



## **SCS900 v2.5 - Ohmex Extension module**

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### ***Changes in SonarMite Hardware***

☑ The HPR sensor has been dropped from the SonarMite hardware, the prime reason it was included was for the correction of Waves seen by a boat using DGPS and Tide Gauge data as its height control, this function has been superseded by the use of heights derived from RTK GPS. Similarly the properties dialog box in the application software does not show the settings used by the HPR, this greatly simplifies the use of the equipment.

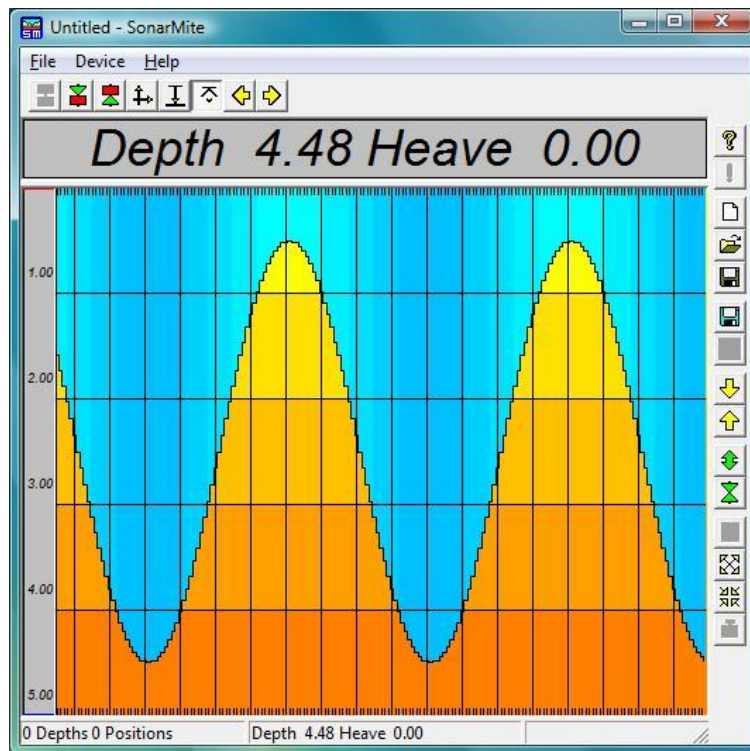
☑ The SonarMite batteries are updated to conform with the recent EU Batteries Directive 2006/66/EC which came into force in October 2008, the SonarMite system is now powered by a rechargeable NiMh battery pack providing up to 10 hours continuous use. The battery pack is charged by a microprocessor controlled adaptor which is powered by a worldwide range of AC power sources and associated adaptors, the charger can also take the pack through a deep discharge/charge cycle to greatly extend battery life.

☑ SonarM8, an installation version of the portable SonarMite hardware, is available for permanent installation fitting to a work vessel ([www.ohmex.com/sonarm8.htm](http://www.ohmex.com/sonarm8.htm)) . The device has no carry case or internal batteries and is connected to a wide variety of power sources directly from the vessel. Both the SonarMite and SonarM8 have the option of a permanent 'thru hull' transducer in addition to the conventional 'transom mount' component.

### ***SonarMite application software (SCS900 v2.5 version).***

☒ The SonarMite application software has been updated to provide the time stamped data form required by the updated SCS900 application, this includes updated 'pipe' and 'socket' processes for passing data between applications. The SonarMite application has been tied to the following operating systems ...

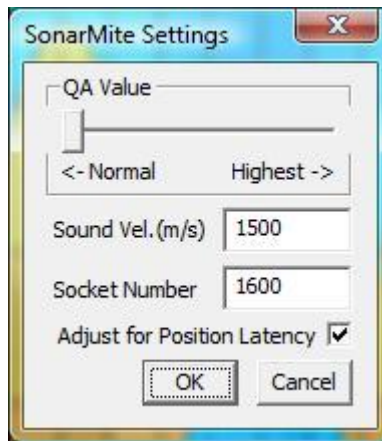
- PC Version - Windows Vista, TabletPC and XP
- Mobile Version - Trimble TSC2 Windows Mobile 6.0



☒ To avoid the problems associated with applications working in forthcoming updates to these operating systems the applications have been compiled as 'standalone' with no dependence on version specific extensions to the MFC environment.

☒ The Trimble ACU/TCU versions have been dropped as the WinCe Operating System requires a specific compiler and software developers kit which does not warrant the low demand and high level of support required.

☒ The properties dialog box does not show the settings used by the HPR sensor but includes prime sonar setting control settings ...

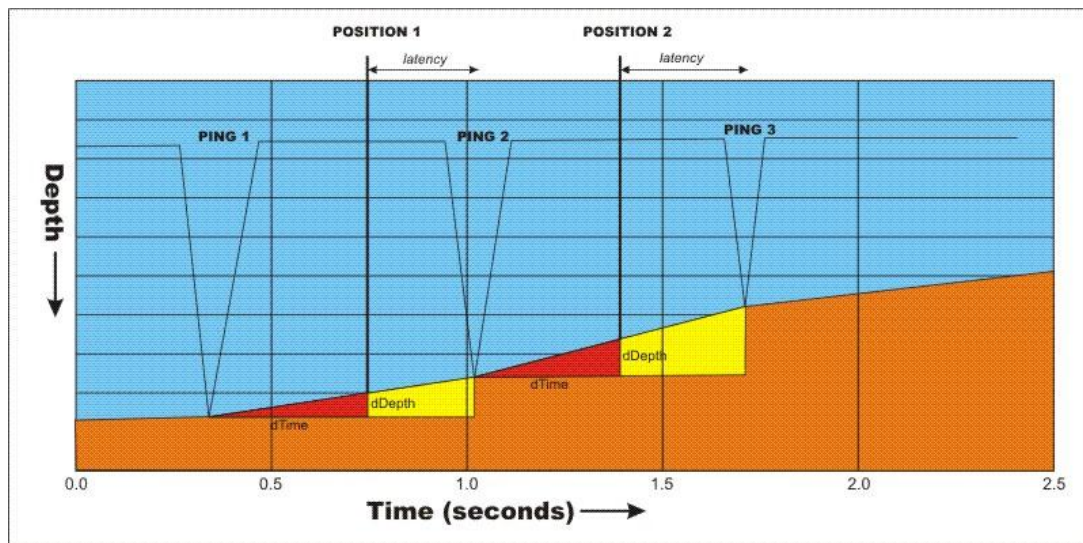


- QA control - A slider control has been added so the user can set the acceptance level for the QA value between normal and highest value. The highest will filter out all but the very best shots based on QA
  - Speed of Sound - The user can set the sound velocity value between 1400-1600m/sec, the default setting being 1500 m/sec.
  - Socket Number – The socket number used to transmit the data between applications (PC version only), default updated to #1600 to avoid confusion with earlier SCS900 versions.
  - Latency Calculation - The user can enable/disable the Latency correction algorithm within the SCS900 extension module, unless the system is using SCS900 to measure positions this function is inoperative.
- ☒ The internal call to the extension module now always returns TRUE regardless of the Z value having been adjusted by depth. This enables the user to have the extension module loaded but when the SonarMite application is not running then SCS900 will continue saving position data with no depth applied.

## SCS900 Extension Module DLL

### ☒ Depth Time (latency) adjustment

The SCS900 extension dll is called by the main application and passed a position with a timestamp, the SonarMite extension dll adjusts the depth based on the depth timestamps to suit the timing of the position, this calculated depth is then subtracted from the current position Z value (or height) and returned to the main SCS900 application.

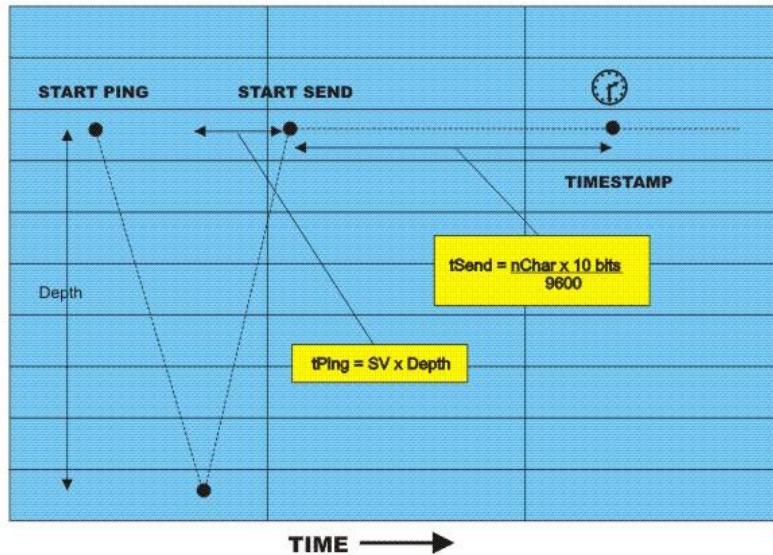


*Adjustment of Depth to suit position timing*

The above figure illustrates the linear interpolation of a depth based on the timestamp of the current depth, previous depth and the current position values. The latency correction algorithm times the depth reading using the same internal computer clock tick counts as the position reading timestamp.

## ☒ Estimation of delay from Ping to Depth Timestamp

As the extension dll receives its data via serial transmission and timestamps it on reception of the Linefeed character ...



The above figure illustrates the calculation of the delay from the depth 'start ping' time and subtracts it from the applied depth timestamp. The SCS900 Latency Adjustment can be enabled/disabled from within the Properties Dialog Box of the SonarMite application software.

## ☒ Retention of raw data

The SCS900 extension module returns the depth corrected Z value to SCS900 application (time adjusted if enabled), it also stores the following values in the extension data fields ...

- CustomDataField 1 = Depth subtracted from current Z value
- CustomDataField 2 = Current Depth QA value
- CustomDataField 3 = Time between Position and Depth (milliseconds).

These values can be used to reconstitute the original data if required and also estimate the applied time shift and depth QA value.

## ☒ Simulation Mode

The simulation mode in menu DEVICE/TEST DATA/ has been updated to send a timestamp with the simulated depth message. This helps configure or demonstrate the system without the need for a physical SonarMite to be connected.

## SCS900 v2.8 - Ohmex Extension module

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### **SonarMite v3.1 application software - SCS900 version**

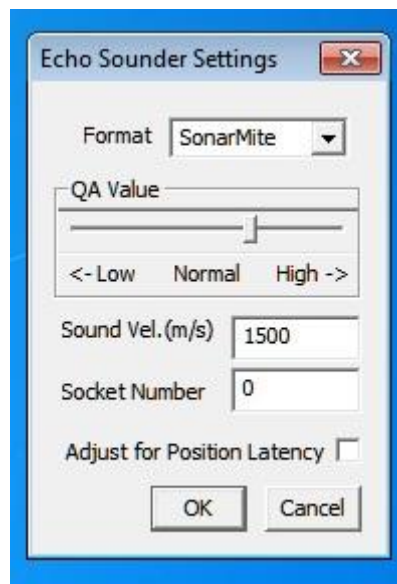
Both the PC and PDA versions of the software have been updated to facilitate updates of operating systems (Windows 7 and Windows Mobile 6).

#### **☑ Modifications to QA filter settings**

It was found the QA settings were previously set a little tight for reliable collection of data. The settings were made on the basis that reliable data would be required under the following conditions ...

- SCS900 would be used in turbid water conditions in a construction environment.
- It would be unlikely the software would be used in depths greater than 25m.

As there were several situations in which this was not the case and data was filtered out the QA filter slider has been modified for a wider range of operation and that a windows error beep is also sounded if data fails to pass the filter settings.



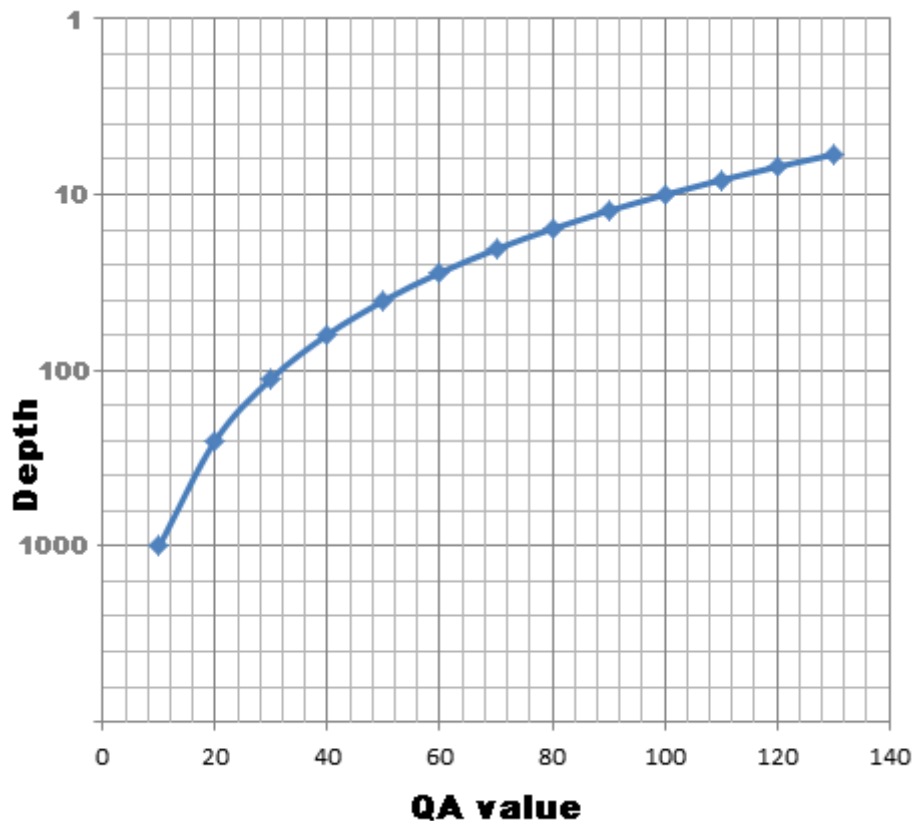
*Modified QA slider control*

Previously the slider filter point ranged from QA values 80 to 110, the new settings are set for a range of 40 through to 100.

## ***Explanation of the QA value***

The QA value is a numeric representation of the inverse gain applied to the sonar transmission in order to maintain minimum beamwidth. In simple terms more power has to be applied in bad conditions to achieve the same return. The value of this number is complex and depends on several parameters ...

- Turbidity - Quality of water in the column under the transducer.
- Relection – The ‘hardness’ of the bottom surface.
- Sound Velocity – The transmission speed of sound in water.
- Depth – The total depth the sound has to travel through the water.



*Attenuation of QA value with increase in depth*

### **☒ Auto enumeration of COM: ports.**

The PC software has been modified to detect and auto enumerate com ports when making a serial connection to the SonarMite. This gets over the technical problems with port numbers greater than 10 in Winows Vista and Windows 7. The PDA version is still limited to ports COM1 to COM10.



## **Components Supplied**

### **General**

Help file in Vista/XP format – SMscs900.chm  
Documentation in pdf format – SCSEv2.8.pdf  
User Manual in pdf format – Userguide SCS900 Ohmex.pdf  
SonarMite Hardware manual – SMhardware.pdf

### **PC/Tablet Version**

SonarMite Application – SMscs900.exe  
SCS900 extension DLL – SCSE\_smvx.dll

### **TSC3 Version**

SonarMite Application – SMscs900.exe  
SCS900 extension DLL – SCSE\_smtsc.dll