
# GMSW7 SensTool

## Operating Instructions

Version: 1.1.6

A6V10245824
01.10.2015

Vanderbilt

# Copyright



Edition: 01.10.2015

Document ID: A6V10245824

# Table of Contents

# 1 Trademark Acknowledgement

All products or company names referred to explicitly in this manual are mentioned only for purposes of identification or description and may be trademarks or registered trademarks of their respective owners.

Microsoft is a registered trademark and Windows a trademark of Microsoft Corporation.

# 2 General

These instructions detail how to use the software for SensTool. It is assumed that the user is familiar with the use of the GM7xx range of seismic detectors.
If however you still have any questions, please contact the support team-www.service.vanderbiltindustries.com.
The screenshots shown are examples and may deviate from what is displayed by your software.

## 2.1 Description

SensTool is a PC based software program offering the following functions for the Vanderbilt seismic detector types GM730, GM760, GM775, and the obsolete GM770:

- Setting the operating parameters.
- Guidance on the permitted detector settings.
- Analysis of the detector data.
- Display of event data from seismic detectors.
- Upload and download of detector data via RS232 port and associated PC lead.
- Storage and display of seismic configuration data, signal data and historical event data.

## 2.2 Scope of Supply

The GMSW7 SensTool consists of:

- 1 x RS232 connection cable for connecting a seismic detector to a serial port on a PC.
- 1 x CD GMSW7 SensTool with the latest version of SensTool and the operating instructions in PDF format.

## 2.3 System Requirements

In order to use the SensTool software, your PC must feature the following:

- X86 processor with at least 166MHz and 40MB RAM.
- CD drive.
- RS232 or USB port with converter to RS232 (the converter is not included in the scope of supply).
- At least 100MB of free memory space on the hard disk.
- Operating system: XP / VISTA / Windows 7 / Windows 8.

# 3 Installation

## 3.1 SensTool Software Installation

The SensTool software must not be disseminated to third parties or sold.

If SensTool is already installed on the PC, open the program and the version number displays in the header bar.

If you have an older version of the SensTool software (< V1.1.6 ) it is possible that not all current detector types will be detected. Vanderbilt strongly recommend that you install the current version of the SensTool software.

Install the software as follows:

- Close all applications on the PC.
- Insert installation CD.
  The installation program launches automatically

  If the SensTool installation program does not launch automatically, start the **gmsw7-x.x.x_installer.exe** program manually from Windows Explorer.
- Follow the installation program instructions.

## 3.2 Hardware Installation

Connect the seismic detector to the PC using the serial connection cable as follows:

- Open the seismic detector (refer to GM7xx installation sheet for additional information).
- Use a free RS232 connection (COM port) on the PC to connect to the seismic detector via a connection cable.

  If the chosen COM port is already being used by another application, close the application.

  If no COM port is available on the PC, it is possible to connect through a USB port on the PC using a USB to RS232 converter (not supplied).
- Connect the supply voltage on the seismic detector and wait 30 seconds for the detector to calibrate.

# 4 Program Application

## 4.1 Starting SensTool

Proceed as follows to start the SensTool software:

- Start the SensTool software using **Start > All Programs > Vanderbilt > GMSW7 > gmsw7** or double-click on the desk top icon.

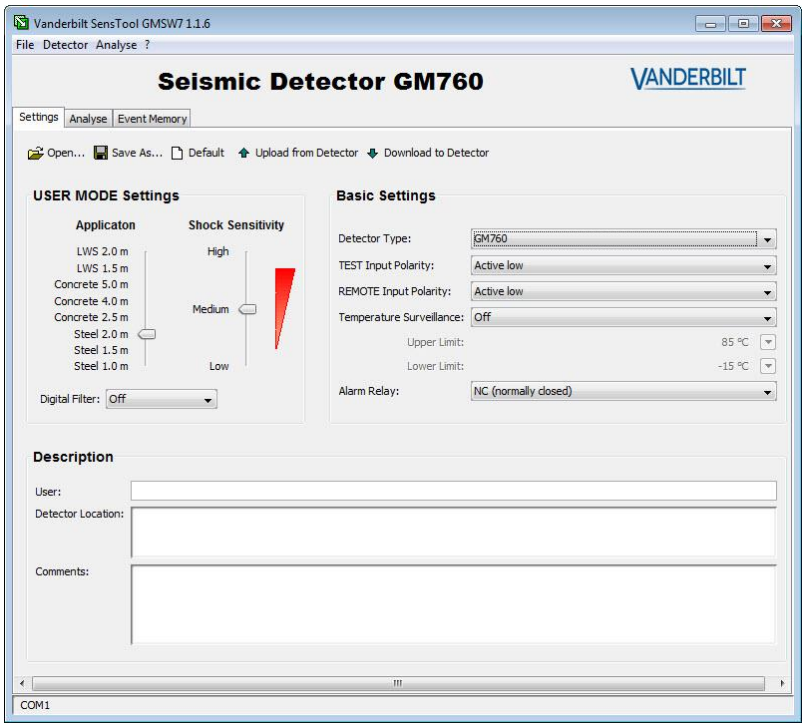

- Select the language from the drop-down list. Language options are English, German, French, Italian, Spanish, Dutch, Swedish, Polish, and Portuguese.
- Select the connection port from the drop-down list.


The **No detector connected** setting is used to preconfigure settings if the connection to a detector is unavailable or to evaluate saved data.

- Click **OK** to confirm the entries and pass to the main menu or click **Exit** to close the program.

The evaluation of saved configuration data can only be viewed in the **Settings** tab and by opening a currently saved .gmsw7 file

# 4.2 Main screen




## 4.2.1 Tabs

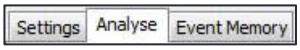
Select a tab on the main screen to display the **Settings**, **Analyse**, and **Event Memory** functional areas.

- **Settings**

  Select the **Settings** tab to configure and select the seismic detector type, to transfer data to and from the detector and to save and retrieve the detector settings.

- **Analyse**

  Select the **Analyse** tab to review real time signal test data and to save and retrieve signal data.

- **Event Memory**

  Select the **Event Memory** tab to retrieve the event log from the detector and to save the retrieved events to the PC.

### 4.2.2 Footer


The footer displays the following information:

| | |
|---|---|
| Left side | Connection between detector and PC. |
| Right side | Settings data for the connected detector, when uploaded. |

## 4.3 Settings tab

### 4.3.1 Command bar

To enable the command bar options in the **Settings** tab, first select a detector from the **Detector Type** drop-down list in the **Basic Settings** area.


When a detector is selected, the following options are available:

| | |
|---|---|
| Open... | Open a previously saved configuration file. The configuration file can contain the detector settings, detector type and the description text. |
| Save As... | Save the current settings to a configuration file on the PC including the detector settings, the detector type and the description text. |
| Default | Restore the factory settings for the connected detector type.<br>See **Table 1 - Default settings for detectors** for more information on the factory settings for detectors. |
| Upload from Detector | Receive and display the current settings from the connected detector. |
| Download to Detector | Transmit the current settings from SensTool to the connected detector. |

### 4.3.2 Table 1 - Default settings for detectors

| Detector | Application/ radius | Shock Sensitivity | Test I/P | Remote I/P | Temperature surveillance | Alarm Relay | Digital Filter |
|---|---|---|---|---|---|---|---|
| GM730 | Steel 2.0m | Medium | Active low | Active low | Off | Normally closed | Off |
| GM760 | Concrete 4.0m | High | Active low | Active low | Off | Normally closed | Off |
| GM775 | Concrete 4.0m | High | Active low | Active low | Off | Normally closed | Off |
| GM770* | Concrete 4.0m | High | Active low | Active low | Off | Normally closed | Off |

*GM770 obsolete

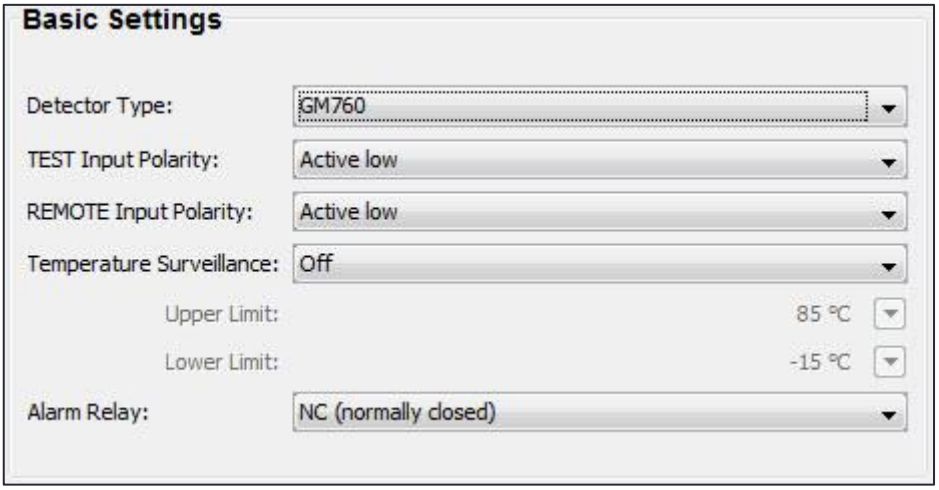
### 4.3.3 Program multiple detectors

To configure multiple detectors for one application, save the settings for a single detector to a configuration file. The saved configuration file can then be opened and downloaded to multiple detectors at any time.

During the data transfer, the cable connection to the detector and the detectors supply voltage must not be interrupted.

### 4.3.4 Basic Settings

The selected configuration on SensTool overrides any DIP switch settings on the detector.
Refer to the GM7xx Install sheets for details of local approval body requirements.

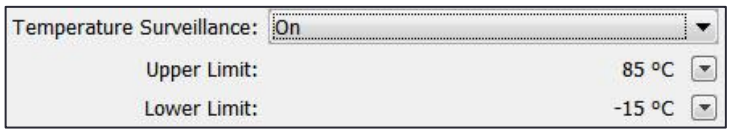



Select the following settings for the connected detector:

| | |
|---|---|
| **Detector Type:** | Select the connected detector type:<br>• **- - -**<br>• **GM730**<br>• **GM760**<br>• **GM770**<br>• **GM775**<br>The default setting is option 1, no selection. |
| **TEST Input Polarity:** | • **Active low**<br>• **Active high**<br>The default setting is **Active low**<br>**Active low** = 0 V applied to activate<br>**Active high** = 0 V removed to activate |
| **REMOTE Input Polarity:** | • **Active low**<br>0 V applied<br>• **Active high**<br>0 V removed<br>The default setting is **Active low**<br>**Active low** = 0 V applied to activate<br>**Active high** = 0 V removed to activate |

| | |
|---|---|
| **Temperature Surveillance:** | • **Off**<br>• **On**<br>The default setting is **Off.**<br>See **Table 2 - Temperature Surveillance** for more information on the range of temperature surveillance that is configurable for each detector type |
| **Alarm Relay:** | • **NC (normally closed)**<br>• **NO (normally open)**<br>The default setting is **NC (normally closed)**. |

## 4.3.5 Table 2 - Temperature Surveillance

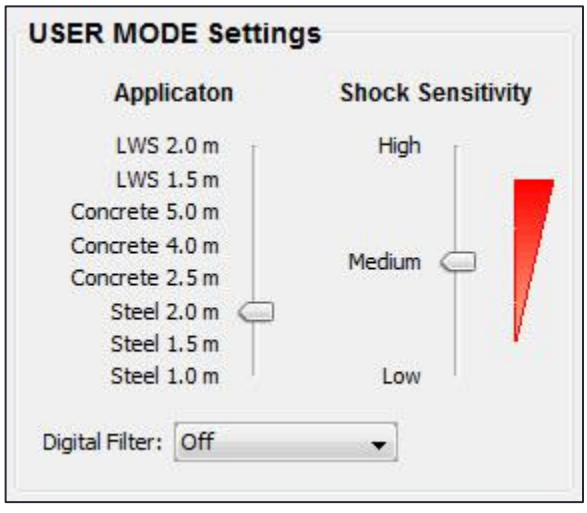


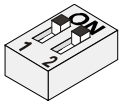

| Detector Type | Lower Limit | Upper Limit | Default Lower Limit | Default Upper Limit |
|---|---|---|---|---|
| GM730 | Fixed | Fixed | N/A | N/A |
| GM760 | -40 °C to 0 ° C** | +85 °C to +20 ° C ** | -15 °C | +85 °C |
| GM775 | -40 °C to 0 ° C** | +85 to +20 °C ** | -15 °C | +85 °C |
| GM770* | -40 to 0 C** | +85 to +20 °C ** | -15 °C | +85 °C |

*GM770 obsolete

**Temperature must be specified in units of 1 degree.

## 4.3.6 USER MODE Settings




**USER MODE**

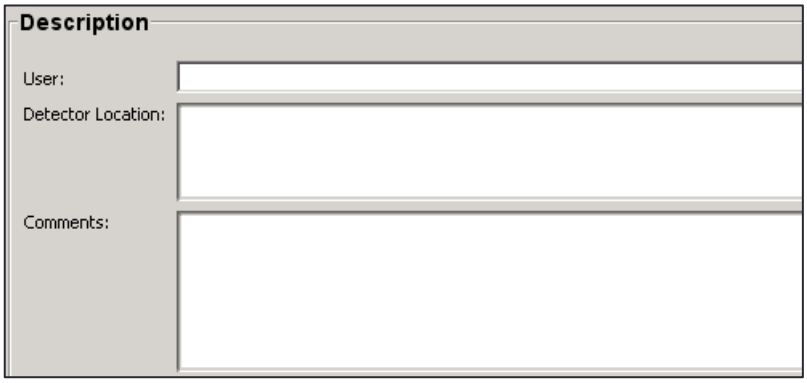
**USER MODE** is the facility to overwrite the limited programmability via the DIP switch settings on the detector. To activate the **USER MODE Settings**,set the DIP switches 1 and 2 on the detector to **ON**
The recommended settings for each detector and the application can be found in the GM7xx Install sheets.

Enter the following values in the **USER MODE Settings** area:

| | |
|---|---|
| **Application** | Select the material type that the detector is mounted on and the required detection radius. (LWS for lightweight steel). |
| **Shock Sensitivity** | Select the detectors responsiveness to impacts on the detector or the surface it is mounted on. |
| **Digital Filter** | These options assist with the filtering of noise, which may create unwanted alarms.<br>**Fluorescent Lights** – this option will reduce potential interference from local light fittings within the protected space.<br>**Mechanical Noise** – this option will reduce potential interference from mechanically generated noise such as clocks, air-conditioning units, motors, power supplies, traffic and other internal or external sources. |

Refer to Table 1 - Default settings for detectors for information on the default settings.

## 4.3.7 Description

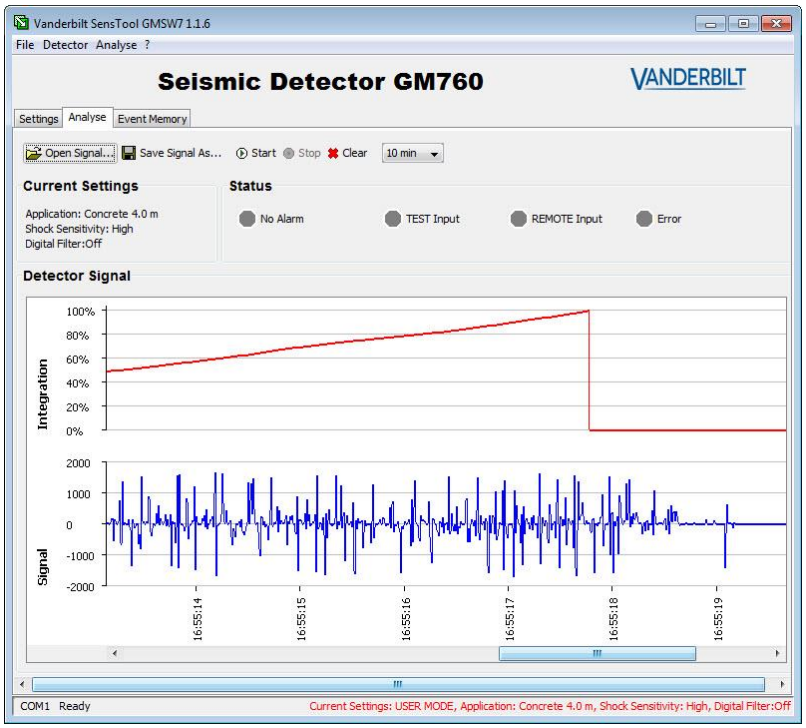



The Description area contains 3 free-text areas for recording important site data. Click **Save As…** to save description information with the current data relating to the detector settings. Description information is only saved in the configuration file, not in the detector.

Example:

| | |
|---|---|
| **User:** | Engineer's name and contact details |
| **Detector Location:** | GM775 located on the door of the main safe and has a GMXP3 as part of the installation |
| **Comments:** | This door can only be opened during banking hours and the manager and the assistant manager are the designated key holders.<br>The high sensitivity setting is to provide increased protection to the door. |

# 4.4 Analyse tab

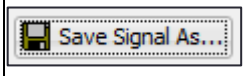


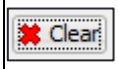
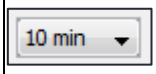

The **Analyse** menu can be used to perform the following actions:

- Open saved signals from the PC.
- Save captured signals to the PC.
- View real time signals.
- Record real time signals.
- Delete recorded signals.

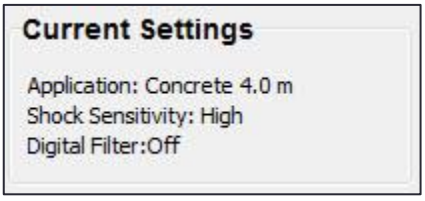
## 4.4.1 Command bar


Select an option in the **Analyse** command bar to review real time signal test data and to save and retrieve signal data.

| | |
|---|---|
|   | Retrieve and open saved signals from the PC (.txt format file) and depict them graphically. |
|   | Save the signals currently displayed in the selected directory of the PC in a .txt format file. |
|   | Start recording signal after a 5 second delay. |

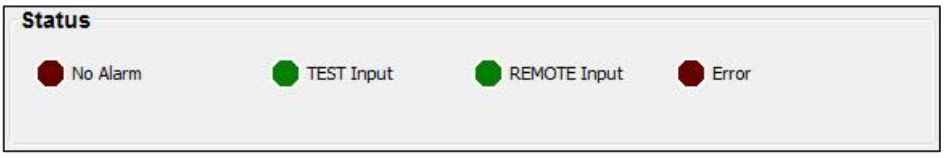
| | |
|---|---|
|  | Stop recording signal. |
|  | Delete the current recording. |
|  | Selects a recording time period from the drop-down options.<br>• 10 min<br>Samples the signal and records every 1 second for a 10 minute period.<br>• 100 min<br>Samples the signal and records every 5 seconds for a 100 minute period.<br>• 18 h<br>Samples the signal and records every 30 seconds for an 18 hour period. |

## 4.4.2 Current Settings




The current settings are also shown in the footer.

## 4.4.3 Status




The status section is dormant with all status indicators showing grey until a recording starts.

During a recording a change in status is indicated as follows:

Alarm status

| Status | Colour change |
|---|---|
| **No Alarm** | Changes from grey to dark red during recording. |
| **Alarm * (Integration)** | Changes from dark red to bright red when an integration alarm is detected. |
| **Alarm (Shock)** | Changes from dark red to bright red when a shock alarm is detected. |
| **Alarm * (Temperature)** | Changes from dark red to bright red when a temperature alarm is detected. |
| **Alarm * (Drill)** | Changes from dark red to bright red when the anti-drilling foil is disconnected/damaged. The alarm remains until the anti-drilling foil is replaced or linked out. |

*Alarm signals cycle 2.5 sec on/off for the duration of the alarm input being present.

TEST status

| Status | Colour change |
|---|---|
| **TEST Input** | Changes from dark green to bright green when the test input has been activated. |

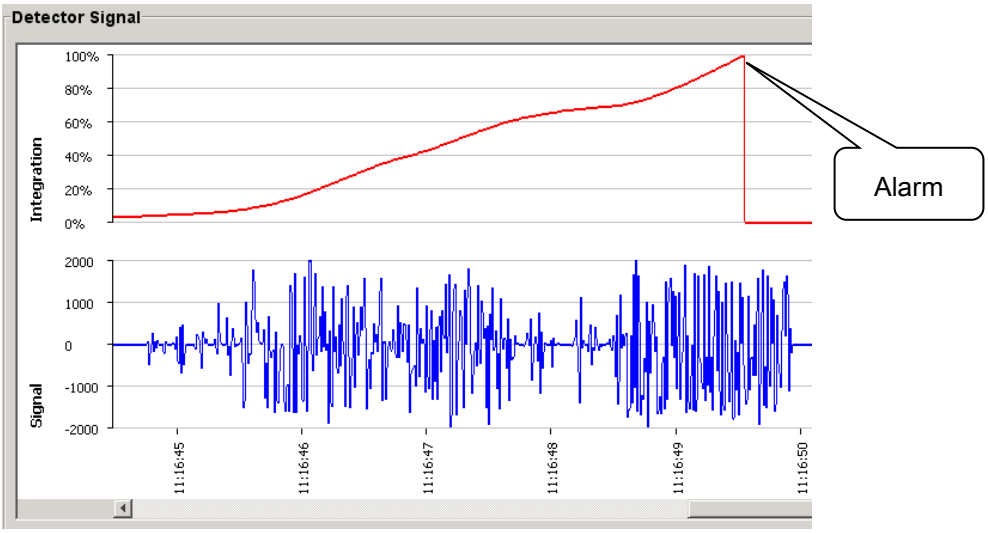
REMOTE status

| Status | Colour change |
|---|---|
| **REMOTE Input** | Changes from dark green to bright green when the remote input has been activated. |

Error status

| Status | Colour change |
|---|---|
| **Error** | Changes from grey to bright red when the detector receives invalid data. The data needs to be resent to the detector. |

### 4.4.4 Detector Signal




The detector signal recording is shown in blue in the bottom section of the screen. The time stamp is linked to the PC's clock and is implemented when the recording starts. The signal strength automatically adjusts to the strength of the signal being detected, in a range of 0 to +/- 2000.

If the detector signals fulfil the requirements of an alarm, these signals are integrated and shown in red in the top section of the screen. If integration reaches 100%, an alarm is activated.

## 4.5 Event Memory tab

Event memory must be uploaded from the detector. For more information, see **Event Memory** Upload.

The following are considered detector events:

- Restart of detector after an interruption to the supply voltage.
- Alarm activation.

Detector events can be uploaded from the following detectors:

- GM760
- GM770
- GM775

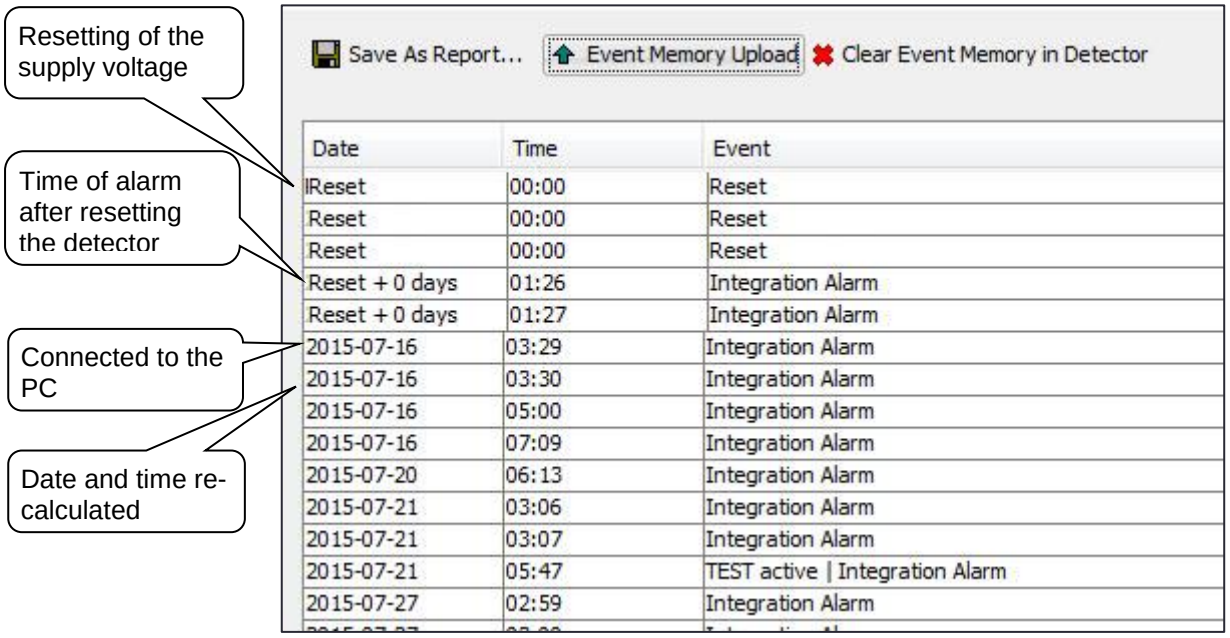
SensTool can retrieve the event memory from the detectors, save the data as a report (.txt format), and delete the event memory in the detector.

The time displayed, without a date, may vary by ± 10 minutes a day. This time is from the real time clock in the detector. Times that are displayed with a date are taken from the clock in the PC.

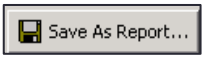
The detector is equipped with a time measuring function which starts to run when the supply voltage is applied. The time is saved for every event. If the supply voltage is switched off (interrupted), the time measurement automatically restarts when the supply voltage is restored.

SensTool can read the events from the detector with the time measurement and calculate the time and date for the current period. The calculation is based on the time/date from the clock in the PC.

Earlier events are shown with the time relative to the corresponding restart (reset).




## 4.5.1 Save As Report ...




Save the current report as a .txt format file in the selected directory of the PC.

## 4.5.2 Event Memory Upload


Copy events from the detector to SensTool and display.

## 4.5.3 Clear Event Memory in Detector


Delete event data in the detector. Detector settings are retained within the detector.

## 4.5.4 Display of dates, times and events

- **Date**
  The **Date** column displays the calendar date calculated with year, month and day (e.g. 2015-01-22) or the days after a restart (e.g. Reset +0 days)
- **Time**
  The **Time** column displays the time in hours and minutes.
- **Event**
  The Event column displays the type of events. Several events may occur at the same time.

| **Event** | **Meaning** |
|---|---|
| Reset: | Restart of detector after an interruption to the supply voltage. |
| Integration alarm: | Alarm activated due to a series of vibrations. |
| Temperature alarm: | Alarm activated due to the set temperature limits being exceeded. For more information, see **Table 2 - Temperature Surveillance**. |
| Drill alarm: | Alarm activated due to the anti-drilling foil being drilled or cut through. |
| Shock alarm: | Alarm activated due to impact. |
| TEST active: | TEST input activated.***** |
| REMOTE active: | REMOTE input activated.****** |

*****The alarm is only recorded if the alarm is activated while the input is active.

**Activation of the GMXS1 test transmitter displays in the Status area of the Analyse tab as **Alarm (Integration)** and **TEST input.** For more information, see Section 4.4.3, **Status**.

# 5 Recommended settings

The following settings are recommended for standard applications**.**

## 5.1 Basic Settings

- Alarm relay set to NC (normally closed).
- Temperature Surveillance set to Off.

If the temperature is to be monitored, it should be set to around 10 degrees Celsius above or below the expected operating temperature range of the detector.

## 5.2 Table 3 – USER MODE Settings

- Digital Filter set to **Off**

| Construction | Impact sensitivity | Application |
|---|---|---|
| **Steel 1.0m** | **Low** | Ticket machine with loud function-related noises. |
| **Steel 1.5m** | **Medium** | ATM, day/night vaults, safes with loud function-related noises. |
| **Steel 2.0m** | **Medium** | Encased safe, vault doors with function-related noises. |
| **Concrete 2.5m** | **High** | Vault room, element vault with some interfering influences. |
| **Concrete 4.0m** | **High** | Vault room, element vault with low interfering influences. |
| **Concrete 5.0m** | **High** | Vault room, element vault with minimal interfering influences. |
| **LWS 1.5m** | **High** | ATM made of plastic plating system with function-related noises. |
| **LWS 2.0m** | **High** | Element vault made from plastic plating system with minimal noises. |

# 6 Troubleshooting

| Problem | Diagnosis | Solution |
|---|---|---|
| PC cannot communicate with the detector. | Ensure that the COM port on the PC is free for use. | Check that the correct COM port is selected, usually COM1 |
| | Close all open applications that could claim the port. | |
| | Ensure the connection cable is plugged into the serial port on the PC and into the detector. | |
| | Ensure the detector has power. | Check using a multimeter, also check for polarity. |
| | Ensure that DIP switches 1 and 2 are in the ON position to establish comm's. | |
| | Ensure that a detector type has been selected and it is the correct type. | |
| | Ensure that the compatible version of SensTool is being used. | |
| | Ensure the correct driver software is installed on the PC, if a USB/Serial adapter is used. | |
| Detector is showing Drill Alarm | Ensure the GMXD7 anti-drilling foil is connected correctly.<br>Ensure that the GMXD7 is not open circuit. | Connected into header marked **GMXD7**, refer to detector Install sheet.<br>Check using a multimeter for continuity (around 300Ω resistance for GMXD7). |
| Integration Alarm present | Ensure that the GMXS1 test transmitter is not activated from an external source. | Check terminal 4 on the detector with a multimeter. Refer to the Install sheet for the detector. |

| Problem | Diagnosis | Solution |
|---|---|---|
| | | Refer to **Table 1 - Default settings for detectors**.<br>Ensure that the 0 V applied or removed is correct for the detector configuration. |
| | Check that the GMXS5 auxiliary test transmitter (usually located outside the protected space) is not activated. | Check terminal 6 on GMXS5 with a multimeter. Refer to GMXS5 Install sheet for input options. |
| | Use the Analyse option to view and record the noise. | Refer to section 4.2.3.<br>Use the digital filter options to remove the noise as required. |
| Shock Alarm present | View the shock alarm using the Analyse option in SensTool. | Change shock settings to reduce noise.<br>Change the detection radius, if permissible, to remove the noise.<br>Use the digital filter options to remove the noise.<br>Identify the source and take appropriate action to prevent |
| Temperature Alarm present | Check the high and low settings of the detectors.<br>Check ambient temperature of the local area. | Use SensTool and adjust if required. Refer to **Table 2 - Temperature Surveillance** for input options. |
| Detector slow to respond | Check if the remote input is active, which will reduce the sensitivity to 12.5%. | Check input 7 on the detector using a multimeter. Refer to the Install sheet for the detector. |
| Unwanted activations | Check the settings of the detector.<br>Repeat the processes above for the removal of the different types of alarm. | Verify against the original settings, if available. |

# 7 Ordering information

| Item | Order number |
|---|---|
| SensTool software | VA5Q00006246 |

Issued by:
Vanderbilt International (IRL) Ltd.
Clonshaugh Business and Technology Park
Clonshaugh
Dublin
D17 KV84
Ireland
www.service.vanderbiltindustries.com

Data and design subject to change without notice
www.vanderbiltindustries.com
Supply subject to availability
Document no. A6V10335789
Document version 1.0