

QUICK START

OPTIMOD-
5700i

FM/HD/DAB Digital Audio Processor



Introduction

The **OPTIMOD 5700i** is a 1 RU (rack unit) broadcast audio processor designed for use with analog FM broadcasts as well as digital broadcasts or streaming. It has a consistent 2 band AGC (Automatic Gain Control) followed by a 5 band processor and state of the art peak control. A separate peak control system is employed for those using the processing for streaming or codec based processing such as HD or DAB.

This quick start guide is intended to help you get the processor from the shipping box to being on the air.

Unboxing the 5700i

Once you have taken delivery of the 5700i, you should open the box and check the unit for any damage from shipping. Inside the box should be the audio processor as well as a power cable and an owners manual. If any of these items are damaged, please contact your dealer or Orban as soon as possible.

What You will Need

The following will be needed for you to install the 5700i

- 4 standard rack screws to support the unit.
- The provided power cable.
- A good audio source of your program material that will be the main audio signal you broadcast.
- A composite cable to interface your 5700i to your STL or main transmitter.
- A modulation monitor capable of reading total modulation, pilot level, and SCA level. For those using HD broadcasting, the modulation monitor should be type accepted to work with HD transmissions.

Where to locate the 5700i

There are many theories as to where to locate the processor. This depends on the Studio-to-Transmitter (STL) link. Sending composite audio to your transmitter over an RF link is one option. In this case, your 5700i would be located at the studio. You can also send stereo audio to your transmitter site over the internet. In this case, the 5700i would be located at the transmitter end. If you are replacing an existing processor and have had stable uptime with the current processor, the 5700i should replace it if you don't plan to re-engineer your STL. If you will be using the 5700i for HD broadcasts, the best location is at the transmitter, but there are many ways to configure your STL. If you have questions and need help placing the 5700i, please feel free to contact Orban Labs at 856-719-9900 and we can help you with questions to optimize your setup.

Racking the 5700i

The 5700i is designed to fit in a standard 19" (inch) rack. While the 5700i is robust and can be used in situations that are extreme, it is best that 1 rack space be left free above and below the processor to allow air to circulate.

Using the power cable supplied (or equivalent), the 5700i should be energized. Orban Labs recommends that the 5700i be energized via an Uninterruptable Power Supply (UPS) to prevent sudden swings in voltage that may damage equipment. This isn't required because of a design flaw in the 5700i itself, it is good engineering practice to ensure all mission critical equipment is protected.

The 5700i input voltage is 100-240 VAC 50-60Hz, making the unit universal electrically.



Startup and Input

Once the 5700i has booted, it's now time to apply audio to the processor. **For this guide, we will recommend setting up your HD audio signal path, but leave the HD subcarriers off as we adjust the analog FM signal.** This is because of the delay needed to align the FM and HD signals. You can learn more about HD Radio, the 5700i and delay on page 3-66 of the main manual.

We will deal with two traditional ways of interfacing the 5700i with your audio sources; Analog or AES. The rear panel has inlets for both and you may attach both an analog and digital input and later decide which will be your main audio source and which will be your backup source.



Outputs

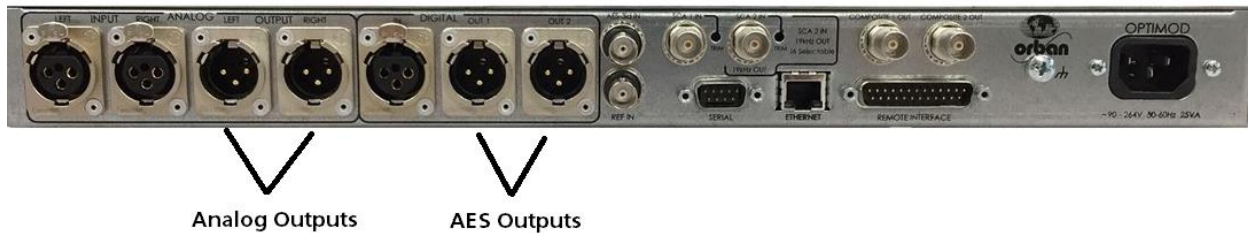
The 5700i has multiple output options to interface with your transmitter or STL. By far the most common is to connect the 5700i to the transmitter or composite style STL via the BNC style **Composite 1 or 2 Out**. These composite outputs carry the entire payload of the processed audio with pre-emphasis and stereo generation and interfaces it to your transmitter. The same applies for

The 5700i supplies two composite outputs. One is intended to feed your main transmitter, while the other can supply a composite signal to a backup transmitter so that both transmitters receive the same audio regardless of which transmitter is on the air.



Also on the back of the 5700 are Left and Right analog outputs as well as an AES output. These outputs can be used for many things,

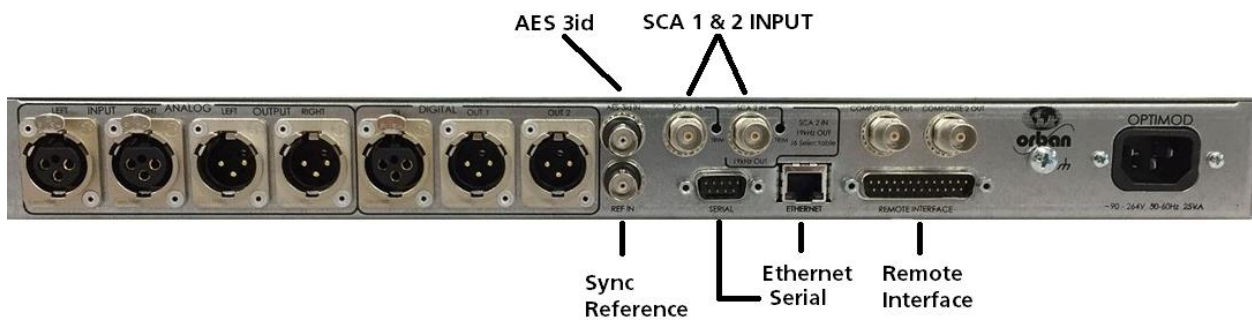
- 1) The analog L/R output can be de-emphasized and used to feed monitors so you can listen to the processing before the transmitter.
- 2) The AES output can remain pre-emphasized and feed an exciter that accepts AES audio. Please make sure you reference the main operating manual to set the sample rate. This is not the most ideal setup since you are bypassing the Optimod's high quality stereo generator and peak control. You ***WILL NOT*** be as loud as possible with this setup, but we realize that there are situations where major re-engineering of the audio is not possible.



SCA and Sync Options

The rest of the outputs on the 5700i rear panel are type BNC and serve different functions.

- 1) The SCA 1 and SCA 2 inputs allow you to interface either audible subcarrier audio or RDS audio. Next to each SCA level is a trim pot. Using a modulation monitor that can show in the injection level of the RDS (57kHz), SCA 1 (67kHz), or SCA 2 (92kHz) inputs, trim the input so that the proper injection is realized. As shipped, SCA 2 outputs a 19kHz reference tone for external RDS. Please see Page 2-10 of the main manual to change it to an SCA input.
- 2) One 75 ohm sync reference input that can accept 10 MHz or 1 x wordclock (32, 44.1, 48, 88.2, and 96 kHz) and lock the digital output sample rate and the 19 kHz pilot tone frequency to this input.
- 3) The AES3id input is used for ratings encoder loop in "ratings encoder loopthrough" mode.



The ETHERNET port allows you to connect your 5700i to your network or a local PC to control the processor from the Optimod GUI Application. If this isn't available in the box the 5700i came in, it's a quick download if you visit www.orban.com and go to the downloads section.

The SERIAL and REMOTE INTERFACE DB connectors allow you to control the 5700i via a serial connection as well as set logic control for the 5700i. For more information on these features, please see the main manual for configuration.

Quick Setup



Pressing the SETUP button (the bottom button to the right of the screen) will enter this mode. There are four options here. These are all explained in the main Optimod 5700i manual, but for now we will deal with the first option, which is the Quick Setup.

To the left of the display are the NEXT and PREV (previous) buttons. These will light if there are options to move forward or backward in the front panel setup menu. To get started, push the button directly below the Quick Setup option.



The first option is to set the time. The format is military time. Under each number is a button. Holding the button down while turning the knob will advance the HOURS, MINUTES or SECONDS. Once the correct time is set, press the ENTER TIME button.



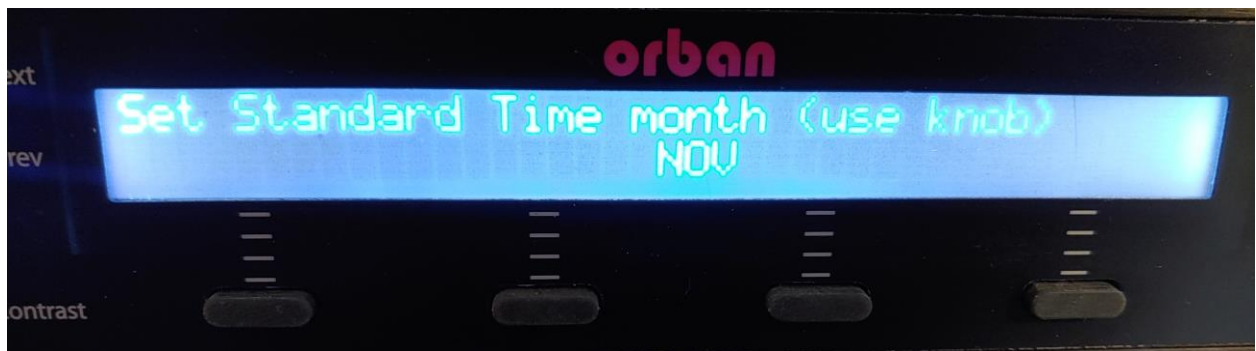
Next comes the date. The format is DAY/MONTH/YEAR. Again, hold down the button under the value you wish to change and, using the knob, select the correct date. Once finished, press ENTER DATE.



Next comes the DAYLIGHT SAVING TIME settings. If your region changes time to preserve daylight in the evening hours in the spring, use the knob to set the month. When selected, push the NEXT button. If you do not observe the time change, choose OFF which is before January.



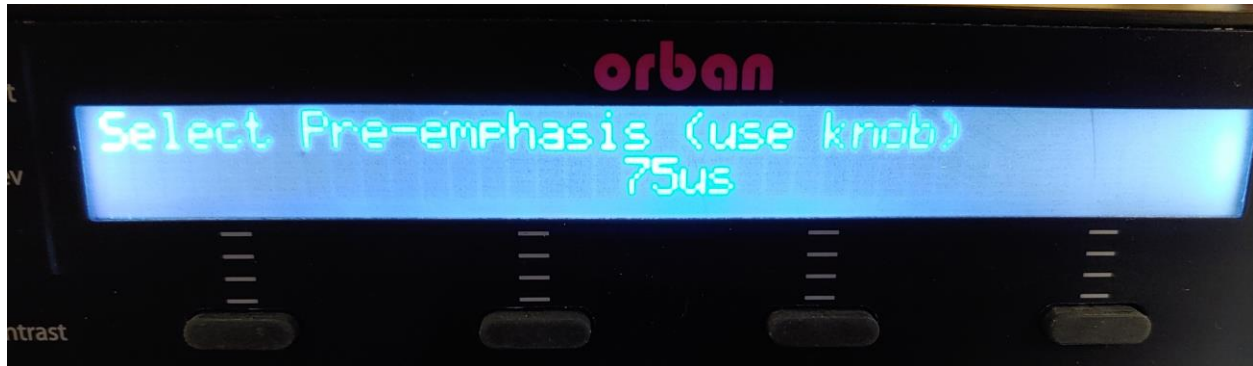
On this screen, use the knob to set the week daylight saving time will occur. When selected, push the NEXT button.



Next comes the STANDARD TIME settings. Use the knob to set the month clocks are changed back. When selected, push the NEXT button. If you do not observe the time change, choose OFF which is before the January option.



On this screen, use the knob to set the week daylight saving time will end. When selected, push the NEXT button.



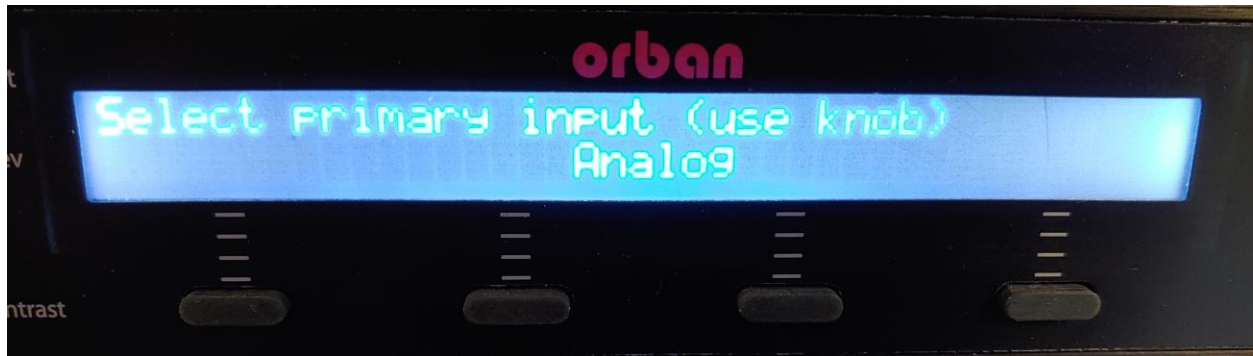
The pre-emphasis screen allows you to select between 50 and 75 μ s options. If you are unsure, check with your local regulatory body. Generally, North and South American use 75 μ s while most of the other parts of the world use 50 μ s.

One VERY important note: you want to make sure any exciter/transmitter past the Optimod 5700i does not have any pre-emphasis engaged. Pre-emphasis is best done in the processor where it can be properly peak controlled. Check the manufactures guide for your transmitter to ensure pre-emphasis is off or call them for instructions.

Once you have decided on the proper pre-emphasis, press NEXT



If you are using any pre-processing before the 5700i, you will want this to be set to YES. Orban recommends that no pre-processing should be used before the 5700i as the AGC in the 5700i is designed to work best with nearly all material and is crucial for optimum performance of your processor. However, if you feel the need to have an external AGC, you can turn the knob and select YES, then hit the NEXT key.



Use the front panel knob to select the corresponding main input signal. The options are ANALOG, DIGITAL and DIGITAL J17. Most will use ANALOG or DIGITAL. Once selected, press the NEXT button.



Hold down the button underneath the option and use front panel knob to set the ANALOG or DIGITAL input reference level. If you have audio hooked up to the 5700i, you should set this so that the AGC is showing approximately 9-12dB of gain reduction if the console or device feeding it is set to its normal operating level.



Use the front panel knob to route the audio you want to appear on the digital XLR. The options are **HD**, **FM**, **FM+Delay** or **Monitor**. The **HD output** has special codec aware look ahead limiting for transmission systems which use codecs (streaming, HD or DAB). The **FM output** is the peak controlled standard output (no 19kHz pilot) as it appears BEFORE the delay needed for HD Radio. The **FM+Delay** is the same as FM but includes the HD delay. **Monitor** is a low latency delay that

can be used for headphone monitoring. It is not fully peak controlled, so it is inappropriate for transmission. Once the correct output is selected, press NEXT.



Use the front panel knob to route the audio you want to appear on the digital XLR. The options are the same as the analog outputs. Choose the output you wish to appear and press NEXT.

You will then be asked to set the output of the Digital 2 output. If you plan on using the 5700i for HD, DAB or Streaming, one of these two outputs must be set for HD. Orban recommends using Digital 1 as the HD output and Digital 2 for the other outputs listed above.



This option selects the sample rate of the AES output. Use the knob to select the correct sample rate and press NEXT.



The next option gives you the option to put a tone on the air to set the proper modulation level. You can do this via tone, or you can use program material and watch the modulation monitor for overshoots. The 5700i has state-of-the-art overshoot protection, so once the modulation is set, all material will be held to that level or below.



This will set you modulation level, either using the tone option in the previous menu or program material if putting tone on the air is not an option. The next menu screen is the same, but for the 2nd composite output. In an ideal world, both exciters will require identical output levels, but brands can differ, so if you plan to you composite 2 to feed an auxiliary transmitter, you may need to place it on air or use a sample from the exciter to feed a modulation monitor to set the proper level. When finished, press NEXT.



With this option, you are setting the **analog XLR** output level. Use the front panel knob to change the value until you have reached your goal. Then press NEXT.



With this option, you are setting the **AES Digital 1** output level. Use the front panel knob to change the value until you have reached your goal. Pressing next will take you to the screen to set the **AES Digital 2** output mode. As with digital 1, set the output for the level you need and press NEXT



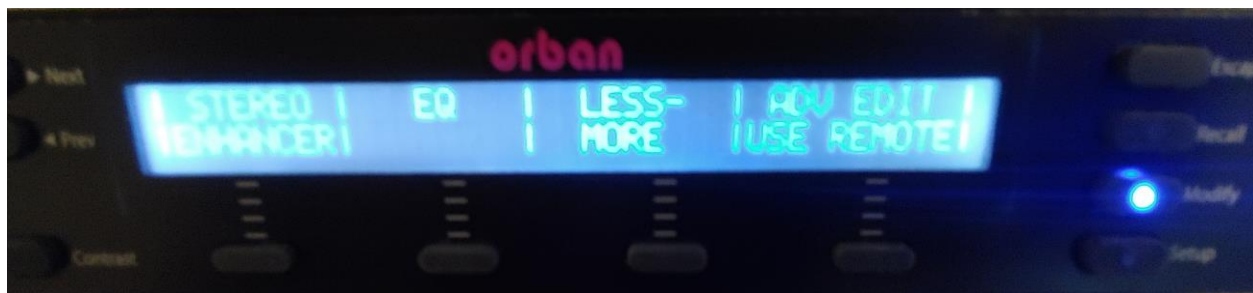
Congratulations! You have configured your Optimod. Now is the time to select a preset. Please press NEXT



The processing screen top row will show the current preset on the air. Turning the knob changes the NEXT option to a different preset. In the example above, GREGG OPEN is the preset you want to put on the air. To do so, use the button under RECALL PRESET to change to GREGG OPEN.

Quick Preset Modification

To the right of the screen are 4 buttons. To modify a preset, select MODIFY



You will see four options. Stereo enhance sets the amount of additional enhancement you want to apply to the processing. A word of caution. If you are in an area prone to multipath distortion, you will want to tread lightly here as excessive enhancement can aggravate or make the blend-to-mono effect in automobiles more noticeable. To access STEREO ENHANCER just push the button below the option. To exit, press the MODIFY button which will be illuminated.

EQ lets you tailor the overall spectral balance. Since the EQ is placed BEFORE the multiband processing in the 5700i, you can be a little more liberal with adjustments since you have the safety net of the multiband to protect EQ settings. To exit the EQ settings, press the MODIFY button.

The LESS-MORE control sets the overall aggressiveness of the processing. The softest and loudest possible performance of each selected preset (and everything between the two extremes) are available to you.

The ADVANCE EDIT USE REMOTE option instructs you to configure the remote application to communicate with the 5700i. You can find information on how to do that in the main 5700i manual.

Selecting a Preset

There are many preset options to choose from. Many times a preset that has the name that is or close to your format is the correct option. Sometimes it's not. If you find that one preset doesn't sound right for your format, you can try the options above to dial it in, or try another preset. A good rule of thumb is to listen but take a break before your ears tire. Once your ears tire, your reference is skewed and you'll end up overcompensating which will result in what this author calls "next day regret" where the preset that sounded great the night before is too bassy/bright/brittle than you would like.

The presets in the 5700i have been made based on thousands of hours of listening to all types of source material. With that said, not every preset will match what is needed in your market. Orban suggests that installing a new processor is a MAJOR project that should not be performed when you have other major projects going on (I know what you're saying... everyday is a major project!) But seriously, take time with the processor, either via the front panel or the remote app, to dial in the settings that make the most out of what the 5700i offers.

Of course, Orban is with you to help in any way we can. We can be reached between 8am-5pm ET at +1-856-719-9900 or at either support@orban.com or productsupport@orban.com

A full copy of the 5700i manual which dives deeper into the processing is available at www.orban.com in the downloads section.

To ready your 5700i for network connectivity, please see page 2-47 of the main Optimod 5700i manual. This section has information on set an IP address to connect with the remote application.

A full explanation of the settings on the front panel of the Optimod 5700i can be found on pages 2-15 to 2-59 of the main manual.