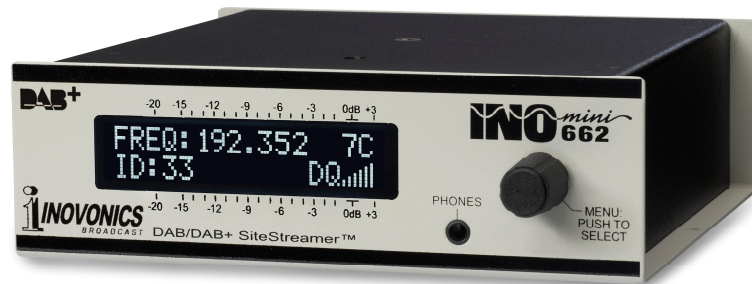


INO *mini*
662

DAB/DAB+ SiteStreamer™

Installation & User Guide



August, 2017 - Rev. 1 Firmware

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WARRANTY(inside back cover)

Section I

INTRODUCTION

Product Description

The INOmini 662 SiteStreamer™ is a Web-enabled digital-radio DAB/DAB+ receiver for remote signal monitoring. Installed at a transmitter site or other remote location with an Internet connection, the unit streams audio from the off-air signal back to any computer, tablet or mobile device. The intuitive browser interface enables remote setup, tuning and source switching, and also displays program metadata including MOT 'slideshows' that accompany the audio broadcast. The INOmini 662 logs reception fault alarms, which also may be dispatched immediately by email or SMS/text messaging.

Product Features

Features of the SiteStreamer™ include:

- Monitor your off-air DAB audio program from any remote location
- BandScanner™ utility displays an RF spectrum plot
- 'StationRotation' feature allows sequential monitoring of multiple programs
- AES digital AUX input for monitoring a hardwired audio program feed
- Full dynamic browser support of all operational features, including audio streaming through the dynamic Web interface
- Sends instant error messages via email or SMS texts; logs Audio Loss, Low Signal, DAB Loss and DLS Loss
- Accurate front-panel and Web interface display of signal metrics and program audio levels
- Easy setup and operation; full SNMP support
- Front-panel headphone jack

Product Specifications

Tuning Range: DAB Band III, Mode I; (174.928MHz-239.200MHz / Blocks 5-12, A-D) plus Block 13 A-F

Receiver Sensitivity: ≥10μV for error-free reception

Antenna Input: 75-ohm (BNC)

Audio Response: 20Hz-20kHz, ±0.25dB

AUX Program Line Input: AES3 (XLR) digital AUX input accepts 32kHz, 44.1kHz, 48kHz sampling with menu-programmable input level control

Network Connection: RJ45 jack accepts universal TCP/IP connection to LAN/router/Internet

Headphone Jack: Front-panel 3.5mm (TRS); volume is adjustable from the front panel

Signal Parameters Displayed: Frequency, FFT Offset, FQ (FIC Quality), RF (RSSI), SNR, CNR

Metadata Displayed: CNR FIB Error, CU Level, Ensemble Label & ID, Total Services, Total Components, Total CU, Time, Dynamic Label Segment & Size, Sample & Bit Rates, Gain, Mode & Service Mode, Protection Info, Current CU & Address, Frequency & Block, Service Label & ID, PTY, Component Label & ID, Global ID, Country, Language, Character Set ID, L/R Audio Levels, MOT images (Web interface only)

Alarms: Low Signal, Audio Loss, DAB Loss, DLS Loss; adjustable thresholds and timers; immediate email/SMS-messaging dispatch

Alarm Logs: Alarms are logged and may be emailed as daily, weekly or monthly CSV files

Power Requirement: 12VDC at 110mA (2.1mm x 5.5mm coaxial); a universal inline switchmode power supply is provided

Mounting Options: An optional rack adapter accepts up to three INOmini modules in a 1U rack space

Size and Weight: 1.6”H x 5.5”W x 5.5”D; 4 lbs. shipping weight.

Certifications:



Section II

INSTALLATION AND CONNECTION

Unpacking and Inspection

Immediately upon receipt of the INOmini 662, inspect for possible shipping damage. If damage is found or suspected, notify the carrier at once, and then contact Inovonics.

We recommend that you set aside the original shipping carton in the event that return for Warranty repair is required. Shipping damage sustained as a result of improper packing for return may invalidate the Warranty!

Warranty Registration

Please complete the Warranty Registration process. Not only does this assure coverage of the equipment under terms of the Warranty (printed inside the back cover of this manual), but the user will receive any specific service and modification instructions, including firmware and software updates. Register online at:

www.inovonicsbroadcast.com/product-registration

Mounting

The INOmini 662 SiteStreamer™ is packaged in a compact ‘clamshell’ chassis that defines the standardized module in this series of Inovonics products. The unit may simply be set on top of an existing piece of rack-mounted equipment, as long as at least 1U of panel space is left open above the rack-mounted ‘host’ to access the unit. Alternatively, a pair of mounting holes on the chassis base allows fastening to any flat surface with two #4 screws.

An optional rack-mount kit is available for the Site-Streamer™. The rack kit can hold up to three INOmini modules and comes with blanking panels for unused spaces and two ‘daisy-chain’ power cables so that two or three INOmini modules may share a single power supply.

AC Mains Power

All Inovonics INOmini modules are supplied with a ‘universal’ inline ‘brick’ type switching power supply that accepts mains voltages between 100VAC and 240VAC. The power requirement of this SiteStreamer™ is 110mA at 12 volts DC. A second DC connector on the rear panel of the unit allows ‘daisy-chaining’ two or more units to share a common mains supply, thus cutting down on cord clutter. Do make sure that the total power consumption does not exceed the DC current rating noted on the power supply label.

Radio Frequency Interference (RFI)

Although the SiteStreamer™ is intended for radio broadcasting environments, please do practice reasonable care in locating the unit away from *abnormally* high RF fields.

The Front-Panel Display and Menu Knob

The front-panel MENU knob scrolls the LCD through the various viewing and programming options. Section III of this manual explains the easy setup and various operating options of the SiteStreamer™.

Headphone Jack

The front-panel PHONES jack will accommodate stereo headphones of virtually any impedance with a 3.5mm stereo plug. When headphones are plugged in, the LCD menu will automatically go to the HeadPhone Vol screen so that you can adjust listening level. When the volume has been set to a comfortable volume, push the knob to return to the previous menu.

Rear Panel Connections

ANTENNA	The antenna input is 75-ohm BNC connector. Inexpensive, ready-made cables of various lengths are common in this format, and adapters for other RF connector types are readily available.
AES3 DIGITAL LINE INPUT	This XLR female input can accept an auxiliary AES3 stereo audio feed at sampling rates of 32/44.1/48kHz. On-screen gain programming scales the “Zero-VU” reference for digital audio

inputs to various dBFS levels, as explained on Page 13.

LAN PORT

This RJ45 jack accepts traditional TCP/IP connections to a router or server, and from there to the Internet.

+12VDC POWER I/O

These two connectors are in parallel to allow ‘daisy-chaining’ INOmini modules. This allows one DC supply to power up to three modules mounted in a single rack adapter, provided that the rating of the supply is not exceeded. Two short ‘pigtail’ cables are provided with each rack adapter.

The Model 662 draws 110mA. Check the rating on the label of the power supply to make sure that its rating accommodates all the modules it is called upon to support.

These power connectors are not a locking type, and the mating plugs do pull out rather easily. A Ty-Wrap® will secure the cables to the plastic anchor above the jacks if this is a problem.

Section III

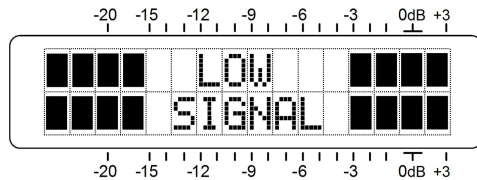
662 SITESTREAMER™ SETUP

SiteStreamer™ setup is explained in this section using the front-panel LCD screen and MENU knob. The menu functions described here, as well as many additional setup and operating features, are also available through the Web interface. We recommend using local control first to get familiar with the product.

Flashing Alarm

The SiteStreamer™ has alarms that indicate transmission fault conditions. These alarms can also dispatch instant email or SMS/text-message notifications to station personnel, and also are logged for later downloading. Alarms are set up and managed using the Web interface as detailed in Section IV. One alarm shows up on the front panel as well, which you may encounter this as soon as you power-up the unit.

If the SiteStreamer™ is not receiving an RF carrier, a LOW SIGNAL alarm will begin to flash soon after the unit is powered-up. The alarm is held off once the unit is operating normally.

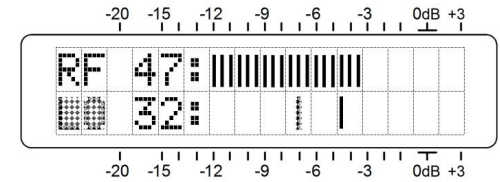


If you push or turn the knob, you'll get a brief respite from the flashing so that you may navigate among menus and complete unit setup.

Menu Navigation Basics

You may already have figured-out the menu tree for yourself. Quite simply: 1) *turn* the knob to navigate from one menu to the next, 2) *push* the knob to enter any menu associated with setup, 3) *turn* the knob to choose an option or to set a value, and then 4) *push* the knob again to accept the selection and commit it to memory.

Menu items that can be edited will 'blink' at a rapid rate when you enter that menu and push the knob. Don't confuse 'blinking' menu callouts, such as the one illustrated here, with the 'flashing' LOW SIGNAL alarm condition.

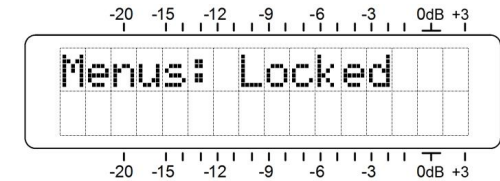


To recap: in setup menus, any parameter that can be edited will begin blinking as soon as the knob is pushed. Blinking indicates that a different option or value may be selected. Turn the knob to make your choice, and then push it once again to accept the selection.

Each SiteStreamer™ menu screen will be discussed separately and in order, except that the last menu is discussed first, as it could constitute a show-stopper!

Locked Menus (Menu Screen 14)

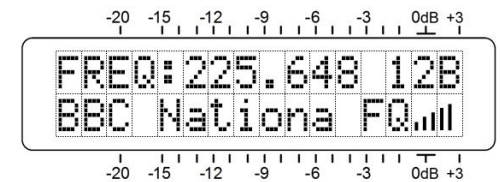
To guard against inadvertent menu editing or casual tampering, the very last menu in the sequence allows the user to lock the knob out of the editing mode. If you find that when you push the knob you can't enter a setup menu to change a parameter, scroll all the way to the very last menu screen. Push the knob and the word **Menus:** will start to blink. Turn the knob to **Menus: Unlocked** and push the knob again to set this selection. Then navigate back to whatever screen you were trying to edit. You can always re-lock the menu when you've finished making changes.



Tuning and Ensemble Label (Menu Screen 1)

When power is applied to the SiteStreamer™, a 'splash screen' with the product ID pops up immediately on the LCD. Within a few seconds this will revert to Menu Screen 1, shown here.

The top line of Menu Screen 1 displays the frequency of the broadcast and the corresponding DAB block designa-



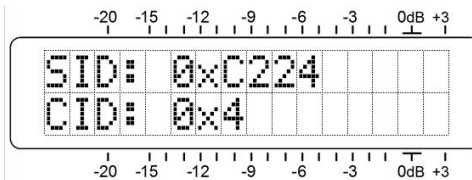
tion. Push the knob and FREQ will blink. Turn the knob to tune-in the desired frequency/group.

The second line displays the Ensemble Label, a service name common to all broadcasts sharing this common transmission channel. If the Ensemble Label overruns this 11-character display area it will scroll to reveal the complete text.

The FQ (FIC Quality) bargraph is a rough measurement of digital reception integrity. An accurate numerical value may be seen with the Web interface.

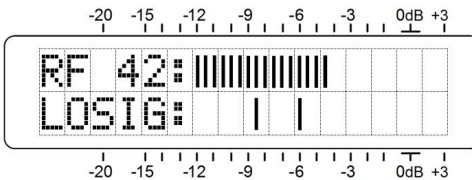
Service and Component IDs (Menu Screen 2)

SID# (Service Identifier) is a 16-bit hexadecimal identifier for audio programming, or a 32-bit one for data services. CID# (Component Identifier) further defines a specific component within the particular service.



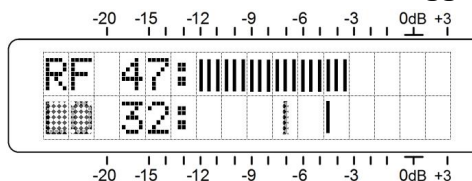
Carrier Strength and Alarm (Menu Screen 3)

The upper line of this screen displays signal strength of the RF carrier. The RF numerical value is the level at the antenna input in dBuV, and defines a range between 0dBuV (1 microvolt) and 75dBuV (about 5 millivolts). The bargraph readout gives an analog display of levels in a range from 10dBuV to 75dBuV. The signal strength display does not refer to the dB scaling above the display, which is used only for audio level measurements in Menu Screen 5.



The lower LCD scale is labeled LOSIG# and allows local, front-panel adjustment of the carrier loss alarm trigger points.

Push and turn the knob to set LO (trigger) and HI (reset) alarm values independently. Be advised that this alarm has timer



settings as well the level trigger points. As the timer settings are accessible only with the Web interface, setup of the carrier loss alarm is probably best done entirely that way. This is detailed beginning on Page 23.

Signal/Noise and Carrier/Noise (Menu Screen 4)

This screen displays two additional signal metrics. Numerical values are assigned to each of these readouts as well, although these numbers should be considered somewhat arbitrary, as they do not adhere to a specific broadcast standard.

SN# is a first-order approximation of the signal-to-noise quality of the demodulated program with respect to total channel noise. This measurement takes into account factors that involve multiple channels and other interference factors. The metered range is 0 to 20 and is dB-linear.

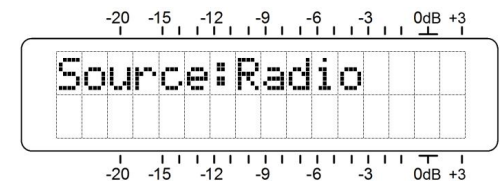
CN# is the OFDM carrier-to-noise ratio. This defines the dynamics of the OFDM subcarrier group signal level between its on and off (null) states. The metered range extends from 0dB to 54dB.

The RF, SN and CN numerical values are useful when installing a rooftop antenna. In locating and aiming the antenna, do everything you can to maximize the numbers.

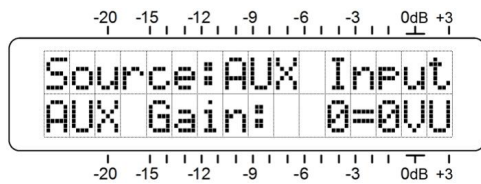
Monitor Source Switching (Menu Screen 5)

The SiteStreamer™ normally monitors the off-air DAB broadcast, but it can also switch to an external audio feed that is applied to the rear-panel AES3 DIGITAL LINE INPUT connector. This will allow, for example, an A/B comparison between the air signal and a program audio feed to the DAB multiplexer.

This snapshot shows the primary, default monitoring mode: the off-air Radio signal. Push the knob and turn it to select AUX Input.



Now, with `SOURCE:AUX` Input showing, press the knob a second time to highlight `AUX Gain:` setup.

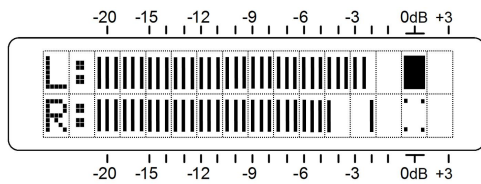


Input sensitivity is normally 'unity': a digital 0dBFS tone will take the front-panel Menu Screen 6 meter to 0dB. You can turn the knob to introduce gain, however, so that the front-panel meter reading of 0dB can equate to 'zero-VU' values of -18dBFS, -20dBFS or -24dBFS.

Program Audio Levels (Menu Screen 6)

Menu Screen 6 presents accurate bargraph metering of program audio levels. This is a peak-responding meter with a floating peak-hold function.

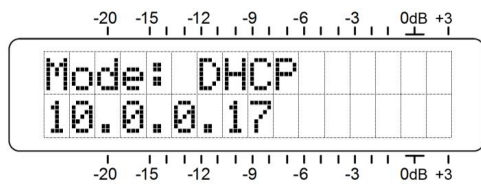
"Full" modulation is denoted by the large block opposite the 0dB marking on the panel. The meter resolves +1, +2 and +3dB above 0dB, and from 0dB down it is calibrated in 0.5dB steps to -15dB, and then in 1dB steps to -21dB.



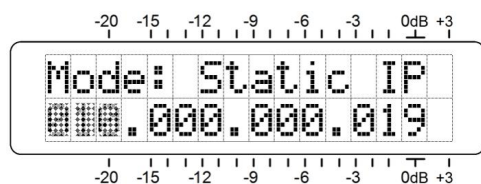
The 0dB of a DAB broadcast corresponds to a 0dBFS feed to the DAB subchannel multiplexer.

Networking Mode and IP Address (Menu Screen 7)

The IP networking mode and address are set on this Menu Screen. Push the knob and `Mode:` will blink. Select either DHCP or Static IP as dictated by your network configuration. In `Mode: DHCP`, the IP address is automatically assigned by the router/server and cannot be changed manually.



With `Mode: Static IP` selected, push the knob again to enter a fixed IP address manually. The

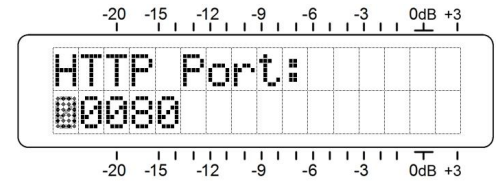


first address group will begin to blink. Turn the knob to dial-in the required number. Continue to press the knob and dial-in numbers until all four IP address fields are filled. Push the knob a final time to commit all selections to memory.

HTTP Port (Menu Screen 8)

The default IP port assignment is the commonly-used Port 80, which shows up on the second line of Menu Screen 8.

To change this assignment, push the knob to enter the setup field. Leading zeroes will display and each digit must be set independently.



Push the knob repeatedly to reach the digit you need to reset, starting on the left and proceeding to the far-right units digit. When all digits are set, press the knob one final time to commit the selection to memory.

Gateway, Subnet Mask, Primary DNS (Menu Screens 9, 10, 11)

It's really not within the scope of this manual to cover the intricacies of network configuration. Often an IT professional will need to get involved in this.

These three screens relate to a static IP address and are available only when `Mode: Static IP` is selected under Menu Screen 6. The `Gateway:`, `Subnet Mask:` and `Primary DNS:` are entered exactly as described for Static IP addressing under Menu Screen 7.

MAC Address (Menu Screen 12)

The MAC (Media Access Control) address of any piece of hardware with IP connectivity is a fixed value unique to that particular piece of gear. Menu Screen 11 displays the `MAC Address:` of your SiteStreamer™ and cannot be changed.

Headphone Monitoring (Menu Screen 13)

A front-panel PHONES jack offers a convenient monitoring point for SiteStreamer™ setup and casual listening. When a pair of headphones is plugged into the front-panel jack, Menu Screen 12 automatically pops up. `HeadPhone Vol`

will begin blinking and the panel knob may be adjusted for a comfortable listening level.

The LCD shows an arbitrary numerical value and a bargraph representation of the headphone volume. Once volume is set, push the knob to save the setting to memory and to return the screen to the last menu on display.

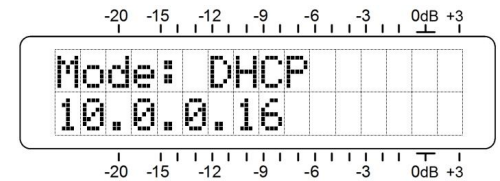
The headphone jack and its level control remain active and may be used to provide an unbalanced program audio feed.

Section IV

THE WEB INTERFACE

Connecting

Connect both the INO-mini 662 SiteStreamer™ and a computer to your local network. We'll assume DHCP operation for this exercise. Next, go to Menu Screen 7 and note-down the IP address that your router has assigned. In this case it's 10.0.0.16



Open a browser window on your computer and type the IP address into the browser's address bar. The main Now Playing Web interface page should appear on your screen.

The following illustration ('articulated' over two pages) shows the entire 'raw' Now Playing screen as it might appear when first loaded.

The screenshot shows the Cambridge 105 web interface. The top bar includes the device name "Cambridge 105" and a volume icon. The main content area is divided into several sections:

- Menu:** A list of menu items including "Now Playing", "BandScanner", "DAB Info", "Alarms & Notifications", "Setup", "Network", "Dynamic DNS", "SNMP", "Email Preferences", "Time & Time Zone", and "Admin".
- Now Playing:** A section with three rows of data:
 - Row 1: Freq (202.928 (9A)), SID/CID (0xC791 / 0xA), RSSI (44 dBuV)
 - Row 2: SNR (15), DAB Quality (100), CNR (29)
 - Row 3: FFT Offset (0), CNR FIB Error (0), CU Level (36)
- Ensemble Label:** Trial Norwich, Ensemble ID (0xC1CB)
- Total Services:** 14, Total Components (14)
- Total CU:** 846 (98%), Time (17:19 28/08/17)
- Radio:** AUX Input, Dynamic Label Segment (Size 0)

Sample Rate: 32000 kHz
Bit Rate: 48 kbps
Gain: 0
Mode: (2) Stereo
Service Mode: (4) DAB+
Protection Info: (8) EEP 3A
Current CU: 36
CU Address: 0x2A0

Frequency: 202.928 (9A)
Service ID: C791
Component ID: A

Valid Channels

- SID: About Norwich (0xC6D6)
CID: About Norwich (0x3)
- SID: Classical 1 (0xC2DC)
CID: Classical 1 (0xB)
- SID: Radio Caroline (0xC6D6)
CID: Radio Caroline (0x8)
- SID: Cambridge 105 (0xC791)
CID: Cambridge 105 (0xA)
- SID: Weather24/7Radio (0xC9DD)
CID: Weather24/7Radio (0x6)
- SID: Totally Radio (0xCAD4)
CID: Totally Radio (0x7)
- SID: Future Radio (0xB16)
CID: Future Radio (0x1)
- SID: Antenna Radio (0xCBD9)
CID: Antenna Radio (0xE)
- SID: Chris Country (0xCCC4)
CID: Chris Country (0xD)
- SID: The Beat (0xCCDD)
CID: The Beat (0xC)
- SID: Radio Norwich (0xCDB7)
CID: Radio Norwich (0x2)
- SID: Angel Vintage (0xCDC2)
CID: Angel Vintage (0x9)
- SID: Jazz FM Norwich (0xCDD0)
CID: Jazz FM Norwich (0x4)
- SID: Solar Radio (0xCED4)
CID: Solar Radio (0x5)

Save as Preset

Preset Stations

- [1] 202.928 (9A) - Future_Radio
- [2] 202.928 (9A) - Radio_Norwich
- [3] 202.928 (9A) - About_Norwich
- [4] 202.928 (9A) - Solar_Radio
- [5] 202.928 (9A) - Jazz_FM
- [6] 202.928 (9A) - Radio_Caroline
- [7] 202.928 (9A) - Totally_Radio
- [8] 202.928 (9A) - Angel_Vintage
- [9] 202.928 (9A) - Weather247_Radio
- [10] 202.928 (9A) - Cambridge_105
- [11] 202.928 (9A) - The_BEAT
- [12] 202.928 (9A) - Classical_1
- [13] 202.928 (9A) - Chris_Country
- [14] 202.928 (9A) - Antenna_Radio
- (Empty)

StationRotation

Enable: On

Rotation Time (Sec): 10

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A header at the top of the page and the Menu list on the left are common to all SiteStreamer™ Web interface pages. The header displays the tuned frequency, the remote listening utility, audio levels and alarm status indicators. All SiteStreamer™ screens will be described individually as they are listed in the Menu on the left-hand side of the screen.

Remote Listening

Click the loudspeaker icon in the header to listen to the station from a remote location.



The default streaming rate is 128kbps. But on networks that won't support that speedy a stream, you may select 64kbps, or even 32kbps for a really sluggish network.

The encodings/decoding and buffering time (latency) of the audio will depend to some degree on the connection path and network quality. Latency may be several seconds, even on a Local Area Network.

The Web listening utility has been included more to confirm the presence of audio than to perform a critical assessment

of off-air audio quality. Keep in mind that the audio will lag metering.

Now Playing

The Now Playing Web screen is where you tune-in stations and save them as presets. This screen also gives signal quality information and displays basic DAB information, including some of the more important PAD (Program-Associated Data) items. You may refer back to the previous pages to identify the “Blocks” discussed here.

Block 1 of this screen gives signal reception parameters.

Freq, is the frequency in MHz that the radio is currently tuned to. The DAB group designation appears parenthetically.

SID/CID are the Service and Component identifiers, RSSI is the dBuV measurement of signal strength. These were discussed on Page 11.

SNR , FIC Quality (FQ) and CNR are signal metrics previously addressed on Pages 11 and 12. The numerical designation for FIC Quality is a relative value ranging from 0 to 100.

The three remaining signal metrics are unique to the Web interface. FFT Offset indicates a frequency offset of OFDM signal components, normally corrected by AFC (Automatic Frequency Control). CNR FIB Error displays activity of the error counter within the Fast Information Block; it is reset automatically. CU Level gives the number of currently decoded Capacity Units; the maximum indication is 470.

Block 2 of information shows the Ensemble Label and Ensemble ID of the currently-tuned DAB ensemble, the number of Total Services and Total Components of that ensemble.

Total CU (Capacity Units) and the use (in percent) of CU resources are also displayed here, plus the local Time and date at the broadcast location.

Block 3 shows the Dynamic Label Segment, program metadata in clear text that accompanies the transmission; Size is the number of characters used. The same holds true for any Dynamic Label Segment Tags that define ‘DL Plus’ objects. These might be used to identify a Web or telephone address within the text or otherwise integrate part of the Dynamic Label Segment with an associated operation.

Block 4 of DAB reception data gives the Sample Rate of the tuned program, the encoded Bit Rate, Gain offset, if used, and reception Mode (whether it’s monaural or one of several stereophonic schemes). Service Mode, Protection Info, Current CU and CU Address are further parameters of the program being received.

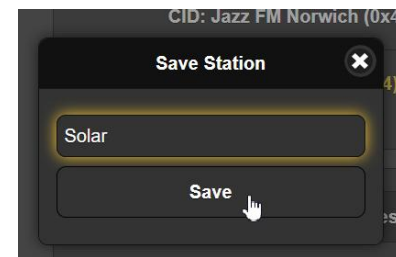
Block 5 is provided for setup and test purposes. In normal operation, the Frequency:, Service ID: and Component ID: data displayed here will echo the top of the page for a valid incoming broadcast. However, these fields also permit manual entry of hexadecimal values for the three parameters. This is useful for setting-up a SiteStreamer™ before a signal can be received; just program-in the appropriate ensemble and component IDs manually beforehand. Whatever is manually entered will then populate the fields at the top of the screen just as if the unit was tuned to that broadcast. Keep in mind that this is for setup, test and debugging purposes only, and entering data manually during normal operation will override whatever broadcast is being received.

As the **Block 6** name might imply, Valid Channels displays all programs in the received ensemble. The tuned station, shown in yellow, will also display a thumbnail of the MOT Slideshow image if one is being transmitted (see Page 22).

As depicted in **Block 7**, you may program DAB ‘stations’ into memory for instant call-up or for the self-sequencing StationRotation feature explained later.

Station Presets

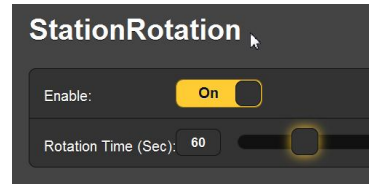
With a station tuned-in, click the Save as Preset bar. This brings up a Save Station box for typing-in an identifier, either the formal name of the channel as shown under Valid Channels, above, or your own nickname of up to 16 characters+spaces). This will replace the (Empty) slot under Preset Stations.



Presets are erased by clicking the big **X** at the right-hand side of the individual entry.

StationRotation

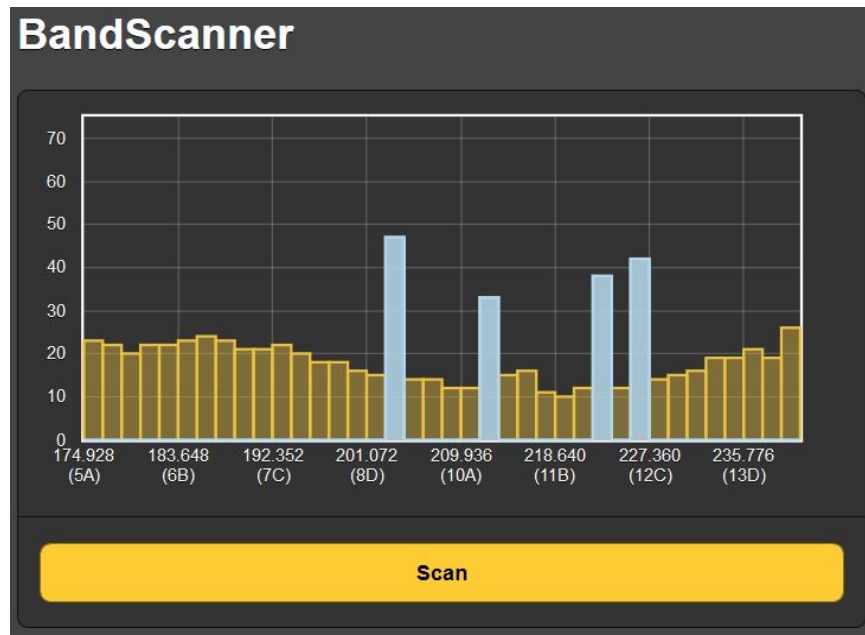
The SiteStreamer™ can monitor all stations that have been added as presets by 'round robin' sequencing. When the StationRotation function is enabled, the unit will tune to the next station on the list, 'listen' to that station for the interval programmed into the Rotation Time (Sec): box, and then cycle to the next preset.



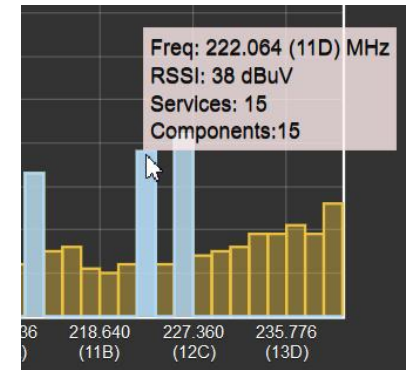
Individual station memories retain the pre-programmed parameters for the Audio Loss, Low Signal and DAB Loss alarms. As alarm settings are specific to the station being monitored at the time, it is important to factor-in the Rotation Time (Sec): figure when setting alarm variables so that the SiteStreamer™ will not sequence to the next station before an alarm is triggered.

BandScanner™

The second Menu button brings up a built-in utility that displays the RF spectrum of the DAB broadcast band. An example plot is shown on the next page.



'Hovering' the screen cursor over any DAB carrier (blue bar) will present an information box with the frequency, group, signal level and total number of Services and Components.

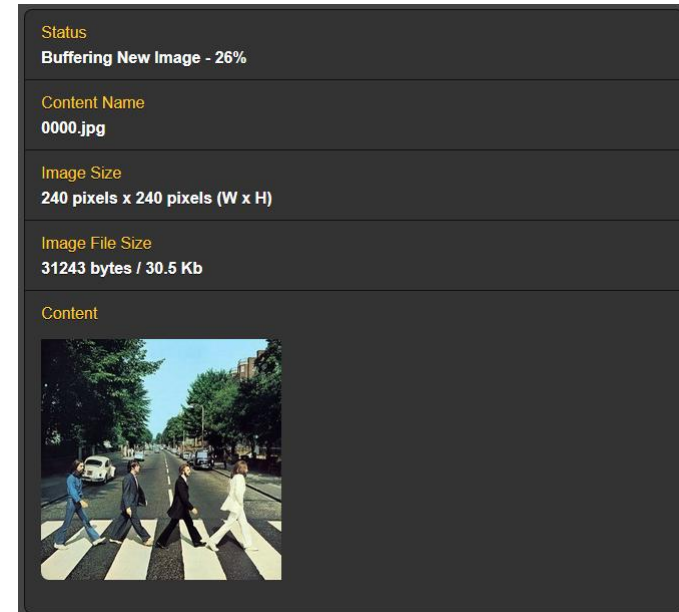


A band scan necessarily interrupts program audio during the scanning process, which may take up to 20 or 30 seconds. Alarms are inhibited for this interval.

DAB Info

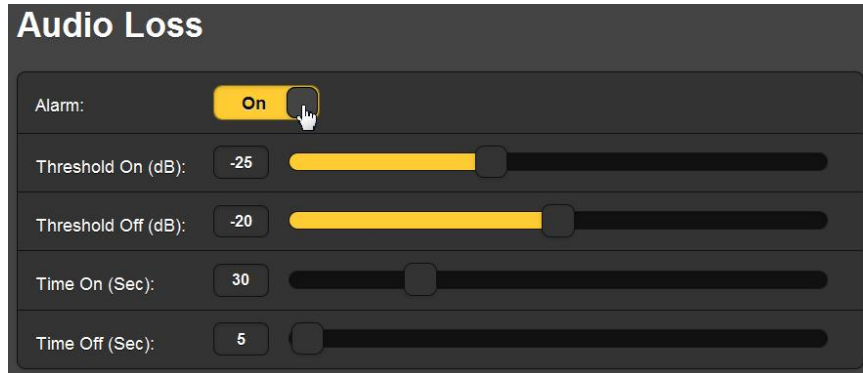
Between the Service Info, Component Info and MOT Slideshow information areas, you will find substantially all the necessary DAB metadata associated with the broadcast you are tuned to. Some of this information is redundant to listings on other screens, but it is all in one place at this location.

The MOT Slideshow block displays the image of any album art, station logo or other .jpg or .png file sent for display on appropriately-equipped DAB receivers. The file status, name and sizes of the image and its file are shown as well.



Alarms and Notifications

The time-stamp feature for email notifications and the Alarm Log depends on Internet time, plus the proper time offset and relationship to DST, or 'Summer Time'. Correct time setup should be confirmed before considering setup of this page complete. Internet time setup is explained on Page 30.



The screenshot shows the 'Audio Loss' configuration panel. It includes a toggle switch for 'Alarm' set to 'On'. Below are four sliders: 'Threshold On (dB)' at -25, 'Threshold Off (dB)' at -20, 'Time On (Sec)' at 30, and 'Time Off (Sec)' at 5.

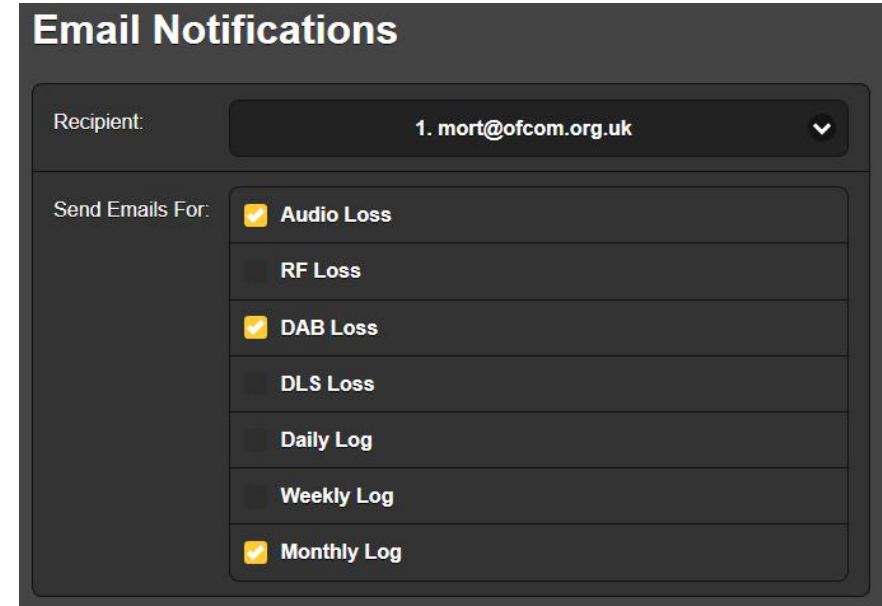
The Audio Loss and Low Signal alarms have similar threshold and timing setup parameters.

The alarm threshold has two points to set. Threshold On is the level the signal must remain below for the Time On (Sec): period before an alarm will initiate. Conversely, the measured value must re-attain the Threshold Off setting and remain at or above this level for the Time Off (Sec): duration to reset the alarm. This implies *hysteresis* in the alarm level settings, which prevents 'chattering' as a metered value dithers about one set point or the other. Usually the two points will be set with only a small difference.

The DAB Loss and DLS Loss alarms have only Time On (Sec): and Time Off (Sec): settings. Presence of these digital parameters is a go/no-go situation. These settings will depend entirely on whether you want to be apprised of a short-term loss, or if the condition has to remain for a greater number of seconds before the alarm is triggered.

Email Notifications is where you specify which staff member gets which alarm message, and whether the notification is an email or an SMS/text message. Before this can be set up, you must first enter the recipients on the Email Preferences Web interface page. This is covered on Page 29.

Email Notifications setup is pretty-much self-explanatory. Once recipients are listed under Email Preferences, and the outgoing SMTP mail server has been set up (see Page 29), all you need do is select the email and/or text message recipient from the pull-down list, and then check the alarms for that person to receive.



The screenshot shows the 'Email Notifications' configuration panel. The 'Recipient' dropdown is set to '1. mort@ofcom.org.uk'. Under 'Send Emails For:', the following options are checked: 'Audio Loss', 'DAB Loss', and 'Monthly Log'. Other options like 'RF Loss', 'DLS Loss', 'Daily Log', and 'Weekly Log' are not checked.

In this example, Good old Mort has both an SMS/text and an email address on the list, and in this case will receive email notifications of Audio Loss and DAB Loss, plus a Monthly Log of all alarms. Other personnel or a contract engineer can be apprised of the same or of different fault conditions.

The Alarm Log

Open the log by clicking the + next to Alarm Log at the bottom of the screen. This will open the log to view the contents on the Web interface screen. The SiteStreamer™ logs all alarms and includes a date and time stamp. In addition to sending emails with a daily, weekly or monthly log as a small .csv file attachment, the logging utility can also send an alert when it has reached a certain memory capacity. The log is capable of holding several hundred entries, so you'll probably want to go in and clear it every now and then.

Alarm Log Settings

Status: 7% full

Email when % full: 50

Clear Alarm Log Download Alarm Log

— Alarm Log

Alarm	Station	Time	Date
Station change	202.928 (9A) - Angel	17:15:23	2/08/17
DAB back	202.928 (9A) - Future Radio	23:49:18	1/08/17
Audio back	202.928 (9A) - Future Radio	23:49:23	1/08/17
DAB loss	202.928 (9A) -	23:48:45	1/08/17

The current contents of the log may be downloaded by clicking: Download Alarm Log, which will prompt you to pick a location to save the small .csv file. Click: Clear Alarm Log to purge all entries, but keep in mind that this will affect any daily, weekly or monthly logs being accumulated for automatic scheduled email dispatch.

Setup

The Setup Web interface page allows remote programming of the Radio / Aux Input switching and the Aux Gain: setting for the dBFS = 0VU offset.

Network

This screen displays the current networking setup. Some entries are 'grayed-out' when the SiteStreamer™ is under automatic DHCP assignment. When using a Static IP, this

Web interface page is a user-friendlier means of entering the various network parameters.

Hostname: is a 'friendly' name you can assign to your SiteStreamer™. Type this name into a browser address bar to access the unit on the same local network. This is particularly handy if you have more than one SiteStreamer™ on a given network; easier than remembering IP addresses that can change with DHCP assignments.

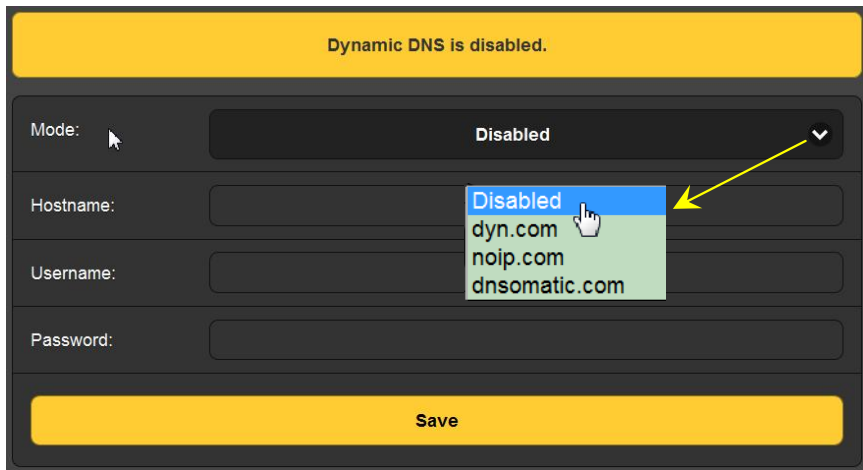
Dynamic DNS

You could not address equipment behind a dynamic IP address if it were not for IP-forwarding providers available on the Internet. Their services, which are either free or at very modest cost, will allow your SiteStreamer™ to apprise the forwarding provider of its reassigned IP address each time that address is updated by the ISP. The IP-forwarding provider intercepts data attempting to access the SiteStreamer™ with an old address, and replaces that IP address with the updated one.

There are three popular forwarding service providers available on the Internet. Their basic service (all you really need) may be free of charge, but advanced features may command a nominal annual fee. All services require registration on the appropriate Website.

In the example on the next page, the dynamic DNS function is shown Disabled. But if you click on the arrow to the right you'll see the drop-down list of the three popular providers. Jot down these provider names and enter each in your Web browser to learn more about their services, and to register with whichever provider seems best to meet your needs.

When you register, the provider will issue you a Hostname, (not to be confused with the Hostname of your SiteStreamer™), Username and Password.



Click on the provider you have chosen, and then type the information into the appropriate boxes on the Dynamic DNS Web interface screen. Follow with a Save. This will allow you to access your SiteStreamer™ when it is behind a dynamic IP address.

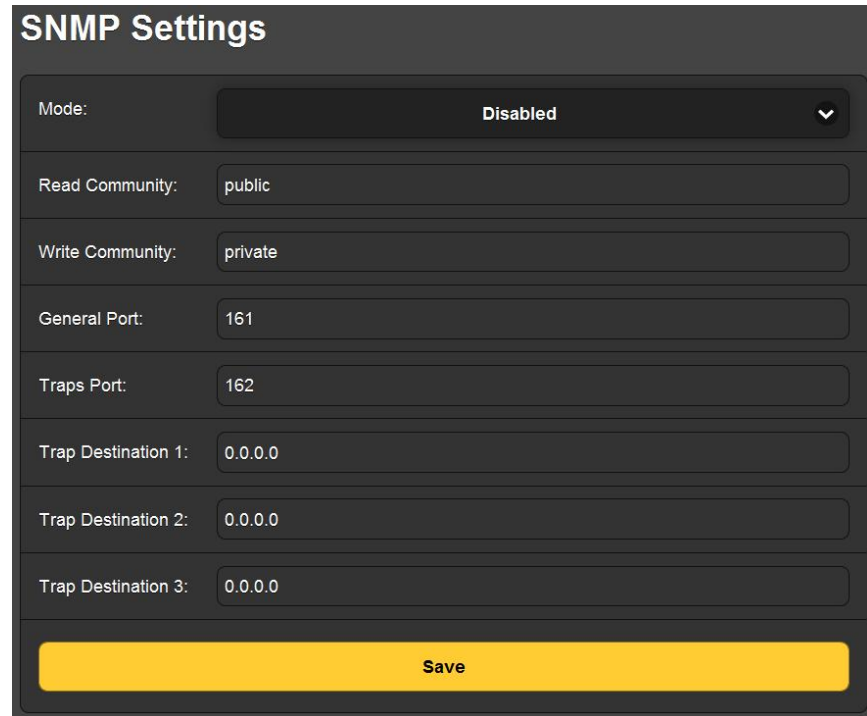
SNMP Operation

SNMP, or Simple Network Management Protocol, allows other TCP/UDP/IP equipment to communicate directly with the SiteStreamer™, and for the SiteStreamer™, itself, to initiate an alarm on the network.

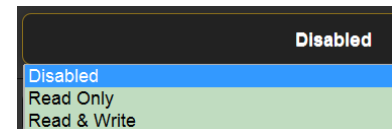
The SiteStreamer™ interfaces with a network controller, technically known as the SNMP ‘Manager.’ The SiteStreamer™ incorporates an embedded ASCII text file called a Management Information Base, or MIB. In setting up for SNMP operation, the MIB file is downloaded from the SiteStreamer™ and uploaded to the SNMP Manager.

Click: SNMP in the Menu listing to bring up the window shown on the following page.

The default mode for SNMP is Disabled, which inhibits communication between the SiteStreamer™ and the SNMP Manager. Click the arrow to the right of Disabled to view operating choices in the drop-down menu.



Changing Mode: to Read Only allows the SiteStreamer™ to be interrogated by the SNMP Manager so that SiteStreamer™ settings, metering, PAD data and alarms can be read and integrated by other equipment on the network.



With Mode: set to Read & Write, the SNMP Manager can send commands to the SiteStreamer™. Other equipment can then change the station and adjust other setup parameters.

SNMP ‘Communities’ serve as passwords for this function. Go into the Read Community: and Write Community: boxes to enter text that is specified for the read/write strings on the SNMP Manager monitoring device. As with similar text-entry screens, execute a Save after entering.

When the SiteStreamer™ initiates an alarm, rather than being queried or polled for one, the alarm is known as a ‘trap.’ You may enter three network IP addresses as Trap Destinations, each corresponding to other devices to be apprised of alarms.

The default SNMP Ports, General Port 161 and Trap Port 162, are customary assignments for the majority of SNMP operations. These may be changed as required by typing-in new values.

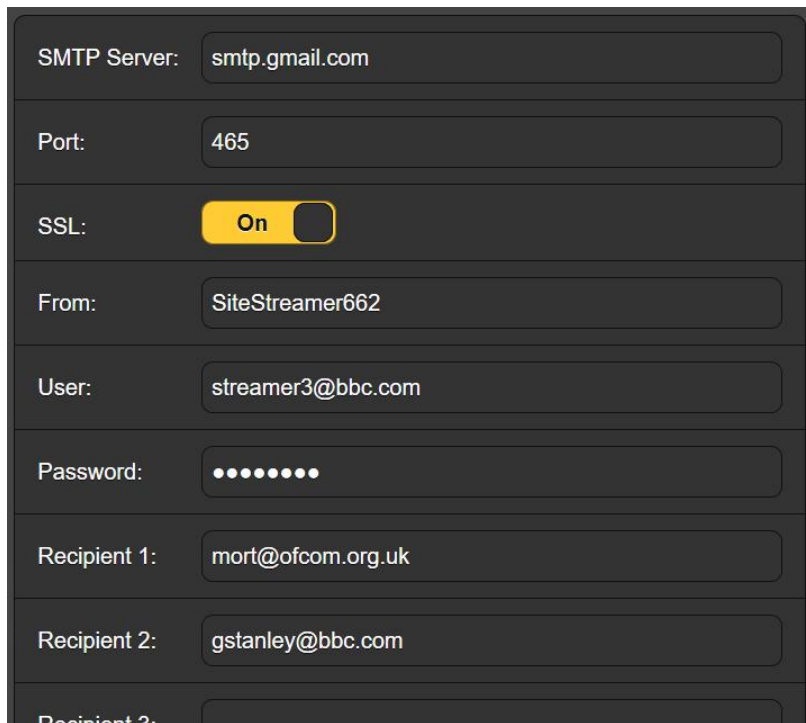
The MIB File

The MIB file is a small text (.txt) file that is read by the network controller (the SNMP Manager). To download and read this file yourself, click: Download MIB. The MIB file is in plain text and may be saved in the usual Windows manner, and read with Windows Notepad.

Email Preferences

Enter the email server settings and email addresses for the various recipients of email or SMS text messages here on the Email Preferences menu page. These entries determine ‘who gets it and how.’ However, the alarm preferences for email notifications, or ‘who gets which alarm message’ are set on the Alarms and Notifications menu page. This is described with the alarms discussion on Page 23.

This example shows typical setup for an SMTP mail server.



The screenshot shows a web interface for configuring email preferences. It features several input fields and a toggle switch. The fields are: SMTP Server (smtp.gmail.com), Port (465), SSL (On), From (SiteStreamer662), User (streamer3@bbc.com), Password (masked with dots), Recipient 1 (mort@ofcom.org.uk), and Recipient 2 (gstanley@bbc.com). There is also a partially visible Recipient 3 field at the bottom.

Mail server settings vary, but essentially you create a separate email account for your SiteStreamer™. The User: name can be anything you like, and will actually be the formal name of the sender. But with most email clients, emails from the SiteStreamer™ are received with the sender identified by the ‘friendly’ name: INOmini 662 – 202.928 (9A) (or whatever frequency the unit is tuned to when the message is sent).

Recipient 1: and Recipient 2: in this example are email addresses for personnel responsible for one or more of the stations that can be received.

When this utility has been set up, click: Save at the bottom of the page to commit this information to memory. You may also click: Send test Email to dispatch a confirming test message immediately to all recipients.

Timekeeping

Open the Time & Time Zone Web interface screen to set up the internal timekeeping functions. Correct timekeeping is essential for time-stamping alarm notifications and for meaningful Alarm Log listings.

Select your offset from Universal Coordinated Time using the Time Zone (Hours): slider. When this is set correctly, local time will show at the top of the window. You may make allowance for Daylight Saving Time (‘Summer Time’) here too. Choose either the automatic function, fulltime DST, or disregard DST altogether by leaving both boxes unchecked.

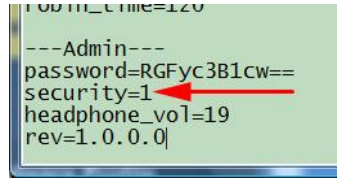
The Time Server defaults to a recognized Web-based time authority, but you may enter an alternative Server: if you are partial to another. Be sure to click: Save at the bottom of the window to commit your choices to memory.

SiteStreamer™ Password

The Admin Web screen allows you to set up a SiteStreamer™ password. Simply type the password into the Password: field, click: Save, and the click: Enable. You’ll immediately be prompted with a pop-up window asking for a User Name: and Password:. The User Name: is optional and may be left blank as it is not used with any other SiteStreamer™ function at this time. Just enter your new password in the Password: field. This pop-up will greet you each time you launch the SiteStreamer™ Web interface pages. Again the User Name: is optional.

If you lose or forget your password, you must perform a 'hard reset' (see below). This will purge all setup and other information from memory. To obviate this inconvenience, we recommend periodically downloading and saving a Hardware Profile, which retains all the setup data and can be uploaded back to the unit. This procedure is described shortly.

Bear in mind that the old, lost password is part of the Hardware Profile, so you must edit this file before restoring it to the purged SiteStreamer™, otherwise you'll be back to where you started. The snapshot at the right shows the very bottom of the Hardware Profile where the administrative data is held. Note the numeral '1' marked with the arrow. This shows that the password is enabled. Use MS Notepad or another text editor to change the one to a zero. This turns password protection off. Re-save the edited file. You can now do a hard reset of the SiteStreamer™ and then upload the edited Hardware Profile. This will restore your previous settings, and you will even be able to see the old password, which you may use or replace.



```
---Admin---  
password=RGFyc3B1cw==  
security=1  
headphone_vol=19  
rev=1.0.0.0
```

Hard Reset

A hard reset will purge all setup information from memory. Please see the Hardware Profile discussion that follows to save settings and restore them to the SiteStreamer™.

To perform a hard reset, hold down the MENU knob while power-cycling the unit. Remember: this restores the SiteStreamer™ to 'factory-fresh' condition; you will lose all setup information.

The Hardware Profile

The entire SiteStreamer™ setup, which includes receiver setup choices, station presets, alarm parameters, alarm notification preferences and SNMP options, may be saved to your computer as a small text file.

The Hardware Profile is useful for restoring a previous setup or for 'cloning' a second unit for backup service. Click: Download Hardware Profile to save the profile to your system. Depending on your browser and version, the file will normally be saved to a Downloads folder unless you are asked

for a specific 'save to' location. The file has a default name of 662settings.ini.txt.

To upload a saved Hardware Profile to your SiteStreamer™, first click: Browse... to locate the saved profile on your computer, and then click: Upload Hardware Profile. This will replace all setup parameters that are currently loaded and running in your unit.

Section V

UPDATING THE SITESTREAMER™

The Firmware Updater

The Sitestreamer™ is host to two operating files that may be updated easily by the user in the field. These files are the primary firmware, which controls the functions, memories and Web interface of the unit, and the individual Web pages that comprise the Web interface screens.

The Sitestreamer™ includes a 'bootloader' utility that allows firmware to be updated whenever Inovonics issues changes to add features, to improve performance, or otherwise to expand the usefulness of the product. Inovonics supplies firmware updates free of any additional charges.

A bootloader is a simple software routine that runs on any PC connected to the same network as the Sitestreamer™. Refer to Page 16 for securing a connection between the SiteStreamer™ and your computer. This *must* be a wired, LAN connection for both the PC and for the Sitestreamer™. Attempting to use a Wi-Fi link will almost always fail.

Warning

A firmware update will restore the SiteStreamer™ to factory defaults. *All settings and presets will be overwritten!* Always save a Hardware Profile (Page 31) before proceeding with an update. This will retain all user setup parameters that can be restored afterward.

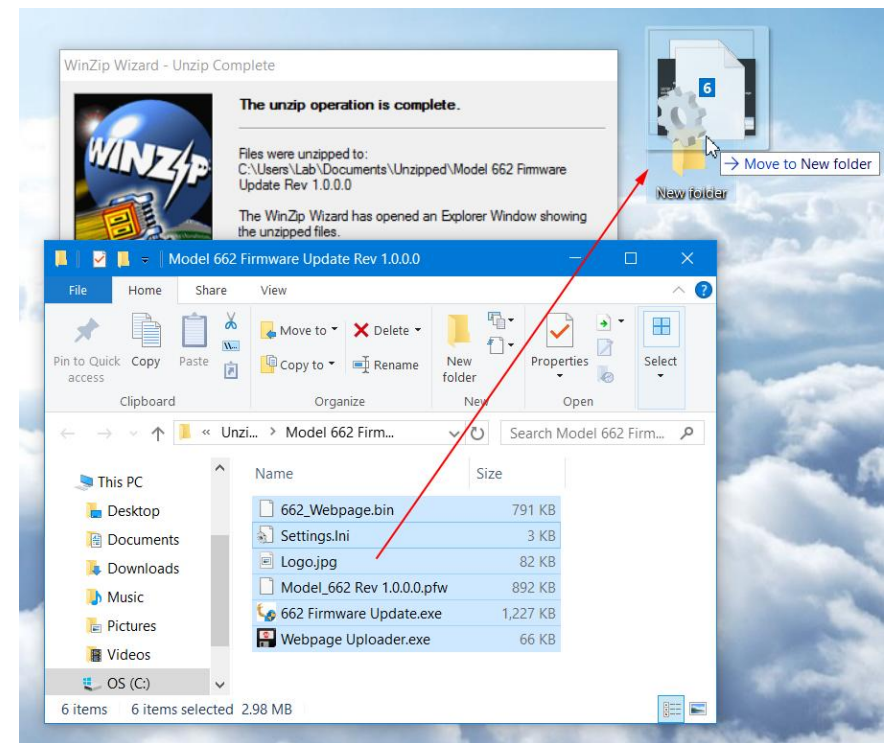
Update Files

A firmware update will be supplied as a 'zipped' folder containing a number of files. Make a temporary New Folder on your PC Desktop and unzip these files to it as shown on the next page.



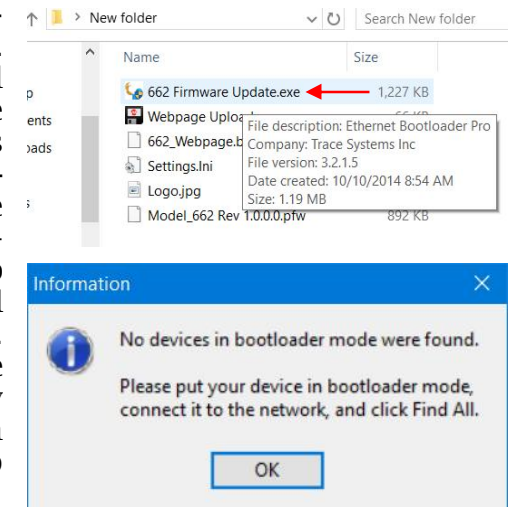
One of the supplied files is the third-party bootloader utility, an 'executable' (.exe) file. Because executables are notorious for propagating viruses, many antivirus programs will not allow .exe files to be downloaded and will urge you not

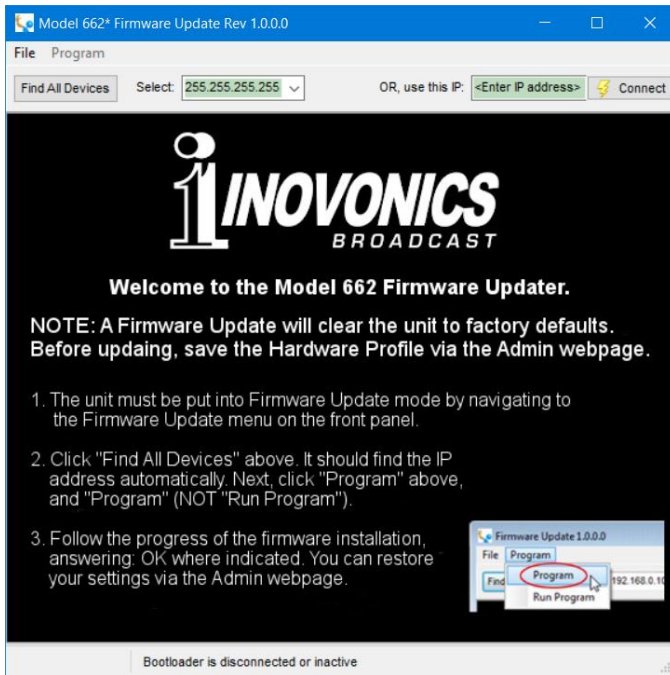
to install them. But we implore you to place your trust in us, glibly throwing caution to the wind.



Firmware Update

Navigate to your temporary Desktop folder (New Folder) and double-click the Firmware Update.exe file. This is the file marked with the arrow in the upper snapshot. This will bring up the Information message in the second snapshot, advising that the Firmware Updater does not yet find your 662 SiteStreamer™. Click: OK to start the updating utility anyway and to display its main screen, shown at the top of the next page.



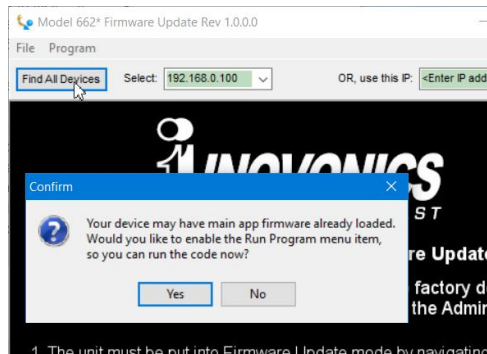


The bootloader window outlines the firmware update process in three easy steps. The first step advises that the SitesStream™ must, itself, be in the 'bootloader' (Firmware Update) mode.

Hold down the front-panel Menu knob until 662 Firmware pops-up on the front-panel LCD. Next, turn the Menu knob to the third screen: Update Firmware. Push the knob and select Yes, and then push the knob again. This will bring up Loadine Bootloader on the LCD.

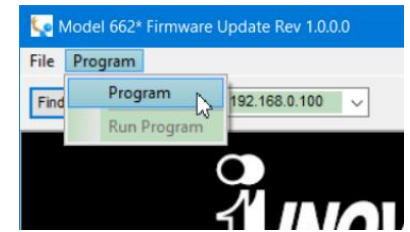
Click: Find All Devices at the top of the Firmware Update window. Look for the SitesStream™ IP address to populate the Select: area, and for a Confirm box to pop-up on the screen as well.

The Confirm box is a 'watchdog' feature included in the third-party



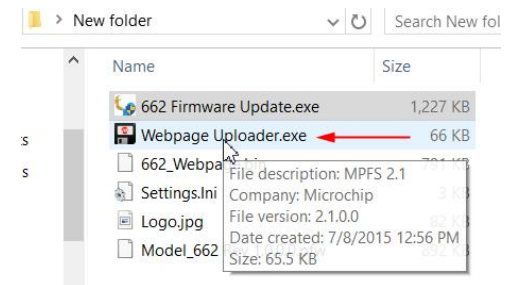
bootloader utility, but it is not pertinent to the SitesStream™ update procedure.

Click: No in the Confirm box to close it, and then click: Program at the top of the window, and finally click: Program, the first item in the drop-down list. The update utility will run and then restart the 662 SitesStream™ for normal operation with factory-default values. You may then upload a Hardware Profile to reclaim all user setup parameters (Page 31).

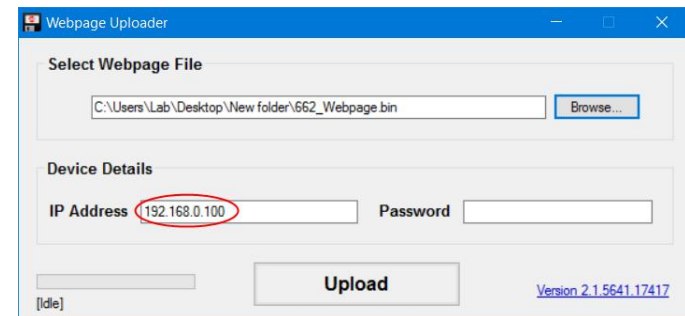


Updating Web Interface Pages

If a new version of firmware calls for a Web interface page update, there will be an extra Webpage Uploader.exe file in the Firmware Update folder (New Folder). The arrow in the snapshot at the right points to this file.



After the firmware update is bootloaded, and while the 662 SitesStream™ is in communication with your computer, return to the New Folder and double-click the Webpage Uploader.exe file to start this utility.



Enter the IP Address, if it does not automatically populate, and then click: Upload. The existing Web interface pages will summarily be replaced with the new ones.

Section VI

TECHNICAL MATTERS

Firmware Version

With the SiteStreamer™ powered-up, hold the knob down for 5 seconds or so. The menu screen you have been viewing will be replaced by the 662 Firmware screen. This shows the firmware version installed in your unit, information that may prove important when communicating with the factory. Push the knob again to return to the normal menu sequence.

'Under the Hood'

The 662 SiteStreamer™ is compact and sophisticated, utilizing mostly surface-mounted (SMD) components. Many of these are application-specific and/or pre-programmed at the factory, but all of them are impossibly tiny. This makes servicing the unit in the field a difficult proposition at best. For these reasons, and also because of the small format of this manual, we have dispensed with schematic diagrams, servicing instructions and a listing of component parts.

Having said that, our policy has always been one of 'full disclosure.' We feel that, unless we are doing something nefarious (or acting in the interest of national security!), there should never be a reason to hide information from the user. With a clear conscience, and upon request, we will cheerfully provide additional documentation and divulge all but the very darkest secrets concerning any Inovonics product.

Because it is so small and lightweight, returning the 662 SiteStreamer™ for factory servicing, firmware upgrades, etc. is an option that we encourage. Inovonics has never considered factory repair charges a significant source of revenue, and we are confident that you will be astonished at how reasonable our rates actually are!


Notes:

More Notes:



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 “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. The 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. The 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 tag 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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