



GOM-SONICS®

SNIFFER
SENTINEL™



Covers Firmware up to Version 7

USER GUIDE

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Phone 1-800-336-9681 or 1-540-434-5965
Monday - Friday: 8:00 a.m. - 5:00 p.m. Eastern time
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*This document describes: Sentinel Firmware Versions v6 (or lower),
Sentinel Firmware v7, and Configuration Utility 1.04.*

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This document describes; Sentinel Firmware Versions v6 (or lower), Sentinel Firmware v7, and Sentinel Configuration Utility Version 1.04.

Configuration Utility Version 1.04 is compatible with all Sentinel Firmware Versions.

CAUTION!

Do not use a previous Configuration Utility version (1.03 or lower) with a Sentinel containing Firmware v7 or higher.

If a v7 unit is connected with a previous utility version, the Serial Number and Channel Frequency are incorrectly displayed.

Do not use the 'Send User Settings to Sentinel' function with Configuration Utility version 1.03 or lower and a Sentinel with Firmware v7.

This operation will cause the unit to malfunction and requires returning the unit to the factory for repair.

Specifications

*Channel Tuning	133.2625 MHz factory default, single frequency (See Configuration Utility section for list of available channel frequencies.)
Usable Level Range	5 to 1999 $\mu\text{V}/\text{m}$ (factory default $\mu\text{V}/\text{m}$)
and	14 to 66.0 $\text{dB}\mu\text{V}/\text{m}$
*Units of Measure	5 to 57.0 $\text{dB}\mu\text{V}$
Level Accuracy	$\pm 10\%$ over operating temperature
Pre-detection BW	7.5 kHz
Battery	Rechargeable Lithium-Ion, internal Recharge Time: < 3 Hours Runtime: Monitor Mode only: > 45 Hours Measure Mode only: > 3 Hours Combined Runtime: > 16 Hours ⁱ
Size	$\approx 7'' \times 2.6'' \times 1.6''$
Weight	≈ 10 oz
Operating temperature	0°F to 120°F (-18°C to 49°C)
Storage temperature	-4°F to 140°F (-20°C to 60°C)

* Selectable through Configuration Utility Software Kit (option 101241-002)

ⁱ Combined runtime based upon 80% Monitor Mode, 20% Measure Mode, and 50% Audio Loudness setting.

Introduction

Thank you for purchasing ComSonics' Sniffer® Sentinel™, a ruggedized full-featured handheld detector that provides the perfect blend between size and performance. One button - that's right, only **ONE BUTTON** blends with the ergonomic contours of the front panel and operates the functions needed in normal use. The button controls powering functions, the backlight, operating modes, and even the loudness of our famous historic Sniffer warble.

The Sentinel utilizes our Leakage Validation Indicator (LVI™) to isolate real leakage from ambient noise, as emitted by hair driers, vacuum cleaners, blenders, food processors, etc. This feature, along with a 25 kHz or 50 kHz frequency offset from a neighboring system's channel carrier offers the best available solution for making sure the leakage read is your leakage and only your leakage.

An optional Configuration Utility software kit customizes tuned frequency, units-of-measure, squelch levels, preferred volume settings, and scrambled channel level compensation to suit your needs. The kit provides the workstation application and all other tools necessary to communicate with and personalize the Sentinel to conform with your system specific parameters.

Battery Care

An internal Lithium-Ion rechargeable battery pack powers the Sniffer Sentinel. Charge the battery for at least three hours before using for the first time. Make sure the Sentinel is powered off to fully charge the battery.

The Sentinel has one visible multifunction indicator light. The light is red when the battery is charging and turns green when the battery pack is fully charged. If the ambient temperature is out of range (too hot or too cold), the light flashes in red and the battery will not receive a charge. This feature prevents premature failure of the battery due to charging at temperature extremes.

The Sentinel automatically powers off when the charge is low to protect the battery from excessive discharge.

Caution: Only use the included AC Charger, the Docking Cradle, or the optional Vehicle Charger to charge the Sentinel. Use of other AC adapters or chargers may cause equipment failure, create a safety hazard, and void the warranty.

Sentinel Firmware Version 6 or lower

General Operation

The Sniffer Sentinel has one multifunction button on the front. Press the button momentarily to power on the unit. The speaker sounds a single beep and the channel frequency is briefly displayed in two parts. The fourth digit after the decimal is not shown. To power off, hold the button for three seconds. On power off, the speaker sounds a single beep then a double beep.

The Sentinel has two modes of operation. When initially turned on, the unit is in Measure mode and the display is active. While in Measure mode, press and hold the button for one second (one beep) to activate Monitor mode. In Monitor mode, the display turns off and the indicator light flashes green at five-second intervals (eight seconds when warbling). Press the button for one second (one beep) to return to Measure mode.

Measure Mode

Powering on the Sentinel activates the Measure mode. The backlight illuminates the display for ten seconds after power on. Momentarily pressing the button reactivates the backlight for ten seconds.

Leakage level measurements are displayed in large easy to read numbers. See the Specifications section for the level range of each units-of-measure setting.

The leakage level indicator, on the left of the display, shows the relative leakage level. The indicator operates in a peak hold mode and is reset by momentarily pressing the button.

At leakage levels above the Measure mode squelch setting (factory 20 $\mu\text{V}/\text{m}^*$), the Sentinel produces an audible warble tone. The warble tone varies in loudness according to the leakage level measurement.

Adjust the warble loudness by momentarily pressing the button to activate the backlight. While the backlight is on, each press of the button changes the loudness in sequence by one of the four steps and returns to step one after step four. Loudness is adjustable only when the backlight is on. The loudness setting affects the audio line level connection from the Docking Cradle. The level of each of the four steps can be customized using the optional Configuration Utility.

The Sentinel includes a Leakage Validation Indicator to determine if the received signal is leakage or noise. When the display shows the word 'Noise', the Sentinel is reading a broad spectrum interference and not a cable channel leak. The Leakage Validation Indicator is factory set to ON.*

A battery graphic indicates the battery charge level. The Sentinel automatically powers off when the charge is low to protect the battery from excessive discharge.

Sentinel Firmware Version 6 or lower

Monitor Mode

Activate the Monitor mode by pressing and holding the button for one second (one beep) while in Measure mode. In this mode, the indicator light flashes green at five-second intervals when the signal received is below the monitor squelch setting.

In Monitor mode, the speaker emits the Sniffer warble tone indicating the presence of a RF field exceeding the Monitor mode squelch setting (factory set to 20 $\mu\text{V}/\text{m}^*$). The warble tone sounds for one second and repeats every eight seconds. Press the button momentarily to mute the warble tone for five minutes. Press and hold the button for one second (one beep) to activate Measure mode.

In Monitor mode, a chirp tone indicates a low battery warning. The chirp tone rate increases as the battery level diminishes. The Sentinel automatically powers off to protect the battery from excessive discharge.

The Leakage Validation Indicator is disabled in Monitor Mode.

Monitor Mode is disabled when the Sentinel is operating in the Docking Cradle.

* Selection is adjustable by using the Configuration Utility Software Kit (optional). See Configuration Utility section for available settings.

General Operation

The Sniffer Sentinel has one multifunction button on the front. Press the button momentarily to power on the unit. The speaker sounds a single beep and the display briefly shows a power-on code then the channel frequency in two parts. The fourth digit after the decimal of the channel frequency is not shown. To power off, hold the button for four seconds. On power off, the speaker sounds two beeps and then a double beep.

Sentinel Firmware Version 7 implements a distance setting function. Using the optional Configuration Utility, distance settings of automatic and/or manual can be applied. The number 010 represents 10 feet and the number 030 represents 30 feet. The use of these numbers at power-on indicates this firmware version and the currently configured distance settings. Distance settings are explained later in this section. The following chart shows the power-on codes according to the unit's distance settings.

Automatic	Manual	Shown on Display		
OFF	OFF		010	Frequency
ON	ON	030	010	Frequency
ON	OFF		030	Frequency
OFF	ON	010	030	Frequency

The Sentinel has two modes of operation. When initially turned on, the unit is in Measure mode and the display is active. While in Measure mode, press and hold the button for one second (one beep) to activate Monitor mode. In Monitor mode, the display turns off and the indicator light flashes green at five-second intervals (eight seconds when warbling). Press the button for one second (one beep) to return to Measure mode.

Distance Setting

If the automatic distance setting* is enabled, the Sentinel distance setting is 10 feet handheld and 30 feet when in the docking cradle.

If the manual distance setting* is enabled, at power on the distance setting is 10 feet. To set the distance to 30 feet, press and hold the button for two seconds (two beeps). Release the button immediately after the second beep. The number 10 appears on the display. Press the button to toggle 10 or 30. The unit returns to the previous mode after two seconds with the last distance number shown in effect.

If both the automatic and manual distance settings* are enabled, the distance can be set to either 10 or 30 feet for handheld operation. When the unit is placed into a docking cradle, the distance automatically is set to 30 feet. When the unit is removed from the docking cradle the distance is automatically set to 10 feet. The distance can be temporarily set to 10 feet in the docking cradle when both settings are enabled.

Measure Mode

Powering on the Sentinel activates the Measure mode. The backlight illuminates the display for ten seconds after power on. Momentarily pressing the button reactivates the backlight for ten seconds.

Leakage level measurements are displayed in large easy to read numbers. See the Specifications section for the level range of each units-of-measure setting.

The leakage level indicator, on the left of the display, shows the relative leakage level. The indicator operates in a peak hold mode and is reset by momentarily pressing the button.

At leakage levels above the Measure mode squelch setting (factory 20 $\mu\text{V}/\text{m}^*$), the Sentinel produces an audible warble tone. The warble tone varies in loudness according to the leakage level measurement.

Adjust the warble loudness by momentarily pressing the button to activate the backlight. While the backlight is on, each press of the button changes the loudness in sequence by one of the four steps and returns to step one after step four. Loudness is adjustable only when the backlight is on. The loudness setting affects the audio line level connection from the Docking Cradle. The level of each of the four steps can be customized using the optional Configuration Utility.

The Sentinel includes a Leakage Validation Indicator to determine if the received signal is leakage or noise. When the display shows the word 'Noise', the Sentinel is reading a broad spectrum interference and not a cable channel leak. The Leakage Validator is factory set to ON.*

A battery graphic indicates the battery charge level. The Sentinel automatically powers off when the charge is low to protect the battery from excessive discharge.

* Selection is adjustable by using the Configuration Utility Software Kit (optional). See Configuration Utility section for available settings.

Monitor Mode

Activate the Monitor mode by pressing and holding the button for one second (one beep) while in Measure mode. In this mode, the indicator light flashes green at five-second intervals when the signal received is below the monitor squelch setting.

In Monitor mode, the speaker emits the Sniffer warble tone indicating the presence of a RF field exceeding the Monitor mode squelch setting (factory set to 20 $\mu\text{V}/\text{m}^*$). The warble tone sounds for one second and repeats every eight seconds. Press the button momentarily to mute the warble tone for five minutes. Press and hold the button for one second (one beep) to activate Measure mode.

In Monitor mode, a chirp tone indicates a low battery warning. The chirp tone rate increases as the battery level diminishes. The Sentinel automatically powers off to protect the battery from excessive discharge.

The Leakage Validation Indicator is disabled in Monitor Mode.

Monitor Mode is disabled when the Sentinel is operating in the Docking Cradle.

* Selection is adjustable by using the Configuration Utility Software Kit (optional). See Configuration Utility section for available settings.

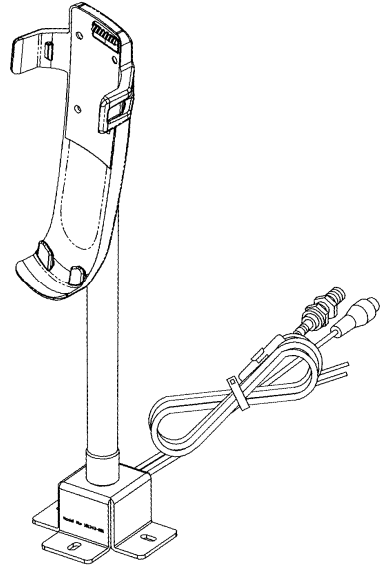
Sniffer Sentinel Vehicle Docking Cradle

The Docking Cradle features a flexible gooseneck mount. Mount the Docking Cradle in a convenient location, such as the dash, floor, transmission hump, or engine cover. Secure to a suitable mounting surface with the supplied or other appropriate hardware.

Connect the RED lead to the vehicle (+12V) ignition or accessory fuse block circuit. Connect the BLACK lead to the vehicle ground. A 2-ampere safety fuse is used in the red lead.

Mount the magnetic base monopole antenna on the vehicle roof. Route the antenna cable into the vehicle and securely attach to the RF connector of the Docking Cradle.

The RCA jack connector enables the Sentinel's line-level audio to be connected to an external audio amplifier, such as a PA system.



When the Sentinel is placed into a powered Docking Cradle, the operating mode is as follows:

- The rubber duck antenna is automatically disconnected (internally).
- The external monopole antenna is automatically connected.
- The indicator light is green when the Sentinel is powered on.
- The indicator light is red, when the Sentinel is powered off, as the unit charges from the vehicle. The indicator light turns green when the battery is fully charged.
- The line-level audio output is active.
- The distance setting changes to 30 feet, if the unit has firmware v7 and the automatic distance mode is on.

Sniffer Sentinel Configuration Utility (option 101241-002)

The Sniffer Sentinel is factory configured to the settings indicated throughout this guide. To re-configure the Sniffer Sentinel, use the PC Configuration Utility Software. The utility kit consists of an installation CD and interface cable. The PC application requires a modern PC running MS Windows 2000, XP, Vista, or 7 with a minimum display resolution of 1152 x 864.

The interface cable requires a 9 pin standard serial port. If a serial port is not available, a USB to Serial adapter may be used (not supplied).

Configurable Functions:

- Tuned Channel Selection: (single frequency in MHz)
120.0000, 120.0060, 120.2500, 121.1375, 121.2375, 121.2500, 121.2625, 123.2500, 126.0063, 126.2500, 127.2375, 127.2500, 127.2625, 128.0000, 128.2500, 131.2500, 132.0066, 133.2375, 133.2500, 133.2625*, 136.0000, 136.2500, 138.0069, 138.2500, 139.2375, 139.2500, 139.2625, 139.3000, 139.6250, 140.2500, 144.0000, 144.0072, 144.2500, 145.2375, 145.2500, 145.2625, 147.2500, 150.0075, 151.2375, 151.2500, 151.2625, 152.0000, 152.2500, 154.2500, 155.2500, 156.0078, 157.2375, 157.2500, 157.2625, 159.2500
- Units-of-Measure Selection:
 $\mu\text{V/m}^*$, $\text{dB}\mu\text{V/m}$, or $\text{dB}\mu\text{V}$
- Monitor Mode Squelch Level Selection Range:
 $\mu\text{V/m}$ 10 to 400, (20 $\mu\text{V/m}^*$)
 $\text{dB}\mu\text{V/m}$ 20.0 to 52.0
 $\text{dB}\mu\text{V}$ 10.7 to 42.8
- Measure Mode Squelch Level Selection Range:
 $\mu\text{V/m}$ Off, 5 to 400, (20 $\mu\text{V/m}^*$)
 $\text{dB}\mu\text{V/m}$ Off, 14.0 to 52.0
 $\text{dB}\mu\text{V}$ Off, 4.7 to 42.8
- Level Offset Compensation: (for scrambled channel)
0.0 to +6.0 dB in 0.5 dB steps (0.0 dB*)
- Leakage Validation Indicator: On* or Off
- Loudness Steps: of maximum
Step 1 - 5 to 100% (10%*)
Step 2 - 5 to 100% (35%*)
Step 3 - 5 to 100% (70%*)
Step 4 - 5 to 100% (100%*)
- Distance Options (Firmware 7)
Automatic Mode Off*
Manual Mode Off*

(* Factory Default Setting)

Using the Configuration Utility

Install Sniffer Sentinel Configuration Utility Software

Place the CD-ROM into the drive. The installation program will automatically start. If the PC auto-start function is turned off, follow the instructions below to manually install the program.

Manual Install:

Click Start, then click Run. Type D:\SETUP (If your CD-ROM drive is not D, substitute with your drive letter) or choose Browse and select your drive, then select SETUP.EXE. Click OK and follow on-screen instructions.

Connect Sniffer Sentinel Communications Cable

Plug the Sniffer Sentinel Communications cable into a standard serial communications port on the PC.

Run Sniffer Sentinel Configuration Utility

Double-click the Sniffer Sentinel desktop icon to start the Utility.

or

From the Program list, move the pointer to Sniffer Sentinel Configuration Utility then click.

Configure Com Port

Click the Configure Com Port button. Select the com port connected to the Sniffer Sentinel communications cable. Click OK.

Connect Sniffer Sentinel to PC

Plug the 1/8" mini plug from the communications cable into the charge / communication jack on the Sniffer Sentinel. If the Sentinel is not already powered on, momentarily press the button on the front of the unit.

In a few seconds, the currently connected Sniffer Sentinel settings are displayed in the Current Sentinel Settings section.

User Settings Section

Click on the displayed value or the down arrow to list the settings available. Click on the desired value.

The currently connected Sniffer Sentinel is changed to these settings when the Send User Settings to Sentinel button is clicked.

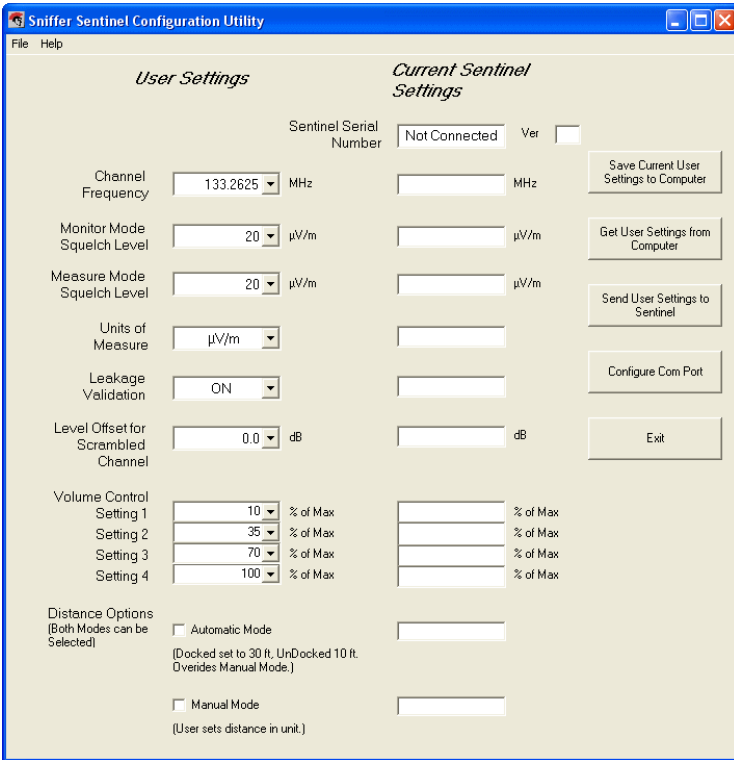
Current Sentinel Settings Section

This section is blank without a powered Sniffer Sentinel connected to the PC and the proper com port selected.

This section is updated within a few seconds after connecting a powered Sniffer Sentinel.

continues on next page

PC Configuration Utility



Sentinel Configuration Utility Version 1.04

The Distance Options section requires Sentinel firmware version 7 or greater.

CAUTION!

Do not use a previous Configuration Utility version (1.03 or lower) with a Sentinel containing Firmware v7 or higher.

If a v7 unit is connected with a previous utility version, the Serial Number and Channel Frequency are incorrectly displayed.

Do not use the 'Send User Settings to Sentinel' function with Configuration Utility version 1.03 or lower and a Sentinel with Firmware v7.

This operation will cause the unit to malfunction and requires returning the unit to the factory for repair.

Sentinel Package / Accessories

Sniffer Sentinel Leakage Package (<i>includes: Sentinel, Soft Case, AC Charger, 133 MHz Duckie Antenna, Monopole Antenna, Docking Cradle, and User Guide</i>)	101340-133C
Sniffer Sentinel Leakage Detector (<i>includes: Sentinel, Soft Case, AC Charger, 133 MHz Duckie Antenna, and User Guide</i>)	101340-133
Sentinel Accessories	
Docking Cradle	101343-001
Soft Case (Replacement)	101376-001
Vehicle Charging Adapter	101247-001
Set-up Software	101241-002
Battery (Replacement)	101237-001
AC Charger (Replacement)	101349-001
Interface Cable	101219-003
USB to DB9 Serial Comm Adapter	USB-SER-ADAPT
121 MHz Duckie Antenna	MU-360
127 MHz Duckie Antenna	MU-359
133 MHz Duckie Antenna	MU-358
139 MHz Duckie Antenna	MU-357
145 MHz Duckie Antenna	MU-356
Monopole Antenna (two parts)	ANT-MNT-MAGMNT ANT-WHIP
User Guide	101346-001

Troubleshooting Note

If the Sentinel stops responding to button operations, press and hold the button for about ten seconds. This is a master power off function and restores the unit to normal operation. Configured settings are not changed.

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Exclusions: This warranty excludes:

- Damage to the physical surface of the product, including cracks or scratches to any part.
- Damage caused by misuse, neglect, improper installation or testing, unauthorized attempts to open, repair, or modify the product, or any other cause beyond the range of the intended use.
- Damage caused by accident, fire, power changes, other hazards, or acts of nature.
- Use of the product with any non-recommended device or service if such device or service causes the problem.

Any third party products, software or hardware, included with ComSonics products are not covered by this ComSonics warranty and ComSonics makes no representations or warranties on behalf of such third parties. Any warranty on such products is from the supplier or licensor of the product.

Exclusive Remedies: If a covered defect occurs during the warranty period and you notify ComSonics, your sole and exclusive remedy shall be, at ComSonics sole option and expense, to repair or replace the product. If ComSonics cannot reasonably repair or replace then ComSonics may, in its sole discretion, refund the purchase price paid for the product. Replacement products or parts may be new or reconditioned or comparable versions of the defective item. ComSonics warrants any replaced or repaired product for a period of ninety (90) days from shipment or through the end of the original warranty, whichever is longer.

Obtaining Warranty Service: The customer must contact ComSonics Technical Support or Customer Service within the applicable warranty period. Products or parts shipped by Customer to ComSonics must be sent postage-paid and packaged appropriately for safe shipment. ComSonics is not responsible for damage occurring in transit from the Customer to ComSonics. Repaired or replacement products will be returned at ComSonics' expense. All products or parts that are replaced become the property of ComSonics. ComSonics shall not be responsible for Customer's software, firmware, information, or memory data contained in, stored on, or integrated with any products returned to ComSonics for repair, whether under warranty or not.

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*This document describes; Sentinel Firmware Versions v6 (or lower),
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