



SB800/SB800U Ultrasonic Test Unit

Operating Guide and Technical Information

**Please read this documentation
before operating the SB800/SB800U**

Model No: SB800/SB800U

Display Unit Serial No: _____

Transmitter Probe Serial No: _____

Receiver Probe Serial No: _____

Quality Assurance Completed: _____

Manual code: SB800INST3.1

Manual date: October 2014

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SB800/SB800U Ultrasonic Test Unit

Please check your package contents include:

- Operating Guide and Technical Information manual.
- Carry case containing transmitter probe, receiver probe and display unit.

1. Overview

The *SB800* is an ultrasonic test unit for use in making single pulse transmission time measurements in solid samples. The *SB800* consists of three units:

- A transmitter probe (Red)
- A receiver probe (Blue)
- A display module (Silver) where readings are given in microseconds (μS)

The unit operates by the transmitter probe producing an acoustic pulse at the tip of the probe and timing the subsequent interval until the pulse is successfully detected at the receiver probe. The transmission time will depend on the propagation within the sample and the thickness of the sample.

The three units are switched on automatically when they are removed from the carry case. Note that the carry case contains magnetic material that may damage sensitive items, such as credit card strips, that are held in close proximity.

2. High-Voltage Warning!

The transmitter probe has a high voltage present internally. This can cause a painful electric shock, and for this reason we recommend that you return faulty units to Woodsonix or its authorized dealers for servicing.

The unit should not be operated with the probes immersed in any liquid.

3. Intellectual Property

All intellectual property relating to the concept, design and implementation of the *SB800* hardware and software belongs to Woodsonix Limited. Copyright, patent, and other infringements will be dealt with aggressively.

4. Operating Instructions

The units are switched on automatically by removing them from their carry case. In order to prolong battery life, the units should be turned off (by replacing the base unit and probes in the case) whenever they are not in use.

4.1 Unit Identification

The probes are colour coded. The **transmitter probe has a red coloured body** and **the receiver probe is blue**. Readings are shown on the display unit's screen. A sample screenshot is shown in figure 1.



Figure 1. Display-unit screenshot

4.2 Displayed Measurement

With the probe tips firmly applied to a solid sample, a reading of the transmission time in microseconds should be displayed. If no measurement is displayed this can indicate that the attenuation in the sample is too great, the transmission time is greater than 2000 microseconds, or the unit is faulty (check batteries). Figure 2 shows the display location of the reading.



Figure 2. Reading portion of the display

With the display unit turned on and the probes held apart, the screen should show: '----' instead of a reading, indicating that no measurement is being made. If the display shows a reading in this situation this may indicate a faulty/damaged probe or low battery voltage.

4.3 Previous Reading

The number in the top right of the display-module screen represents the most recent good reading. Its display position is shown in figure 3.



Figure 3. Previous reading portion of the display

4.4 Battery-Level Indicators

There are three battery-level indicators on the right of the display-module screen as shown in figure 4. See section 6 for more section for more information on battery replacement.



Figure 4. Battery life indicator portion of the display

The unit is carefully calibrated after manufacture, and is rechecked during the quality assurance stage. In order to test this calibration, and the correct operation of the unit, press the two probe tips together; a reading of '0' should be displayed.

5. Serial Number Identification

Each SB800 component is uniquely identified with a serial number. In addition to a physical number, an electronic serial number is stored in each component and these are shown on the screen when the display module is turned on. Note that the displayed probe serial numbers are those in use when the display unit was turned off. Therefore, the first time replacement probes are used, the displayed serial numbers will not match the actual probes.

6. Battery Replacement

Each battery indicator is shown as a solid rectangle when the batteries are fully charged. An empty, or near empty, rectangle indicates that the batteries in the associated unit should be changed. The letter beside each battery tells which unit the battery reading is for:

- R (Red) for the transmitter probe
- B (Blue) for the receiver probe
- S (Silver) for the display module

The unit will continue to give accurate timing measurements when the battery voltage is low, as long as the transmit pulses continue, but the sensitivity will be reduced. Ensure that the batteries are inserted correctly and never mix old batteries with new ones. For maximum battery life, alkaline batteries should be used.

6.1 Replacement of Probe Batteries

Unscrew the cap at the rear of the probe by turning it anticlockwise. The battery holder can be slid out and the batteries changed. Ensure that the terminals on the end of the battery holder point towards the probe tip when it is re-inserted, and that they line up the metal contacts in the probe. Figure 5 shows the probes with unscrewed caps.

6.2 Replacement of Display-Unit Batteries

Remove the four screws on the rear of the display unit to open up the battery cavity. Replace the batteries in the battery holder. Do not remove the plate that covers the front of the display unit, as it seals the electronic and microprocessor components from environmental damage. Figure 5 shows the display unit with the battery cavity visible.



Figure 5. Probes and display unit opened for battery replacement

7. Care of the Unit

The *SB800* is a sensitive piece of test equipment and should be treated with care. Exposure to heat, moisture and dust should be avoided. If moisture is allowed to enter the display unit or probes, the batteries should be removed and the units thoroughly dried before reuse. The probe tips are especially sensitive to physical shock. Do not tap or bang the probe tips sharply, as the internal transducer ceramic is inherently brittle and may shatter. We recommend returning the unit for service and calibration every year.

8. Probe Operating Range

The probes are designed to work reliably up to 5 metres from the display unit. Depending on environmental conditions, the necessary sensitivity of the display unit's radio receiver may cause it to pick up signals from probes up to 200 metres

away. This should be taken into consideration when simultaneous use is planned for two *SB800* units in the same vicinity.

9. Regulatory Conformance

The *SB800* unit complies with AS/NZS 4268. It is approved for operation within **Australia** and **New Zealand**.

The *SB800U* unit complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

It is approved for operation with within the **United States**.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

10. Disclaimer

All information provided in this document is carefully prepared and offered in good faith as a guide to the operation of this product. System integrators must ensure that the final system operates satisfactorily within the relevant regulatory requirements and tolerances. We accept no responsibility for incorrect use or unsafe employment of the resulting measurements. The suitability for any particular purpose is not implied. We reserve the right to change products, specifications, and installation data at any time, without notice.

11. Warranty

This product is warranted for a period of 12 months from date of purchase against faulty materials or workmanship. Your vendor will register your product with Woodsonix.

Should any fault occur, the unit should be returned to your vendor. Any unauthorised alterations, repairs, or opening of secured sections, will invalidate the warranty. Warranty exclusions include, but are not limited to:

- Physical damage
- Wear and tear
- Damage caused by careless or rough use
- Water damage
- Excessive contamination with dust
- Incorrect connection of batteries or voltage sources
- Exposure to excessively high or low temperatures

If a unit is under warranty, but the repair is due to unwarranted use, a charge will be made. Your vendor will be able to provide information regarding warranty extensions for the *SB800*.

12. Nominal Technical Specifications

12.1 Display-Unit Specifications

| | |
|-------------------------------------|-----------------------|
| Power supply: | 4 x 1.5V AA batteries |
| Supply voltage range: | 4.8V to 6.0V |
| Nominal operating current: | 45mA with 6V supply |
| Display: | Graphic LCD |
| Reading accuracy: | ±5µs |
| Operating temperature: | 0°C to 45°C |
| Physical dimensions (excl. aerial): | 173mm × 73mm × 45mm |

12.2 Transmitter Probe Specifications

| | |
|----------------------------|------------------------------------------|
| Power supply: | 4 x 1.5V AA batteries |
| Supply voltage range: | 4.8V to 6.0V |
| Ultrasonic transmitter: | Piezo-ceramic transducer |
| Radio frequency: | SB800 = 433.920MHz SB800U = 914.50MHz |
| Radiated power (e.i.r.p.) | < 1mW |
| Nominal operating current: | 45mA with 6V supply |
| Probe length: | 232mm |
| Probe outside diameter: | 45mm |

12.3 Receiver Probe Specifications

| | |
|----------------------------|------------------------------------------|
| Power supply: | 4 x 1.5V AA batteries |
| Supply voltage range: | 4.8V to 6.0V |
| Ultrasonic receiver: | Piezo-ceramic transducer |
| Radio frequency: | SB800 = 433.920MHz SB800U = 914.50MHz |
| Radiated power (e.i.r.p.) | < 1mW |
| Nominal operating current: | 18mA with 6V supply |
| Probe length: | 232mm |
| Probe outside diameter: | 45mm |



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