SOFIA 567

AM SiteStreamer+™

Installation & User Guide

Dante®

INOVONICS
BROADCAST
www.inovonicsbroadcast.com

Installation & Operation
User Guide

SOFIA 567

AM SiteStreamer+™

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Section I

INTRODUCTION

SOFIA 567 PRODUCT DESCRIPTION

'SiteStreamers'
Defined

Inovonics' SiteStreamers™ are Web-enabled, off-air radio receivers that allow broadcasters to monitor their stations from a remote location beyond the normal coverage area. Using any computer or mobile device, station personnel can listen to the audio program and monitor signal and audio levels.

The elite SiteStreamer+™ ('plus') series includes additional features. The SOFIA 567 has AoIP connectivity and can provide a signal metrics history of an entire broadcast day.

Product
Features

Leading features of the Inovonics SOFIA 567 include:

- All-digital "SDR" (Software-Defined Radio) off-air reception of medium-wave analog-AM stations.

- Stays on-channel and holds user settings through signal and power losses.

- Provides analog, AES3-digital, HTTP/UDP Web-streaming and independent AoIP-streaming program audio outputs.

- Collects and displays a history of signal parameters.

- StationRotation™ allows automatic sequential monitoring of multiple stations.

- Dispatches SMS-text or email messages to specific individuals for various alarm conditions; logs alarms chronologically with the internal real-time clock.

- Intuitive, menu-driven front-panel setup. The built-in Web server allows remote setup and full operation over any IP network. Supports SNMP remote monitoring.

- The built-in BandScanner™ utility gives a spectrum plot, either the entire AM band or a specific portion.

SOFIA 567 TECHNICAL SPECIFICATIONS

Tuning Range: 520kHz-1710kHz with either 10kHz (American) or 9kHz (European) channel spacings.

Antenna Input: 50-ohm (BNC); accepts passive loop or random-wire antenna.

Sensitivity/SNR: 60dBuV metered level required for 50dB unweighted SNR.

Off-Air Frequency Response: ±3dB, 50Hz-5.5kHz.

De-emphasis: Selectable NRSC truncated-75µs or none.

Receiver Bandwidth: IF bandwidth selections give 6kHz, 4kHz, 3kHz or 2kHz (–6dB) audio response.

Graphs and Metering:
Program audio modulation, RSSI and RF SNR measurements and histograms.

Program Audio Outputs ("left" and "right" dual monaural)**:**
- **Balanced Analog:** (XLR) Left and Right outputs, adjustable from –15dBu to +15dBu in 0.1dB steps.
- **AES Digital:** (XLR) output at 44.1kHz or 48kHz, adjustable from –30dBFS to 0dBFS in 0.1dB steps.
- **Dante/AES67 Compatible:** (RJ45) AoIP output at 44.1kHz (Dante) or 48kHz (Dante/AES67), adjustable from –30dBFS to 0dBFS in 0.1dB steps.
- **Headphone Jack:** (3.5mm TRS) with adjustable listening level.

Streaming Audio:
The web-browser-based remote listening stream has MP3 or OGG (selectable) encoding and offers bit-rates from 32kbps to 256kbps at sampling rates from 16kHz to 48kHz, and accommodates up to 10 simultaneous listeners; http/Icecast and raw UDP streams simultaneously available..

Alarms:
- **Audio Loss:** 'Silence Sensor' Alarm has programmable On/Off thresholds and Time On/Off intervals.
- **Low Signal:** Alarm and reset trigger levels are independently adjustable relative to the AM carrier level display and have programmable Time On/Off settings.
- **Overmodulation:** Alarm trigger level is adjustable relative to AM modulation and has programmable Time On/Off settings.
- **Email Alerts:** Email or SMS/text-messaging can alert selected personnel to specific alarms.
- **Alarm 'Tallies':** Individual open-collector NPN transistor outputs to ground are programmable for logic polarity and GPO assignment.

Real-Time Clock:
Auto-sets to Internet time; auto/manual DST setting; battery backup.

AoIP Port:
The Dante-based/AES67-compatible (selectable) AoIP utility has independent IP, Audio Format and Transmit Flow settings.

LAN Port:
LAN connection to local network or Internet provides remote monitoring, listening and control; user-programmable network setup and streaming parameters.

Power Requirement:
12VDC at 390mA; a universal 88-264VAC, 50/60Hz inline switching power supply is supplied with the SiteStreamer+.

Mounting Options:
An optional rack adapter mounts one or two half-rack modules in a 1U, 19-inch rack space.

Operating Environment: 32˚F/0˚C-122˚F/50˚C; 0% - 95% non-condensing relative humidity; 10,000ft/3048m

Size and Weight:
1.6"H x 8"W x 6"D; 5 lbs. shipping weight.

Conformances:

CE   EN50081-1
      EN50082-1
      93/68/EEC

√RoHS   2002/95/EC

BLOCK DIAGRAM

The SOFIA 567 is a Software-Defined Radio (SDR) receiver. Other factors in its design make the product almost entirely DSP-based, with virtually all functionality provided through firmware coding. The Block Diagram presented here illustrates product basics in an easily-understood form, although actual signal paths and logical functions may deviate appreciably from the circuit shown here.
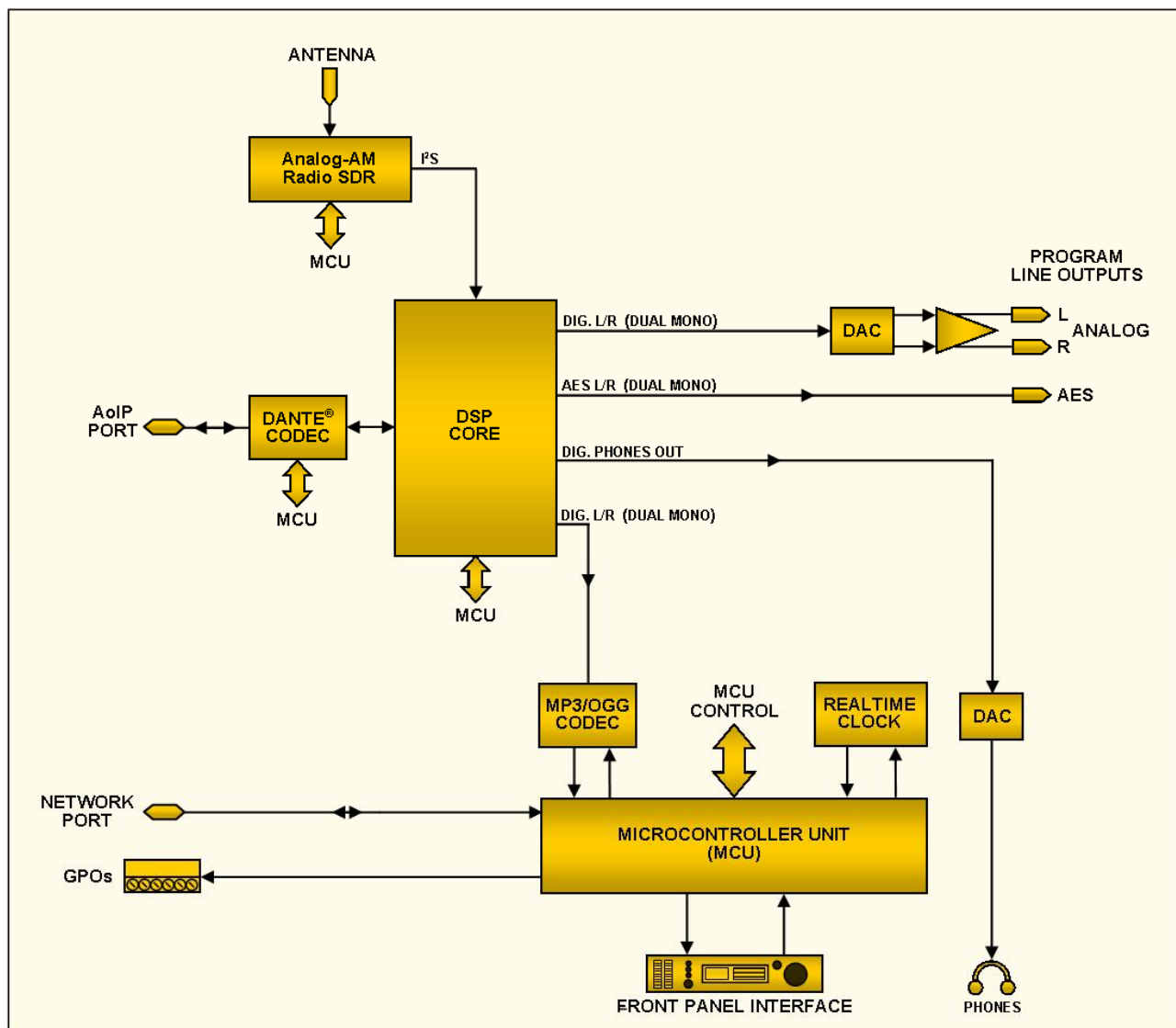
Block Diagram – SOFIA 567 AM SiteStreamer+

Section II

INSTALLATION

GENERAL

This section of the manual addresses the physical installation of the SOFIA 567 at its operating location, the 'nuts and bolts' of connecting the unit. This section also references pages where pertinent setup adjustments are discussed.

Many users choose first to familiarize themselves with equipment on the bench or at their desk, in which case they may immediately turn to Section III that describes SOFIA 567 setup and use. When the time comes, do please refer back to this section to confirm proper physical installation and interconnection with other station equipment.

Unpacking and Inspection

As soon as the equipment is received, inspect carefully for any shipping damage. If damage is found or suspected, notify the carrier at once, and then contact Inovonics.

We suggest that you retain the original shipping carton and packing materials for possible return or transshipment. If returned for Warranty repair, shipping damage sustained due to improper packing for return may invalidate the Warranty!

IT IS IMPORTANT to register the Warranty of your SOFIA 567. This assures coverage of the equipment under Warranty terms, provides a means of tracing lost or stolen gear, and adds the user to a database to receive specific service instructions or software/firmware updates when issued. Register online at:
www.inovonicsbroadcast.com/support/productRegistration

MOUNTING, POWER AND ENVIRONMENT

Rack Requirement

The optional 1U rack-mount chassis will accommodate either one or two half-rack Inovonics modules, or one half-rack and one one-third-rack size in the INOmini™ series. Appropriate blanking panels are provided with the rack-mount kit.

Heat Dissipation

Consuming little power, the SOFIA 567 generates negligible heat itself, thus there is no noisy internal fan and bothersome filter! The unit is specified for operation within an ambient temperature range between freezing and 120°F/50°C. Because adjacent gear may radiate substantial heat, be sure that the equipment rack is adequately ventilated to keep internal temperature below the specified maximum ambient.

AC Mains Power   The SOFIA 567 is provided with an external, inline 'universal' switching power supply that accommodates mains voltages between 88VAC and 264VAC at 50 or 60Hz. Self-protection circuits obviate the need for an external fuse.

The power supply has a detachable IEC-type power cord fitted with a North-American-standard male plug. If you need to replace the mains plug with another, you will find that the individual cord conductors are color-coded in one of two ways. US standards specify black for AC 'hot,' white for AC neutral and green for earth ground. European CEE standards specify brown for AC 'hot,' blue for AC neutral and green with a yellow stripe for earth ground. Please don't mix these up.

Radio Frequency Interference (RFI)   Although it is expected that the SOFIA 567 will be co-located with other radio equipment, do practice care and common sense in locating the unit away from *abnormally* high RF fields.

Ground Loops   A mains frequency or RF ground loop could possibly be formed between cable shield grounds and the AC power cord ground. If hum or other constant noise is noted, a 'ground-lifting' AC adapter may remedy the problem, although the chassis must somehow be returned to earth ground for safety. The optional rack-mount chassis should satisfy this requirement.

INPUTS, OUTPUTS AND PORTS

Antenna Input and Considerations   The rear-panel ANTENNA input is a female BNC connector, ubiquitous worldwide with readily-available adapters to other connector types.

Several factors will guide your selection of an antenna, not the least of which is the level and purity of the available off-air signals of interest. The selectivity of the SOFIA 567 is remarkably good, but to optimize the signal from a desired direction, a non-resonant loop antenna to the signal source will yield best reception. The Inovonics PA-00 is an indoor/outdoor loop specifically designed for the SOFIA 567.

Analog Line Outputs   Male XLR left- and right-channel ANALOG OUTPUTS on the rear panel actually carry the same program signal and should be thought of as 'dual mono' outputs, not L/R stereo. These are electronically-balanced, meaning that they are ground-referenced and *not* transformer-isolated.

Analog line outputs may be adjusted under the front-panel Setup / Audio Outputs / Analog Level menu. These may be set to any level between –15dBu and +15dBu, corresponding to 100% AM carrier modulation. The dB levels shown beside the slider control represent the *unloaded* output level. These outputs have a resistive source impedance of 200 ohms. Feeding a 600-ohm-terminated load will drop the actual dBm level 2.5dB lower than the figure shown by the slider.

Unbalanced Operation If the analog line outputs of the SOFIA 567 are connected to low-level, unbalanced inputs of consumer-grade equipment, connect the center conductor of the shielded output lead to Pin 2 of the XLR connector and the shield to Pin 1. Leave Pin 3 unconnected.

When driving unbalanced lines, the actual output level will be 6dB lower than the Analog Level shown in the menu as only one side of the bridge-configuration output stage is driving the load.

AES Digital Line Output The male XLR connector labeled AES DIGITAL OUTPUT is a balanced, transformer-coupled digital AES3 stereo program output. Again, this is a dual-mono feed to both the left and the right program audio channels. This is a 24-bit output at either a 44.1kHz or a 48kHz sample rate (follows Dante sample rate settings, see Page 27).

The digital output level is set on the Setup / Audio Outputs / Digital Level menu. The dBFS notation beside the slider control corresponds to the level of program peaks at 100% carrier modulation. The digital output level is adjustable between 0dBFS and −30dBFS.

AoIP Streaming Port and Levels The Dante-compliant AoIP (Audio over Internet Protocol) output appears at the rear-panel RJ45 AoIP PORT. This port is independent of the SOFIA 567 LAN PORT network connection.

The AoIP streaming output level is set on the Setup / Audio Outputs / AoIP Level menu. The dB notation beside the slider control corresponds to the level of program peaks at 100% carrier modulation. This level is adjustable between 0dBFS and −30dBFS.

LAN Network Port The RJ45 LAN PORT jack is used for networking the SOFIA 567 via a Local Area Network (LAN) or the Internet. Networking permits full remote control and the Web-browser 'casual listening' utility that can accommodate up to 10 simultaneous listeners. The LAN PORT also offers full SNMP functionality. Networking setup is explained starting on Page 26.

GPOs A screw-terminal strip on the rear panel gives access to four GPO (General-Purpose Output) terminals. The terminal block may be unplugged from the chassis for easier connection.

GPOs may be assigned to reception- and program-fault alarms. Programming these terminals is detailed on Page 25. These GPOs are NPN transistors that saturate to ground and are able to sink up to 100mA. Alarm polarity (active = ground or active = open) is programmable through the front-panel jog knob or Web interface.

Section III

SETUP AND OPERATION

PRELIMINARY INFORMATION

Quick Boot

'Boot' (startup) time of SOFIA 567 is about five seconds. When power is first applied, or following a power interruption, the unit is back in full operation very quickly. Setup and reception parameters in use prior to the power cycle are reloaded instantly from non-volatile memory into the processing core.

Front Panel vs.
Web Interface
Setup

The SOFIA 567 may be placed in initial service either through local, front-panel setup or by using the Web interface. Although a good number of SOFIA 567 functions and features are addressable only through the Web interface, some familiarity with front-panel operation is necessary to get the unit up and running.

THE SOFIA 567 FRONT PANEL

All setup and operating adjustments of the SOFIA 567 are under firmware control. There are no jumpers, switches or mechanical potentiometers, only the front-panel jog-wheel knob A and Back button B identified in this front-panel rendering.
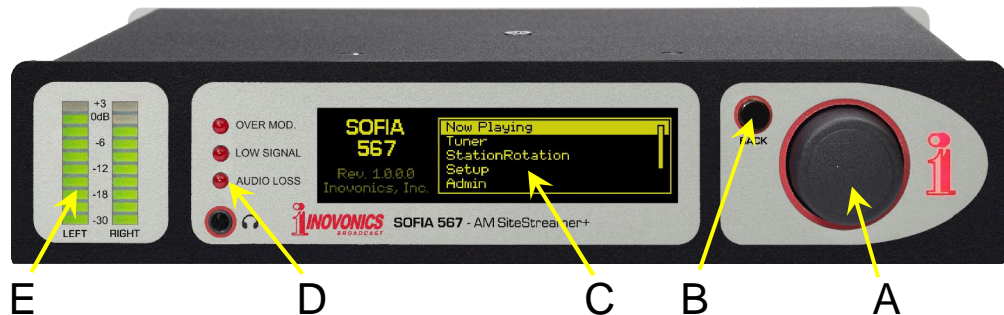
The Jog-Wheel
Knob

Turn the jog-wheel knob **A** to cycle the highlight through the various menu options, and then *push* the knob to select the highlighted item. This will move you to the next submenu, although there may be multiple menu levels for the item you need to reach. Once you do reach a submenu that allows control over a function, you *turn* the knob to highlight the adjustable function, and then *push* to access that function. The highlighted item will begin flashing, and you *push* or *turn* as required to make a selection or to set an adjustable parameter, or even to enter text.

If you dawdle or simply walk away, after 30 seconds of no further knob activity the SOFIA 567 will enter a selection you have made into memory automatically, or simply 'deselect' the highlighted item with no changes if the setting has not been altered.

The BACK Button

BACK button **B** will always return you to the previous menu screen. Push it repeatedly to go back to the Main Menu shown in the illustration.

If you make a mistake (for example, you might *push* the knob slightly off-center, causing it to rotate and bring up the wrong menu), simply push the BACK button to return to the previous menu and try again.

Graphic Display

OLED graphic display screen **C** presents an abbreviated, intuitive setup menu tree in an easy-to-follow format. The display uses a screen saver, so if the screen goes dim or dark, simply *push* the jog-wheel knob or BACK button once to bring the screen back to life. No selection or change is made with this wakeup call.

Local Alarms

Front-panel alarm LEDs **D** indicate critical reception errors. Programming the alarm thresholds and delays is accomplished through the Web interface as described starting on Page 21.

Level Meters

LED-segment meters **E** are marked LEFT and RIGHT, signifying the two 'dual mono' program audio outputs that deliver an identical signal to both output connectors. These are audio level indicators with *peak response* to program dynamics.

Please refer to Page 18 for a complete discussion of the audio level metering utility and its caveats.

Menu Timeout and Screensaver

After making and saving a setting, you may press the BACK button to return to the Main Menu screen, or simply leave any current screen showing.

A programmed interval may be set under the Admin / Display menu to adjust screen brightness and to dim or turn off the OLED screen when the SOFIA 567 is unattended. This is a recommended practice that prolongs the life of the display. At any time, however you can press the jog-wheel knob or BACK button to wake the screen.

THE FRONT-PANEL MENU TREE

The several levels of front-panel setup and operating menus are laid out in an intuitive and easy-to-manage fashion. The complete Menu Tree is detailed below. Keep in mind that the front-panel Menu Tree is an abbreviated version of total SOFIA 567 setup and operation navigation.

Menu Titles are shown here in a font similar to the OLED display font. Primary menu items are against the left margin and sub-menu levels are indented appropriately.

Menu items are tagged here to show whether the item is a readout (display) of some parameter, or if it accepts some form of user entry (data entry). (set) signifies an on/off or enable/disable function, and (select) denotes user control over multiple-choice selections, or for adjusting some value incrementally. (data entry) calls for alphanumeric character entry into data fields. Data entry is a bit cumbersome with the jog-wheel knob and is much more easily done through the Web interface.

SOFIA 567 FRONT-PANEL MENU TREE

Now Playing
    Freq (display)
    RSSI (display)
Tuner
    Frequency (select)
    RSSI (display)
    SNR (display)
    IF BW (select)
Station Rotation
    Enable (set)
    Rotation Time (select)
Setup
    Radio
        De-Emphasis (select)
        Spacing (select)
    Audio Outputs
        Analog Level (select)
        Digital Level (select)
        AoIP Level (select)
    General Purpose Outputs
        Output 1-4 (select)
        Type (select)
        Polarity (set)
        Status (display)
    Network
        IP Settings
            DHCP (set)
            IP (data entry)
            Subnet (data entry)

Setup / Network / IP Settings (continued)
            Gateway (data entry)
            DNS (data entry)
            Hostname (data entry)
            HTTP Port (data entry)
            MAC (display)
            Speed *(Link Speed)* (display)
        Time
            Time Zone (select)
            DST (select)
            Format (set X2)
            Server (data entry)
        AoIP/Dante (*NOTE:* this submenu is program-
            mable only through the Web interface)
            DHCP (display)
            IP (display)
            Subnet (display)
            Gateway (display)
            DNS (display)
            MAC (display)
            Speed *(Link Speed)* (display)
Admin
    Security *(Passwords)*
        Front Panel (data entry)
        Webpages (user) (data entry)
        Webpages (admin) (data entry)
    Display
        Brightness (select)
        Timeout (select)
        Dim on timeout (set)
    About
        Firmware Rev (display)
        Serial # (display)
        Uptime (display)
Headphone Volume
    Volume (set)

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GETTING UP AND RUNNING

The Main Menu Push the BACK button until you see the Main Menu on the OLED display. This is the 'gateway' for setup and operation.
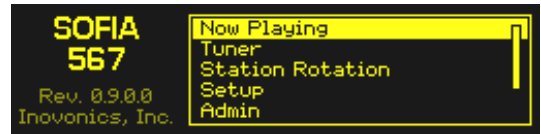
With the SOFIA 567 connected to your local network (LAN), use the jog wheel to navigate from the Main Menu to: Setup / Network / IP Settings.

Finding the SOFIA 567's IP Address This image is typical of what your unit should now display. Under the default ▦ DHCP control selection, your router should have assigned the SOFIA 567 an IP address. In this example the DHCP assignment is IP: 10.0.0.17. Note that this menu screen holds more IP address information; turn the knob to scroll down.

Assigning a Fixed IP Address To assign the SOFIA 567 a fixed IP address, clear the ☐ DHCP box and then navigate through the various fields on this screen, entering the called-for information manually in each. Be sure to execute a Save after entering the IP data in the appropriate fields.

Connecting to the SOFIA 567 On your computer connected to the same network, open a browser window and enter the SOFIA 567 IP address into the address bar using the IP: displayed on the front-panel OLED screen. The Now Playing screen should pop-up like the one shown here.
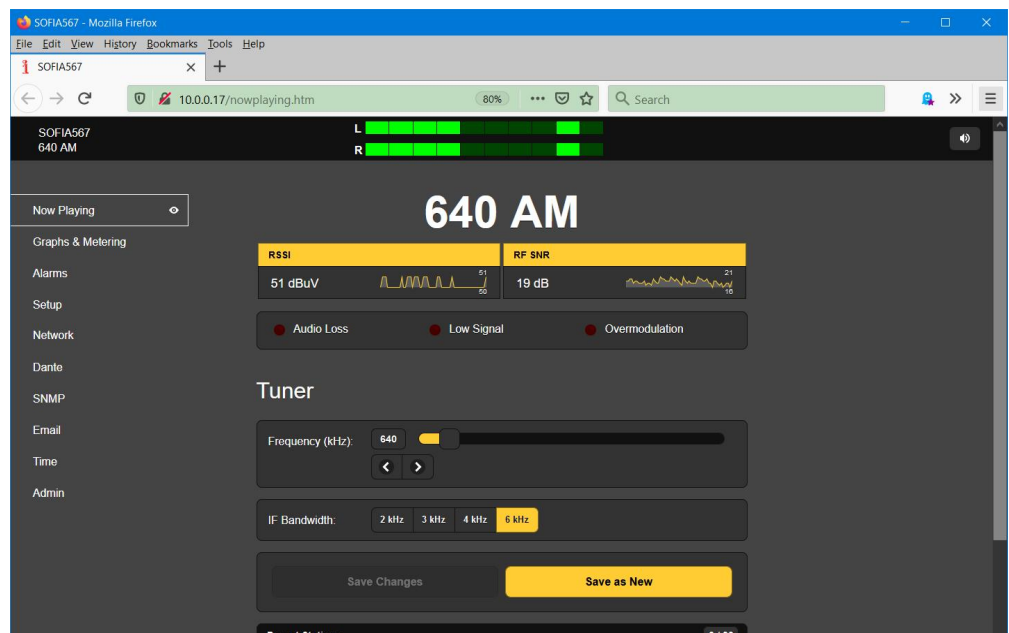
The 'responsive' design of the SOFIA 567 Web interface provides an optimal viewing experience across a wide range of devices, such as desktop computers, tablets, and mobile phones.

SOFIA 567 Webpages feature the unabridged Main Menu on the left-hand side of the screen. This columnar list appears on every Web interface screen. It is a substantial expansion of the front-panel Main Menu and a testament to the many features and their setup options that can only be addressed using the Web interface.

The remainder of this manual section will be devoted to individual explanations of each left-column menu item, discussed in listed order.

NOW PLAYING

The SOFIA 567 offers an array of OLED and Web interface meters and data readouts useful for setup and for monitoring important signal parameters.

The Web interface identifies the product model and shows the tuned frequency at the top of each Webpage. This name, the 'Hostname,' can be personalized (see Page 26).

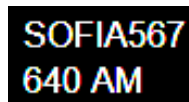**Remote Listening**   What you can hear at the remote location will be predicated on the 'what' and 'how' settings discussed a bit further-on in this section. You can click the loudspeaker icon at the top-right of the screen to listen to the off-air audio program through your Web browser.

Alternatively, you may use the IP address method with the address bar of any browser or player (e.g., VLC Media Player). In other words, it is not necessary to use the formal Web interface utility to listen-in. The address-bar entry should resemble this example, with the SOFIA's IP address and port number followed by a slash and the word 'stream.'

NOTE: Selected programming will be the same for 'casual' Web-listening audio streaming (HTTP and UDP), the separate AoIP-streaming utility, and the rear-panel analog and AES-digital program line outputs. Whatever listening choice you make will be heard on *all* audio monitor functions.

The independent AoIP audio streaming provision is covered separately on Page 27.

'VU' Meter   SOFIA 567 audio level metering is peak-responding, and the Web interface level display at the top of each Web interface page follows the 10-segment front-panel LED bar readout. Metering with greater resolution

can be found on the Graphs & Metering Web interface page and is discussed and qualified in detail on Page 18.

Signal Metrics Directly beneath the prominent frequency notation near the top of the page, you'll find off-air signal quality readouts and alarm indicators.
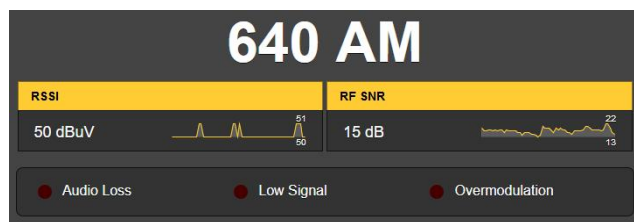
The two signal quality notations are accompanied by a scrolling 30-second graphical history, plus low and high values over the time period shown.

RSSI is received signal carrier strength in dBuV at the antenna input. RF SNR is a generalized signal/noise figure for the off-air RF signal, not an audio SNR measurement. These metrics are useful when setting-up the receive antenna.

Alarms The SOFIA 567 offers alarm indications for three signal-related issues. Alarm status is displayed on the front panel, in this area of the Now Playing Webpage, and on the Alarms Webpage where the alarm trigger and reset parameters are set. Alarm specifics and setup procedures begin on Page 21.

In addition to the alarm status indicators, the individual alarms can be assigned to rear-panel GPO terminals to tie into remote control systems or to light an LED at the operating position. GPO programming is explained on Page 25.

Alarms can also send email or SMS/text messages to specific personnel. Instructions for setting this up begin on Page 29.

Tuning the Radio The SOFIA 567 is easily tuned from the front panel Tuner menu, or from the Tuner section of the Now Playing Webpage. Using the Web interface you can either directly overtype an AM frequency into the box to the right of Frequency (kHz):, or you can grab the slider knob and drag it back and forth. Or click on the slider knob and, once it's highlighted, use your keyboard arrow keys to move up and down the dial. The **< >** arrows on the screen also allow incremental tuning.

Station Presets You may enter as many as 30 station-memory Preset Stations. Preset memories hold not only the tuner settings, but the independent alarm settings for each individual station as well.

To add a station to the Preset Stations list, tune to the station you wish to save and click on the Save as New bar. You'll be prompted to add descriptive info if you like.

When you click on these presets to tune the radio, the selected station will display in yellow, per the example. Delete any preset by clicking the ✖ at the far right of the listing.

StationRotation™   The SOFIA 567 is capable of sequencing through all the saved Preset Stations entries in the order listed, and at a rate selected by the user. This might allow a contract engineer to receive alarms from any of a number of stations he might service in a given market.

NOTE: StationRotation operation will inhibit manual tuning! Front-panel station selection will be unavailable and the Web interface Tuner setup section will be grayed-out.

StationRotation must first be turned on by setting Enable: to On.

Next the Rotation Time (Sec): must be programmed. This takes some thought as there are alarm setup considerations when using this feature. Alarms have time-on/time/off settings that will dictate the Rotation Time (Sec): setting. See the Alarms discussion beginning on Page 21.

The Status: display gives a second-by-second countdown of rotation time.

GRAPHS & METERING

Audio Level Metering   Near the top of this Web interface page you'll find an audio level metering utility

with much higher resolution than the 10-segment front-panel LED or its on-screen counterpart that headlines every Web interface page.
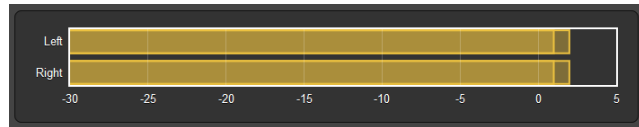
NOTE: Despite the Left and Right channel labels next to this meter, the SOFIA 567 is *not a stereo receiver.* The labels simply refer to the analog, digital and streaming outputs that carry the monaural program on both the 'left' and 'right' channels.

The level metering 0dB reference corresponds to 100% modulation of an AM carrier by a steady-state tone. Asymmetrical modulation, with positive peaks reaching the legal limit of +125%, will cause music and talk programming to read above the 100% mark, and stations incorporating MDCL (Modulation-Dependent Carrier Level) technology tend to read a bit higher than full modulation of a carrier with a constant power level. For these and finite-bandwidth limitations, the SOFIA 567 is not suitable to serve as a substitute for a true Modulation Monitor for audio processing and transmitter-adjustment purposes.

Because all SOFIA 567 level metering is peak- rather than average- or VU-responding, you'll find that these level readouts will generally hang near the top of the scale during most music programming, which sadly nowadays has an egregiously-limited dynamic range.

Histograms

The next section on this Web interface page presents three 'rolling histograms,' or constantly-updated plots-over-time of incoming signal metrics.

The information shown here accumulates over the entire previous 24-hour period. The Time Span: setting below the graphs sets the time period displayed. Options are the last 1 Minute, the last 10 Minutes, the last 1 Hour, the last 6 Hours, or the entire previous 24 Hours. Click on these buttons to change the time period, or simply click anywhere in the display area to cycle through the options.

The upper graph shows program level over the selected time period. The level reflects the unit's peak-weighted metering, and although it does not represent r.m.s. 'loudness', one can get a pretty good idea of program-audio dynamics from this display. In the example above graphs a talk-radio format and shows the expected wide program dynamic range.

This second example plots a pre-teen music station in the same market. Very aggressive audio processing results in virtually no music dynamics at all.

The lower graph area displays signal metrics over time. The display defaults to a display of both available parameters, although the Show: buttons allow for selective presentation. The Y-axis resolution (level range) is optimized for the display choice.

Note that the RSSI histogram in the first example shows that station's use of MDCL, the carrier level increasing during periods of low modulation.

Obviously, the histograms represent only the station being received at the moment. If you change frequency to check on other stations in the market, the histograms will reflect parameters of those stations during your surfing expedition. You

might want to jot-down the time away from the primary station target if the histograms will be analyzed after the fact.

The BandScanner utility of the SOFIA 567 is an annotated, simple RF spectrum analyzer. It can display the entire SOFIA 567 tuning range if Step Size: is set to the default 10kHz. In the case of an entire AM-band scan, the Center Frequency (kHz): setting is automatically set during the scan.

However, Center Frequency (kHz): and Step Size: may be programmed to zero-in on any narrow frequency range of interest.

NOTE: The band-scanning function mutes the receiver audio during the scan cycle and will put a glitch in the histograms as it actually tunes across the band and downloads data from each station in the market. This is another of the implications alluded-to earlier with respect to metering, histograms and AM band-surfing.

Here is an entire AM-band plot of the Los Angeles market. Center Frequency (kHz): was automatically set with Step Size: at the default 10kHz.
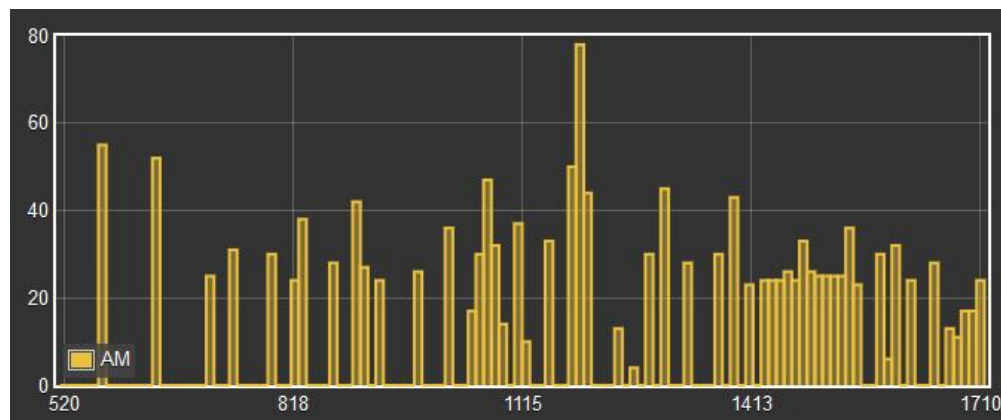
AM carriers are displayed as vertical bars, the height indicating the relative signal strength in dBµV per the annotation to the left of the plot. The 'pileup' above the 1413kHz mark is actually mains-related noise, the result of using an indoor antenna.

Next we zero-in on 1070kHz, 50kW all-news KNX, a Los Angeles station that broadcasts in the HD Radio® hybrid-digital mode. The digital carrier pair is unmistakable, and it would appear that, in this case, market companions should be largely unaffected.
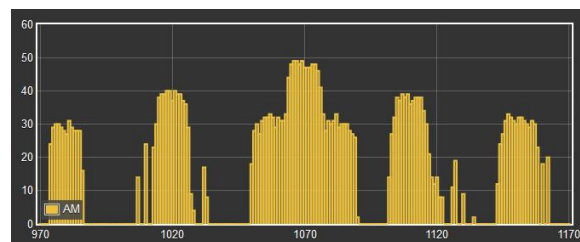
You may mouse-over the BandScanner display screen and click on any vertical bar. The radio will tune to that station and bring up the Now Playing page.

ALARMS

Alarm Status Signal-related alarms light front-panel LEDs and give flashing notifications on the front-panel OLED screen. The front-panel LEDs are also reflected on the Now Playing page and in the Alarm Status area of this Web interface page as shown here. Any or all alarms are also able to initiate email or SMS/text messages to selected personnel, and alarms are logged for later analysis or finger-pointing. Alarms are also assignable to rear-panel GPO 'tally' outputs to interface with remote-control equipment or local lights and sirens.
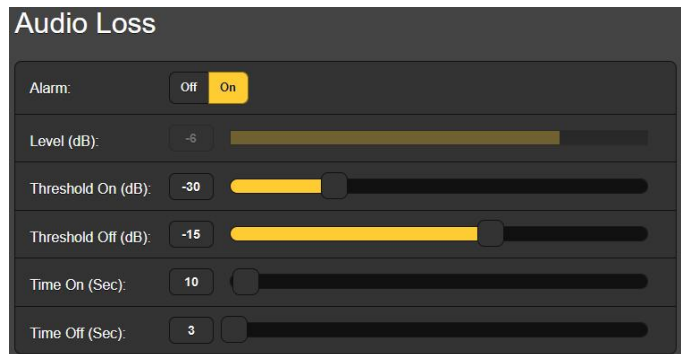
Front-panel LEDs will begin blinking immediately upon registering an alarm magnitude-related condition (warning), and will light steadily once the alarm timing condition has been met (alarm). Alarm conditions must first be set-up as described in the remainder of this section. Following that, the email/SMS messaging and rear-panel GPO tallies may be programmed. These procedures will be described in the Setup and Email Webpage discussions, respectively.

NOTE: Do please read the following discussions in their entirety. A setup explained for one alarm that is common (or quite similar) to the setup of others may not be repeated in full detail a second time.

Audio Loss Alarm: On simply 'arms' the function for loss of audio. With Alarm: Off selected, there will be no front-panel AUDIO LOSS LED or corresponding Web interface indicator on the Now Playing or Alarm pages. There will be no closure at a rear-panel GPO terminal, nor will the SOFIA 567 send SMS/text or Email alerts to station personnel or log the alarm. This applies to all alarms.

Level (dB): displays the current audio metering level of the off-air program being received. This is 'grayed-out' because there is no adjustment to make in this case. The audio level is shown to make alarm setup easier.

Threshold On (dB): is the set point that the program must drop below to trigger an alarm. Moreover, the program level must remain below this set point for the number of seconds selected with the Time On (Sec): slider. Even a quick burst of noise, or a transient click will start the timing period to begin afresh.

The alarm automatically resets when the program level re-attains a specified Threshold Off (dB): value and remains above that point for the number of seconds set by the Time Off (Sec): slider.

In the setup illustrated on the previous page, the program must fall below –30dB for a full 10 seconds to trigger an alarm. Then when the program returns, it must stay above –15dB for 3 full seconds for the alarm to reset. The reason for such hysteresis in these levels is to make sure that legitimate program material is what resets the alarm, not simply random noise in the absence of carrier. The 3-second reset time should ensure that music or speech will remain above the –15dB level for that period, but even a short program audio pause will restart the period count and keep the alarm from resetting.

Low Signal This alarm is similar to one just discussed for audio loss. When the Mute: function is turned On, program audio from all outputs is 'squelched' (silenced) during the alarm interval. Mute: On keeps random no-carrier noise from making a nuisance of itself when the incoming signal is lost.

The RSSI (dBuV): grayed-out bargraph gives the level of the incoming RF carrier. Threshold On (dBuV): and Threshold Off (dBuV): set points are programmed in much the same manner as the audio-loss alarm example above. Be sure to take day/night power differences into account when setting these parameters.

Overmodulation This alarm is useful in signaling a transmitter or audio processor malfunction that causes the carrier to grossly overmodulate. The Level (%): and Limit (%): settings are calibrated in percent-modulation in this case, which corresponds to 0dB on the level meters. Do be sure to take both asymmetrical and MDCL operation into account when setting the Limit (%): value (see Page 18).

Follow the same strategy in setting Time On (Sec): and Time Off (Sec): settings as with the other alarms. In the case of overmod these probably both want to be of relatively short duration, perhaps on the order of just a few seconds.

Alarm Logging In addition to local displays and messaging alerts for signal and program audio problems, the alarm data are logged and stored indefinitely. You can click on ✚ View Alarm Log near the bottom of the page for a display of all alarms in chronological order.

The log holds data on the type of Alarm, which monitored Station it pertains to (important when the StationRotation feature is active), the Time and Date received, and the Duration of the alarm.

You can View Alarm Log on your screen and even filter the results by overtyping Filter alarms… with a search term from the appropriate column.

You may also download the Alarm Logs for Daily, Weekly, Monthly or Complete (all logged alarms) time periods. The number of alarms received for these time periods is shown to the right of View Alarm Log. Downloads are saved to your computer as small .csv text files in the usual Windows manner.

The Alarm Log will continue to accumulate entries, but you may clear it at any time by clicking the Clear Alarm Logs bar. This will delete all entries. You'll be asked to confirm this action, and you might decide to download the Complete log of all alarms first to be on the safe side.
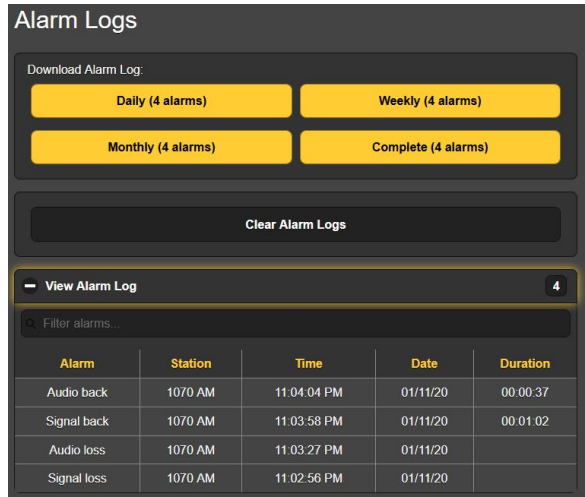
SETUP

This Web interface page is not as imposing as its name suggests, as SOFIA 567 setup is accomplished by entries on a number of the Web interface pages. The specific items on the Setup page are discussed in order here.

Radio Settings   NRSC is the default De-Emphasis: setting. NRSC de-emphasis is a truncated 75μs characteristic adopted by the US and other western hemisphere AM broadcasters. This may be manually changed to None, which gives a frequency-flat output.

AM broadcast channel Spacing: is 10kHz for the Americas and 9kHz for much of the rest of the world.

Audio Outputs   The levels for SOFIA 567 audio outputs are individually adjustable. Please note the associated comments relating to what these levels actually mean.

The Analog Level (dBu): slider sets the rear-panel XLR balanced left and right analog outputs to any dBu value between –15dBu and +15dBu. dBu signifies the *unloaded*, balanced level from these outputs, which have a source impedance of 200 ohms. This means that a 600-ohm-loaded dBm reading will be about 2.5dB lower than the figure shown. However, the concept of 600-ohm sources and terminations in professional audio practices date back to the days of transformer coupling, leased telephone lines and 'repeat coils,' and the notion of audio signal

impedance matching is nowadays generally regarded as "old school" and passé.

Also with regard to the analog output level, the dBu notations beside the slider actually refer to the *r.m.s. average* level of a sine-wave tone with a peak value corresponding to 100% modulation of the AM carrier.

The Digital Level (dB**FS**): slider adjusts the rear-panel XLR AES3 digital program line output between –30dBFS and 0dBFS. Levels in this case are dBFS *peak* values at the output, again corresponding to 100% modulation of the AM carrier. An accepted and appropriate setting for this slider would be in the neighborhood of –12dBFS, allowing sufficient headroom for overmodulation due to asymmetrical modulation or MDCL operation. This also acknowledges that the average off-air program level will usually be so uncomfortably close to the peak level as to eschew a more conservative headroom buffer.

In general, the Dante/AoIP Level (dB**FS**): requires the same considerations as the AES digital output and may be set similarly.

Streaming Outputs

The Stream audio output references the Web-listening utility, which is independent of the Dante-based AoIP streaming. Web-listening relates to the little loudspeaker icon at the top of each SOFIA 567 Web interface page, which can be clicked-on by as many as 10 users at the same time who have Internet access to the unit. Also note that you can enter the IP address of the unit in the address bar of any browser, as described on Page 16.

The streaming Format: defaults to the popular MP3 standard, although it may be reset to OGG, a family of audio file types that may enjoy a slight sonic advantage over MP3.

The streaming Bitrate: defaults to 128kbps, which ought to be quite acceptable for AM-radio listening. For unbelievably-poor network conditions the bitrate can be reduced all the way down to 32kbps, or for audio quality overkill it can be upped to 256kbps.

The stream Sample Rate: may also be changed, from the typical broadcast-plant default of 44100Hz to other sampling rates between 16kHz and 48kHz. Again, network limitations or specific installations may dictate this setting.

A unique and useful feature of the SOFIA 567 is the ability to purposely add-in a fixed Audio Latency (Sec): delay that may help overcome deficiencies of an uncertain network connection. Rather than allowing network latency to degrade packetized audio transmission, building-in an intentional delay of a few seconds gives the system time to reassemble the data with fewer errors and only a few seconds' delay inconvenience.

HTTP and UDP Streams

The SOFIA 567 offers both an HTTP/Icecast Stream for general 'tune-in' (listener request) listening, and an independent UDP Stream that allows the 567 to send raw compressed audio to a

specific IP address and port. Both modes are available concurrently.

For the general-listening HTTP/Icecast Stream a unique and useful feature of the SOFIA 567 is the ability to add-in a fixed Audio Latency (Sec): delay that may help overcome deficiencies of an uncertain network connection. Rather than allowing network latency to degrade packet transmission, building-in an intentional delay of a few seconds gives the system time to reassemble the data with fewer errors with just a few seconds' temporal inconvenience.

Although the SOFIA 567 can accommodate as many as 10 simultaneous HTTP/Icecast Stream Web listeners, the number of listeners can be truncated in the interest of better streaming service to fewer authorized listeners. The Max Listeners: slider can be set between 0 and 10.

When the streaming format is MP3, the SOFIA 567 can send the stream over UDP to remote equipment. The Transport: format can be either Raw MP3, or MP3 in MPEG-TS. Data are sent to the IP Address: and Port: indicated when Enable: is set to On.

Once modified, Stream settings must be saved by clicking on the Save bar. Note that this does reset the utility, disconnecting any current listeners, who then must log back on.

General Purpose Outputs

The rear-panel GPOs serve as 'tally' outputs for SOFIA 567 alarms. These rear-panel terminals give access to closures to (or opens from) ground for any four alarms selected from the field of five (plus None).

Each GPO is programmed separately. The Output # numbers on this Web interface page correspond to the four numbered terminals on the back of the unit. Current-limited +5V and ground are also provided on the terminal strip.

In the example shown here, Output 1 has been Polarity:-programmed to deliver an Active Ground to GPO terminal 1 for an alarm Type: of Audio Loss.
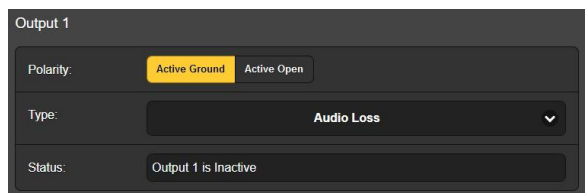
It could as easily have been set to deliver ground on that terminal all the time, and then go Active Open (ungrounded) when the alarm is received. The other GPOs are programmed in identical fashion.

The Status: line in this example shows that Output 1 is Inactive; that is, the assigned Audio Loss alarm has not been tripped.

NETWORK SETUP AND INTERNET ACCESS

Obviously, if Web interface pages are appearing on your screen, what follows here must already have been addressed. Getting up-and-running through front-panel setup was covered on Pages 12 and 15, so most information here may turn out to be redundant.

IP Setup With Mode: set to DHCP, your router automatically assigns the SOFIA 567 an IP Address: and will populate the four associated fields, although they will be 'grayed-out' and you won't be able to edit the data in those fields. However, if Mode: is changed to Static IP, then you must make the appropriate entries in all four fields.
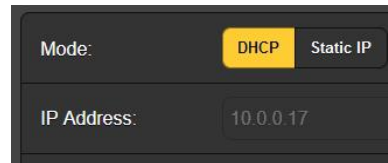
Assigning a Hostname You may change the default name SOFIA567 to something else, either to personalize the equipment name or to differentiate one SiteStreamer+ from another on the same network.

Overtype the default Hostname: using all uppercase letters and without using any spaces. Be sure to click the Save bar at the bottom once the entry is finalized. The newly-programmed Hostname will be seen at the top of all Web interface pages.
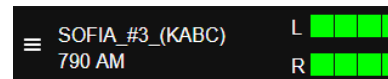
HTTP Port The default HTTP Port: 80 is commonly used when accessing networked equipment like the SOFIA 567 on a local network (LAN). Provision is included to change this to another port number as may be required under certain circumstances. Remember to Save your new setting.

MAC Address The MAC Address: (Machine Access Code) is the digital ID of your particular SOFIA 567. This is factory-assigned and cannot be changed. You may wish to make note of your unit's 'signature,' however, to help identify it on your network.

Link Speed Link Speed: is an indication of connection status and the best expected bitrate between your SOFIA 567 and the local network (LAN).

Addressing the SOFIA 567 Under the Windows operating system, you can access the SOFIA 567 Web interface on a common LAN by just typing its Hostname and a forward-slash into the browser address bar as shown here. The entry is not case-sensitive in this instance. Non-Windows browsers may require you to enter the complete IP address of the unit, which you can always find by front-panel navigation to Setup / Network / IP Settings.
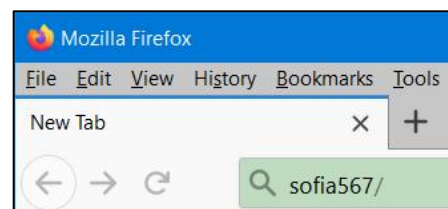
Incoming Internet Access To 'dial into' the SOFIA 567 from the Internet, the unit must be assigned a static IP address. If your router makes DHCP assignments for other equipment on the network, simply assign a static IP that is outside the router's DHCP range. This should be an easy matter with the aid of the router's Help utility.

You also need to open a specific port for the SOFIA 567 on the network router. Within the router's Port Forwarding utility you will be able to enter your static IP address for the unit (Internal IP), followed by a colon and a port number. The port number may be any number in the router's range.

If your Internet Service Provider (ISP) assigns you a static IP address, then it is a simple matter to address the SOFIA 567 from anywhere. Just type the IP address and port number into your browser as pictured here.
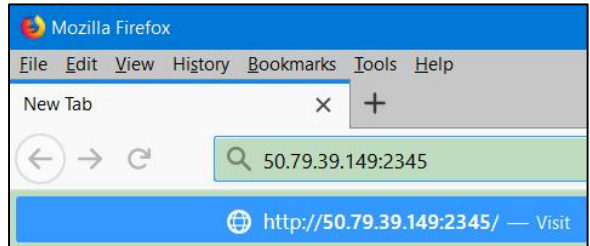
But if your ISP issues a *dynamic* IP, which is quite often the case, this mandates 'Dynamic DNS' operation using the services of an IP-forwarding provider. This is an operation you should entrust to your IT department, though explanations and instructions are available from multiple Web resources.

DANTE® AND AoIP STREAMING

The term Dante® refers to networking technology developed by the Australian firm, Audinate Pty. Ltd. It enables simple connection with other Dante-equipped devices and gives AES67 AoIP (Audio over Internet Protocol) compliance and interoperability among a wide range of pro-AV products. Dante is (or can be made) compatible with proprietary systems from independent manufacturers of AoIP-enabled products.

IP Settings Mode The Dante-based AoIP utility of the SOFIA 567 is quite similar to the product's general networking function. Like the LAN connection, the independent AoIP connection may accept IP address assignments in either a DHCP or Static IP assignment Mode:. Static IP operation requires manual entries into the four fields that are grayed-out when your router makes DHCP assignments.

AES67 and AoIP Streaming The Dante utility of the SOFIA 567 is able to AoIP-stream audio at two sample rates. The "AES67 Standard" from the Audio Engineering Society specifies a 48kHz sample rate, but Dante encoding can send at a 44.1kHz rate as well, perhaps a more common rate in radio broadcast plants. But with AES67 Enable: set to Enabled, streaming is forced to a 48kHz sample rate.

The AoIP MAC Address The MAC address: for AoIP streaming is not the same as the one for general Web interactivity of the SOFIA 567. These are two independent network connections, and like the rear-panel LAN Port, the AoIP Port has a unique Mac Address: that is factory-assigned and cannot be changed.

Link Speed Link Speed: is a readout showing connection status and the expected best networking rate for the AoIP connection.

Audio Format Encoding: refers to the word length for the PCM-encoded digital audio to be sent as AoIP. PCM 16 / PCM 24 / PCM 32 refers to word length for Dante AoIP flows. AES67 flows are locked to 24 bits regardless of this setting.

Sample Rate (Dante & AES3): is forced to 48kHz for AES67 streaming, or can be reset to 44.1kHz for other applications.

Transmit Flows The AoIP utility can specify either one or two IP destinations for the audio stream. These are set in the Dante Controller.

This snapshot is typical of what you might see in the Transmit Flows area.

The Dante Controller The Dante Controller is a free software utility available from Dante's developer, Audinate. It is an essential software means of finding, setting-up and controlling Dante-enabled devices on your network. It may be downloaded for operation under either Windows or Macintosh operating systems using this link:

https://www.audinate.com/products/software/dante-controller

SNMP OPERATION

Overview SNMP (Simple Network Management Protocol) allows other TCP/UDP/IP equipment on the same Local Area Network (LAN) to communicate directly with your SOFIA 567, and for your unit to send alarms and supplementary information to other equipment on the network.

The SOFIA 567 will interface directly with a network controller, technically known as the SNMP 'Manager.' The SOFIA 567 has an embedded ASCII text file called a Management Information Base, or MIB. In setting up for SNMP operation, the MIB file will have to be downloaded from your unit through the Web interface and then uploaded to the SNMP Manager. More about this in a bit.

Mode The SNMP submenu default Mode: setting is Disabled, which inhibits communication between the SOFIA 567 and the SNMP Manager.

Changing Mode: to Read Only allows the SOFIA 567 to be interrogated by the SNMP Manager, so that programmed setup parameters, alarms, etc. can be integrated with other equipment on the network.

Setting the Mode: to Read & Write allows the SNMP Manager to send commands that can control your SOFIA 567.

Security   SNMP 'Communities' serve as passwords for this function. In the Read Community: and Write Community: fields, overtype the factory defaults and enter text that is specified for the read/write strings on the SNMP Manager monitoring device. You must do a Save after entering your text.

Ports   The default SNMP Ports, SNMP Port: 161 and Trap Port: 162 are customary for a majority of SNMP operations. Overtype these defaults to change them as may be required.

Trap Destinations   When the SOFIA 567 *initiates* an alarm, rather than being *interrogated* or *polled* for one, the alarm is known as a 'trap.' Three local network IP addresses may be entered in the Trap Destination 1:, 2:, and 3: fields, each corresponding to other devices on the LAN that need to be apprised of alarms. Overtype the defaults with valid IP addresses of other equipment.

The MIB File   The MIB File is a small text file required by the SNMP Manager. Click: Download MIB to save this file using the usual Windows methods. The MIB file is in plain text with a .mib extension, and may be read with Windows Notepad.

NOTE: This is an abbreviated discussion of SNMP operation. SNMP is a complex utility managed exclusively by whatever SNMP 'Manager' (monitoring equipment) is employed. Refer to all instructions supplied with, and for, the SNMP Manager hardware and/or software in setting-up the SOFIA 567.

EMAIL

Email and Text Notifications   *NOTE:* The time-stamp feature for email notifications and the Alarm Log both depend on a network connection to sync with Internet time, along with setting the proper time zone and other options. Setup is explained on Page 30.

When connected to the Internet, the SOFIA 567 can send email or SMS/text notifications of reception or programming faults to one or more recipients. But which alarms go to whom is a separate setup routine addressed later.

SMTP Setup   The SOFIA 567 must first be properly programmed to send mail under SMTP Settings. You need to set up an actual email account, the elements of which are just like setting up any conventional email account. Information to be entered here depends on the provider you choose. When you apply for the account, much of this information will be assigned to you. Con-

sult your IT professional for setting up email accounts if you need help.

Under SMTP Server:, enter the provided outgoing mail server info (e.g.: smtp.gmail.com), the required Port: number and whether TLS: is On or Off.

From: is the 'friendly' name that identifies the SOFIA 567 to the email or SMS/text recipient. You could use station call letters, or something like SOFIA Alarm or Uh-Oh! User: is the full email address of the unit. You may assign a Password: to the account.

Recipients, (Send To)

Next enter up to ten email recipients, typing-in the full email address. After this you'll decide who gets what alert.

Email addresses typically take the traditional form of the upper entry in this example. If instead you wish to send a text message to a recipient's cell phone, the entry may look like

| Recipient 1: | engineering@klac.com |
| Recipient 2: | 3235558210@vtext.com |

the lower entry. In this instance the alarm notifications are being directed to a Verizon subscriber's phone. Further information on these naming protocols is available on the Web, or you can check with the wireless carrier to confirm the proper addressing style for Internet texting delivery.

When all recipients have been entered, click Save. You may also click Send Test Email, which will memo-message all recipients to confirm proper communications setup.

Notifications, (Send What)

You can assign any or all alarms to any or all email or text addresses in the Notifications section.

Referring to this example, first choose a recipient 1 through 10 by clicking the down arrow. With a Recipient: selected, click the Send Emails For: boxes to choose which alarm

Notifications

Recipient: 2. 3235558210@vtext.com

Send Emails For: ☑ Audio Loss
☑ Low Signal
Over Modulation
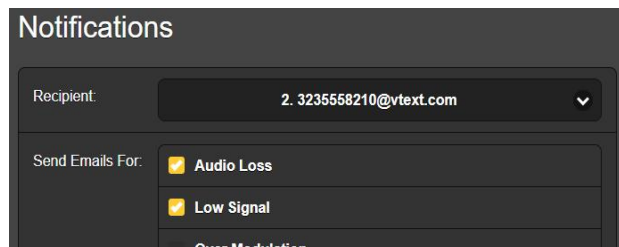
conditions will be reported to that individual. In this case, the Chief Engineer will receive a text message on his phone for Audio Loss and Low Signal alarms.

When you've finished with this Recipient, proceed to the next. A Save command is not necessary in this operation.
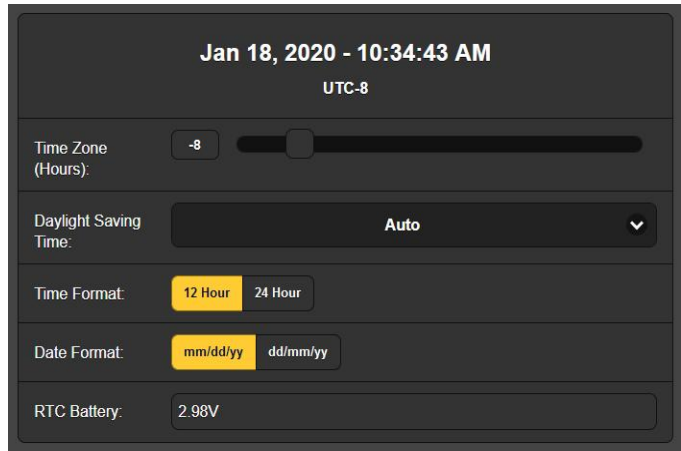
TIME SETUP

Time and DST

The onboard Real Time Clock will receive updates from Internet Time daily and has sufficient inherent precision to remain accurate inside this schedule. Grab and drag the Time Zone (Hours): slider for the proper offset from Universal Coordinated

Time for your area. In this example, the -8 represents West Coast US (Pacific) time. The time at the top of the page will update immediately, so you can simply drag the slider until the time shown here agrees with your watch or phone.

Jan 18, 2020 - 10:34:43 AM	
UTC-8	
Time Zone (Hours):	-8
Daylight Saving Time:	Auto
Time Format:	12 Hour 24 Hour
Date Format:	mm/dd/yy dd/mm/yy
RTC Battery:	2.98V

Daylight Saving Time: is set to the default Auto mode in this example. You may either opt for this convenience, or click the down arrow to select On or Off for DST.

Presentation Formats

Time Format: can show either a 12 Hour or a 24 Hour clock, and the Date Format: can reflect either US or European conventions. The date is automatically set by the Internet Time Server.

RTC Battery

The Real Time Clock has a backup battery located on the rear of the front-panel board. This is a 3V CR2032 flat 'coincell' battery with the + side facing out. Replace the battery when RTC Battery: voltage drops to 2V.

Time Server

We have provided a reliable default time server, which is 1.inovonicsinc.pool.ntp.org. If you must change the server because of some corporate edict, overtype the Server: entry with your alternate and click Save.

ADMINISTRATIVE MATTERS

Security and Passwords

SOFIA 567 access may be protected by passwords, which must then be entered before any changes can be made. Either the same or separate passwords may be assigned to lock out the front-panel knob and/or Web interface access.

NOTE:

All passwords *will appear in clear text* on the Admin OLED menu screen.

All passwords *are hidden* on the Admin Web interface page when logged-in as a 'Web User (Read Only).'

Under the Web interface Security heading, type-in the Front Panel: password, which then must be manually entered with the front-panel knob when accessing the unit at the equipment site.

There are two Web interface passwords. Web Admin Password (Read/Write): is the Administrator password that allows full access to the SOFIA 567. Web User Password (Read Only): allows

the lower-level user to view all data, but those users cannot tune the radio or make changes to any settings. Once passwords have been assigned, click Save to lock them into nonvolatile memory.

Once passwords have been entered and saved, the front-panel Now Playing screen will be the only one visible, and all Web interface screens will be locked out.

With respect to front-panel access, the SOFIA 567 will lock any time the screen times-out (goes dim or dark) after the unit is untouched for the programmed-in timeout period. It may be locked immediately by holding down the Back button for a few seconds.

Signing In

When password protection is in place, at the installation site you will be prompted to enter the password through the front-panel OLED screen and jog knob before any menu can be accessed other than Now Playing. Use the knob to spell-out the password, and then highlight Save and push the knob. This will be necessary each time the unit times out to a dark or dim screen.

When working on a protected unit over an extended period, you can avoid the frustration of having to keep re-entering a password from the front panel by resetting the Admin / Display / Timeout setting to 60 min. From the Admin / Security screen you could also repeatedly push Del to delete the password, but of course jot it down first so you can put it back in when finished.

The Web interface password must be entered on any connecting device. When this image appears on your screen, ignore User Name: and enter the password into the Password: field, then click OK.
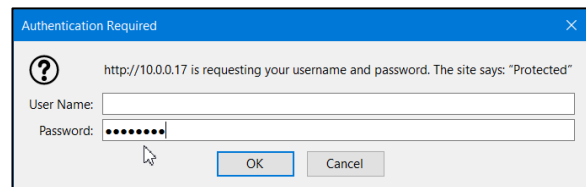
Lost Password (Hard Reset)

NOTE: A 'hard reset' is required to bypass a local or a Web interface password. *This must be performed at the installation site!* A hard reset not only deletes the password, but will also return the SOFIA 567 to all-factory-default settings. *All User settings will be lost!* (This should illustrate the importance of keeping a Hardware Profile current, which is discussed next.)

If the password is lost, the only way you can recover control of the SOFIA 567 is at the equipment site. Hold down the Back button as you power-cycle the unit (disconnect and then reconnect AC-mains power).
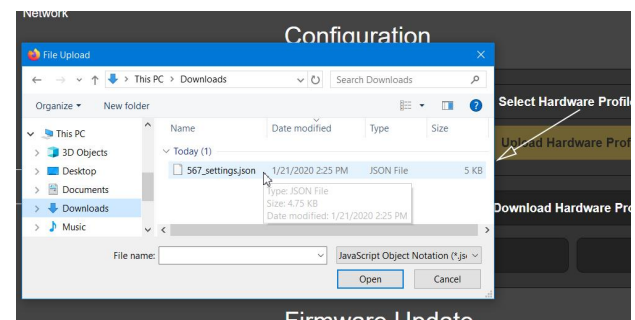
The Hardware Profile

The entire SOFIA 567 'setup' may be saved to your computer as a small text file. The Hardware Profile includes user settings, alarm notification entries, SNMP options, etc., and is useful for restoring a previous setup or for cloning a second unit for backup service.

To save a profile to your computer, under Configuration click: Download Hardware Profile. With the Firefox browser used in this example, Windows first asks whether to Open or Save the file. After clicking the Save button and OK, Windows saves the file to the browser's assigned 'Save' location, usually the Windows Downloads folder. From there you can move it to a folder of your choice. The file carries a default name of 567_settings.json.
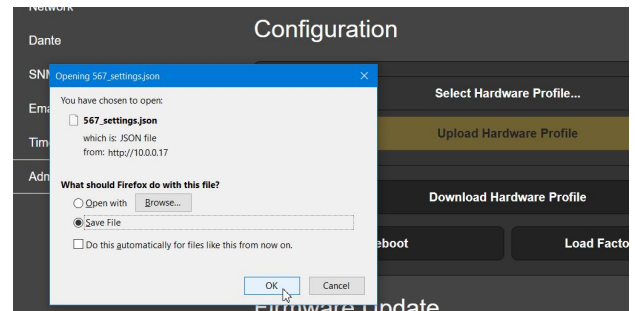
To upload (restore) a saved setting, first click Select Hardware Profile…, navigate to the folder where the profile has been saved and, when prompted, Open the file. Then click Upload Hardware Profile. This will replace all setup parameters currently loaded and running in your SOFIA 567 with the saved ones.

Reboot

Uploading a Hardware Profile automatically reboots the SOFIA 567. There may be other circumstances under which you might want to reboot the unit manually. This can be done by clicking Reboot in the Configuration area.

A *manual* reboot does not change any settings or dump any accumulated off-air data, it's simply the same as doing a local power cycle. The SOFIA 567 will come back tuned to the same station and with all settings as they were.

However, at any time you wish to 'clean house' and restore all settings and preferences to factory values, click: Load Factory Defaults. In this case you *will* lose your settings, except for IP settings (to maintain access to the unit), so doing a Hardware Profile download first might be a good idea.

Updating Firmware

SOFIA 567 firmware includes the Web interface pages, and updates are easily uploaded to the unit when issued by Inovonics.

<u>NOTE</u>: We recommend saving a fresh Hardware Profile, as a firmware update may affect user settings. If there is danger of compromising stored data, the firmware update will include notes to that effect.

Updates are issued as small .bin files which may be downloaded to your computer Desktop or placed in any convenient folder. From the Firmware Update utility at the bottom of the Admin

screen, click Select Firmware File... Then navigate to where the file's been stored and double-click the .bin file listing. This will transfer the file to the updater as shown below.

With the name of the new .bin showing in File:, click Update Firmware and follow the prompts to complete the process. Updating takes a couple of minutes and will return you to the new Web interface pages once the operation is complete.
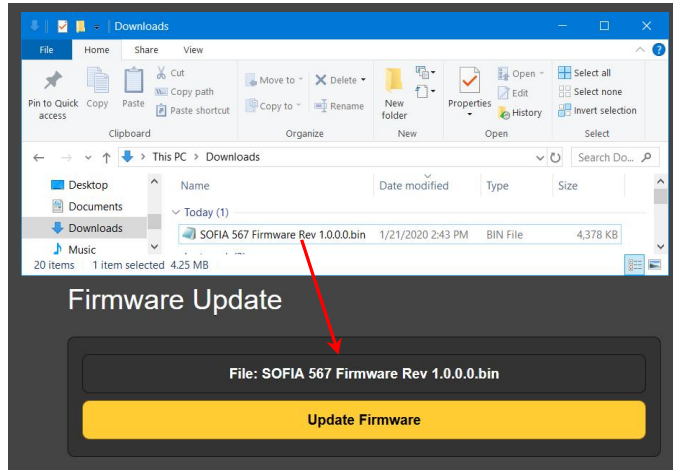
'About' Info The bottom of the Admin screen shows the Serial Number: of your SOFIA 567 SiteStreamer+, gives the current Firmware Rev: and displays the Uptime:, or how long your SOFIA 567 has been running since power was last applied. You also may click Check for Updates to see if a new version of the firmware has been issued.

ⅰ INOVONICS WARRANTY

I TERMS OF SALE: Inovonics products are sold with an understanding of "full satisfaction"; that is, full credit or refund will be issued for products sold as new if returned to the point of purchase within 30 days following their receipt, provided that they are returned complete and in an "as received" condition.

II CONDITIONS OF WARRANTY: The following terms apply unless amended *in writing* by Inovonics, Inc.

A. Register the Warranty online at www.inovonicsbroadcast.com within 10 days of delivery.

B. This Warranty applies only to products sold "as new." It is extended only to the original end-user and may not be transferred or assigned without prior written approval by Inovonics.

C. This Warranty does not apply to damage caused by misuse, abuse, accident or neglect. This Warranty is voided by unauthorized attempts at repair or modification, or if the serial identification label has been removed or altered.

III TERMS OF WARRANTY: Inovonics, Inc. products are warranted to be free from defects in materials and workmanship.

A. Any discrepancies noted within THREE YEARS of the date of delivery will be repaired free of charge, or will be replaced with a new or remanufactured product at Inovonics' option.

B. Parts and labor for factory repair required after the three-year Warranty period will be billed at prevailing prices and rates.

IV RETURNING GOODS FOR FACTORY REPAIR:

A. Equipment will not be accepted for Warranty or other repair without a Return Authorization (RA) number issued by Inovonics prior to its return. An RA number may be obtained by calling the factory. The number should be prominently marked on the outside of the shipping carton.

B. Equipment must be shipped prepaid to Inovonics. Shipping charges will be reimbursed for valid Warranty claims. Damage sustained as a result of improper packing for return to the factory is not covered under terms of the Warranty and may occasion additional charges.

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INOVONICS, INC.
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