

# 262

## Stereo Audio Processor

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### Installation & User Guide



May, 2017 - Rev. 1 Firmware

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## Section I

# INTRODUCTION

### Product Description

Inovonics' NOVIA 262 is a versatile, dual-mode stereo audio processor. It is well suited to FM airchain use with an exciter that includes the stereo generator, and serves general production studio and other broadcast plant applications.

The NOVIA 262 features gain-riding AGC, leveling, parametric EQ, 3-band dynamic range compression, and both wide-band and independent pre-emphasis-protection final limiting. Programmable from the front panel or through its cross-platform Web interface, the NOVIA 262 also supports 2-way program streaming and SNMP.

### Product Features

Features of the Inovonics NOVIA 262 include:

- Comprehensive audio processing with factory and user presets; internal scheduler allows dayparting
- Accepts analog, AES-digital and streaming program inputs; out-streams source and processed audio for remote monitoring
- Failover feature can switch to an alternate program feed when primary audio is lost
- Easy setup using the OLED screen and jog-wheel navigation of the processor's menu tree
- Full-function Web interface works with any browser
- Self-logging alarms for audio loss; alarm 'tally' for remote indication; alarm also dispatches email or text message alerts
- Analog L/R and AES-digital program line outputs.
- Accurate front-panel LED metering; all processing functions metered with OLED display and Web interface

### Product Specifications

#### **Frequency Response (processing bypassed):**

**Flat mode (analog I/O):** 50Hz-20kHz,  $\pm 0.25$ dB

**Flat mode (digital I/O):** 20Hz-20kHz,  $\pm 0.05$ dB

**FM mode:** 50Hz-15kHz,  $\pm 0.25$ dB; 75 $\mu$ s/50 $\mu$ s pre-emphasis in normal operation

#### **Distortion (processing bypassed):**

**Analog I/O:** <0.02% THD (ref: +24dBu I/O)

**AES Digital I/O:** <0.002% THD (ref: 0dBFS I/O)

#### **Signal-To-Noise (processing bypassed):**

**Analog I/O:** >105dB (ref: +24dBu I/O)

**AES Digital I/O:** >120dB (ref: 0dBFS I/O)

#### **Separation:**

**Analog I/O:** >100dB, 20Hz-20kHz

**AES Digital I/O:** >140dB, 20Hz-20kHz

#### **Program Line Inputs\*:**

**Analog:** active-balanced (XLR) accepts line levels from -15dBu to +15dBu; +24dBu clipping

**AES Digital:** transformer-balanced (XLR) accepts line levels between -30dBFS and 0dBFS at sampling rates from 32kHz to 96kHz

**IP Streaming:** accepts Icecast/SHOUTcast MP3, Ogg and AAC streams

#### **Program Line Outputs\*:**

**Analog:** active-balanced (XLR) delivers -12dBu to +18dBu for 100% modulation; +24dBu clipping, 200-ohm source

**AES Digital:** transformer-balanced (XLR) delivers -30dBFS to 0dBFS at 100% modulation; sampling rate follows input or may be fixed at 32kHz, 44.1kHz, 48kHz, 96kHz

**Characteristic:** outputs may be set for 'normalized' (flat) or with pre-emphasis in FM mode; flat response in Flat mode

\* **NOTE:** Analog and digital I/Os are not available simultaneously

#### **Program Signal Latency (Delay):**

1.5ms in Bypass, 3ms analog I/O, 3.5ms digital I/O (typical)

#### **Network Port:**

TCP/IP network connection (RJ45) for remote setup/operation and in/out audio streaming; full SNMP support

#### **GPIO Ports:**

3 GPI, 3 GPO with assignable functions and logic polarity

#### **Headphone Jack:**

3.5mm (TRS) on front panel; low-Z or high-Z headphones

#### **Internal Test Tone Generator:**

20Hz-20kHz; variable frequency and level

#### **Alarms:**

Local GPO closures, browser interface, SNMP and SMS/email alarms for audio loss; maintains daily, weekly, monthly logs

### Scheduler:

Accommodates ‘dayparting’ or ‘signature processing’ (e.g. talent microphone) with an onboard real-time clock and preset-selection programming

### Audio Processing:

**AGC:** ±15dB capture range; gated with dual-rate ‘windowed’ operation

**Leveling:** variable ‘syllabic’; 2:1 compression ratio

**EQ:** 4 cascaded sections of parametric equalization

**Bass ‘Punch’:** variable bass-attack enhancement

**Compression:** 3 bands with selectable crossovers; variable master and individual drive controls; r.m.s./peak ‘density’ adjustment

**Final Peak Control:** no-clip feed-forward wideband limiting with independent high frequency protection for FM mode

**Processing Presets:** 10 factory, 10 user-defined

### Power Requirement:

12VDC at 280mA (2.1mm x 5.5mm coaxial); an inline ‘universal’

100/240VAC switchmode power supply is included

### Mounting Options:

An optional rack adapter mounts one or two NOVIA or other Inovonics half-rack units in a standard 19-inch 1U rack space

### Size and Weight:

1.6”H x 8”W x 6”D; 5 lbs shipping weight

### Certifications:



### Rear View:



### ‘Under the Hood’

The NOVIA 262 processor is very compact with a major utilization of surface-mount (SMD) technology. Some components 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.

Nevertheless, our policy has always been one of ‘full disclosure.’ We feel that, unless we are doing something deceit-

ful, 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 NOVIA 262 for factory servicing is an option that we encourage. Inovonics has never depended on factory repair charges as a significant source of revenue, and we are confident that you will be astonished at how reasonable our rates actually are!

## Section II

### GETTING STARTED

#### **Unpacking and Inspection**

Immediately upon receipt of the NOVIA 262, 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 registration assure coverage of the equipment under terms of the Warranty (printed inside the back cover of this manual), but the user is assured of receiving specific service and modification instructions, including software or firmware updates. Register online at:

[www.inovonicsbroadcast.com/product-registration](http://www.inovonicsbroadcast.com/product-registration)

#### **Mounting**

The NOVIA 262 is packaged in a compact, half-rack format. We supply stick-on rubber feet so the unit may sit on a desktop or atop an existing piece of rack-mounted equipment, as long as at least 1U of panel space is left open to access the NOVIA 262 front panel.

An optional rack-mount kit is available that can accommodate a single or a pair of Inovonics half-rack products. The kit comes with a blanking panel for unused space and with a ‘daisy-chain’ power cable so that two devices may share a single supply.

#### **AC Mains Power**

The NOVIA 262 comes with a ‘universal’ outboard ‘brick’ type switching power supply that accepts AC mains voltages between 100VAC and 240VAC. The actual power consumed is 280mA at 12 volts DC. A second DC connector on the

rear panel of the unit allows the user to ‘daisy-chain’ 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 we anticipate the NOVIA 262 finding a home in radio broadcasting environments, please do practice reasonable care in locating the unit away from *abnormally* high RF fields.

#### **Front-Panel Display and Controls**

Left- and right-channel LED bargraph meters monitor the program input and are peak-responding with a floating ‘peak hold’ above the bouncing display. The panel dB markings should be considered relative as these meters come after the input level control in the signal path.

Display range and meter activity will depend very much on the dynamics of the program material. Heavily compressed music will generally peak (and ‘hang’) at about -6dB on the meter scale; material with greater dynamic range will show more variation.

The green LED to the right of the level display indicates AGC gating. It will be lighted most of the time, going dark only during pauses in speech. The audio loss alarm lights the red LED.

The front-panel OLED graphic display screen presents the setup/operate menu tree in an easy-to-read format, and all setup can be done with jog-wheel knob entry. The display does employ a screen saver, so when the screen goes dim or completely 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 wake-up call.

#### **Front-Panel vs. Web Interface Setup**

The NOVIA 262 may be set up and operated either by using the front-panel menu and jog-wheel knob, or by using the Web interface. Doubtless you’ll find the Web interface faster and easier, but we do advise gaining some familiarity with the front-panel approach. You will need to set up a network connection initially from the front panel.

Having said that, if you are adventurous do feel free to jump-in, set up a network connection and do all your setup over your network. The Web interface is organized so much like the OLED Menu Tree that separate sets of instructions would be redundant. Here in Section II we'll concentrate on front-panel setup. But anything in the Menu Tree can be found in the Web interface pages. Check Section IV for matters that are specific to networking the NOVIA 262.

### Navigating the Menu Tree

In a nutshell, you *turn* the jog-wheel knob to cycle among and to highlight menu items, and then *push* the knob to select, edit or adjust the highlighted item. To further clarify:

- 1) If you land on a menu item that requires a text or numerical entry, a text-entry screen appears when you enter that submenu. *Turn* and *push* the knob to select alphanumerics, punctuation, backspace, etc. After text entry, select Save and *push* the knob to commit to entry, or press the Back button next to the knob to cancel the operation.
- 2) If the submenu has a checkbox or 'radio button,' bracket the option and *push* the knob to toggle it.
- 3) If the screen shows an adjustment 'slider,' *turn* the knob to bracket the slider, *push* the knob to enable adjustment, and then *turn* it to change the value. Finally, *push* the knob or press the Back button to commit to the adjustment.

You may always press the Back button repeatedly to return to the Main Menu screen shown here.



### Program I/O Notes

Limited real estate on the NOVIA 262 rear panel requires that the XLR input and output connectors serve double duty. Analog and AES-digital program inputs and outputs are not all available simultaneously. You can, however, take a digital output from an analog input, and vice-versa. The NOVIA 262 can also accept a streamed input from the network.

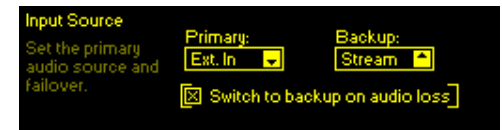
### Analog & Digital Program Inputs

From the Main Menu navigate to Setup/Inputs/Input Type & Mode. Here you select either the  Analog or the  Digital external program input as a source choice. Be sure to use the corresponding rear-panel XLR input connector(s).



Mode defaults to Stereo for these inputs, but you may select monaural operation from either Mono L+R (combined left and right program channels), or Mono L or Mono R, which directs just the chosen channel into both processor inputs.

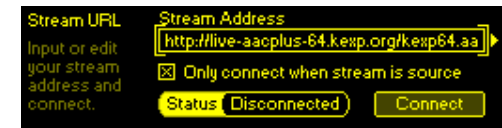
Next, from the Main Menu go to Input Source to select your Primary: program input, either Ext. In (the analog or digital input you programmed above) or Stream (the stream input described below). The optional failover Backup: program source will always be the complement of Primary:.



To enable the Backup: source for audio-loss failover, check the  Switch to backup on audio loss box (more on Page 11).

### Stream Input

Navigate to Setup/Inputs/Stream Input. Under Stream URL, manually enter the Internet address of the streamed program audio source.



When the  Only connect when stream is source box is *not* checked, the NOVIA 262 will connect to a valid stream automatically and remain connected. When the  Only connect when stream is source box is checked, as shown above, the unit will connect to the stream just when the stream has been manually selected as the primary input source or 'failover' has switched-over to the stream as the backup source. The Connect button simply forces a reconnection.

### Audio Alarms

The Audio Loss alarms for analog, digital and streaming inputs are each programmed independently, but follow the

same procedure. As a typical example, we'll program the alarm for the analog input.

From the Main Menu go to Setup/Inputs/Analog Input/Analog Audio Loss.

**NOTE:** The  Alarm box must be checked for the alarm to function at all. If left unchecked, the alarm will not trigger!



There will be no program audio failover, no front-panel or Web interface alarm indication, no 'tally' output, no email or text notifications, no SNMP trap.

Threshold On is the audio level that the program must drop below to trigger an alarm. Moreover, the audio level must stay below this point for the number of seconds programmed into the Time On box. Similarly, Threshold Off is the audio level that the program must come back to, and stay above for Time Off seconds, to reset the alarm.

The current level of the program audio shows as a shaded bargraph behind the Threshold On/Off boxes. This makes it easier to set the trip-point mark with reference to the program audio. Of course, no audio will show unless that input is connected. Be sure to set up the backup input source alarm when the program failover feature is used.

### Program Failover

From the Main Menu go to Input Source. When the  Switch to backup on audio loss box is checked, an audio-loss alarm on the Primary: source will automatically switch the input over to the Backup: program. This will switch back when the alarm resets.

### Program Output Modes

Under Setup/Outputs/Output Type & Mode, select an  Analog or a  Digital line output. Be sure to use the XLR output connector(s) corresponding to your selection in this menu.



Mode reflects your particular use of the NOVIA 262. As an FM airchain processor, you need to know the FM pre-

emphasis curve appropriate to your region. 75µs (microseconds) is standard for North America, 50µs is used in Europe and many other countries. You also need to know whether your exciter has pre-emphasis built in or not.

If the exciter has internal pre-emphasis, set Mode to FM-Flat 75us (or FM-Flat 50us). If your exciter needs a pre-emphasized feed, select FM-Pre 75us (or FM-Pre 50us).

For general, production-studio applications set Mode to 20k-Flat.

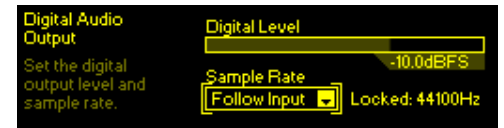
### Analog Program Outputs

The Setup/Outputs/Analog Audio Output menu controls the balanced analog level at the rear-panel LEFT OUT and RIGHT OUT XLR connectors. Analog Level adjusts the peak level of the limited program signal from -12dBu to +18dBu.

### Digital Program Output

The rear-panel digital AES OUT is controlled under Setup/Outputs/Digital Audio Output. Digital Level adjusts the peak level of the limited program signal from -30dBFS to 0dBFS.

In addition, the Sample Rate of the output may be set to Follow Input (the same sampling rate as the input, as indicated on the screen), or to a fixed 32kHz, 44.1kHz, 48kHz or 96kHz rate.



### GPIOs

Three rear-panel GPO (General Purpose Output) terminals present alarm "tally" connections for remote indication of program audio loss. The plastic connector body may be unplugged from the chassis to make connection easier and for quick disconnect.

GPOs are programmed from the Setup/Outputs/General Purpose Outputs menu. The Polarity: of each Output: 1, 2 or 3



may be programmed as an Active Ground (the terminal goes to ground for an alarm) or Active Open (the terminal normal-

ly sits at ground and opens on an alarm). Type: may be assigned to Analog Audio Loss, Digital Audio Loss or Stream Audio Loss. None inhibits the alarm terminal closure or open. Alarms have the programmable parameters in the discussion starting on Page 10.

Alarm GPO ‘tally’ outputs are the collectors of NPN transistors that saturate to ground. Up to 100mA may be ‘sunk’ by each of these outputs to operate relays or LED indicators using an external voltage source up to 24VDC. The negative side of the external power source must be returned to the GND (Ground) terminal on the rear panel; a 10mA current-limited +5V source is provided as a convenience.

The three GPI terminals have no application at present, but have been included for future use.

### **The Network Port**

The rear-panel RJ-45 jack connects with your local network (LAN), and from there through your network router to the Internet. A network connection is required for the Web interface, for 2-way audio streaming, and for SNMP functions.

### **+12VDC Power I/O**

Two paralleled ‘coaxial’ connectors allow ‘daisy-chaining’ two half-rack units that share a common rack adapter. A short ‘pigtail’ cable is provided with each rack adapter for power loop-through.

The NOVIA 262 draws 280mA. Check the rating on the label of the power supply to make sure it has capacity for the modules it must support.

These power connectors are not a locking type. A Ty-Wrap® will secure power cables to the plastic anchor above the connectors if this becomes a problem.

### **Password Protection**

You may protect NOVIA 262 settings with a password, which thereafter must be entered before any subsequent changes can be made. Either the same or separate passwords may be assigned to lock out the front-panel and Web interface access.

From the Main Menu, navigate to Admin/Security. Enter either or both boxes to manually enter a password for Front Panel: or Webpages:. Highlight Save and push the knob to set the password in memory. Once the password is saved, the Now Playing screen will be the only menu item available.

Press the Back button to sign-in. You will be prompted to enter the password before any menu can be accessed and any adjustments made. Similarly, the Webpages: password must be entered on a Web-enabled computer or other connected device.

To recover a lost password, you must perform a “hard reset.” This deletes not only the passwords, but will also return the NOVIA 262 to factory-default values. *All User settings and presets will be lost!* Initiate a hard reset by holding down the Back button as you power-cycle the unit (disconnect and then reconnect power). Always keep an up-to-date Hardware Profile to back up your settings (see Page 28).

### **Miscellaneous Administration Menus**

The Admin/Display menu offers a Brightness adjustment for the OLED menu screen. We don’t recommend a higher setting than the 60% default setting, as it doesn’t look that much brighter and may shorten the life of the display.

Timeout sets the interval between the last use of the knob and the screen going  Dim (dim) or  Dim (dark). You can set this between 5 min and 60 min. Test the screen-saver by holding-down the Back button.

About shows the current Firmware Rev: and Serial #: of your unit, the Ethernet: port status and Uptime:, or how long the NOVIA 262 has been running since power was last applied.

### **Headphone Monitoring**

The front-panel headphone jack will accommodate either low- or high-impedance stereo headphones with a 3.5mm plug. When you plug headphones in, the display automatically opens the Headphone Volume screen where the slider will adjust the listening level. After you set Volume, push the Back button twice to return to the menu you were on. You can also reach the Headphone Volume screen anytime from the Main Menu.



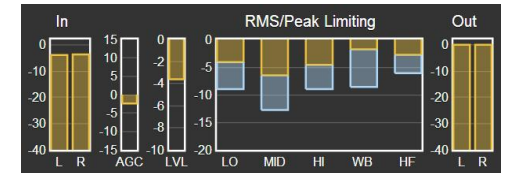
The default Headphones Source: selection is Proc. Out, which monitors the output of the final wideband limiter. This is the 20k-Flat point ahead of the independent HF limiter and 15kHz low-pass filter. Other monitoring options are Ext. In or Stream In. These allow you to preview the incoming, unprocessed audio, including the failover source, without putting it on air.

## Section III PROCESSOR SETUP

All adjustments discussed here appear under Processor in the Main Menu.

### Metering

Meters gives an overall picture of audio processing action. The Web interface gives a 2-color display that additionally provides audio level and gain reduction annotation. The two examples here reflect the same program, but not quite at the same moment.



### Processing Presets

The NOVIA 262 comes with ten factory-programmed processing presets and ten empty registers where you can save your own, customized ones. We recommend that you start with one of ‘ours’ and nurse it into ‘yours,’ something that sounds best for your programming and market demographics.

In this contrived example, ‘Bob,’ the station’s P.D., has developed his own version of our factory (F) Country preset, and has renamed it Country-2 (Bob’s). All processing parameters are saved in each preset, and presets are saved along with all other user settings when you download a Hardware Profile backup (see Page 28).



Creating presets is easy. After you have nursed-in just the right sound for your station, scroll to the top of the Presets menu to Save Preset. Push the knob and, as instructed,

Name Your Preset. Finish with a Save. You'll find your new preset at the bottom of the list.

To delete a custom preset, scroll to the bottom of the list and select Delete. Navigate the flashing X to the preset to delete and push the knob. Factory presets cannot be deleted.

### **Setting Input Levels**

Adjust the appropriate Input Level under Setup/Inputs/... (whichever input: Analog, Digital or Stream applies).

Setting the level of the program source involves matching the dynamics of the incoming program audio to those of the 'gain-riding,' slow-AGC function. It's best to use program audio for this, rather than tones. With moderately processed off-air feeds and contemporary music releases, program peaks should consistently reach  $-3\text{dB}$  on the front-panel LED meters. Heavily processed music may need to be backed-down so peaks don't go above  $-6\text{dB}$ . Material with a wide dynamic range may occasionally reach  $0\text{dB}$ . For a definitive measurement, go to Setup/Processor/Meters and check AGC meter action. The aim is to keep this meter hovering right around  $0\text{dB}$  (center-scale) most of the time.

### **AGC**

AGC is a slow, wideband 'gain-riding' function that presents subsequent processing stages with a uniform level based on both the peak and the average content of the audio program. AGC is 'gated' to prevent 'gain runaway' during silent periods.

The front-panel AGC indicator lights when the gate is open. The AGC designation below the OLED and Web interface meters is at normal brightness under this condition. The LED goes off and AGC grays-out during pauses in the program.

AGC is 'windowed' as well. This means that when AGC gain drifts outside its  $\pm 5\text{dB}$  'sweet spot,' accelerated 'makeup gain' brings it back inside more quickly.

AGC is enabled  AGC by default, but may be turned off for classical or jazz music to preserve *pianissimo* passages.

### **Leveling**

The AGC feeds a 2:1 compressor that has 'syllabic' response (like a 'VU' meter) to program dynamics. It gives gentle, unobtrusive dynamic range compression that actually makes very little difference in program loudness. Leveling decreases the overall long-term dynamic range of music programming without 'pumping,' and can normalize dialog among several speakers in a roundtable discussion. Think of leveling as a fast, ungated AGC.

With Leveling Drive turned all the way down to  $0\text{dB}$ , this stage is essentially out of the circuit and seldom gives any meter action. Increased Leveling will 'collapse' fades at the end of songs, and extraneous noise in the studio may be more noticeable in the background during pauses in speech.

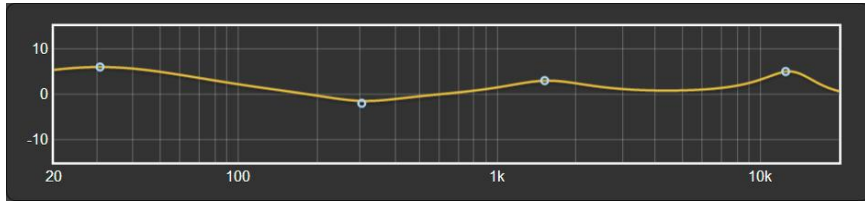
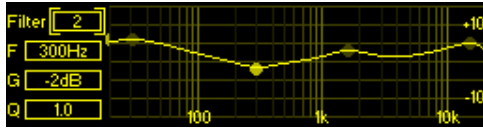
### **Equalization**

The NOVIA 262 has a four-section parametric equalizer that can offer quite a lot of control over 'sonic signature.'

Parametric EQ is not as well-known in the broadcast environment as it is in the recording studio. This type of EQ affords variable gain or loss at a selected frequency, not unlike a single section of the more common graphic equalizer. Not only are frequency and gain adjustable here, but the 'Q' (bandwidth) at the selected frequency may also be varied. Lower 'Q' (wider bandwidth) values are most useful for program equalization. Sharp peaks or nulls are usually reserved for fixing dedicated-channel problems, ahead of the final mix, with specific instruments, voices or room resonances.

To illustrate the overall effect of the 4-section equalizer 'bank,' the frequency and gain of each section are graphically presented on the front-panel and Web interface menu screens, and the overall, combined effect of the four sections is plotted as a graph.

Each section is programmed independently for frequency, 'Q' and gain. The illustration at the top of the next page shows this from front-panel and Web interface perspectives. The ubiquitous bass boost is centered at  $30\text{Hz}$  with a low 'Q' of 0.4. The next EQ point reduces 'tubbiness' at  $300\text{Hz}$  by a couple of dB. A bit of a 'presence lift' at  $1.5\text{kHz}$  aids speech articulation, and a few dB of 'sparkle' at the tippy-top rounds out this profile.



If you are not familiar with parametric EQ, do spend some time listening to various samples of representative program material as you put the EQ bank through its paces. Unlike the more intuitive graphic equalizer, a parametric takes some getting used to.

### **Multiband Processing**

The multiband processing section of the NOVIA 262 provides both r.m.s. compression and peak limiting in three frequency bands. Some multiband setup controls spill-over from the Multiband header into Limiting to keep each menu from getting too cluttered.

### **Crossovers**

Crossovers are the frequencies that divide the audio spectrum into the three processing bands. Filter skirts are second-order functions offering subtle differences from one selection to the next. ‘Bass’ frequencies are generally considered those below 100Hz, so choose the low crossover to best fit your programming. A high crossover of 2kHz complements the US 75-microsecond FM pre-emphasis characteristic. 3kHz matches the European 50µs curve and may give a better-balanced midrange in general studio processing applications.

### **‘Master’ and Band Drives**

Adjust ‘master’ Drive to the triband section under Limiting/Triband Drive & RMS/Peak. This also is where you’ll find the RMS/Peak slider that establishes the ratio of r.m.s. to peak limiting in the three bands. r.m.s. G/R (gain reduction) is shown by the solid or yellow portion of the LO/MID/HI G/R

meters, and peak limiting by the floating segment or blue portion of the bar.

Drive and RMS/Peak will have greatest effect over how ‘busy’ the program sounds. Multiband processing action fills voids in the program spectrum. r.m.s. control (0 to -10) will give a smoother sound and peak-based control (0 to +10) a greater spectral density.

Under Multiband/Band Drive, independent sliders at the input to each band yield a certain degree of static equalization, plus an ability to normalize compression and limiting among the three bands.

### **Band Uncoupling**

With most program material, the mid band contains the most energy and is thus considered the ‘master’ band of the multiband section. Band Uncoupling allows slaving the action of the low and high bands to that of the mid band. When fully coupled (0% Uncoupling), mid-band G/R will also reduce gain in the slaved bands, acting more like a single-band processor. The slaved bands will still be able to reduce gain beyond the midband G/R level as needed, but will not release to a value less than the G/R level established by the mid band. Advance Uncoupling to get a ‘busier’ multiband sound.

### **Bass Punch**

This is a bass-enhancement feature that accentuates the initial impact of drums or the pluck of a bass guitar string. This is a dynamic function and will have no effect on sustained bass material. Bass Punch bypasses the multiband section, so its action will not be evident in multiband metering.

### **Limiting**

In addition to the Triband Drive and RMS/Peak adjustments above, the Limiting submenu has a few more user controls found under Final Limiter.

### **WB Release**

WB Release establishes a dual release function and will have the greatest effect over perceived loudness in the program audio.

The time-averaged value of final limiting establishes a release ‘platform.’ Program peaks quickly release to this platform, which itself then releases at a slower rate. WB Release sets the platform level with relation to peak gain reduction. The platform is the solid or yellow portion of WB metering; fast peak release is seen as the hovering segment or blue section of the display. A default value of ‘0’ is a safe compromise between ‘smooth’ (–10) and ‘loud’ (+10). Your station programming and personal preference will dictate a proper setting for your purposes.

### **HF Limiting and Clipping**

FM broadcasting is a transmission system that employs complementary pre-emphasis and de-emphasis, requiring an independent high-frequency limiter to avoid carrier over-modulation. The NOVIA 262 uses both HF limiting and distortion-cancelled HF clipping to meet this requirement.

***NOTE:*** The independent high-frequency limiter is active only when the output of the NOVIA 262 is set to one of the FM-... modes under Setup/Outputs/Output Type & Mode. With Mode set to 20k-Flat, the HF limiter and the 15kHz low-pass filter are out of the signal path.

HF Limit-Clip covers the range between full limiting (–10) to mostly-clipping (+10) with ‘0’ as the default compromise. Full HF limiting can sound somewhat dull. But even with distortion-reduction techniques, HF clipping can put an ‘edge’ on vocals and other familiar sounds. Be sure to listen to a representative sample of your programming before settling on an adjustment here.

### **Dayparting**

***NOTE:*** The daypart scheduler relies on at least an initial network connection to sync with Internet time, and with the proper time zone and other options selected. See the notes on timekeeping on Page 26.

As many as 20 ‘dayparts’ (changes in a station’s programming) may be scheduled by this built-in feature of the NOVIA 262. Audio processing presets may be called-up for scheduled deviations in the station’s format during the broadcast day. A station might depart from jazz music to a big-band segment, for example, or from music to regularly

scheduled talk programming, or take a 5-minute satellite-delivered news feed on the hour.

From the Processor/Daypart menu, enter a processing Preset that you have selected for the scheduled programming



segment. You may select one or more Days of the week that the segment will air, and the Hour and Min (minute) it begins, AM or PM. In this example, the station airs a religious roundtable discussion on Sunday at 11:00AM. A second daypart, to return to the station’s music format, will have been set for noon.

Once a programmed daypart begins, it will continue indefinitely. This makes it important to set up your ‘normal’ processing as a daypart as well, programming the scheduler to switch back when the other daypart ends.

### **Processor Bypass**

The  Bypass mode simply removes the entire audio processing function from the program signal path.

### **Test Oscillator**

Engaging the Test Oscillator disconnects program audio from the input of the audio processing section and allows you to feed this point with a tone. Default is  Off, of course, but the oscillator tone may be fed to the left  L only or right  R only channels independently, or to both  L+R program channels.

The Frequency and the Level of the tone are both adjustable from this menu. A Level setting of –10dB is equivalent to a console ‘zero-VU’ level and will center the gain-riding AGC function. Depending on the processor setup you may see little or no meter action with a tone, as subsequent stages respond primarily to program peaks.

## Section IV

# NETWORKING THE NOVIA 262

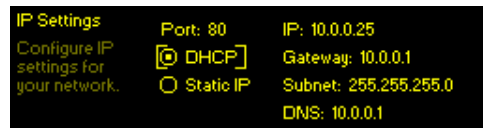
Section II stressed setup of the NOVIA 262 using front-panel ‘knob and button’ data entry. As soon as you have a network connection, feel free to ‘graduate’ to Web interface operation. Although the OLED Menu Tree will continue to be referenced here, the Web interface menu is nearly identical, quite intuitive, and much faster.

### The Web Interface

The ‘responsive’ design of the NOVIA 262 Web interface provides an optimal viewing experience across a wide range of devices. A minimum of resizing, panning and scrolling is required between desktop computer monitors, tablets and mobile phones.

### DHCP IP Assignment

With the rear-panel LAN PORT connected to your network, navigate from the Main Menu to Setup/Network/IP Settings. Here you may select:  DHCP to have your router automatically assign an IP address to the NOVIA 262. A DHCP connection will populate the fields on the right-hand side of the screen automatically.



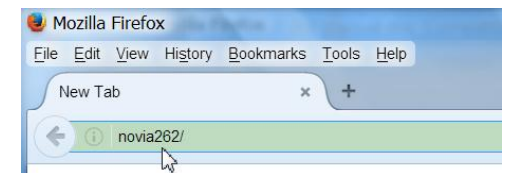
### Manual IP Setup

For any of several reasons you may need to set the IP address of the NOVIA 262 manually. Select  Static IP, and then bracket the various network options shown on the right to enter the proper decimal-delineated numbers. Use Backspace to make corrections and, when finished, Save the new entry. Consult a competent IT professional if you need help with this.

### Assigning a Hostname

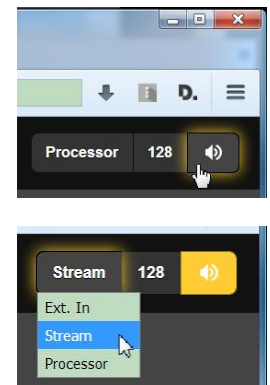
Setup/Network/Hostname lets you assign a unique name to a particular NOVIA 262 to identify it on the network. The factory-default name is NOVIA262. You might change this to differentiate one processor from another on a common network.

Use the knob to assign a new name and Save the name when finished. Although Hostnames must be entered in all-capital letters, you don’t have to use all-caps when addressing the processor. Under the Windows® operating system, bring up the NOVIA 262 with a Web browser that’s on the same network simply by typing the Hostname and a forward-slash into the browser address bar as shown here. Non-Windows browsers will require entering the entire IP address of the unit.



### Remote Listening

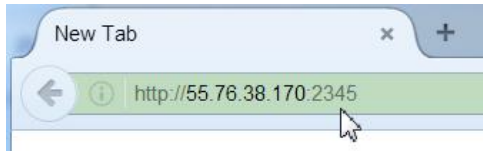
Click the loudspeaker icon at the top of the screen to listen to the audio program through your browser. The 128 box to the left of the icon sets the audio monitor streaming rate. 128kbps is default, but you can drop this to 64kbps or even 32kbps if your network connection is very slow. The box marked Processor, a bit more to the left, selects the source you are actually listening to. The processor output is the default, but you can listen to the incoming ‘raw’ (unprocessed) program sources without changing or interrupting the current program.



### Remote Access

To address your NOVIA 262 from outside your LAN (from the Internet) the unit must have a static IP address. If your router makes DHCP assignments for other equipment on the network, simply assign the NOVIA 262 a static IP that is outside the router’s DHCP range. Use the router’s Help utility with this.

You also need to open a specific port on the network router. From the router's Port Forwarding utility, you will be able to enter your static IP address for the NOVIA 262, followed by a colon and a port number. The port number may be any number in the range indicated by the router. If your Internet Service Provider (ISP) assigns you a static IP address, then it is a simple matter to address the NOVIA 262 from anywhere. Just type the IP address and port number into your browser as shown here.



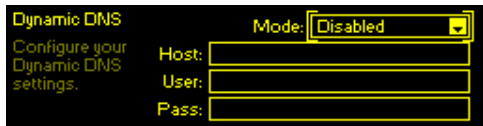
But if your ISP issues you a *dynamic* IP, which is most often the case, then you must utilize the services of an IP-forwarding provider.

### Dynamic DNS

It would be impossible to address equipment behind a dynamic IP address if it were not for IP-forwarding providers available on the Internet. Their service, either free or at a very modest charge, allows the NOVIA 262 to keep that provider apprised of its reassigned IP address each time your ISP reassigned it. The IP-forwarding provider intercepts data attempting to connect with your unit and converts the IP address to the updated one.

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

From the Main Menu, navigate to Setup/Network/Dynamic DNS. Disabled is the default Mode: selection, but here you may choose among the three popular providers. Write down these provider names and do an Internet inquiry for each to learn more about their services and to register with whichever one seems best suited to your needs.



The DNS provider will issue you a Hostname, Username and Password. Enter these into each of



the three fields. Your screen will look similar to this example when finished.

### Timekeeping

The internal daypart scheduler and time stamps for alarm notification and logging require setting the built-in real time clock (RTC) to an Internet time standard.

Under the Setup/Network/Time/Time Zone & DST, use the Time Zone slider to select your local zone with respect to UTC. If you have already established an Internet connection, today's date and the local time will appear at the bottom of the screen.  Auto DST is the default setting for Daylight Saving time. Force DST by checking the  DST box, or uncheck both boxes to ignore DST completely.



An accurate, default Internet Time Server has been pre-programmed into the NOVIA 262 at the factory. You may change this if there is a reason to do so.

### SNMP

SNMP (Simple Network Management Protocol) allows other TCP/UDP/IP equipment on the same Local Area Network (LAN) to communicate directly with the NOVIA 262, and for the unit itself to initiate an alarm to other equipment on the network. Setup instructions here are abbreviated; please consult other literature for an explanation of SNMP terms and protocols.

Under Setup/Network/SNMP/Mode & Communities, the default Mode: setting is Disabled. Reset this to Read Only to allow the NOVIA 262 to be interrogated by the SNMP Manager, or set Mode: to Read & Write so that the SNMP Manager can send commands to the NOVIA 262.

Communities are actually passwords for security purposes. SNMP Ports have typical settings that may be changed as required. 'Traps' are SNMP alarms initiated by the NOVIA 262. Enter the local network IP addresses of associated SNMP equipment under Trap Destinations so that they can receive alarms.

A MIB file is a small text file required by the SNMP Manager. Using the Web interface **SNMP** menu, click: **Download MIB** to save this file in the usual Windows manner. The MIB file is in plain text with a .mib extension that may be read with Windows Notepad.

### **Network Status**

Setup/Network/Status brings up a screen that gives full particulars of the network connection. This screen is useful for troubleshooting or for verifying connection parameters.

### **Alarm Notifications**

The audio-loss alarm setup description begins on Page 10. Page 12 details rear-panel alarm ‘tallies.’

You must first program the NOVIA 262 to send mail under the Setup/Email Preferences menu. You need to set up an actual SMTP email account, following guidelines set by the mail provider you choose.

**NOTE:** As of initial product release, some email servers may not support SMTP mail dispatch from the NOVIA 262. This situation is in a state of flux at present. The TLS1.2 standard is supported, STARTTLS is not. A simple and free Gmail account would be a good choice if your in-house mail system fails to send mail due to this issue.

Under SMTP Server, enter the provided outgoing mail SMTP Server info (e.g. smtp.gmail.com), the specified Port: number and whether or not to  Use SSL.

Under Sender, From: is the ‘friendly’ name that will identify the NOVIA 262 to the email or SMS/text recipient. User: is the full email address of the unit, and Pass: is the password you’ve assigned to the account.

Next enter email recipients separately under the Setup/Email Preferences/Recipients menu. Use Recipients/Select: fields 1. through 10., entering up to ten separate email addresses.

Then from the Main Menu open Alarms & Notifications/Email Notifications. In the top box you can pull-up any recipient from the list you’ve created, and select ✓ which alarm or alarms sends an email alert to that person. From that same list you may also send that same person a complete log of all alarms. Scroll down and check ✓ your preference of a Daily, Weekly or Monthly Alarm Log.

Use the Send Test Email utility to ensure that the NOVIA 262 is set up to send mail properly to all recipients.

### **The Alarm Log**

Under Setup/Alarm Log Settings you’ll find a Status: notation of how close the log is to its maximum capacity, about 2000 events. Enter the Email When: box and set a number for an alert. A setting of 10% equates to about 200 log entries.

The Alarm Log continues to accumulate entries, but you may manually clear it at any time. Under Alarm Log Settings, go to Clear Log at the bottom of the screen. Bracket and select the box, and when prompted push the knob again to delete all alarm history. The NOVIA 262 Web interface provides means of downloading the alarm log for study and analysis if desired.

### **Backup: The Hardware Profile**

The entire NOVIA 262 setup, which includes input source choices, factory and user processing presets, alarm notification preferences and SNMP options... all may be saved to your computer as a small text file. A Hardware Profile is useful for restoring a previous processor setup or for ‘cloning’ a second unit for backup service.

On the Admin Webpage, click: **Download Hardware Profile** to save the profile to your system.

Your browser and version of Windows may ask whether to **Open** or **Save** the file. Click the **Save** button and the file will be saved to a Downloads folder, and from there may be moved to a convenient location. Other browsers may ask you directly to specify a ‘Save as:’ location. The file carries a default name of 262settings.ini.

Upload a Hardware Profile backup file to the NOVIA 262 by clicking **Select Hardware Profile...** Navigate to the folder where you saved the file and double-click it. The filename, File: 262settings.ini, should replace **Select Hardware Profile...** on your screen. At that point, simply click **Upload Hardware Profile**.

**NOTE:** Uploading a Hardware Profile reboots the NOVIA 262. After the reboot, an information screen pops up to remind you of important operating procedures and to guide you through any rough spots that might have surfaced dur-

ing reboot. Restoring factory default settings is another option.

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### **Firmware Updates**

It's an easy matter to upload NOVIA 262 firmware updates to the unit when we issue them.

*NOTE:* Make sure that your Hardware Profile is up-to-date. A firmware update could affect some user settings.

Updates are distributed as small .bin files that 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... and then navigate to the downloaded file and double-click it. This will transfer the file name to the updater. Finally, click Update Firmware to complete the process.




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# 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](http://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 the equipment 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 **RETURN OF 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.  
 + (831) 458-0552

 **INOVONICS**  
**BROADCAST**  
5805 Highway 9 • Felton, CA 95018 USA  
Tel: (831) 458-0552 • Fax: (831) 458-0554  
— [www.inovonicsbroadcast.com](http://www.inovonicsbroadcast.com) —  
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