 30, 60 or 120 seconds for first 10 minutes of alarm condition, increasing to 15 minute intervals thereafter

Alarms: Two programmable alarm settings, 95db audible alarm and red bordered on-screen warning indicate alarm condition

Pressure Inlet Nozzles: Two 3/16" OD barbed hose connectors, 10 ft of pressure hose provided

USB Port: USB V1.1 Type-A

USB Port: USB V1.1 Type-B



AC Power: 85-240 VAC 50-60Hz 10W (with 6 ft power cord)

Battery Power: Internal rechargeable 3.7 Volt Li-ion type battery internal provides 4-6 hours of portable operation, recharges in 4 hours when AC power is available (printer is disabled when powered by battery)

Case: Dimensions 9.25" x 7.5" x 4.5", Shipping Weight 8 lbs., case & handle is copolymer polypropylene with polycarbonate window in the lid, and stainless steel hanging hook

Warranty: One Year Limited Warranty

Appendix C: Establishing a Containment Site

The *Omniguard* monitors and records the differential pressure between the top inlet  nozzle and the bottom inlet nozzle  (Reference).

In abatement applications the *Omniguard* should be located outside the containment area and not in any antechambers (i.e. shower or changing room). This allows a supervisor or hygienist to monitor pressure readings without entering the containment area.

This section of general guidelines to establishing a containment site is provided by Engineering Solutions Inc for informational purposes only. Engineering Solutions Inc is not responsible for its accuracy nor conformance with specific regulations for your area. Engineering Solutions Inc specifically advises all users to obtain the advice of qualified professionals for each use and application of the *Omniguard*. Engineering Solutions Inc makes no claims as to the proper usage or interpretation of the data provided by the *Omniguard*.

General Guidelines to Establishing a Containment Site

1. The contractor and hygienist are to be certified prior to qualifying to bid on an abatement job.
2. All workers are to have undergone specific training in abatement procedures.
3. Typical abatement requirements:
 - a. Containment area to be sealed within a double layer of 8 mil plastic or equivalent.
 - b. Before beginning work within the containment area and at the beginning of each shift, the containment area must be inspected for breaches and smoke-tested for leaks, and any leaks sealed.
 - c. Air volume within containment must be changed 4 times per hour, i.e. the entire air volume must be evacuated every 15 minutes.
 - d. Minimum pressure in containment is $-0.020''\text{WC}$, i.e. the differential pressure between containment pressure and ambient/outside pressure must be at least $-0.020''\text{WC}$ as measured by a manometer.
 - e. The containment area must be kept under negative pressure throughout the period of its use.
 - f. Air movement must be directed away from employees within containment and toward a HEPA filtration unit.
 - g. Fiber levels within the containment area must be sampled at a specific interval and be less than a proscribed level, i.e. sampled 1 time a day or more and fiber levels below "5 fibers/100 fields".

4. Calculating site airflow requirements:

A typical heavy duty HEPA fan/filter unit has a 1000 CFM (cubic feet per minute) capacity with a new filter. Units are typically derated by 25%, so a 1000 CFM unit is derated to 750 CFM by the hygienists when calculating actual site airflow requirements.

Example #1: A room measuring 20 x 20 ft with a 10 ft ceiling encloses 4000 CF of air. To meet the 4X per hour change rate the fan/filter unit must be capable of pulling 267 CFM of air ($4000 \times 4/60$) from the containment area and maintain a minimum negative pressure of $-0.020''\text{WC}$.

Example #2: Room size is 20 x 50 with 12 ft ceiling. Requires $(20 \times 50 \times 12) \text{ CF} \times 4 / 60 = 800 \text{ CFM}$ or 2 units (of a 1000 CFM fan/filter unit... remember the fan/filter unit is derated to 750 CFM).

Example #3: Room size is 100 x 100 with 16 ft ceiling. Requires $(100 \times 100 \times 16) \text{ CF} \times 4 / 60 = 10667 \text{ CFM}$ or 15 fan/filter units (of a 1000 CFM unit).

5. The containment area pressure should be monitored at various points to confirm adherence to abatement requirements. Remember that air is a medium, and air pressure is not identical throughout the containment area. The pressures at specific locations within the containment area vary due to distance, room temperature, proximity to openings, room geometry, etc. Typically one manometer is used for every two "rooms" that have a doorway and attached hallway, up to 1000 square ft.
5. Using a manometer that provides highly accurate pressure readings, time stamped logging of all readings, and audible alarm and printouts of all logged readings protects workers and the public from accidental exposure to airborne hazards and provides proof of containment to protect employers from environmental contamination lawsuits

NOTE: It is important that there be no kinks or sharp bends in any part of the tubing. Any blockage could inhibit accurate recording of the pressure in the containment area.

Appendix D: Limited Warranty

Engineering Solutions warrants that all products, component parts and accessories will, for a period of twelve (12) months from date of purchase, be free from defects in material and workmanship under normal use and service.

PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS F.O.B., ENGINEERING SOLUTIONS, INC., 1201 MONSTER RD SW, SUITE 240, RENTON, WA 98057 USA.

To keep this warranty valid, the purchaser must (a) have promptly informed Engineering Solutions' customer service department of any defects in writing, (b) properly used, maintained and repaired the Product, and (c) have proof of purchase.

This warranty does not cover normal wear and tear or defects due to (a) improper or negligent handling or unauthorized modifications, (b) defective or improper premises, chemical, electrochemical or electrical influences, (c) weather or other influences of nature.

LIMITATIONS OF WARRANTY - THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND OBLIGATIONS OF ENGINEERING SOLUTIONS OR ITS SUPPLIERS, EXPRESS OR IMPLIED. ENGINEERING SOLUTIONS INC EXPRESSLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF REMEDY- Under no circumstances shall Engineering Solutions or any of its suppliers be liable for any loss or damage, including, but not limited to, loss or damage arising out of failure of the Product to operate for any period of time, inconvenience, use of rental or replacement equipment, loss of profit or other economic loss, or general, direct, special, indirect, incidental or consequential damages or property damages.

PRODUCT SUITABILITY - Many states and localities have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Engineering Solutions attempts to assure that its Products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the Products are installed or used. Engineering Solutions recommends that, before purchasing and using a Product, purchasers review the Product application, and federal, state and local regulations, to be sure that the Product, installation, and use will comply with them.

Battery Disposal Information



**This product contains a
Lithium-ion Battery
-Please Recycle-**

The battery included with this product contains heavy metals that may contaminate the environment if improperly discarded. Please follow the battery recycling guidelines as directed by the E.P.A.
(<http://www.epa.gov/osw/conservation/materials/battery.htm>)

To find your local recycling location please visit:
<http://www.call2recycle.org/>



EU Battery Disposal

Batteries containing heavy metals may contaminate the environment if improperly discarded. When incinerated, certain chemicals are released into the air or concentrated in the ash residue from the combustion process; this may lead to a health risk to humans, animals and the environment in general.

Batteries marked with the symbol of a 'crossed-out wheeled bin' are strictly prohibited from being discarded with household waste. Batteries must be disposed of by separate collection and recycling means.

End users are obligated by law to comply with the discarding procedure for waste batteries.

FCC Certification Information

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Contains FCC ID:R17ME910C1NA and

FCC ID:2AC7Z-ESP32WROOM32E

Omniguard Referencia Rápida

Empezar un nuevo trabajo

1. Revise la Fecha y Tiempo, ponga si necesario.
2. Revise los ajustes para Alarma 1 y 2 (ventana operacion), ajuste si necesario.
3. Oprima EMPIECE TRABAJO en la parte inferior en la pantalla de Inicio.
4. Entre el Nombre de Trabajo usando el teclado en la pantalla.
5. Conecte la tubería de presión a la boquilla de entrada.

La Omniguard mostrará EN ESPERA DE PRESIÓN hasta la presión de contención alcanza la ventana de operación. Una vez alcanzado, el estado cambia a la normalidad y un borde verde aparece en la pantalla. El Omniguard comienza registro e impresión lecturas de la presión.

Pantalla de Inicio

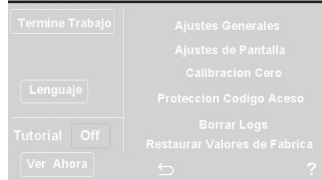


Omniguard tiene una pantalla táctil!

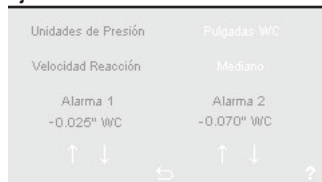
- oprima los iconos y ajustes para ver y cambiar ajustes.
- ver e imprimir Logs y reportes.
- el color del borde de la pantalla indica el estatus:

verde = bueno
amarillo = alarma acercando
rojo = alarma

Menú Principal



Ajuste de Alarmas



Omniguard Aplicación móvil



Omniguard Activación Celular

Escanee el código QR para enviar la solicitud de activación celular
- visite www.engsolinc.com, vaya a la pestaña de registro de Omniguard y envíe el formulario de solicitud de activación
- llame al 206-241-9395 y comuníquese con el departamento de ventas.

ENGINEERING SOLUTIONS INC

1201 Monster Rd SW, Suite 240, Renton, WA USA 98057

(206) 241-9395 • (206) 241-9411 fax • www.omniguard.com

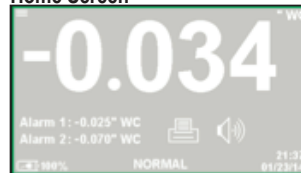
Omniguard Quick Reference

Starting A New Job

1. Check the Time & Date, set if necessary.
2. Check the settings for Alarm 1 & 2 (operating window), adjust if necessary.
3. Touch START JOB at the bottom of the Home screen.
4. Enter the Job Name using the on-screen keyboard.
5. Connect pressure tubing to the inlet nozzle.

The Omniguard will display WAITING FOR PRESSURE until the containment pressure reaches the operating window. Once reached, status changes to NORMAL and a green border appears on the screen. The Omniguard begins logging & printing pressure readings.

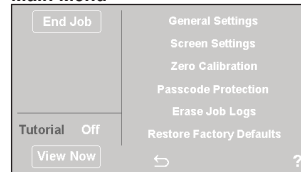
Home Screen



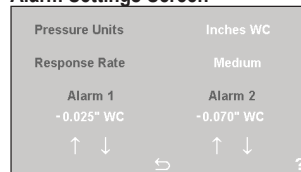
Omniguard now has a Touchscreen!

- touch the screen icons & settings to view & change settings.
- view & print Job Logs and reports.
- colored screen border indicates job monitoring status:
green = good
yellow = approaching alarm
red = alarm

Main Menu



Alarm Settings Screen



Omniguard Mobil App



Omniguard Cellular Activation

Scan the QR code to submit cellular activation request
- visit www.engsolinc.com, go to the Omniguard register tab and submit the activation request form
- call 206-241-9395 and contact the sales department.

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Screen Icons

- Main Menu
- Return/Exit
- Scroll thru menu, Job Logs, reports or Help
- Item specific Help or Help menu

Alarm 1: -0.025" WC Alarm 1&2
Alarm 2: -0.070" WC Settings.

NORMAL Monitoring Status:

START JOB
WAITING FOR PRESSURE
NORMAL
APPROACHING ALARM
ALARM

- Battery life remaining & charging status
- Arm/disarm/mute audible alarm

Printer Settings

- Off
- Off
- Paper Jam (batt power)

Network Connectivity Settings

- Cellular Modem connected.
- Cellular Modem off.
- Cellular Modem error - not activated or network not detected.
- WiFi connected with full signal
- WiFi ON - No Wifi log in information, or no signal in range
- WiFi error - can not connect to wifi network