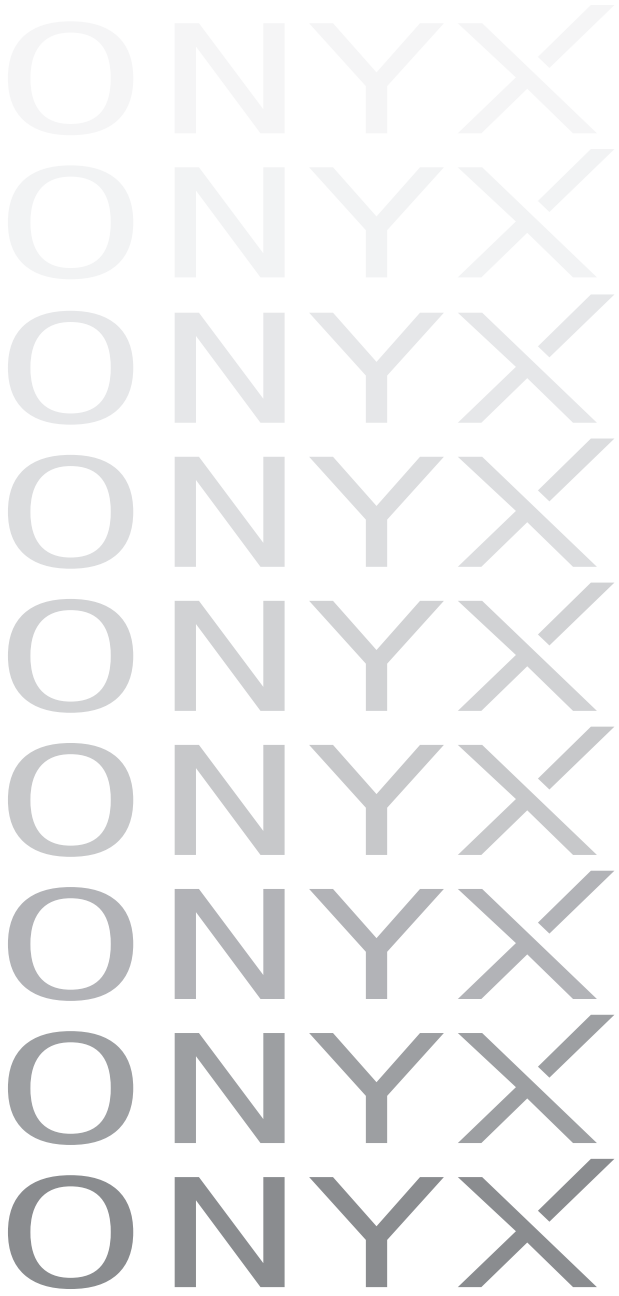
MACKIE.

ONYX 1200F

STUDIO RECORDING PREAMP
with 192kHz FIREWIRE INTERFACE

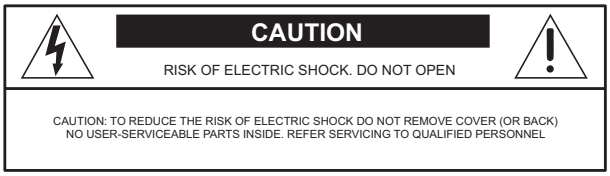
OWNER'S MANUAL



Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquids, such as vases, shall be placed on the apparatus.
16. This apparatus has been designed with Class-I construction and must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).
17. This apparatus has been equipped with a single-pole, rocker-style AC mains power switch. This switch is located on the front panel and should remain readily accessible to the user.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

18. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
    If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
    - Reorient or relocate the receiving antenna.
    - Increase the separation between the equipment and the receiver.
    - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
    - Consult the dealer or an experienced radio/TV technician for help.

    CAUTION: Changes or modifications to this device not expressly approved by LOUD Technologies Inc. could void the user's authority to operate the equipment under FCC rules.
19. This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — *Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le réglement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.*

20. Exposure to extremely high noise levels may cause permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a period of time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible noise level exposures shown in the following chart.

    According to OSHA, any exposure in excess of these permissible limits could result in some hearing loss. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels use hearing protectors while the equipment is in operation. Ear plugs or protectors in the ear canals or over the ears must be worn when operating the equipment in order to prevent permanent hearing loss if exposure is in excess of the limits set forth here.

Duration, per day in hours	Sound Level dBA, Slow Response	Typical Example
8	90	Duo in small club
6	92	
4	95	Subway Train
3	97	
2	100	Very loud classical music
1.5	102	
1	105	Fooyoung screaming at desTROYer about deadlines
0.5	110	
0.25 or less	115	Loudest parts at a rock concert

WARNING — To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Correct Disposal of this product: This symbol indicates that this product should not be disposed of with your household waste, according to the WEEE Directive (2002/96/EC) and your national law. This product should be handed over to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, or your household waste disposal service.

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Don't forget to visit our website at www.mackie.com for more information about this and other Mackie products.

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Please write your serial number here for future reference (i.e., insurance claims, tech support, return authorization, etc.)

Purchased at:

Date of purchase:

Introduction

Thank you for choosing a Mackie Onyx 1200F professional audio interface for live or studio analog or digital audio recording. The 1200F is equipped with twelve of our Onyx Series precision-engineered studio-grade microphone preamps, designed for the digital era and offering the newest features and latest technologies for live sound reinforcement and analog or digital studio recording in a durable, road-worthy package. Its selection of analog and digital output options provides the flexibility to connect in almost any application (including an HDR in standalone mode).

Mackie is renowned for the high-quality mic preamps used in our mixers, and the Onyx mic pre's are better than ever, with specifications rivaling other stand-alone boutique mic preamplifiers at twice the price.

Channels 1 and 2 have balanced send and return insert jacks for connecting to an external signal processor.

Channels 11 and 12 feature an unbalanced instrument input jack and select switch, which lets you connect an acoustic, electric, or bass guitar pickup directly to the preamp, eliminating the need for an external direct box.

Channels 1-12 have Neutrik™ Combo input connectors, which allows you to use either a 1/4" TRS connector or an XLR connector. A 48V switch is provided for each channel and applies phantom power to pins 2 and 3 of the channel's XLR input connector.

Two pairs of balanced control room monitor outputs are provided for connecting to powered monitors (or power amplifier/monitor combination), and can be sourced from the audio streams for any adjacent pair of analog outputs, stereo headphone outputs, or the S/PDIF or AES/EBU outputs.

Eight channels of analog balanced line outputs are provided on a DB-25 connector. Two channels of digital inputs and outputs are provided on two S/PDIF RCA-type connectors and two AES/EBU XLR connectors. Up to 30 input channels and 34 output channels of digital I/O (at 44.1/48 kHz) are provided on the FireWire connectors (see chart below). There are two FireWire connectors so the Onyx 1200F can be placed in a daisy-chain FireWire connection. Two pairs of ADAT optical connectors are included, which provide up to 16 channels of ADAT formatted digital I/O (16 channels at 44.1/48 kHz and 8 channels at 88.2/96 kHz). Two sets of MIDI IN/OUT connectors are provided for sending and receiving MIDI information.

The Onyx 1200F is designed to be a transparent audio interface for direct tracking to a DAW recording application on a PC or Mac. All 30 inputs are directly available to the DAW application over the FireWire connection (when operating at 44.1/48 kHz). The Console software application allows you to route any input to any analog or digital output on the 1200F, along with a pair of outputs from the DAW. This provides you with the choice of direct monitoring, without going through the FireWire connection and DAW software (zero latency), or monitoring through the DAW application.

You can provide a separate mix for each of the four headphone outputs from any of the inputs and from two of the outputs from the DAW. A talkback mic can be routed to the four headphone outputs, operated from a front panel button or a footswitch.

The Onyx 1200F Console Settings tab allows you to choose the sample rate (44.1, 48, 88.2, 96, 176.4, or 192 kHz) for the internal A/D and D/A converters. You can select the clock source from an external clock connected to the external word clock (WordClk) input connector on the rear panel, from the S/PDIF or AES/EBU input, from the ADAT 1 or ADAT 2 input, or from the internal clock. You can turn the DSP Mixer on and off, which allows you to operate the 1200F as a matrix mixer with digital streams to a computer (DSP ON), or as a standalone digital audio interface with digital streams to and from a computer (DSP OFF). You can select which inputs are routed to the Control Room outputs, and whether the S/PDIF I/O is formatted for consumer or professional status. You can adjust the buffer size (latency), and select which I/O audio streams are active on the FireWire connection.

Onyx 1200F Input/Output Chart

Qty	Inputs	ASIO/Core Audio Stream
12	Mic/Line Inputs	1-12
8	Digital A Inputs	13-20
8	Digital B Inputs	21-28
2	S/PDIF/AES Inputs	29-30
30	Total Inputs	

Qty	Outputs	ASIO/Core Audio Stream
8	Analog Outputs	1-8
8	Digital A Outputs	9-16
8	Digital B Outputs	17-24
8	Headphone Outputs (4x2)	25-32
2	S/PDIF/AES Outputs	33-34
34	Total Outputs	

Note: The ASIO/Core Audio Stream assignments shown here apply when 44.1/48 kHz sample rate is selected. At higher sample rates, the digital outputs are multiplexed using the S/MUX format, which reduces the number of ASIO/Core Audio channels available for streaming. You can choose the inputs and outputs that are streamed to the DAW at the higher sample rates in the Console's Settings window.

Onyx 1200F Features

- Premium 30-input x 34-output Recording Preamp/ FireWire Audio Interface
- 12 flagship Onyx mic preamps with class-leading fidelity and dynamic range
- Mastering-grade AKM® 24-bit/192 kHz A/D and D/A converters
- Dual FireWire ports for daisy chaining and direct connection to Mac or PC
- 8 balanced line outputs via 25-pin D-Sub connector
- 16 x 16 ADAT I/O @ 44.1/48 kHz (8x8 @88.2/96 kHz; disabled @ 176.4/192 kHz)
- 4 headphone outputs with volume control and discrete stereo feeds
- Powerful onboard DSP Matrix Mixer: connect any input to any output at near-zero latency
- Built-in control room functions: A/B Monitor Switching, Talkback, plus stereo and up to 7.1 surround output main volume control
- Balanced TRS send and return insert jacks on Inputs 1 and 2
- 2x2 MIDI, plus Word Clock, AES/EBU and S/PDIF I/O
- Stand-alone mixer functionality for field and studio use without computer
- Includes full version of Tracktion Music Production Software for digital audio recording

HOW TO USE THIS MANUAL

We know that many of you can't wait to get your new preamp/FireWire interface hooked up, and you're probably not going to read the manual first (sigh!). So the first section after this introduction is a Quick-Start Guide called "Getting Started" to help you get the Onyx 1200F set up fast so you can start using it right away. Right after that are the ever popular hook-up diagrams that show typical setups for recording.

Then, when you have time, read the Features Description section. This describes every knob, button, and connection point on the Onyx 1200F, as well as the software settings and controls.

Throughout this section you'll find illustrations with each feature numbered. If you want to know more about a feature, simply locate it on the appropriate illustration, notice the number attached to it, and find that number in the nearby paragraphs.

This icon marks information that is critically important or unique to the Onyx 1200F. For your own good, read them and remember them. They will be on the final test.

This icon leads you to in-depth explanations of features and practical tips. While not mandatory, they usually have some valuable nugget of information.

A PLUG FOR THE CONNECTOR SECTION

Appendix B is a section on connectors: XLR connectors, balanced connectors, unbalanced connectors, and the insert connectors used on the Onyx 1200F.

More resources on our website at www.mackie.com.

THE GLOSSARY: A Haven of Non-Techiness for the Neophyte

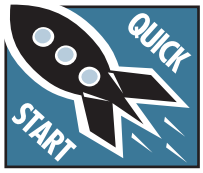
The "Glossary of Terms" is a fairly comprehensive dictionary of pro-audio terms. If terms like "clipping," "noise floor," or "unbalanced" leave you blank, refer to this glossary for a quick explanation.

ARCANE MYSTERIES ILLUMINATED

"Arcane Mysteries" discusses some of the down 'n' dirty practical realities of microphones, fixed installations, grounding, and balanced versus unbalanced lines. It's a goldmine for the neophyte, and even the seasoned pro might learn a thing or two.

Getting Started

READ THIS PAGE!!



Even if you're one of those people who never reads manuals, all we ask is that you read this page now before you begin using the Onyx 1200F. You'll be glad you did!

The Onyx 1200F can be used in standalone mode, or connected to a computer with the FireWire connection. Either way, you will want to install the Windows drivers (a PC requires drivers to be installed; a Mac has the drivers built into the operating system) and the Onyx 1200F Console software on your computer first to get the internal routing setup. Refer to page 21 for instructions on installing the software.

Once you've installed the software, proceed as follows:

Zero the Controls

1. Turn down the channel GAIN controls, and the TALK TO PHONES, OUTPUTS 1-8, MONITOR, and PHONES level controls.
2. Set all push button switches to their "out" or "off" positions.
3. Turn the POWER switch off.

Connections

This tutorial demonstrates how to mixdown up to twelve input channels to a 2-track S/PDIF output, using either the DSP mixer in the Onyx 1200F or your DAW mixer, which can then be routed to a CD recorder:

1. Plug a microphone into channel 1's MIC input. You can plug additional microphones or instruments into channels 2-12.
2. Connect the FireWire connector from the Onyx 1200F to the FireWire connector on your computer.

   Note: The Onyx 1200F is equipped with two 6-pin FireWire connectors and comes with a 6-pin to 6-pin FireWire cable. If your computer has a 4-pin FireWire connector, use the supplied 6-pin to 4-pin FireWire adapter that came with your 1200F.
3. Plug in the detachable linecord, connect it to an AC outlet, and turn on the Onyx 1200F's POWER switch.
4. If the microphone is a dynamic microphone, leave the 48V switch out. If it's a condenser microphone, push in the 48V phantom power button to turn on the phantom power for that channel.
5. Open the Onyx 1200F FireWire Console software application.
6. Connect the S/PDIF output from the Onyx 1200F to the S/PDIF input on a CD recorder or other S/PDIF-compatible recorder.

Set the Levels

To set the channel GAIN controls (on channels 1-12), it's not even necessary to hear what you're doing at the outputs of the preamplifier. The following steps must be performed one channel at a time.

1. Play something into the selected input. This could be an instrument, a singing or speaking voice, or a line input such as a CD player or tape recorder output. Be sure that the volume of the input source is the same as it would be during normal use. If it isn't, you might have to readjust these levels later.
2. Adjust the channel's GAIN control so that the "–20" and "–10" LEDs light frequently or continuously, and the "OL" LED doesn't light at all (or only flashes occasionally).
3. Repeat for each channel.

Record to CD Using the DAW Mixer

This method routes the input signals directly to the DAW via the FireWire connection, where each audio input signal is recorded on a separate track. Then you can mixdown the tracks to two tracks that are routed back to the Onyx 1200F and output on the S/PDIF output, which is then routed to the CD recorder.

1. Select the Onyx 1200F as the sound device in your DAW application. Each DAW application has its own method of doing this, so refer to your DAW application's manual if you are not sure. In Tracktion, this is done in "Audio Devices" under the "Settings" tab.
2. Assign the input signals from the 1200F to the tracks in your DAW (if this isn't done automatically). In Tracktion, right-click on one of the Onyx 1200F Audio Input icons and select "assign all inputs to consecutive tracks" in the pop-up menu.
3. You should now see the signals from the Onyx 1200F appearing on the meters in your DAW (make sure each track is armed and ready to record). Start recording and hear the Onyx 1200F in stunning crystal clarity.

   Note: The signals appearing at the inputs to the DAW are not affected by the settings in the 1200F

Console Output tabs. Each input on the Onyx 1200F appears at its corresponding input in the DAW (see Figure on the next page).

4. Now you can play back the recorded tracks and mix them down to 2-track, which is routed back to the Onyx 1200F S/PDIF outputs (and the CD recorder) on DAW outputs 33 and 34.

Overdubbing

You can expand on this method and overdub additional tracks before mixing down to two tracks.

1. After you have recorded your initial tracks, you can play them back from the DAW and monitor them on one of the headphone outputs or the Control Room outputs while recording additional instruments or voices to the DAW.

2. When you have recorded all the tracks that you want, mix them down to two tracks and route back to the Onyx 1200F S/PDIF outputs (on DAW outputs 33 and 34) for recording to the CD recorder.

Record to CD Using the DSP Mixer

This method records directly to the CD recorder from the S/PDIF output on the Onyx 1200F, without routing the signals to the DAW.

Set the Console Control Panel

1. Select the "Settings" tab in the Console control panel. Select 44.1 kHz sample rate, INT (internal) clock source, and DSP Mixer On.

2. Select the "Headphones" button at the bottom of the Console screen. Select the "Headphones 1" tab at the top of the screen. Make sure the MUTE buttons for Inputs 1-12 and the Master fader are deselected and the faders are all the way up (0 dB). Adjust the Pan controls to your preference. Use this screen to setup your Headphone mix for monitoring.

3. Select the "Digital Outputs A" button at the bottom of the Console screen and select "SPDIF/AES" at the top of the screen (this is for the S/PDIF outputs). Set it the same way you did for Headphones 1 in step 2 above. This will give you the same mix in your headphones that you are recording to CD.

4. Connect a pair of headphones to the Phones 1 output. Slowly turn up the Phones Level control while music is playing and adjust for a comfortable listening level.

5. Start recording and play your heart out.

Standalone Mode

1. Now you can use the Onyx 1200F in Standalone mode by closing the 1200F Console and disconnecting the FireWire connection from your computer. It retains the settings you made with the Console Control Panel and you can take your Onyx 1200F on location to make a stereo recording with your CD recorder or other recording device connected to the S/PDIF output.

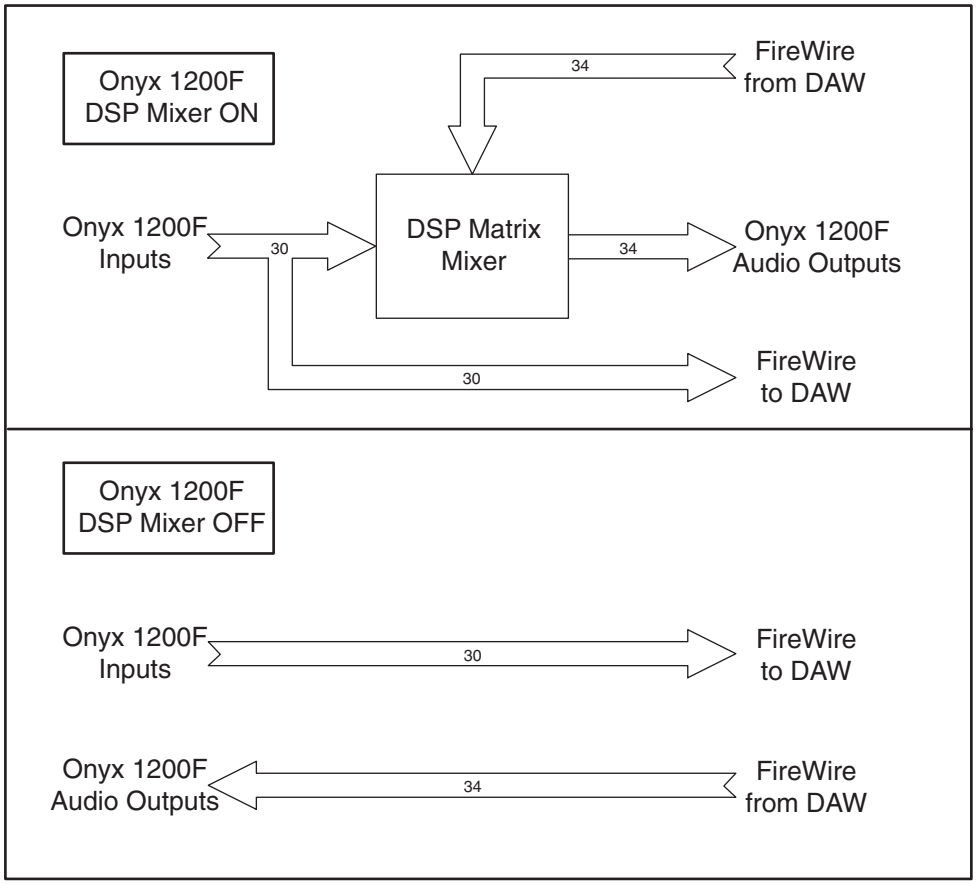
You can set up the Onyx 1200F as a standalone rackmount mixer by adjusting the faders and pan controls for all the inputs in the "Analog Outputs 1/2" tab in the Console Control Panel and using the Control Room Monitor outputs as the stereo output (the Control Room Monitor Outputs mirror the analog outputs 1/2). When you disconnect the FireWire connection between the 1200F and the computer, the settings are retained. When you turn off the 1200F, the settings are saved to the flash memory in the 1200F and recalled the next time you turn it on.

In standalone mode, you can still use the front panel gain knobs to control the relative volume for each channel.

Other Nuggets of Wisdom

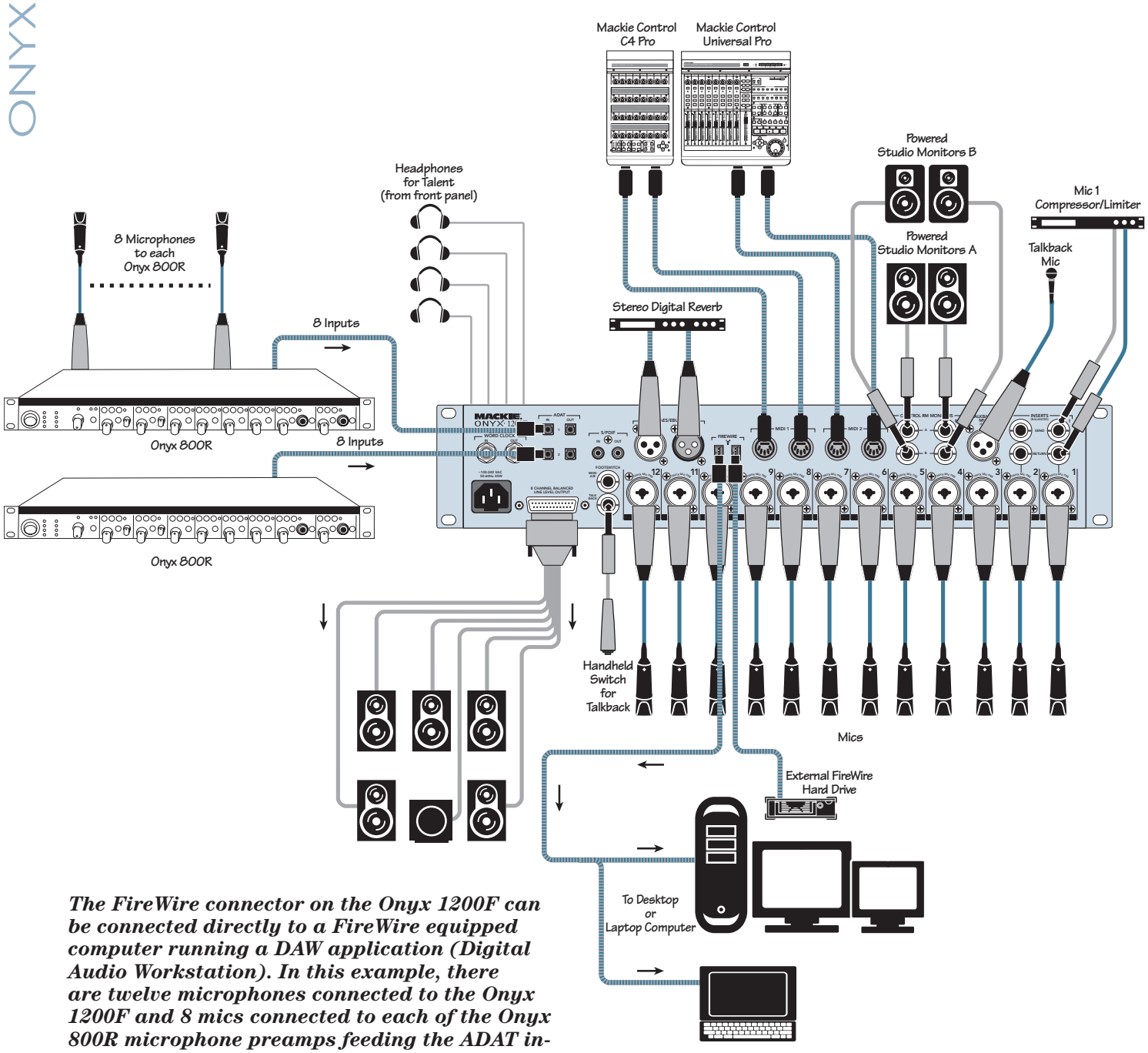
- You can connect the analog outputs from any line-level source to the line inputs on the Onyx 1200F and use its high-quality analog-to-digital converters to get your analog signals to your digital recorder(s).
- Always turn the Onyx 1200F off before making or changing connections.
- When you shut down your equipment, turn off the amplifiers first. When powering up, turn on the amplifiers last.
- Never listen to loud music for prolonged periods. Please see the Safety Instructions on page 2 for information on hearing protection.
- Save the shipping box! You may need it someday, and you don't want to have to pay for another one.

That's it for the "Getting Started" section. Next comes the "Hookup" section that shows you some typical ways that you might use the Onyx 1200F in real applications. After that, you can take the grand tour of the Onyx 1200F, with descriptions of every knob, button, input, and output. We'll also take a look at the Console software application in more detail. We encourage you to take the time to read all of the feature descriptions, but at least you know it's there if you have any questions.



Onyx 1200F Signal Flow with DSP Mixer ON and OFF

Hookup Diagrams



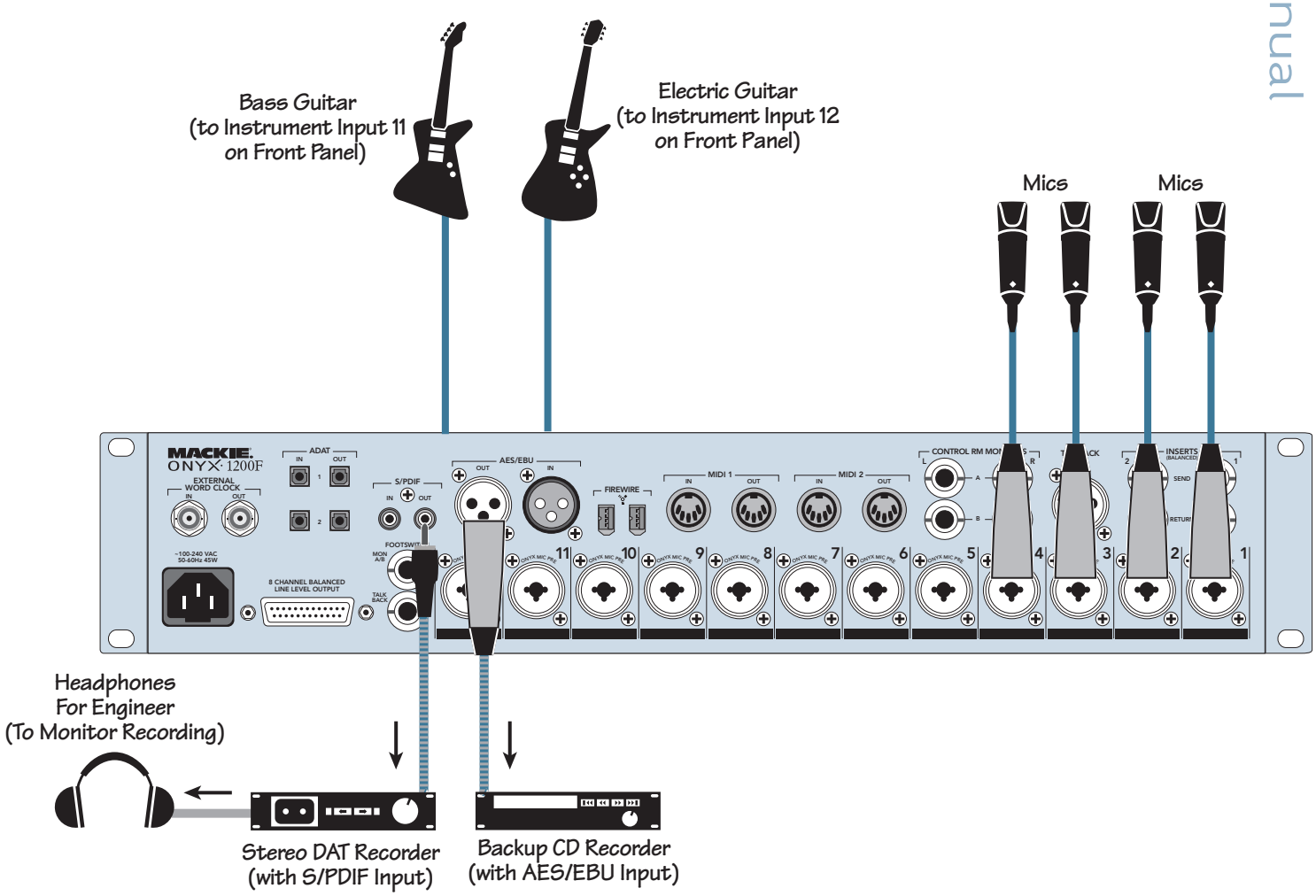
The FireWire connector on the Onyx 1200F can be connected directly to a FireWire equipped computer running a DAW application (Digital Audio Workstation). In this example, there are twelve microphones connected to the Onyx 1200F and 8 mics connected to each of the Onyx 800R microphone preamps feeding the ADAT inputs on the Onyx 1200F, for a total of 28 microphone feeds to the DAW.

Two different sets of studio monitor speakers are connected for control room monitoring. In addition, five studio monitors and a subwoofer are connected to the line-level outputs for surround sound monitoring.

A stereo digital reverb is connected to the AES/EBU IN/OUT to add reverb to the vocals, and a compressor/limiter is connected to the channel 1 Insert Send/Return.

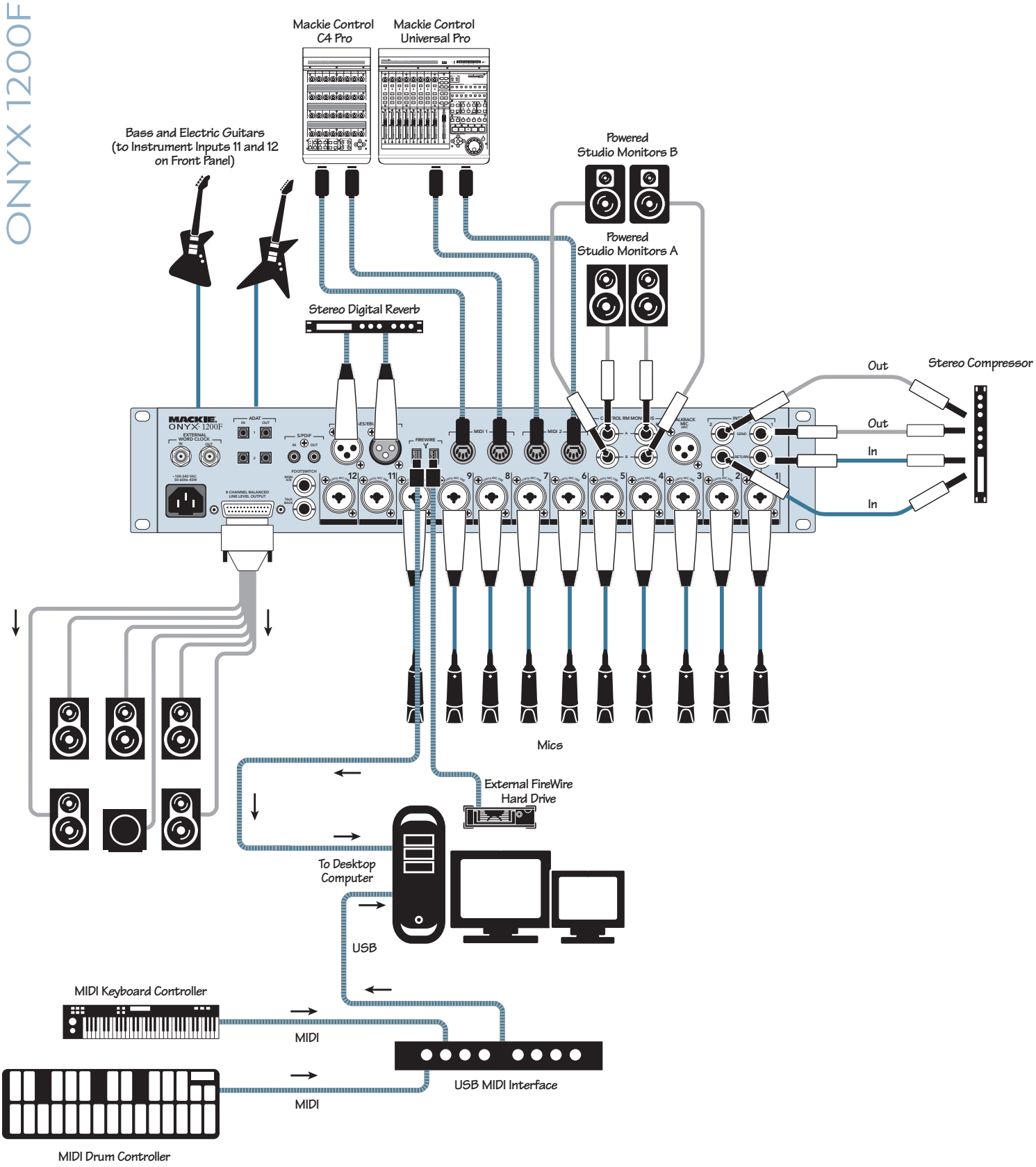
The four headphone outputs on the front of the 1200F are used for the musician's monitors. Each headphone output is getting a separate, unique headphone mix from the DAW stereo aux sends. A Mackie Control Universal and C4 are connected via the MIDI IN/OUTs, which controls the Tracktion software installed on the computer. An external FireWire hard drive is connected to the second FireWire connection on the Onyx 1200F to serve as a dedicated memory storage device for the audio files.

Onyx 1200F Multitrack Recording with a DAW (Tracking)



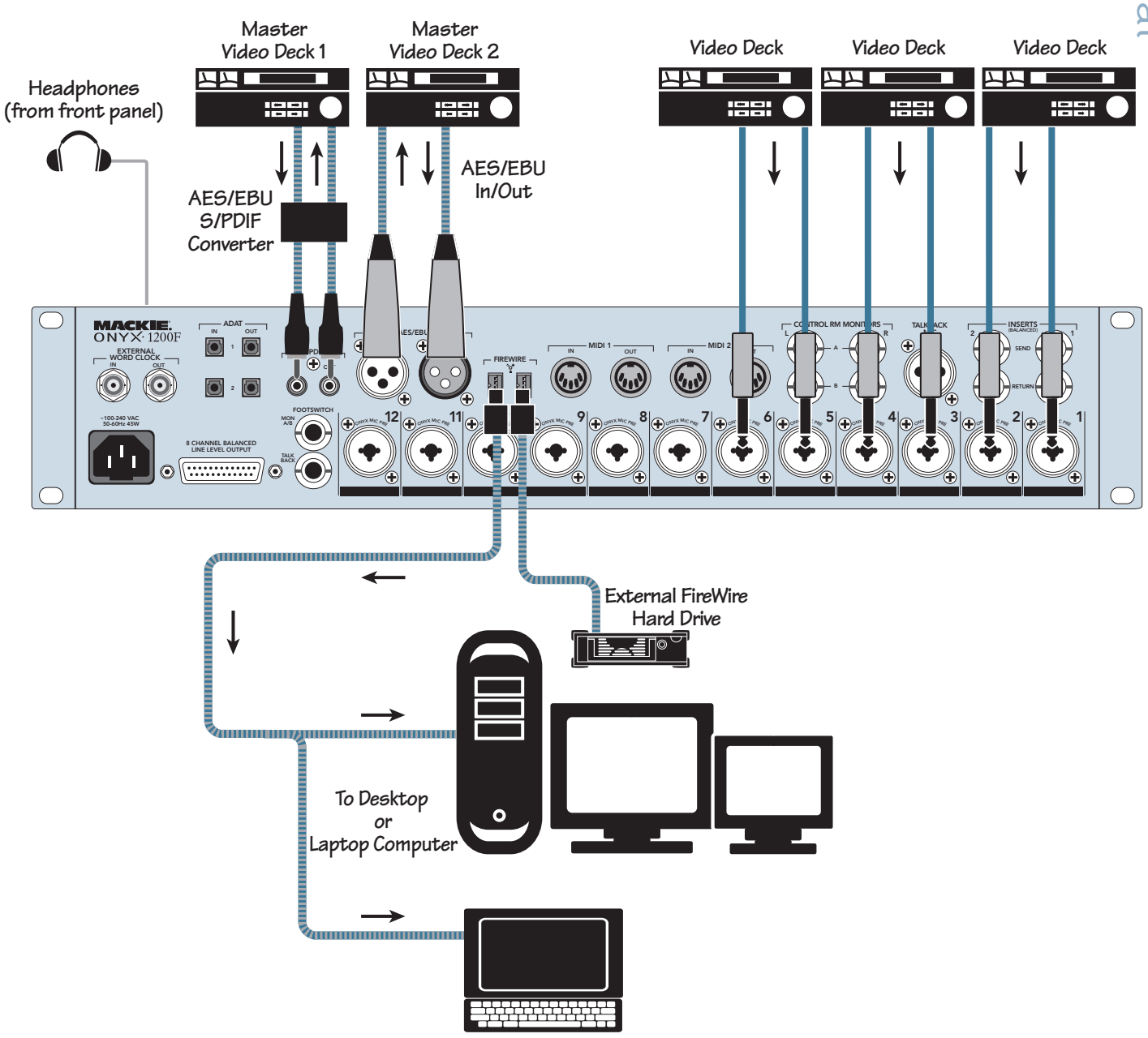
This illustrates a simple direct to 2-track recording setup. You can configure the Onyx 1200F beforehand with the desired sampling rate, with the inputs routed to the S/PDIF output. The AES/EBU output on the Onyx 1200F carries the same signal as the S/PDIF out, and is connected to the AES/EBU input on a stereo CD recorder for backup.

Onyx 1200F 2-Track Recording



This illustrates the potential of the Onyx 1200F to do entire band recordings with a minimum of physical gear or large recording spaces. Everything except the singers are "virtual!" A USB MIDI interface is used to connect an external MIDI keyboard controller and MIDI drum controller to the computer running the DAW software, and a Mackie Control Universal connected to the MIDI I/O on the Onyx 1200F to control the DAW. The DAW is running an amp emulation plugin for the guitars and virtual instrument plugins for the keyboard and drum controllers.

Onyx 1200F with DAW and External Controllers



This illustrates an audio/video application where several video decks are connected to the inputs on the Onyx 1200F, and use the Console control panel to route the audio to the two Master Video decks from the S/PDIF (via a S/PDIF to AES/EBU converter) and AES/EBU digital audio outputs from the 1200F. The AES/EBU digital audio outputs from the Master Video decks are connected to the S/PDIF (again, through the converter) and AES/EBU inputs on the Onyx 1200F. These can be individually selected in the Console Settings panel and routed to the DAW software application on a laptop or desktop computer via the FireWire connection.

Onyx 1200F Audio/Video Application

Onyx 1200F Features

Front Panel

There are twelve mic/line inputs on the Onyx 1200F. They all share the same features with the exception that Inputs 1 and 2 have balanced send and return jacks for inserting an external signal processor into the signal path, and inputs 11 and 12 have an unbalanced 1/4" input jack on the front panel for connecting unbalanced high-impedance electric instruments directly to the preamp without a direct box.

1. Signal Level Indicators

These LEDs indicate the channel's signal level after the GAIN control and the INSERT jack.

If you've followed the "Set the Levels" procedure on page 6, the –20 and –10 LEDs should light frequently, and the OL (Overload) LED should not light at all. If the OL LED is blinking frequently, the signal is probably distorted from overdriving the input. Either turn down the GAIN control or turn down the signal at its source.

2. 48V Phantom Power Switch

Most professional condenser microphones require phantom power, which is a low-current DC voltage delivered to the microphone on pins 2 and 3 of the XLR microphone connector. Push in the 48V button if your microphone needs phantom power. An LED lights next to the button to indicate that phantom power is active.

Dynamic microphones, like Shure's SM57 and SM58, do not require phantom power. However, phantom power will not harm most dynamic microphones should you accidentally plug one in while the phantom power is turned on. Be careful with ribbon microphones. Check the manual for your microphone to find out for sure whether or not phantom power can damage it.

3. LINE Switch

Use this switch to select the proper gain for the Onyx mic/line preamp. Normally, leave the LINE switch out, since the gain control provides a wide range of control over the input level.

However, if you have a particularly hot mic or line-level signal, push in this switch to reduce the overall gain by 20 dB.

4. Channel GAIN

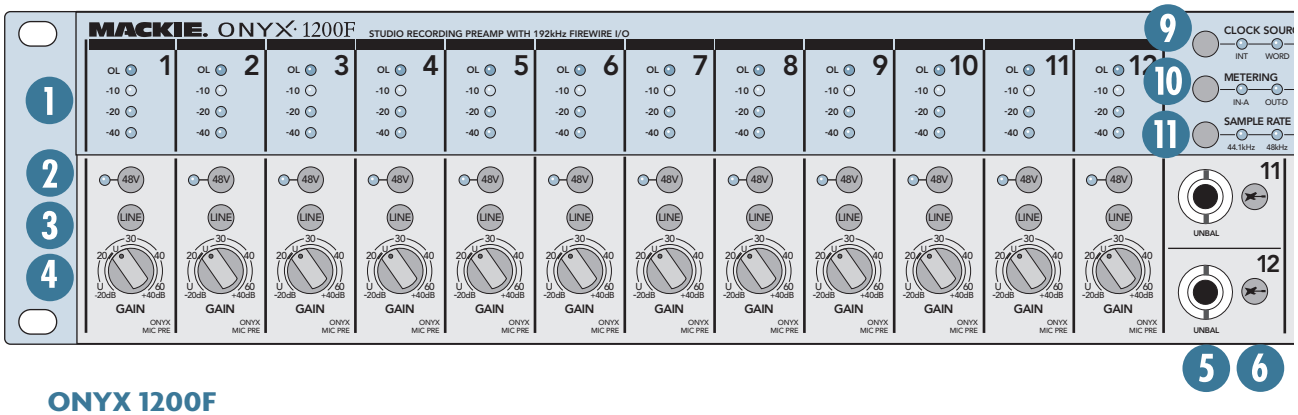
The GAIN controls adjust the input sensitivity of the mic and line inputs on channels 1-12. This allows the signal from the outside world to be adjusted to optimal internal operating levels.

With the LINE switch out, there is 0 dB of gain (unity gain) with the knob turned all the way down, ramping up to 60 dB of gain fully up.

With the LINE switch in, there is 20 dB of attenuation all the way down, and 40 dB of gain fully up, with a "U" (unity gain) mark at about 10:00.

5. Instrument Input

Channels 11 and 12 each have a 1/4" TS connector that accepts an unbalanced instrument-level input signal from a high-impedance instrument like a guitar.



6. Instrument Switch

Channels 11 and 12 have an extra button for switching between the MIC/LINE and Instrument inputs. When the button is out (MIC/LINE), the Neutrik Combo input connector (XLR MIC input or the 1/4" LINE input) is used, and the Instrument input [5] on the front panel is disconnected. When the button is pushed in (Instrument), the 1/4" Instrument input is used and the Neutrik Combo inputs are disconnected. The input stage of the Instrument inputs is specially designed for the high-impedance pickups on electric guitars, basses, acoustic guitar pickups, etc.

Plugging a guitar straight into a typical line input can result in the loss of high frequencies, causing an unnatural and dull sound. Normally, you must use a direct box between a guitar and the input to a mixer or preamplifier, which serves to convert the impedance of the guitar from high to low. The Instrument inputs on channels 11 and 12 make the need for a direct box unnecessary.

HOWEVER: The Instrument inputs *are* unbalanced, so if you are running a long cord between the instrument and the Onyx 1200F (say over 20 feet), it is best to use a direct box with a balanced output to avoid picking up noise over the length of the cord.

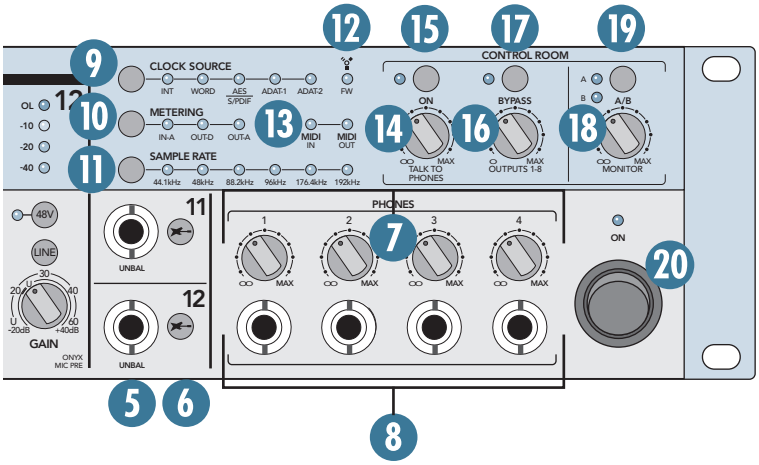
7. PHONES 1-4 Level

These four knobs adjust the signal level at the PHONES Out jacks [8] on the front panel. They range from off (∞) to maximum gain (MAX).

Having independent level control for each headphone output means that in an overdub situation, for example, the musician and the engineer can each adjust their own headphone volume to taste.

8. PHONES 1-4 Outputs

This is where you plug in your stereo headphones. These are 1/4" TRS stereo jacks. Each PHONE jack has its own individual level control [7].



When the DSP Mixer is turned on (in the Console's Settings tab), each headphone output can have a separate and unique mix from any of the Onyx 1200F inputs (including two audio streams from the DAW), using the Console's fader and pan controls.

When the DSP Mixer is turned off, only a pair of audio streams from the DAW is fed to each headphone output. You can create a stereo aux send in the DAW for each headphone output, so each headphone output can still have a separate and unique mix.

WARNING: The headphone amps are designed to drive any standard headphones to a very loud level. We're not kidding! They can cause permanent hearing damage. Even intermediate levels may be painfully loud with some headphones. BE CAREFUL! Always start with the PHONES level turned all the way down before connecting headphones to the PHONES jack. Keep it down until you've put on the headphones. Then turn it up slowly. Why? Always remember: ***"Engineers who fry their ears, find themselves with short careers."***

9. CLOCK SOURCE Select and Indicators

When the Onyx 1200F is not connected to a computer (Standalone mode), press the CLOCK SOURCE Select button to toggle the five clock source options. The five LEDs indicate the clock source currently selected for the Onyx 1200F. When the 1200F is connected to a computer via FireWire, the selection must be made in the Onyx 1200F Console (on the PC or Mac).

The five options are:

INT: This is the default selection. The Onyx 1200F runs on its own internal, extremely accurate, low-jitter clock. Select INT when using the 1200F as the master clock in a system of digital devices, or if no other clock source is available.

WORD: The Onyx 1200F uses the clock signal that appears at the WORD CLOCK IN [30] connection on the rear panel. Select WORD when you want the 1200F to be a slave in a system of digital devices.

AES/SPDIF: The Onyx 1200F uses the clock signal embedded in the AES/EBU [27] or S/PDIF digital input [28] signal.

ADAT-1: The Onyx 1200F uses the clock signal that appears at the ADAT A digital optical input [29] connection on the rear panel.

ADAT-2: The Onyx 1200F uses the clock signal that appears at the ADAT B digital optical input [29] connection on the rear panel.

Tip: It's always best to use the highest quality clock as the master. Experimenting with different clock sources, and using your ears, is the best way to determine which clock source to use.

10. METERING Select and Indicators

Press the METERING Select button to toggle the four meter options. The three METERING LEDs, along with the channel 12 meter, indicate the metering option currently selected for the Onyx 1200F.

Note: The METERING Select button works in both Standalone Mode and when the Onyx 1200F is connected to a computer.

The four options are:

IN-A: With this setting, the front panel meters display the levels for the 12 analog inputs, just after the A/D converters. This allows you to visually confirm with each meter's OL LED that the input signal is not overloading that channel's A/D converter.

OUT-D1: This setting displays the ADAT A digital outputs on channels 1-8, and the 2-channel S/PDIF and AES/EBU outputs on channels 9-10. Channel 11 is blank, and channel 12 has one LED lit to indicate that ADAT A is being metered.

OUT-D2: This setting displays the ADAT B digital outputs on channels 1-8, and the 2-channel S/PDIF and AES/EBU outputs on channels 9-10. Channel 11 is blank, and channel 12 has two LEDs lit to indicate that ADAT B is being metered.

OUT-A: This setting displays the analog outputs as follows:

- The eight analog line-level outputs on channels 1-8.
- The mono-summed levels of the four analog phones outputs on channels 9-12.

11. SAMPLE RATE Select and Indicators

Press the SAMPLE RATE Select button to toggle the six sample rate options (44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz). The six LEDs indicate the sample rate currently selected for the Onyx 1200F. The selection can also be made in the Onyx 1200F Console (on the PC or Mac).

Note: The SAMPLE RATE Select button only works in Standalone Mode. When the Onyx 1200F is connected to a computer, make sure the sample rate setting in the Onyx Console and the DAW application match.

12. FireWire Indicator

This LED illuminates when a valid FireWire connection is made between the Onyx 1200F and a computer.

13. MIDI Indicators

The MIDI IN LED flashes whenever there is MIDI activity on the MIDI 1 and MIDI 2 IN connectors, and the MIDI OUT LED flashes whenever there is MIDI activity on the MIDI 1 and MIDI 2 OUT connectors.

14. TALK TO PHONES Level Control

The talkback feature allows the engineer to communicate with the talent through the PHONES [8] outputs, using a microphone connected to the TALKBACK MIC [23] connector on the rear panel.

Use this knob to control the level of the talkback signal being routed to the PHONES outputs. You should start with the TALK TO PHONES level control turned down, and then slowly turn it up until you get confirmation from whoever is listening to headphones that they can hear you. Once you have set the level, you can leave it there for the duration of the session (or the gig).

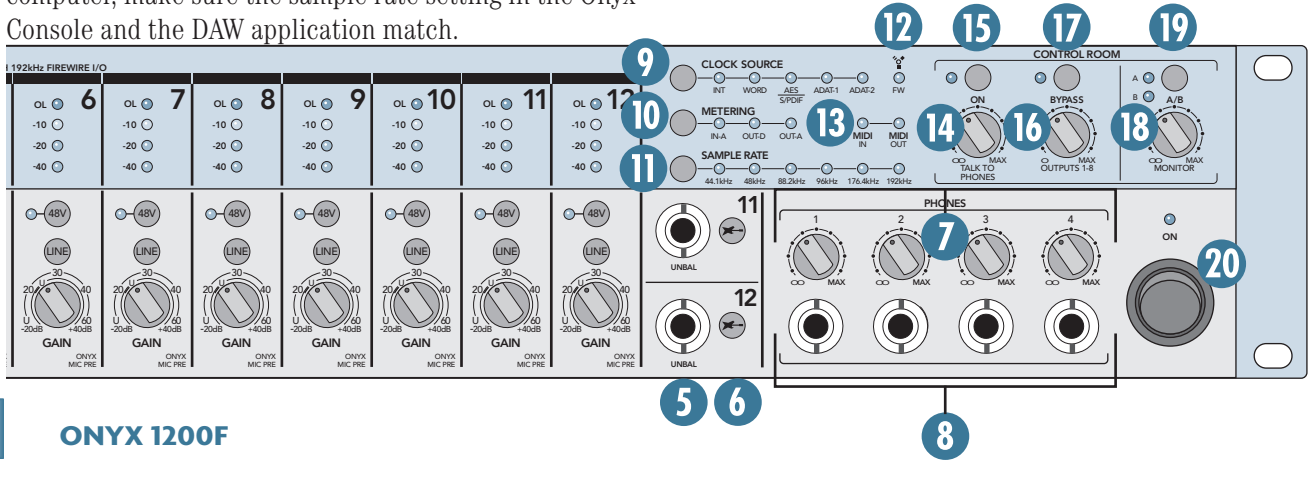
15. TALK TO PHONES On/Off Switch

This switch turns the talkback mic on and off. It is a momentary switch, so you need to keep the button pressed while you talk. When you let go of the button, the talkback mic is off, and the indicating LED next to the switch turns off. This feature is duplicated by the TALKBACK FOOTSWITCH [33] on the rear panel.

16. OUTPUTS 1-8 Level Control

Use this knob to adjust the signal level of the eight balanced line-level outputs on the DB-25 connector on the rear panel. It ranges from off (∞) to unity gain (MAX).

Tip: This is handy when using the eight line-level outputs for surround sound mixing because it gives you a single master volume control for all the surround outputs.



17. Output Level BYPASS

Turn the BYPASS switch on to remove the OUTPUT level control from the signal path. This ensures that the signal at the eight balanced line-level outputs is the same as the DAW's source channels. The indicating LED next to the BYPASS switch lights when the bypass function is on. This might be useful for sending a two-channel mix to a recorder, or for using these outputs (along with some line-level inputs) as sends to a signal processor during mixdown.

18. MONITOR Level Control

Use this knob to adjust the signal level at the CONTROL RM MONITOR jacks on the rear panel. It adjusts the signal for both the left and right Control Room Monitor outputs, ranging from off (∞) to unity gain (MAX).

Connect the CONTROL ROOM MONITOR outputs directly to the inputs of a pair of powered studio monitors. No mixer required!

19. MONITOR A/B Select Switch

Use this button to select the CONTROL RM MONITOR A or CONTROL RM MONITOR B outputs [24]. The LEDs next to the switch indicate whether Output A or B is selected. The MONITOR Level Control [18] acts on whichever Monitor output is selected.

Note: This function is duplicated with the MON A/B FOOTSWITCH jack on the rear panel.

When connecting two pairs of control room monitors to the Onyx 1200F, it is most effective to balance the sensitivity of the monitors so that they are the same loudness when switching between the two pairs. Active monitors usually have a sensitivity control on the rear panel. Passive monitors can be adjusted using the power amplifier level controls.

20. Power Switch

This is self-explanatory. When the POWER switch is turned ON (up), power is supplied to the Onyx 1200F.

Rear Panel

The rear panel is where you make all your analog and digital audio connections to the Onyx 1200F (except for the headphones and the high-impedance instrument jacks on the front).

21. MIC/Line Inputs

These are Neutrik combo connectors, which accept balanced microphone inputs from an XLR connector or balanced line-level inputs from a 1/4" TRS connector. The microphone preamps feature our new Onyx design, with higher fidelity and headroom rivaling any stand-alone mic preamp on the market today.

The XLR inputs are wired as follows:

Pin 1 = Shield or ground
Pin 2 = Positive (+ or hot)
Pin 3 = Negative (– or cold)

The 1/4" inputs are wired as follows:

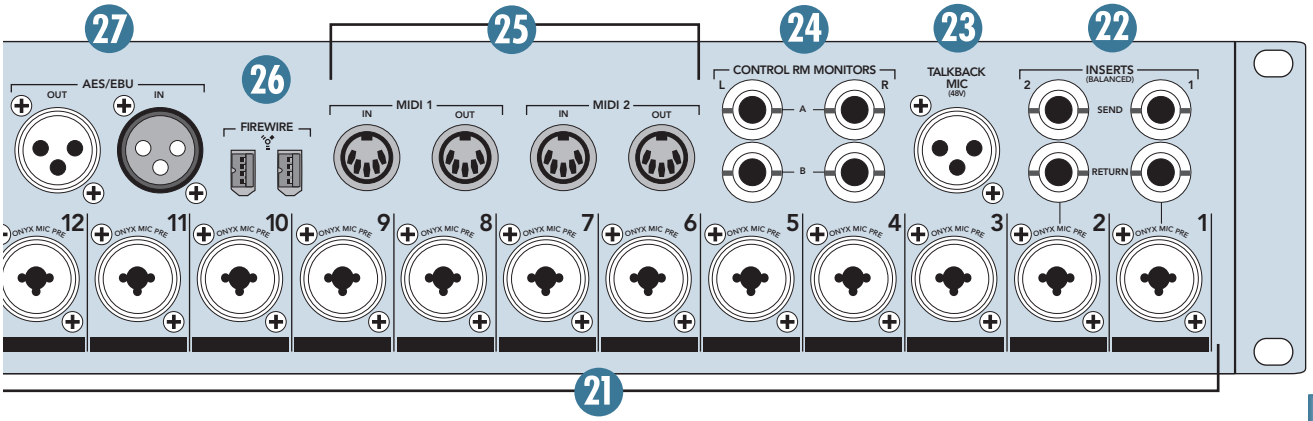
Sleeve = Shield or ground
Tip = Positive (+ or hot)
Ring = Negative (– or cold)

22. INSERTS

These 1/4" TRS jacks provide a send and return point for channels 1-2. Use the CHANNEL INSERT jacks to connect serial effects devices such as compressors, equalizers, de-essers, or filters to each individual channel.

The INSERT points are after the GAIN controls, and just before the analog-to-digital converters. The SEND output is low-impedance, capable of driving any device. The RETURN is high-impedance and can be driven by almost any device.

Tip: Since the inserts are before the A/D converters, it's a good place to strap a compressor on an unruly singer to avoid overloading the A/D converter without having to turn down the GAIN control a whole bunch.



23. TALKBACK MIC

This is where you plug in your talkback microphone, which you can use to communicate with the talent through the headphone outputs. This female XLR connector has +48 VDC phantom power always applied, so you can use dynamic or condenser microphones.

Note: Almost all dynamic microphones can be used with phantom power, but you might want to check the documentation that came with your microphone to be sure.

24. CONTROL RM MONITORS A/B

These 1/4" TRS jacks provide a balanced line-level signal that can be used to provide a monitor mix to a pair of powered studio monitors, or an additional headphone mix to a headphone amplifier. The A and B stereo outputs are identical, but they can only be used one at a time (switched with the MONITOR A/B Select Switch [19] or the MON A/B Footswitch [32]). This is useful for comparing two different pairs of monitor speakers.

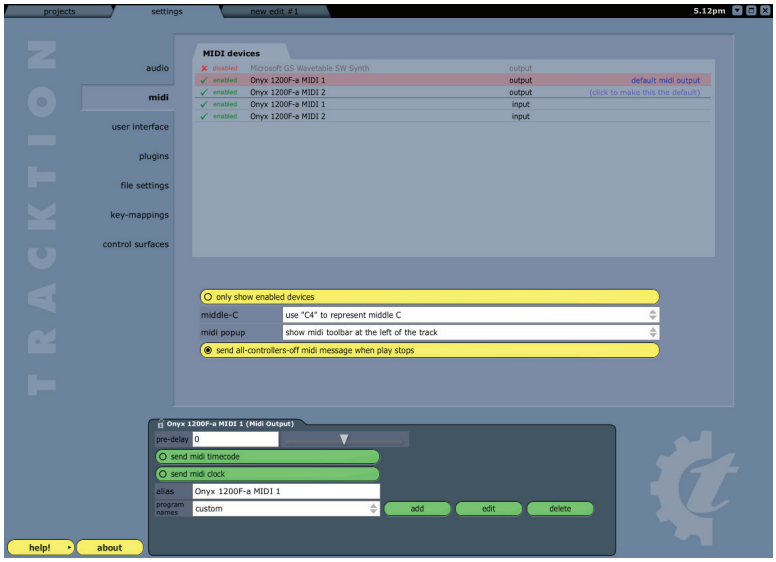
The signal at the CONTROL RM MONITORS output is the same as the BALANCED LINE-LEVEL OUTPUTs 1 and 2 by default. You can use the monitor outputs for the DAW's main stereo mix, while keeping outputs 3-8 free for other uses, such as sending to a personalized monitoring system (when preferred over the built-in headphone amp system).

Note: You can select any odd/even pair of analog outputs, any stereo headphone out, or the stereo S/PDIF_AES/EBU output as the source for the Control Room Monitors in the Console "Settings" window.

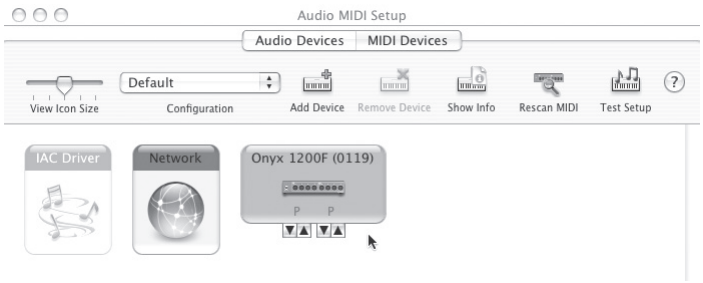
25. MIDI IN/OUT (1 and 2)

These are standard 5-pin DIN MIDI connectors for sending and receiving MIDI commands. When a MIDI controller is connected to the 1200F, it appears as a MIDI device in the DAW software application. They can be used for a MIDI fader controller, a MIDI keyboard or drum pad, or any other computer-related MIDI equipment.

The screenshot below shows how the Onyx 1200F appears in the Settings/MIDI Devices tab in Tracktion as a MIDI device.



On a Mac, it appears in the Audio MIDI Setup utility, found in the Applications/Utilities folder.

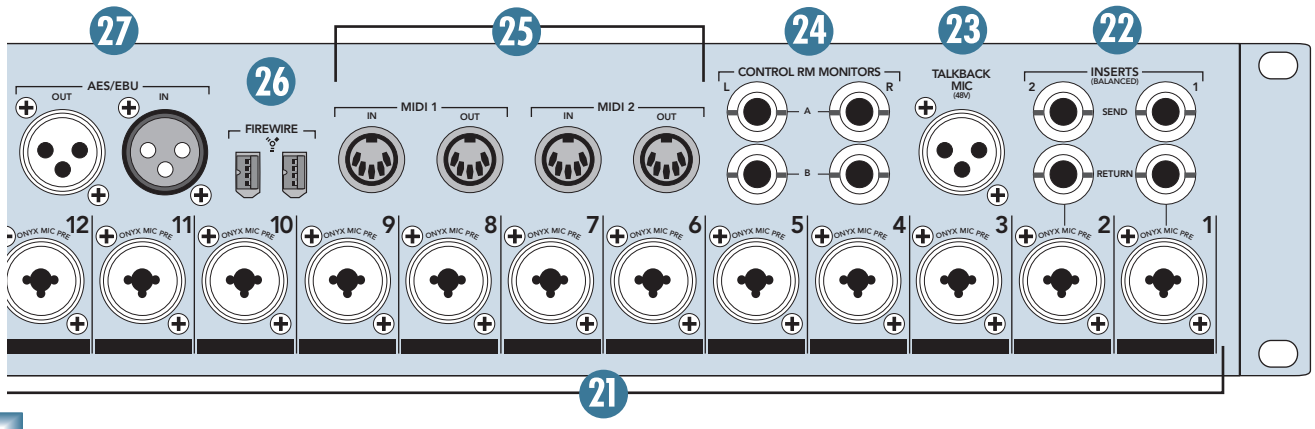


26. FIREWIRE

FireWire (a.k.a. IEEE 1394) is a high-speed serial I/O interface for connecting digital devices, with more than 30 times the bandwidth of USB 1.1. There are two FireWire connections, so you can install the Onyx 1200F in a daisy-chain fashion consisting of, for example, the host computer, the Onyx 1200F, an external FireWire hard drive, etc.

The FireWire interface provides up to 64 individual streams of digital audio I/O at 48 kHz to your DAW software application.

30 in/34 out digital streams at 48 kHz
16 in/16 out digital streams at 96 kHz
8 in/8 out digital streams at 192 kHz



The twelve mic/line inputs, two S/PDIF or AES inputs, eight digital A, and eight digital B inputs are routed directly to the software application via the FireWire connection. These streams are not affected by the DSP Mixer in the Onyx 1200F Console (see the Figure on page 9).

The FireWire interface also provides a return from the DAW for the eight analog outputs, two S/PDIF or AES digital outputs, eight digital A (ADAT) outputs, eight digital B (ADAT) outputs, and four stereo headphone outputs, which can be routed back to their respective outputs. You can use the control room outputs to monitor the stereo mix from the DAW application through your control room monitor speakers.

The FireWire interface works with both PC and Mac. As an added bonus, we include a free copy of Tracktion, our multitrack recording and sequencing software application for PC and Mac.

Tip: If your laptop or desktop computer does not have a FireWire connection, you can purchase a PCI or PCMCIA FireWire card (or FireWire ExpressCard) and install it in your computer easily and inexpensively.

27. AES/EBU IN/OUT

These are XLR connectors that send and receive two channels of digital audio in the AES/EBU professional digital format.

AES/EBU OUT transmits two-channels of digital audio, which appear as outputs 33 and 34 in the DAW software application.

AES/EBU IN receives two-channels of digital audio, and appears as DAW inputs 29 and 30 in the Onyx 1200F Console.

The AES/EBU I/O on the Onyx 1200F supports sample rates up to 192 kHz.

Note: The AES/EBU or S/PDIF inputs are selected in the Console's Settings window. Only one of these inputs can be selected at a time.

The AES/EBU and S/PDIF outputs mirror each other and are always active.

28. S/PDIF IN/OUT

These are RCA connectors that send and receive two channels of digital audio in the S/PDIF (**S**ony/**P**hilips **D**igital **I**nter**f**ace) format.

The S/PDIF inputs share the same two digital streams with the AES/EBU inputs. You can select which input to use in the Settings tab in the Onyx 1200F Console (Digital Input: S/PDIF coaxial or AES/EBU XLR). The S/PDIF and AES/EBU outputs are always active and carry the same stereo signal.

S/PDIF OUT transmits two-channels of digital audio, which appear as outputs 33 and 34 in the DAW software application.

S/PDIF IN receives two-channels of digital audio, and appears as DAW inputs 29 and 30 in the Onyx 1200F Console.

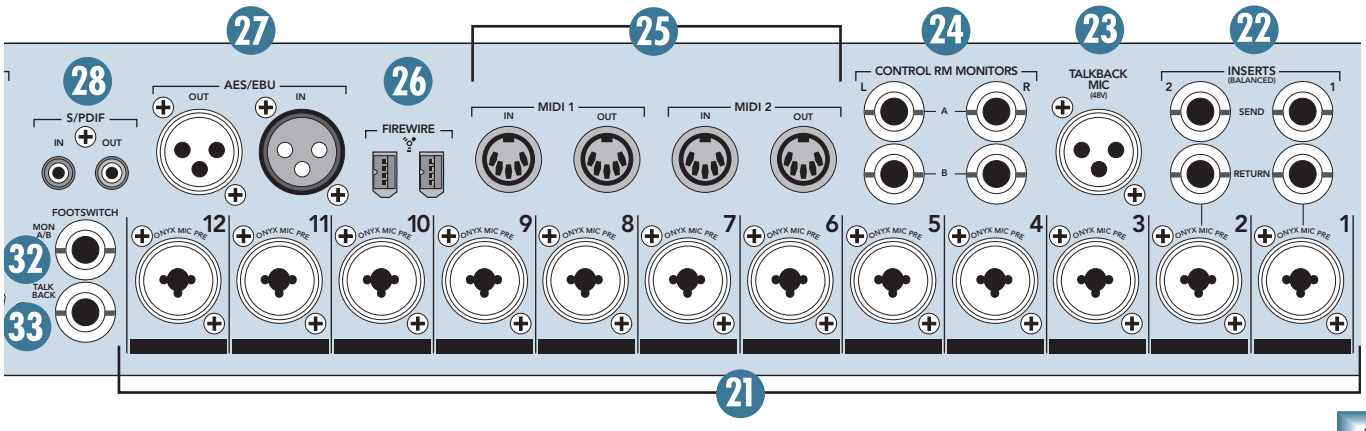
The S/PDIF I/O on the Onyx 1200F supports sample rates up to 192 kHz.

Note: Transferring digital audio over a cable generates EMI (electromagnetic interference) around the cable. Use high-quality 75-ohm coaxial cable for the S/PDIF connections to minimize the EMI noise radiated around the cable.

Tip: A 75-ohm composite video cable can be used for a S/PDIF connection.

In general, the shorter the cable length, the less effect it has on the quality of the signal. The maximum recommended length for a S/PDIF cable is limited to 10 meters (about 32 feet).

Note: Strictly speaking, S/PDIF is limited to 20-bits because four bits are reserved for "user bits." However, in the Onyx 1200F, the four user bits are used for digital audio and 24-bits are transmitted (this is an accepted optional implementation of S/PDIF).



29. ADAT IN/OUT (A/B)

These four Toslink connectors provide optical digital inputs and outputs using the ADAT lightpipe format. At higher sample rates, the signal is multiplexed using the S/MUX format.

At 44.1 kHz, and 48 kHz sample rates: Sixteen channels of inputs and outputs are provided (eight channels on digital A and eight channels on digital B).

TIP: If you are recording a live show, you can use the second ADAT OUT to make a backup recording to a separate, independent recorder, "just in case."

At 88.2 kHz and 96 kHz sample rates: Four channels are provided on the A connectors, and four channels are provided on the B connectors, as specified by the S/MUX II protocol for doubled sample rates.

At 176.4 kHz and 192 kHz sample rates: The ADAT I/O is disabled at these higher sample rates.

If you want to use the 88.2/96 kHz sample rates, check your recording device's owner's manual to make sure the optical inputs support the S/MUX format.

30. EXTERNAL WORD CLOCK IN/OUT

These BNC connectors send and receive word clock signals.

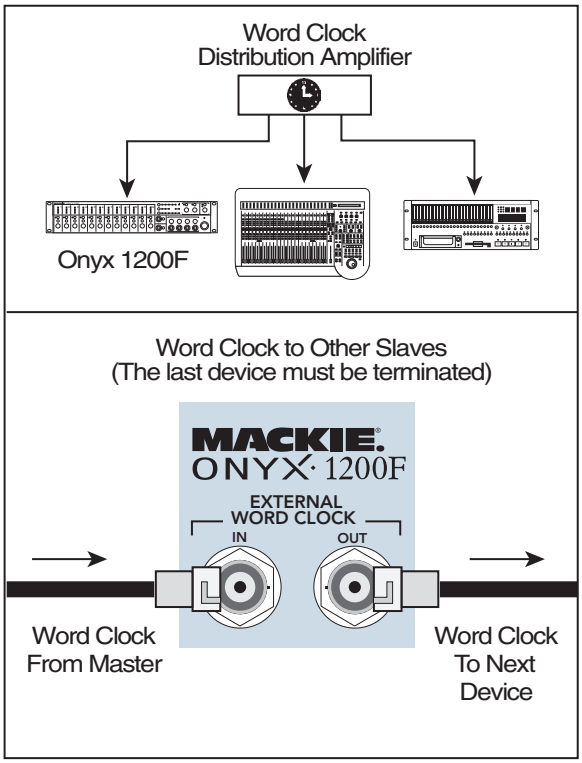
This WORD CLOCK IN connector receives word clock from another device when the CLOCK SOURCE selector on the front panel is set to WORD. Use this connector when you want to slave the 1200F to an external master word clock.

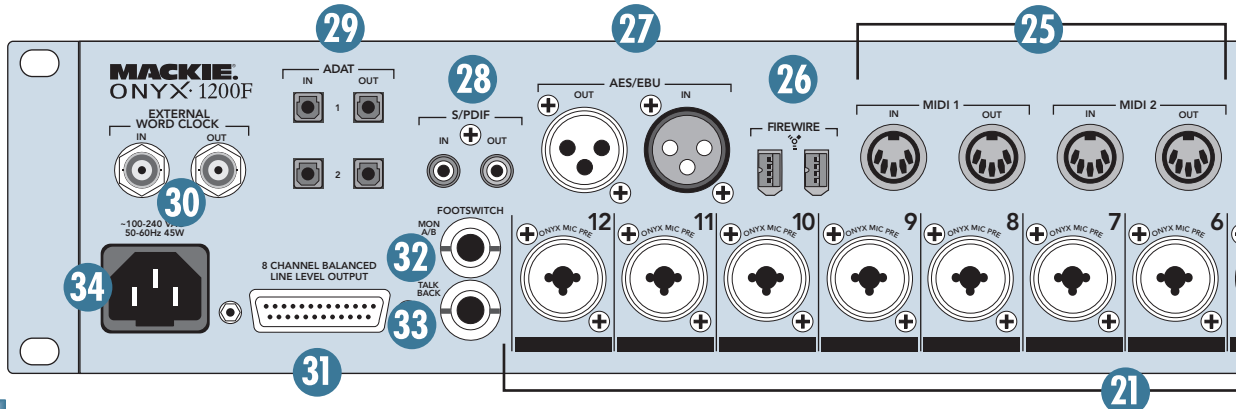
Use 75 Ω coaxial cable when connecting a word clock to the WORD CLOCK IN jack. If there is more than one device to connect to the word clock, either use a master word clock distribution box (preferred), which distributes the master word clock to multiple devices simultaneously, or use the WORD CLOCK OUT to feed the signal on to the next device in the chain (see illustrations below).

The WORD CLOCK OUT jack produces the word clock signal for the selected clock source at the selected sample rate.

The last device in a word clock chain must be terminated. If the last device is not self-terminating (for example, the WORD CLOCK IN connector on the Onyx 1200F has a built-in 75-ohm termination), you can purchase a BNC 75-ohm terminator for this purpose.

Note: Chaining the word clock out introduces delay down the line. The more devices you have on the chain, the more delay from the first to the last device. It can work in some cases, but you really want all the devices to receive a clock edge at the same time.





31. 8 CHANNEL BALANCED LINE LEVEL OUTPUT

This is a DB25 connector, which provides balanced line-level analog outputs for channels 1-8. It uses the TASCAM standard pin configuration for balanced analog audio signals (the same standard used on the analog cards for the Mackie DXB and Hard Disk Recorders), and is designed to connect directly to a recorder's analog inputs. The mix at each of these outputs is determined by the Onyx 1200F Console.

See Appendix B for a wiring diagram of this connector.

32. MON A/B FOOTSWITCH

This is an unbalanced 1/4" TS jack used to connect either a momentary or latching two-pole footswitch. The footswitch works the same as the front panel MONITOR A/B Select Switch [19] to toggle monitor outputs A and B. See Appendix B for a wiring diagram.

33. TALKBACK FOOTSWITCH

This is an unbalanced 1/4" TS jack used to connect a normal two-pole momentary footswitch (or Switchcraft ED900 "cable button"). The footswitch works the same as the front panel TALKBACK ON/OFF Switch [15] to turn the talkback mic on and off. This allows the engineer or producer to activate the talkback function and communicate with the talent from anywhere in the room. See Appendix B for a wiring diagram.

34. AC Power Receptacle

This is a standard 3-prong IEC power connector. Connect the detachable linecord (included in the box with your Onyx 1200F) to the power receptacle, and plug the other end of the linecord into an AC outlet. The Onyx 1200F has a universal power supply that can accept any AC voltage ranging from 100 VAC to 240 VAC (50-60 Hz). No need for voltage select switches. It will work virtually anywhere in the world. That's why we call it a "Planet-Earth" power supply! This also means that it is less susceptible to voltage sags or spikes, providing greater electromagnetic isolation and better protection against AC line noise.

Onyx 1200F Console

The Onyx 1200F Console lets you make a number of software changes in the operation of the Onyx 1200F via the FireWire connection to your computer, as well as providing access to the Matrix Mixer that allows you to create individual mixes for each of the analog and digital outputs, and four separate stereo mixes for the four headphone outputs.

Installing the Software

The Onyx 1200F Console can be installed on a PC running Windows XP or a Macintosh running OS X.

Note: Check our website periodically (www.mackie.com) to see if there are newer versions of the Onyx 1200F software or Console available to download.

Computer Requirements

These are the minimum computer requirements for running the Onyx 1200F Console.

For the PC:

- Microsoft Windows XP SP2
- Pentium 4, Celeron, or Athlon XP processor
- 256 MB RAM

For the Mac:

- OS X 10.3.9
- G4 processor
- 256 MB RAM

It is important to note that the processor speed, amount of RAM installed, and the size and speed of your hard drive all contribute to the overall performance of your recording system.

A Note about Hard Drive Speed:

Most tower-style desktop computers have hard drives that spin at 5400 rpm or faster, which is generally fast enough to record 10 channels without a problem. If you are experiencing difficulty recording all 10 channels at once, especially at 96 kHz or higher, you may need to install a faster hard drive (i.e., 7200 rpm).

Most laptops come with 4200 rpm drives. This will work fine if you are recording fewer tracks at lower sample rates. However, if you are buying a laptop to use for recording the maximum number of tracks, specify a faster drive. It may be possible to replace a 4200 rpm drive with a faster one (preferably a 7200 rpm drive with an 8 MB cache), but you should check with the manufacturer to make sure.

Another option for either a desktop or laptop computer is to purchase an external FireWire-equipped hard drive, again preferably a 7200 rpm drive with an 8 MB cache. This can be connected to one of the FireWire connections on the Onyx 1200F, or directly to your computer, and appears as an available drive to your computer.

Installing the Drivers and Onyx 1200F Console

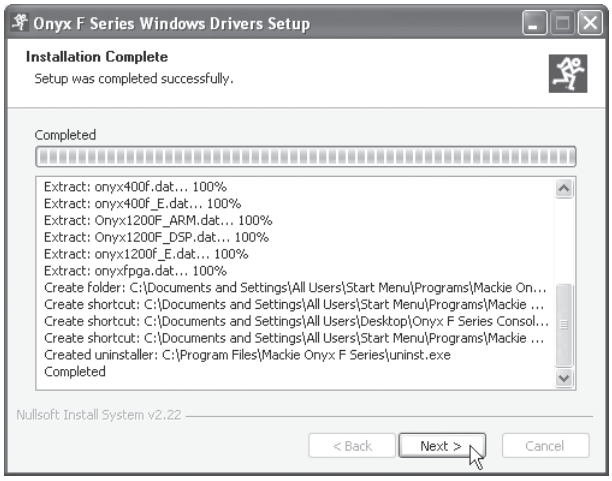
When connecting the Onyx 1200F to a PC, it is necessary to first install the Onyx FireWire Windows drivers and the Onyx 1200F Console. The Macintosh OS X 10.3.9 (and above) has FireWire drivers built-in, so it is not necessary to install drivers on a Mac. However, you do need to install the Onyx 1200F Console on a Mac.

For the PC:

1. Insert the CD provided with the Onyx 1200F into your CD drive.
2. Click “Start > Run > Browse” and navigate to the CD drive. Double-click the file named: “SetupOnyxFSeries_xxx.exe” where xxx is the revision level of the installation.
3. Click “OK” in the Run window.
4. You may get a “Security Warning” about running the installer. It’s okay. Click “Run.”

5. The Onyx F Series Windows XP Installer window opens. Click “Install” to continue.

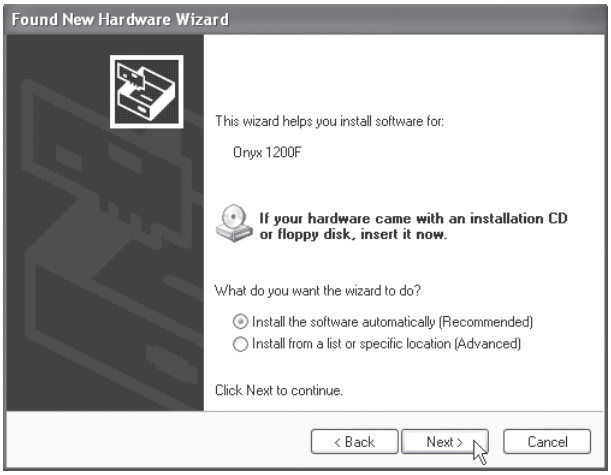
6. When the installation is completed, the Onyx F Series Windows Drivers Setup window indicates that the “Setup was completed successfully.” Click “Next” to continue.



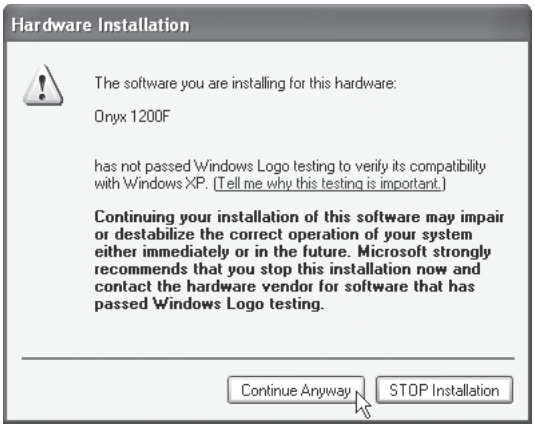
7. The “Install Complete” window opens. Click “Finish” to complete the installation.

8. Connect the Onyx 1200F to your computer with the FireWire cable that was included in the box and turn it on.
9. After a few seconds, the “Found New Hardware Wizard” opens. Select “No, not this time” where it asks to connect to Windows Update. Click "Next" to continue.

10. In the next window, select "Install the software automatically (Recommended)" and click "Next" to continue.



11. As the installation continues, you may see a warning that the software has not passed Windows Logo testing. It's okay. Click "Continue Anyway."



12. When the installation has completed, the "Completing the Found New Hardware Wizard" window opens. Click "Finish" to complete the process.

13. Open the Console (there is a shortcut on your desktop called "Onyx F Series Console") and verify that the Console control panel appears. This confirms that communication has been established between the console software and the 1200F.

Note: You can open the Console from Windows by clicking "Start > Programs > Mackie Onyx F Series > Onyx F Series Console."

For the Mac:

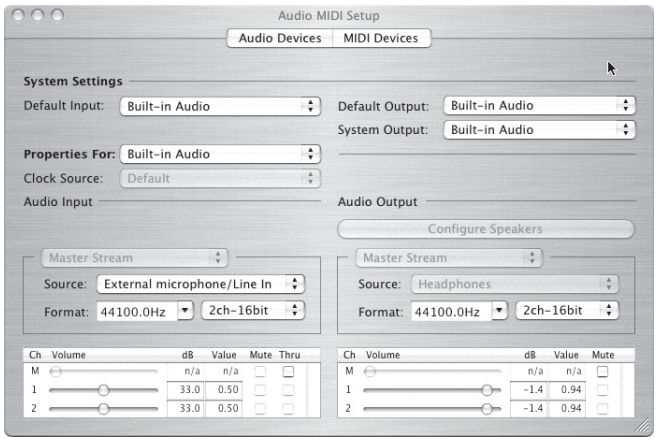
1. Insert the CD provided with the Onyx 1200F into your CD drive.
2. Double-click the CD icon on your desktop and locate the file named "Onyx Console.zip."
3. Click-and-drag the file to your hard drive, to whatever location you prefer (i.e., the Applications folder).
4. Double-click the "Onyx Console.zip" file that you just copied to your hard drive, and OS X automatically unzips the "Onyx Console" file and places it in the same folder with the .zip file. (You can move the .zip file to the Trash once the Onyx Console is extracted from the .zip file.)
5. Connect the Onyx 1200F to your Macintosh with the FireWire cable that was included in the box and turn it on.
6. Open the Console and verify that the Console control panel appears. This confirms that communication has been established between the console software and the Onyx 1200F.

Note: The Onyx Console works with a Mac's built-in audio, so there are no drivers to install. All you need to install is the Onyx Console. However, you must use OS X version 10.3.9 or higher for the Onyx Console to work properly.

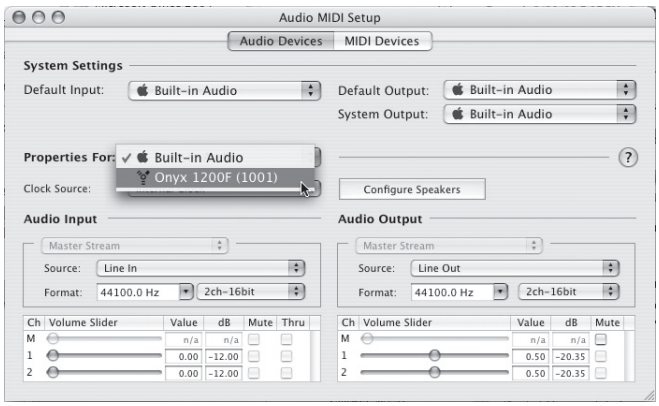
Macintosh OS X Audio MIDI Setup

OS X has a dedicated setup utility for audio and MIDI. You can use the Audio Setup utility to change the default audio input and output and general system settings on your Macintosh.

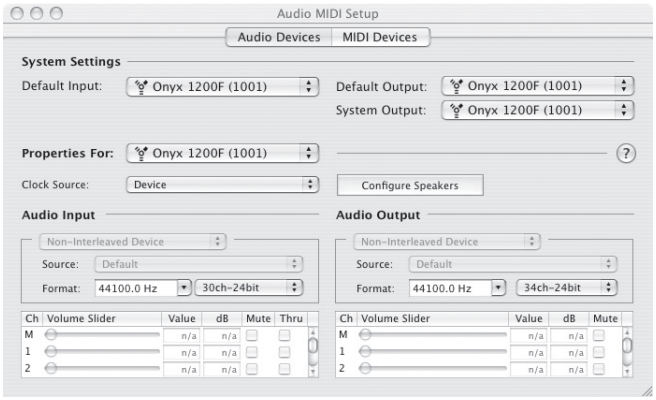
1. Go to the Applications folder and open the Utilities folder.
2. Double-click "Audio MIDI Setup."



3. Click the Audio Devices tab, and select Onyx 1200F in the "Properties For" drop-down box.



4. Here you can see the settings for the Onyx 1200F. You can also choose to use the Onyx 1200F as your default input or output, as well as designate it to be used for system sound output.



5. You're ready to go with any Mac OS X Core Audio host application (i.e., Tracktion, Logic, Cubase, Nuendo, Live, Digital Performer, etc.).

The Onyx 1200F should now appear as a 30x34 audio interface available for any DAW application that you have installed on your computer.

Note: It is still necessary to select the Onyx 1200F as the audio device in the DAW software application's "Settings" window.

Installing Tracktion

Your Onyx 1200F also came with the full version of Tracktion, our easy-to-use multitrack recording and sequencing software for the PC and Mac.

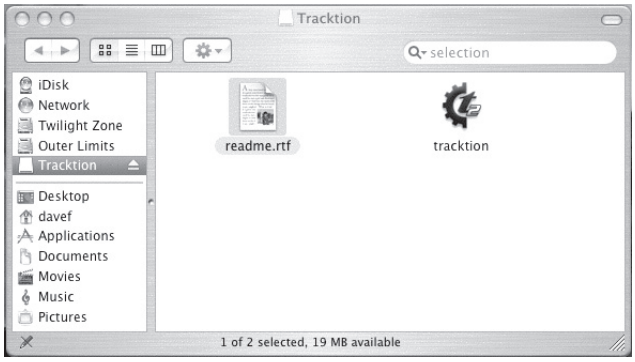
Note: After installing Tracktion, be sure to check our website periodically for software updates (www.mackie.com).

To install Tracktion on a PC running Windows XP:

1. Insert the CD-R or DVD-R into the CD or DVD drive.
2. Browse to the CD or DVD directory and open the "Tracktion" folder. You can copy the folder called "Tracktion Documentation" to your hard drive if you like, to make it easier to access.
3. Double-click the file "TracktionSetup.exe".
4. Follow the instructions in the Tracktion Installer to complete the installation.

To install Tracktion on a Mac running OS X (version 10.3.9 or later):

1. Insert the CD-R or DVD-R into the CD or DVD drive.
2. Double-click the CD or DVD icon on the desktop and double-click the file named "TracktionSetup.dmg".
3. A Tracktion window opens. Drag the Tracktion icon from the Tracktion window into the Applications folder.



4. Double-click the Tracktion file in the Applications folder to open Tracktion.

Authorizing Tracktion

There is an authorization code on the sleeve of the Tracktion CD-R or DVD-R that came with your Onyx 1200F. You can authorize the software from within Tracktion or by going to http://my.mackie.com.

Using the Onyx 1200F Console

The Onyx 1200F Console does two things: 1) It lets you adjust master settings for the 1200F like sample rate, etc., and 2) It lets you use the DSP Mixer to create independent zero latency mixes for each of the eight analog outputs, eight digital A outputs, eight digital B outputs, two S/PDIF/AES outputs, and four stereo headphone outputs.

There are six tabs along the top of the Onyx 1200F Console and four buttons along the bottom. The buttons on the bottom select the group of outputs affected by the matrix mixer (analog outputs, digital outputs A, digital outputs B, or headphones).

The first four tabs on the top change depending on which group of outputs is selected, but each tab represents a pair of outputs. The SPDIF/AES and Settings tabs remain the same regardless of which output group is selected.

Note: The Onyx 1200F uses 24-bit converters and 24-bit word lengths. This is fixed and cannot be changed. If you want to use 16-bit word lengths for burning a CD, most DAW applications will convert 24-bit words to 16-bit words by either using a dithering plug-in at the output to dither the mix down to 16-bits as you create a stereo file, or simply truncating (removing) the eight least-significant bits (LSBs). However, it is best to keep the bit depth at 24-bits until you are ready to burn the audio to a CD to retain the highest quality digital audio.

Settings

Click the Settings tab to access and change the sample rate, clock source, DSP Mixer, Digital Input source, Consumer or Professional mode for S/PDIF, Control Room Monitors output source, Buffer Samples, and access the Stream Selection Matrix.

Sample Rate

The Onyx 1200F can operate at the following sample rates: 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, and 192 kHz. Click the desired sample rate or click and drag the rotary dial to select the sample rate. The sample rate LEDs on the front panel will indicate the selection in the Console's Settings window. Likewise, the Console's Settings window will change to indicate the selection on the Onyx 1200F front panel. You can also select the sample rate in the DAW application.

Note: When the Onyx 1200F is connected to a computer with a FireWire cable, you cannot change the sample rate with the front panel Sample Rate select button. Use the Sample Rate selector in the Console's Settings window.

Clock Source

There are six choices for selecting a clock source.

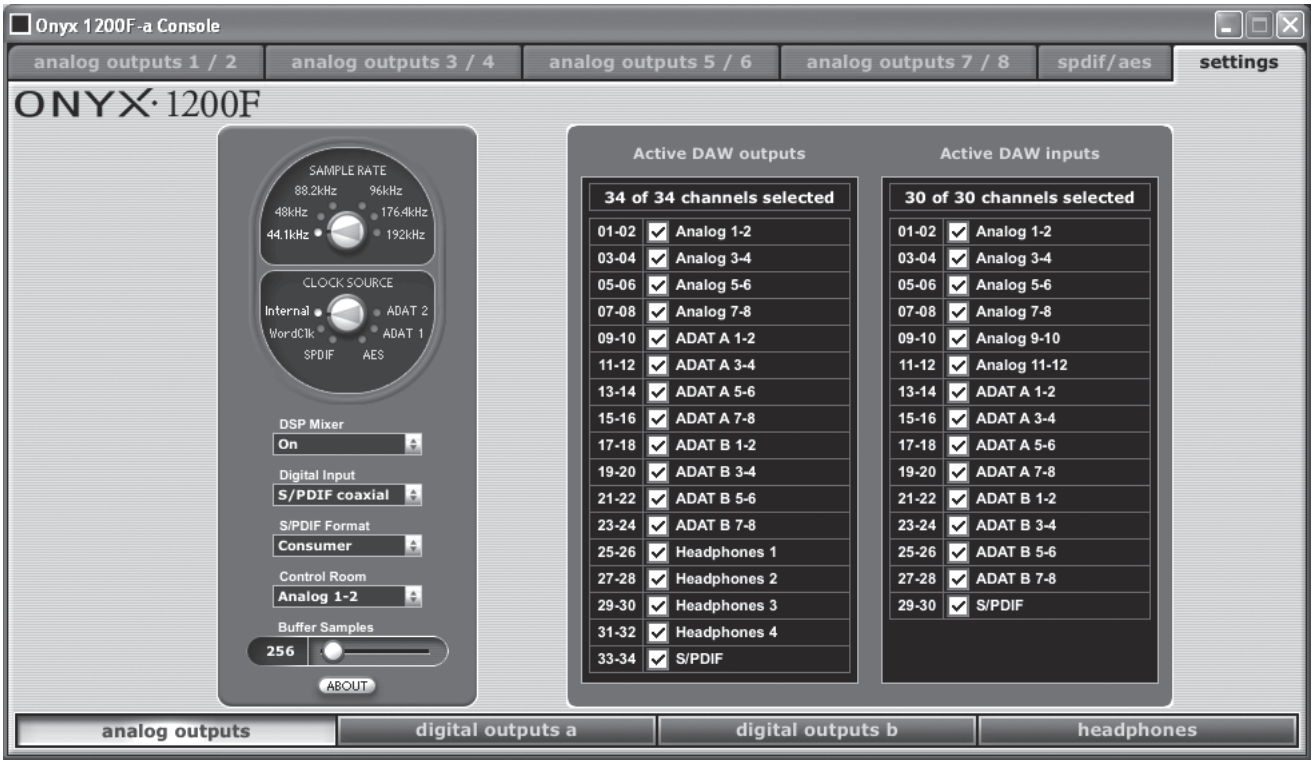
- **INT** (Internal): This is the default selection. The Onyx 1200F operates using its own internal extremely accurate, low-jitter clock. Select INT when you want the 1200F to serve as the master clock in a system of digital devices.
- **W.C.** (Word Clock): The Onyx 1200F operates using the clock from the device that is connected to the WORD CLOCK IN [30] jack on the 1200F rear panel. Select W.C. when you want the 1200F to be a slave in a system of digital devices.
- **S/PDIF**: The Onyx 1200F syncs to the S/PDIF digital input [28] signal.
- **AES**: The Onyx 1200F syncs to the AES/EBU digital input [27] signal.
- **ADAT 1**: The Onyx 1200F syncs to the ADAT 1 digital input [29] signal.
- **ADAT 2**: The Onyx 1200F syncs to the ADAT 2 digital input [29] signal.

  Note: If there is no clock present at the selected clock source, the clock source defaults to INT.

DSP Mixer

This turns the DSP Matrix Mixer on and off. Refer to the figure on the next page for an illustration of the signal routing with the DSP Mixer on and off.

- **Off:** When the DSP Mixer is turned off, the Onyx 1200F simply routes the 30 inputs to the DAW (via the FireWire connection), and the 34 outputs from



the DAW back to the Onyx 1200F outputs. All the Output tabs are unavailable and the matrix mixer cannot be adjusted.

You might leave the DSP Mixer off if your computer has a lot of processing power and you are not concerned about the low-latency contributed by routing the audio through the DAW software application and back to the Onyx 1200F for monitoring. Another scenario is if you are just using the 1200F as an audio interface to your computer.

- **On:** When the DSP Mixer is turned on, the Matrix Mixer is enabled and the five Output tabs are active and selectable. Each output tab controls the mix for a pair of outputs (i.e., 1/2, 3/4, etc.). These mixes are routed to the group of outputs selected by the buttons on the bottom of the screen. Each mix is comprised of the twelve analog inputs, eight digital A inputs, eight digital B inputs, two S/PDIF or AES/EBU inputs, and two channels returned from the DAW.

  Note: Each output tab has a different pair of DAW channels available to combine with the mix (see Onyx 1200F DAW Output Chart below).

  The inputs to the Onyx 1200F are split off into two directions after the A/D converters: one path goes to the DSP Mixer and the physical outputs on the 1200F, and the other path goes to the ASIO/Core Audio inputs of the DAW over the FireWire connection. These are not affected by the DSP Mixer.

Onyx 1200F DAW Output Chart

Analog Outputs	DAW Output Channels
1/2	1/2
3/4	3/4
5/6	5/6
7/8	7/8
Digital Outputs A	
1/2	9/10
3/4	11/12
5/6	13/14
7/8	15/16
Digital Outputs B	
1/2	17/18
3/4	19/20
5/6	21/22
7/8	23/24
Headphones 1-4	
1	25/26
2	27/28
3	29/30
4	31/32
SPDIF/AES	33/34

Note: When the DSP Mixer is turned on, each of the Onyx 1200F Outputs has a different pair of DAW Outputs that can be mixed into its output mix. When the DSP Mixer is turned off, the DAW Output Channels are automatically routed directly to the Onyx 1200F outputs indicated on this chart.

This lets you use the DSP Mixer for tracking a band and creating zero-latency headphone mixes for the talent using the headphone outputs, or the analog line outputs routed through a headphone distribution amplifier, while sending the tracks to the DAW for recording.

Another scenario is for overdubbing, where you are adding another track to some tracks already recorded, which are routed from the DAW to the 1200F via the DAW Outputs.

Digital Input

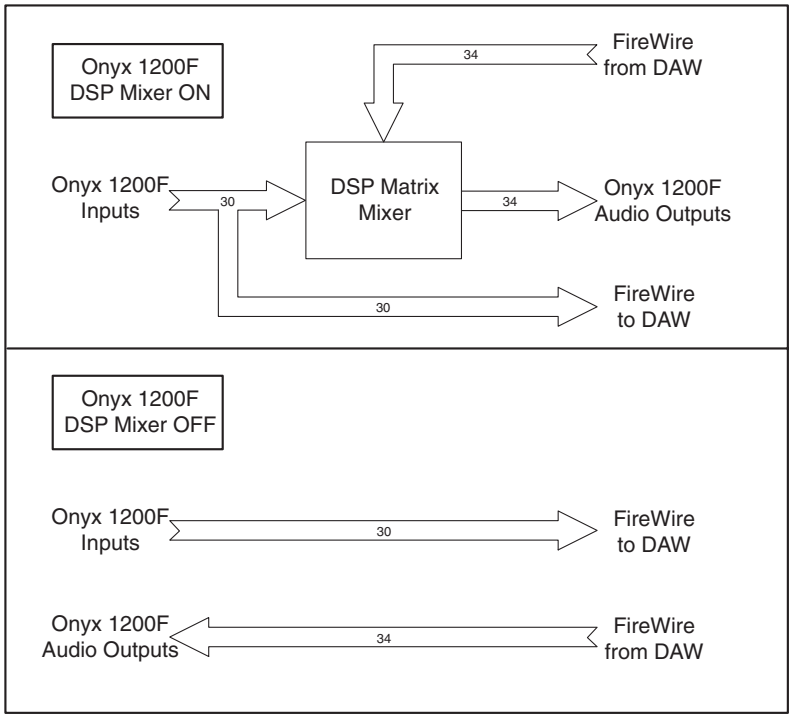
This selects whether the S/PDIF digital input (S/PDIF coaxial) or the AES/EBU digital input (AES/EBU XLR) is used as a stereo digital input.

S/PDIF Format

There are two standard digital audio formats in common use: AES/EBU (Professional) and S/PDIF (Consumer). The audio data is the same for either format, just the non-audio data bits (subcode) are different.

In almost all cases, using the Consumer setting will work just fine for the S/PDIF connection. Occasionally, a S/PDIF device may want to see the Professional subcode and cause problems when using the Consumer setting. If you find that the S/PDIF digital audio is not being tranmitted or received correctly, try using the Professional setting.

Note: If connecting a device equipped with an AES/EBU digital output to the S/PDIF input on the 1200F using an AES/EBU-to-S/PDIF converter, set the S/PDIF format to professional.



Control Room

This lets you select which outputs are routed to the Control Room Monitor outputs. You can select any odd/even pair of analog outputs, any of the four headphone outputs, or the S/PDIF/AES output.

This allows you to have a separate monitor mix in the control room, differing from the headphone mixes for the talent. Or you can listen to any of the headphone mixes in the control room and make adjustments as needed.

Buffer Samples (PC Version Only)

The buffer samples, or buffer size, is related to latency, which describes the amount of time it takes for audio to get in and out of your software application. The lower the buffer size, the lower the latency, and the faster audio can move through the software application and back to the Onyx 1200F. However, a low buffer size requires more resources from your computer, so you need to find a happy balance between finding the lowest latency setting you can attain before the computer begins to have trouble routing and recording audio (e.g., dropouts, pops, distorted audio).

Many DAW software applications have an ASIO control panel. In Tracktion, it is in the "Audio Devices" window in the "Settings" tab. Click the "Show ASIO control panel" button to open the ASIO control panel for the Onyx 1200F. The buffer size in the ASIO control panel should be the same as the buffer size selected in the Onyx 1200F Console.

Note: The DAW software application's ASIO control panel has priority over the Onyx 1200F Console.

The Macintosh version of the Onyx 1200F Console does not have a control for the buffer size. This is adjusted in the DAW software application only.

About

This opens a window that tells you what versions of software and firmware are being used by the Onyx 1200F and the Console Control Panel.

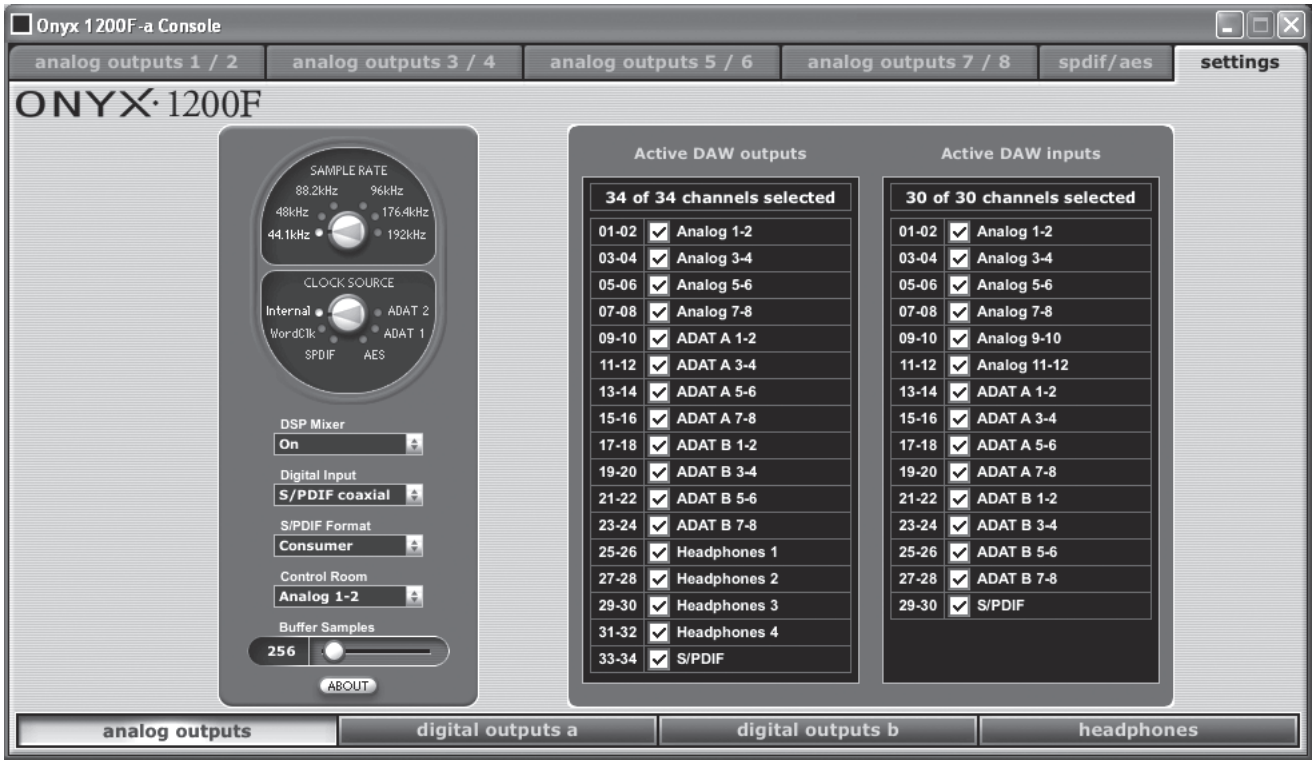
Software and firmware updates are installed using an installer that you can download from our website. Check our website to see if newer versions of the software and firmware are available to download. Better yet, make sure you register your Onyx 1200F either online or with the enclosed Product Registration Card, and we will notify you by email when updates become available.

Stream Selection Matrix

The right side of the Settings window displays the Active DAW Outputs and the Active DAW Inputs. These are the audio streams that are transmitted between the Onyx 1200F and your computer.

When 44.1/48 kHz sample rate is selected, all the audio streams are available (30 inputs and 34 outputs).

When 88.2/96 kHz sample rate is selected, 16 inputs and 16 outputs are available, so some of the inputs and outputs become "greyed" out in the stream selection matrix. You can modify the default settings by deselecting a pair of audio streams you don't need and selecting another pair.



When 176.4/192 kHz sample rate is selected, 8 inputs and 8 outputs are available. Again, you can modify the default settings by deselecting one or more pairs of audio streams and selecting other pairs. As soon as all of the available audio streams are used up, the remaining inputs and outputs are "greyed" out.

To summarize, since the audio stream count is reduced at the higher sample rates, the stream selection matrix lets you decide which audio streams to use for your own application.

Outputs

Click one of the four buttons at the bottom of the Console window to select a group of outputs (analog outputs [35], digital outputs a [36], digital outputs b [37], and headphones [38]).

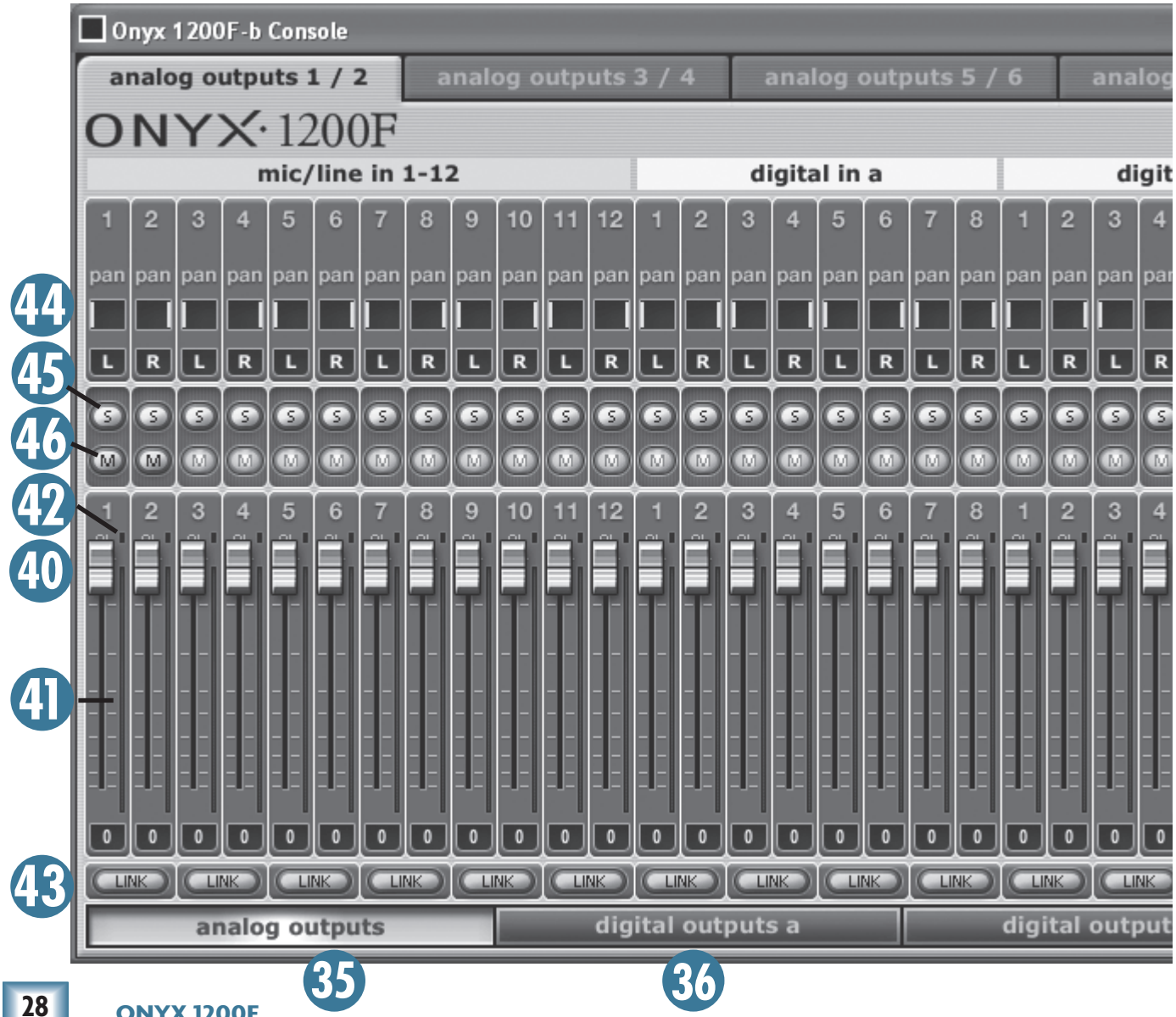
The tabs at the top of the Console window allow you to create individual mixes for a pair of outputs related to the group of outputs you have selected. Each pair of outputs has its own tab, so make sure you have the correct one selected before making any changes.

Note: The mixes you create in the Console matrix mixing section apply to the physical outputs on the Onyx 1200F (analog outputs 1-8, digital outputs a 1-8, digital outputs b 1-8, and the SPDIF/AES output). The DAW application receives inputs independent of the matrix mixer via the FireWire connection.

Channel Strips

Each output matrix mixer has a channel strip for each of the 30 inputs for creating an individual stereo mix at the selected pair of outputs. In addition, a pair of outputs from the DAW software application [39] can be included in the mix. This is useful for overdubbing, when you want to add another track to some tracks that have already been recorded.

Each input has its own fader control [40], meter [41], and overload (OL) indicator [42]. Typically, you want the meters to average around the –10 mark. This allows 10 dB of headroom for peaks. If the signal has lots of sharp peaks, you may need to reduce the average level a bit to allow the peaks through without triggering the OL indicator.



A LINK button [43] allows you to link the faders of adjacent channels (odd/even pair) so they move together when using them as a stereo pair.

A pan control [44] allows you to pan the signal left and right between the pair of outputs (left=odd; right=even).

Each input has a SOLO button [45] and a MUTE button [46]. When a SOLO button is clicked, the Rude Solo LED [47] blinks to remind you that a channel is soloed. Soloing a channel allows you to hear just that channel in the outputs. Muting a channel allows you to remove a channel from the overall mix.

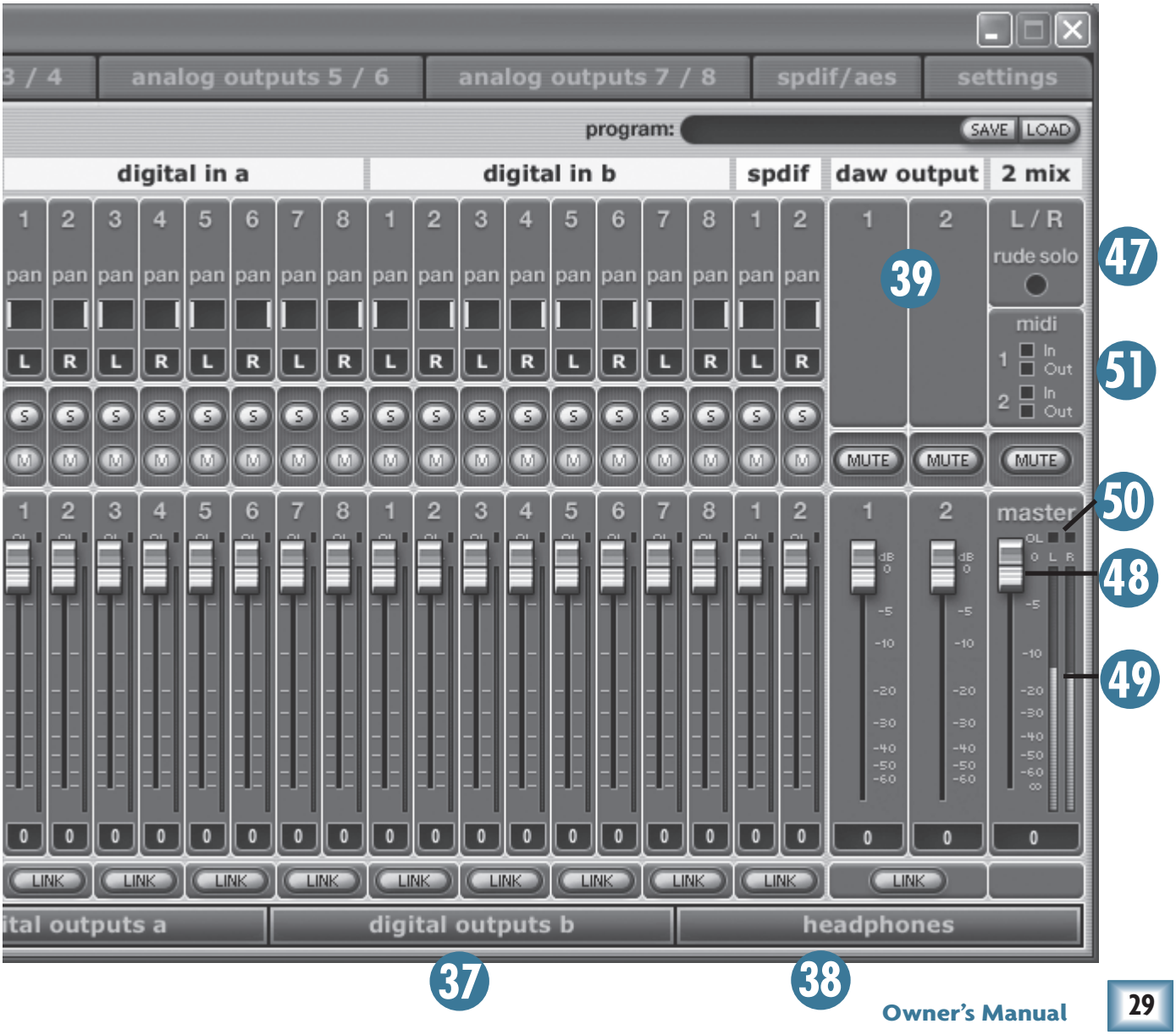
There is a Master Level control [48] for the two outputs and a left and right meter [49] to indicate the signal level at the outputs. Overload (OL) indicators [50] let you know if you need to reduce the Main Mix level control.

There are also indicators [51] that let you know when MIDI data is being transmitted on any of the MIDI ports on the Onyx 1200F.

Standalone Mode

When the Console software application is closed, the Onyx 1200F continues to operate with whatever settings were present when the Console was closed. When the Onyx 1200F is turned off, the current settings are saved to its internal flash memory, and recalled when the 1200F is turned back on.

This allows you to setup the Onyx 1200F for a particular application, such as a 12-channel mic pre or a 12x2 mixer, and use it in that application without having it connected to a computer.



Appendix A: Service Information

If you think your Mackie product has a problem, please check out the following troubleshooting tips and do your best to confirm the problem. Visit the Support section of our website (www.mackie.com/support) where you will find lots of useful information such as FAQs, documentation, and user forums. You may find the answer to the problem without having to send your Mackie product away.

Troubleshooting

No Power

- Our favorite question: Is it plugged in?
- Make sure the power cord is securely seated in the IEC socket [34] and plugged all the way into the AC outlet.
- Make sure the AC outlet is live (check with a tester or lamp).
- Is the POWER [20] switch on? Make sure the POWER switch on the front panel is in the ON position (up).
- Are any LEDs on the front panel illuminated? One of the clock, metering, and sample rate LEDs should be lit. If not, make sure the AC outlet is live.
- Are all the lights out in your building? If so, contact your local power company to get power restored.
- If there are no LEDs illuminated on the front panel, and you are certain that the AC outlet is live, it will be necessary to have your Onyx 1200F serviced. *There are no user serviceable parts inside.* Refer to "Repair" at the end of this section to find out how to proceed.

Bad Channel

- Is the input GAIN control [4] for the channel turned up (channels 1-12)?
- Is the signal source turned up? Make sure the signal level from the selected input source is high enough to light up some of the INPUT meter [1] LEDs for that channel (channels 1-12).
- If it is channel 11 or 12, make sure the Instrument switch [6] is in the right position.
- Try the same source signal in another channel, set up exactly like the suspect channel.

Bad Output

- If the DSP Mixer is turned on in the Console, make sure the output level control for the suspect output is turned up and the meters are indicating that a signal is present.
- If another output is working correctly, try switching the output connections between the working output and the suspect output. If the working output stops working, it could be a bad cable or the device to which it is connected.
- If it's the S/PDIF OUT [28], make sure the S/PDIF Format is set to Consumer in the Console Settings window. If it is set to Consumer and is not working, try using the Professional setting.

Bad Sound

- Is the input connector plugged completely into the jack?
- Is it loud and distorted? Make sure the input GAIN control for the channel is set correctly. Reduce the signal level on the input source if possible.
- Are the Onyx 1200F and the device to which it is connected locked to the same clock? If the Onyx 1200F is operating on its own internal sample rate, make sure the device to which it is connected is set to external clock and is locking to the clock signal either through the WORD CLOCK OUT, ADAT OUT, or the S/PDIF connections. If the Onyx 1200F is set to external Word Clock, make sure it is locked to the external clock.
- If possible, listen to the signal with headphones plugged into the input source device. If it sounds bad there, it's not the Onyx causing the problem.

Noise/Hum

- Turn down each channel, one by one. If the noise disappears, it's coming from whatever is plugged into that channel.
- Check the signal cables between the input sources and the Onyx. Disconnect them one by one. When the noise goes away, you'll know which input source is causing the problem.
- Sometimes it helps to plug all the audio equipment into the same AC circuit so they share a common ground.

No Audio into your Computer

- Confirm that the Onyx 1200F is receiving mic or line-level input signals (the meters should indicate signal is present in the Onyx 1200F Console).
- Make sure the correct audio interface is selected in the DAW. In Tracktion, this is selected in the Settings tab under Audio Devices.

- If the Onyx 1200F seems to be working fine and you are using Tracktion, click Restart Device in the Settings tab under Audio Devices. Other DAW applications may have a similar button.
- In Tracktion, be sure the correct inputs are selected and the tracks are armed.
- Restart your Onyx 1200F and computer.
- Reinstall the drivers from the CD.

Glitchy/Distorted Audio into your Computer

- Increase the buffer size. This can be done in your DAW application.

Repair

For warranty repair or replacement, refer to the warranty information on page 39.

Non-warranty repair for Mackie products is available at a factory-authorized service center. To locate your nearest service center, visit www.mackie.com, click "Support" and select "Locate a Service Center." Service for Mackie products living outside the United States can be obtained through local dealers or distributors.

If you do not have access to our website, you can call our Tech Support department at 1-800-898-3211, Monday-Friday, 7 am to 5 pm Pacific Time, to explain the problem. Tech Support will tell you where the nearest factory-authorized service center is located in your area.

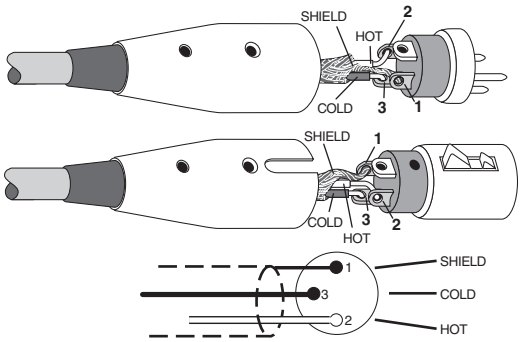
Need Help?

- **Visit www.mackie.com and click Support to find: FAQs (Frequently Asked Questions), manuals, addendums, and user forums.**
- **Email us at: techmail@mackie.com.**
- **Telephone 1-800-898-3211 to speak with one of our splendid technical support representatives (Monday through Friday, from 7 AM to 5 PM PST).**

Appendix B: Connections

XLR Connectors

Inputs 1-12 accept 3-pin male XLR connectors on the Neutrik combo inputs. They are wired as follows, according to standards specified by the AES (Audio Engineering Society).

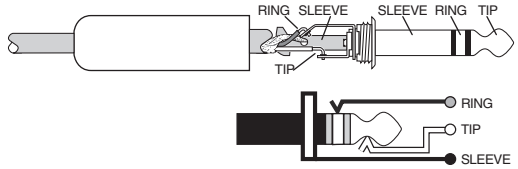


XLR Balanced Wiring:
Pin 1 = Shield
Pin 2 = Hot (+)
Pin 3 = Cold (–)

1/4" TRS Phone Plugs and Jacks

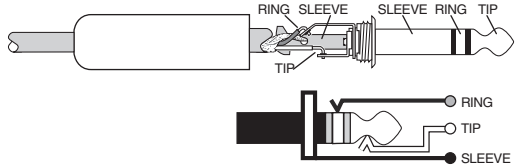
"TRS" stands for Tip-Ring-Sleeve, the three connection points available on a stereo 1/4" or balanced phone jack or plug. TRS jacks and plugs are used for balanced signals and stereo headphones.

Balanced Mono



1/4" TRS Balanced Mono Wiring:
Sleeve = Shield
Tip = Hot (+)
Ring = Cold (–)

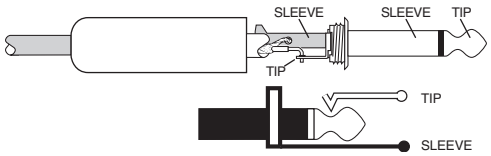
Stereo Headphones



1/4" TRS Stereo Unbalanced Wiring:
Sleeve = Shield
Tip = Left
Ring = Right

1/4" TS Phone Plugs and Jacks

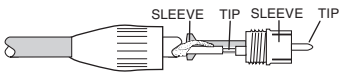
"TS" stands for Tip-Sleeve, the two connection points available on a mono 1/4" phone jack or plug. They are used for unbalanced signals like the high-impedance instrument inputs on the Onyx 1200F.



1/4" TS Unbalanced Wiring:
Sleeve = Shield
Tip = Hot (+)

RCA Plugs and Jacks

RCA-type plugs (also known as phono plugs) and jacks are often used in home stereo and video equipment, and to make S/PDIF connections on consumer digital audio devices. They are unbalanced and electrically equivalent to a 1/4" TS phone plug.



RCA Unbalanced Wiring:
Sleeve = Shield
Tip = Hot (+)

Unbalancing a Line

In most studio, stage, and sound reinforcement situations, there is a combination of balanced and unbalanced inputs and outputs on the various pieces of equipment. This usually will not be a problem in making connections.

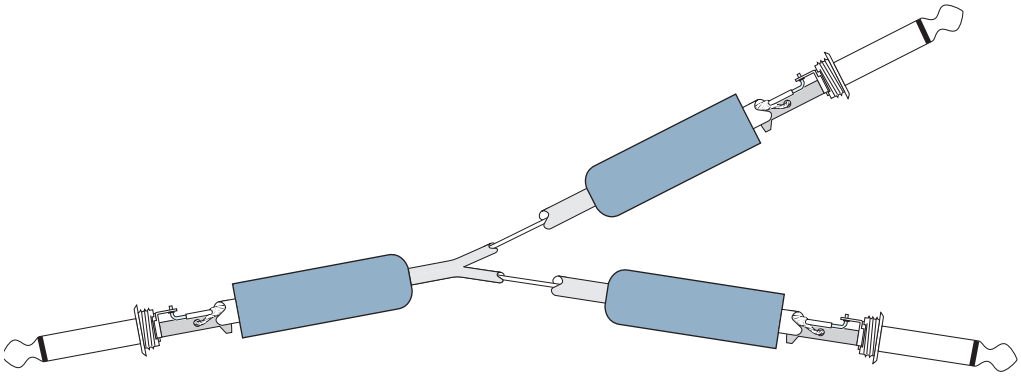
- When connecting a balanced output to an unbalanced input, be sure the signal high (hot) connections are wired to each other, and that the balanced signal low (cold) goes to the ground (earth) connection at the unbalanced input. In most cases, the balanced ground (earth) will also be connected to the ground (earth) at the unbalanced input. If there are ground-loop problems, this connection may be left disconnected at the balanced end.
- When connecting an unbalanced output to a balanced input, be sure that the signal high (hot) connections are wired to each other. The unbalanced ground (earth) connection should be wired to the low (cold) and the ground (earth) connections of the balanced input. If there are ground-loop problems, try disconnecting the unbalanced ground (earth) connection from the balanced input ground (earth) connection, leaving the unbalanced ground connected to the balanced input low (cold) connection only.

In some cases, you may have to make up special adapters to interconnect your equipment. For example, you may need a balanced XLR female connected to an unbalanced 1/4" TS phone plug. Many common adapters can be found at your local electronics supply store.

Mults and "Y"s

A mult or "Y" connector allows you to route one output to two or more inputs by simply providing parallel wiring connections. You can make "Y"s and mults for the outputs of both unbalanced and balanced circuits.

Remember: Only mult or "Y" an output into several inputs. If you need to combine several outputs into one input, you must use a mixer, not a mult or a "Y."

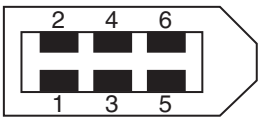


Y-Cord Splitter

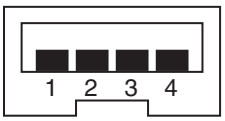
FireWire Connection

The Onyx 1200F is equipped with two 6-pin FireWire connectors and comes with a 6-pin to 6-pin FireWire cable. This works with Macintosh laptops and desktops, and most PC desktops with a built-in FireWire connector or with a PCI or PCMCIA FireWire card added.

Many laptops have a 4-pin FireWire connector. If this is the case, you will need to purchase a 6-pin to 4-pin FireWire adapter cable. These are readily available at computer stores or online.



6-pin Male FireWire



4-pin Male FireWire

6-pin FireWire Wiring:
Pin 1 = Power
Pin 2 = Ground
Pin 3 = TPB–
Pin 4 = TPB+
Pin 5 = TPA–
Pin 6 = TPA+

4-pin FireWire Wiring:
Pin 1 = TPB–
Pin 2 = TPB+
Pin 3 = TPA–
Pin 4 = TPA+

Appendix C: Technical Info

Onyx 1200F Specifications

Frequency Response

Mic Input to Control Room Output (Gain @ unity):

@48 kHz
+0, –3 dB, 10 Hz to 23 kHz

@96 kHz
+0, –3 dB, 10 Hz to 45 kHz

@192 kHz
+0, –3 dB, 10 Hz to 75 kHz

Mic Input to Digital Output
(AES, 192 kHz sample rate, Gain @ unity):
+0, –1 dB, 10 Hz to 86 kHz

Mic Input to Digital Output
(AES, 192 kHz sample rate, Gain @ max):
+0, –3 dB, 15 Hz to 70 kHz

Hi-Z Instr Input to Digital Output
(AES, 192 kHz sample rate, Gain @ max):
+0, –1 dB, 10 Hz to 86 kHz

ADAT Input to ADAT Output (48 kHz sample rate):
+0, –0.01 dB, 17 Hz to 23 kHz

Digital AES Input to Headphones Output
(192 kHz sample rate):
+0, –1 dB, 10 Hz to 55 kHz

Distortion (THD + N)

Mic Input to Line Output (@ +4 dBu output):
THD+N: < 0.006%, 10 Hz to 22 kHz BW,
1 kHz input @ +12 dBu, preamp at unity gain

Mic/Line Input to Digital Output (AES, 48 kHz sample rate):
THD+N: < 0.004% @ 1 kHz, +12 dBu input,
gain at unity, 150Ω source

Hi-Z (Instr) Input to Digital Output (AES, 48 kHz sample rate):
THD+N: < 0.01% @ 1 kHz, 100 mV rms input,
gain at –5 dBFS, 150Ω source

Digital Input (AES) to Analog Outs, (48 kHz sample rate):
THD+N: < 0.004%, 10 Hz-22 kHz BW,
–5 dBFS input, +12 dBu output

Dynamic Range

113 dB (Mic/Line In to Digital AES Out, A-weighted)
101 dB (Hi-Z Instr In to Digital AES Out, A-weighted)
103 dB (Digital AES In to Headphones Out, A-weighted)
107 dB (Digital AES In to Control Room/Line Outs,
A-weighted)

Noise

Signal-to-Noise:
>81 dB (ref. +4 dBu, Mic In to Line Out,
150Ω source, 10 Hz-22 kHz BW, Gain @ unity,
48 kHz sample rate)
>82 dB (ref. +4 dBu, Mic In to Control Room Out,
150Ω source, 10 Hz-22 kHz BW, Gain @ unity,
48 kHz sample rate)
>90 dB (ref. +4 dBu, Mic In to Digital AES Out,
150Ω source, 10 Hz-22 kHz BW, Gain @ unity,
48 kHz sample rate)
>88 dB (Digital AES In to Analog Out, 10 Hz-22 kHz BW,
output level set to +4 dBu, 48 kHz sample rate)

Equivalent Input Noise (E.I.N.), 20 Hz to 20 kHz BW,
150Ω source impedance:
–129 dBu @ +60 dB gain (Mic In to Control Room Out)

Residual Noise:
–113 dBFS (Digital AES Out, 10 Hz-22 kHz BW,
48 kHz sample rate)
< –90 dBu (Control Room Out, Gain @ max,
10 Hz-22 kHz BW)
< –86 dBu (Headphones Out, Gain set to 0 dBu out
into 600Ω, 10 Hz-22 kHz BW, 48 kHz sample rate)

Common Mode Rejection Ratio (CMRR)

Mic In: >60 dB @ 1 kHz, Gain @ maximum

Crosstalk

Mic Input to Control Room Output:
< –88 dB @ 1 kHz, +10 dBu signal on adjacent input,
unity gain, 150Ω source impedance

Mic Input to Digital AES Output:
< –76 dB @ 1 kHz, –50 dBu signal on adjacent input,
maximum gain, 150Ω source impedance

Mic Input to Digital AES Output:
< –110 dB @ 1 kHz, +10 dBu signal on adjacent input,
unity gain, 150Ω source impedance

Input Gain Control Range

Mic In: 0 dB to +60 dB
Line In: –20 dB to + 40 dB

Phantom Power

+48 VDC

Rated Output

Line: +4 dBu
Maximum Rated Output:
+21 dBu @ balanced line-level outputs

Input Impedance

Mic Input:	2.4 kΩ balanced
Inst Input:	1 MΩ
Line:	30 kΩ balanced, 15 kΩ unbalanced

Output Impedance

Line:	150Ω balanced

Signal Level LEDs

–40 dB, –20 dB, –10 dB (normal operating level),
OL = 22 dBu

Sample Frequency Selections

44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz,
176.4 kHz, 192 kHz

Analog Input Connectors

12 balanced XLR/TRS mic/line inputs
Two unbalanced 1/4" TS line/high-impedance instrument inputs
One balanced XLR talkback mic input
Two balanced 1/4" TRS line-level insert returns

Analog Output Connectors

Eight balanced line-level outputs on DB-25
Four balanced 1/4" TRS control room line-level outputs
Four unbalanced 1/4" TRS stereo headphone outputs
Two balanced 1/4" TRS line-level insert sends

Digital Input Connectors

One BNC connector for external word clock input
One RCA connector for S/PDIF input
One XLR-F connector for AES/EBU input
Two 5-pin DIN connectors for MIDI input
Two Toslink optical connectors for ADAT input
Two 6-pin FireWire input/output

Digital Output Connectors

One BNC connector for external word clock output
One RCA connector for S/PDIF output
One XLR-M connector for AES/EBU output
Two 5-pin DIN connectors for MIDI output
Two Toslink optical connectors for ADAT output

DSP

TMS320C6713 Floating-Point Digital Signal Processor operating at 225 MHz, delivering up to 1350 million floating-point operations per second (MFLOPS), 1800 million instructions per second (MIPS), and 450 million multiply-accumulate operations per second (MMACS)

AC Power Requirements

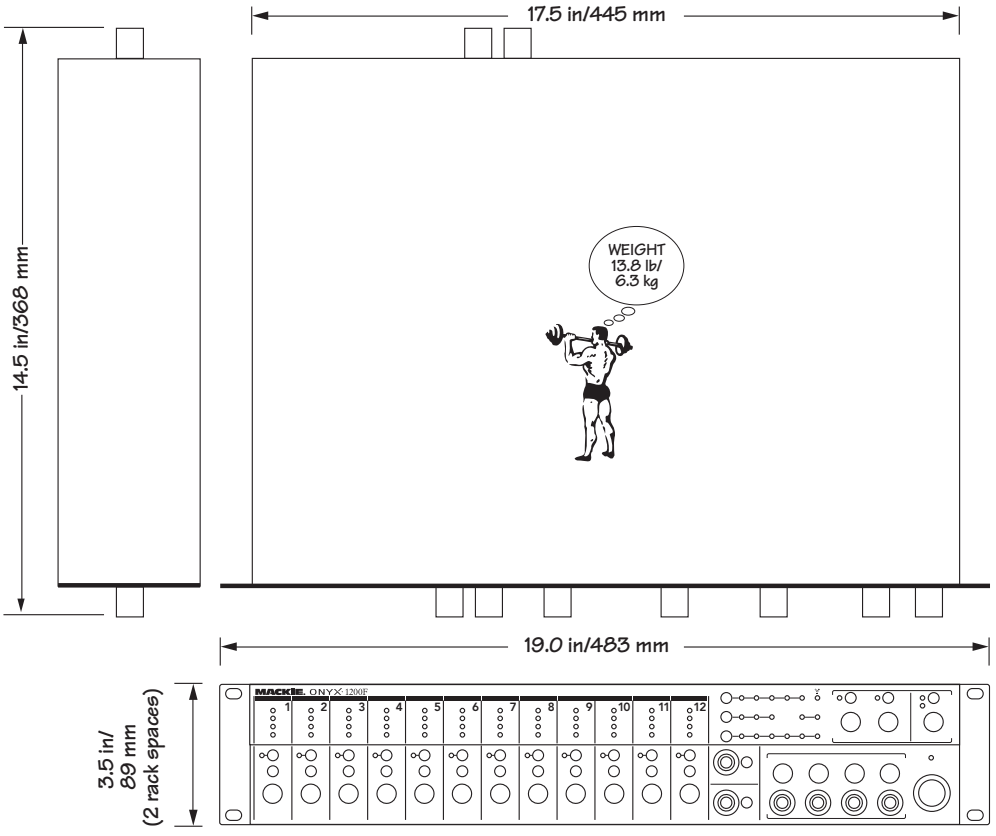
Power Consumption: 45 watts

Universal AC Power Supply:
100 VAC – 240 VAC, 50-60 Hz

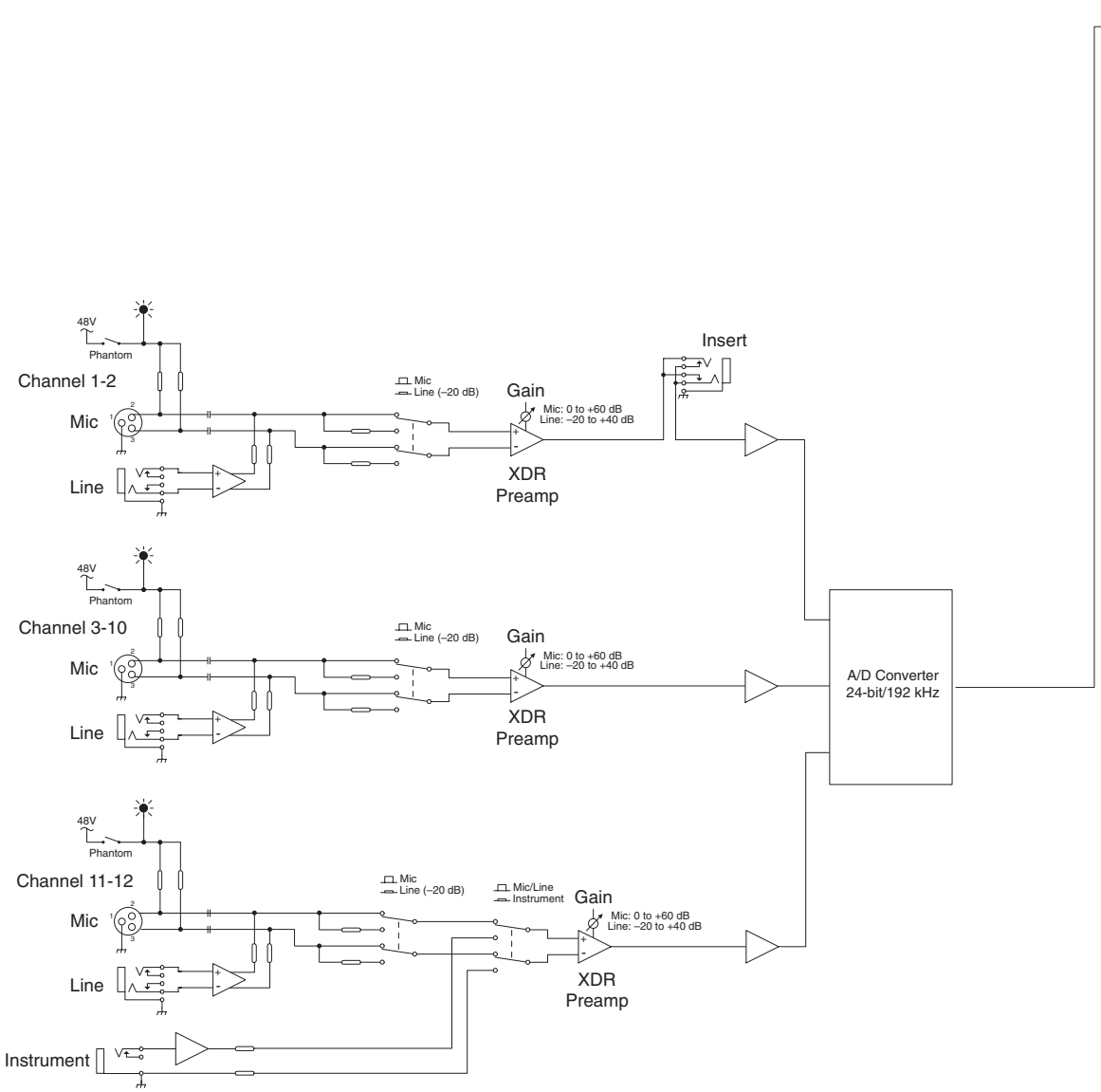
Physical Dimensions and Weight

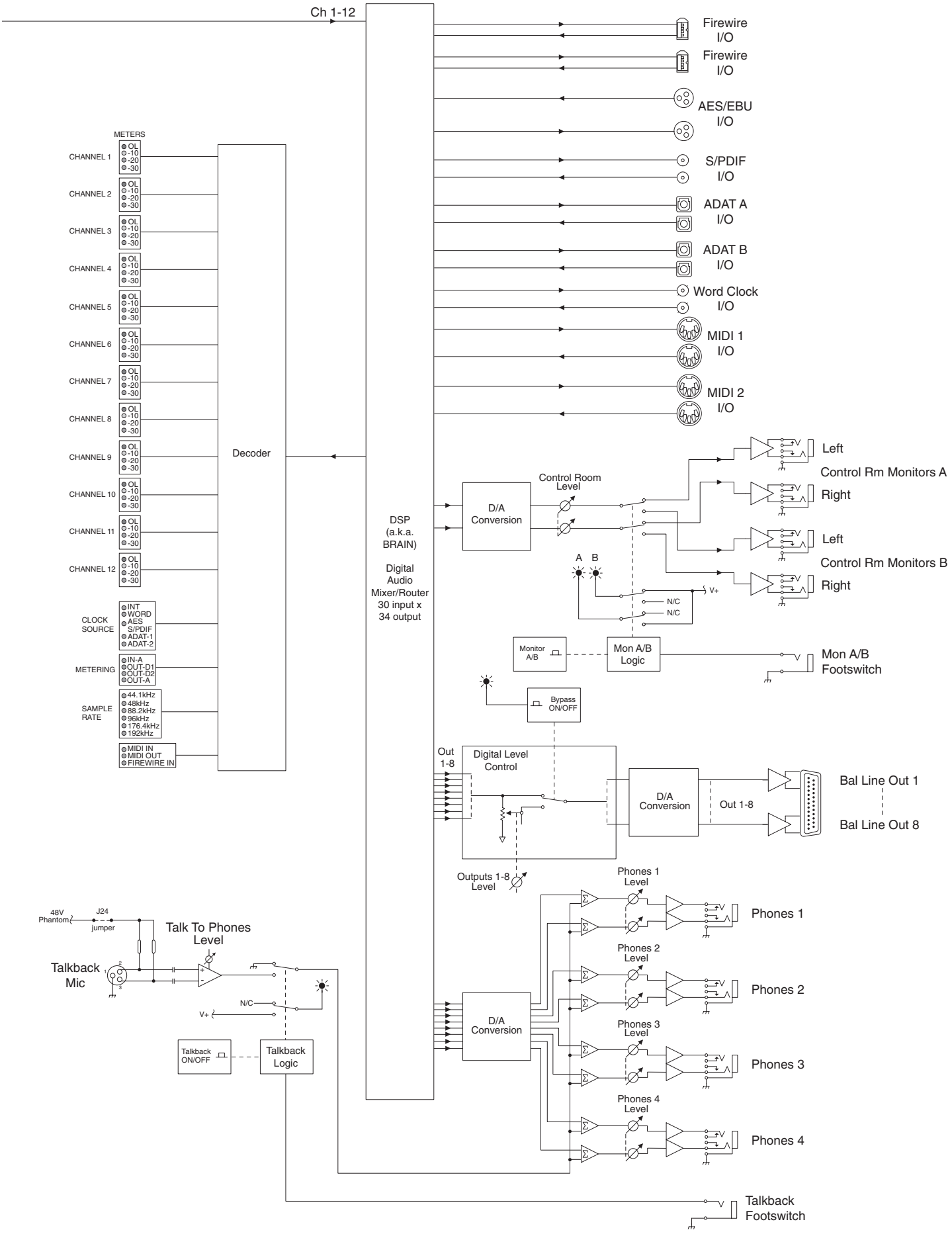
Height:	3.50 in/89 mm
Width:	17.5 in/445 mm (main body of unit) 19.0 in/483 mm (with rack ears)
Depth:	14.5 in/368 mm (including front knobs and rear BNC jack)
Weight:	13.8 lb/6.3 kg

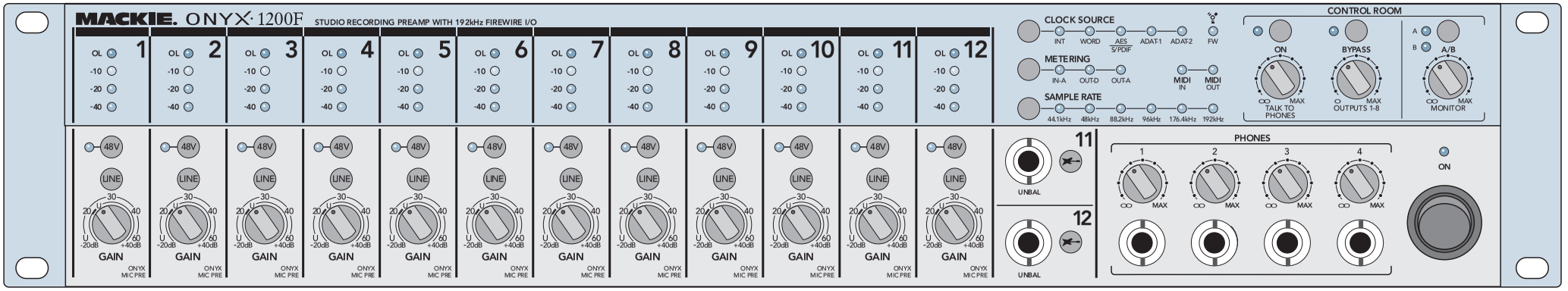
LOUD Technologies Inc. is always striving to improve our products by incorporating new and improved materials, components, and manufacturing methods. Therefore, we reserve the right to change these specifications at any time without notice.

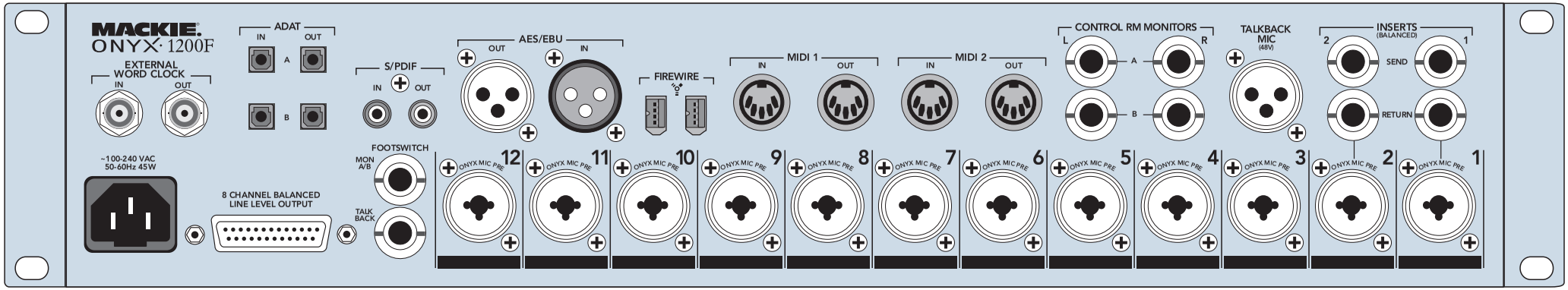


Onyx 1200F Block Diagram




Ch 1-12
Firewire I/O
Firewire I/O
AES/EBU I/O
S/PDIF I/O
ADAT A I/O
ADAT B I/O
Word Clock I/O
MIDI 1 I/O
MIDI 2 I/O
METERS
CHANNEL 1
CHANNEL 2
CHANNEL 3
CHANNEL 4
CHANNEL 5
CHANNEL 6
CHANNEL 7
CHANNEL 8
CHANNEL 9
CHANNEL 10
CHANNEL 11
CHANNEL 12
OL -10 -20 -30
Decoder
CLOCK SOURCE
INT WORD AES S/PDIF ADAT-1 ADAT-2
METERING
IN-A OUT-D1 OUT-D2 OUT-A
SAMPLE RATE
44.1kHz 48kHz 88.2kHz 96kHz 176.4kHz 192kHz
MIDI IN MIDI OUT FIREWIRE IN
DSP (a.k.a. BRAIN)
Digital Audio Mixer/Router 30 input x 34 output
D/A Conversion
Control Room Level
A B
V+
N/C
N/C
Left
Control Rm Monitors A
Right
Left
Control Rm Monitors B
Right
Monitor A/B
Mon A/B Logic
Mon A/B Footswitch
Bypass ON/OFF
Out 1-8
Digital Level Control
D/A Conversion
Out 1-8
Bal Line Out 1
Bal Line Out 8
Outputs 1-8 Level
Phones 1 Level
Phones 1
Phones 2 Level
Phones 2
Phones 3 Level
Phones 3
Phones 4 Level
Phones 4
D/A Conversion
48V Phantom
J24
jumper
Talk To Phones Level
Talkback Mic
N/C
V+
Talkback ON/OFF
Talkback Logic
Talkback Footswitch


MACKIE. ONYX 1200F
STUDIO RECORDING PREAMP WITH 192kHz FIREWIRE I/O
CLOCK SOURCE
INT
WORD
AES S/PDIF
ADAT-1
ADAT-2
FW
METERING
IN-A
OUT-D
OUT-A
MIDI IN
MIDI OUT
SAMPLE RATE
44.1kHz
48kHz
88.2kHz
96kHz
176.4kHz
192kHz
CONTROL ROOM
ON
BYPASS
A/B
TALK TO PHONES
OUTPUTS 1-8
MONITOR
PHONES
GAIN
48V
LINE
UNBAL
ONYX MIC PRE


MACKIE.
ONYX 1200F
EXTERNAL WORD CLOCK
ADAT
S/PDIF
AES/EBU
FIREWIRE
MIDI 1
MIDI 2
CONTROL RM MONITORS
TALKBACK MIC
INSERTS
SEND
RETURN
FOOTSWITCH
MON A/B
TALK BACK
~100-240 VAC
50-60Hz 45W
8 CHANNEL BALANCED
LINE LEVEL OUTPUT
ONYX MIC PRE

Onyx 1200F Limited Warranty

Please keep your sales receipt in a safe place.

A. LOUD Technologies Inc. warrants all materials, workmanship and proper operation of this product for a period of **one year** from the original date of purchase. You may purchase an additional 24-month Extended Warranty (for a total of 36 months of coverage). Visit our website and follow the "Product Registration" links for details (www.mackie.com). If any defects are found in the materials or workmanship or if the product fails to function properly during the applicable warranty period, LOUD Technologies, at its option, will repair or replace the product. **This warranty applies only to equipment sold and delivered within the U.S. and Canada by LOUD Technologies Inc. or its authorized dealers.**

B. For faster processing (not to mention a free gift), register online or mail in the product registration card.

C. Unauthorized service, repairs, or modification of Mackie products will void this warranty. To obtain repairs or replacement under warranty, you must have a copy of your sales receipt from the authorized Mackie dealer where you purchased the product. It is necessary to establish purchase date and determine whether your Mackie product is within the warranty period.

D. To obtain warranty repair or replacement:

1. Call Mackie Technical Support at 800/898-3211, 7 AM to 5 PM Monday through Friday (Pacific Time) to get authorization for repair or replacement. Alternately, go to the Mackie website, click "Support" (www.mackie.com/support), and follow the instructions for reporting a warranty issue and submitting a request for an advance replacement.

2. Advance Replacement: Mackie will ship a replacement unit to you along with an invoice for the suggested retail price of the replacement unit. You must return the defective unit immediately to cancel the invoice. If you do not return the defective unit within 30 days, you must pay the full amount stated in the invoice to satisfy your debt.

3. Repair: When you call Mackie Technical Support, explain the problem and obtain a Service Request Number. Have your Mackie product's serial number ready. ***You must have a Service Request Number before you can obtain factory-authorized service.***

- Pack the product in its original shipping carton. Also include a note explaining exactly how to duplicate the problem, a copy of the sales receipt with price and date showing, your daytime phone number and return street address (no P.O. boxes or route numbers, please!), and the Service Request Number. If we cannot duplicate the problem or establish the starting date of your Limited Warranty, we may, at our option, charge for service time and parts.

- Ship the product in its original shipping carton, **freight prepaid** to the authorized service center. Write the Service Request Number in **BIG PRINT** on top of the box. The address of your closest authorized service center will be given to you by Technical Support, or it may be obtained from our website. Once it's repaired, the authorized service center will ship it back by ground shipping, pre-paid (if it qualified as a warranty repair).

Note: Under the terms of the warranty, you must ship or drop-off the unit to an authorized service center. The return ground shipment is covered for those units deemed by us to be under warranty.

Note: You must have a sales receipt from an authorized Mackie dealer for your unit to be considered for warranty repair.

IMPORTANT: Make sure that the Service Request Number is plainly written on the shipping carton. No receipt, no warranty service.

E. LOUD Technologies reserves the right to inspect any products that may be the subject of any warranty claims before repair or replacement is carried out. LOUD Technologies may, at our option, require proof of the original date of purchase in the form of a dated copy of the original dealer's invoice or sales receipt. Final determination of warranty coverage lies solely with LOUD Technologies.

F. Any products returned to one of the LOUD Technologies factory-authorized service centers, and deemed eligible for repair or replacement under the terms of this warranty will be repaired or replaced. LOUD Technologies and its authorized service centers may use refurbished parts for repair or replacement of any product. Products returned to LOUD Technologies that do not meet the terms of this Warranty will not be repaired unless payment is received for labor, materials, return freight, and insurance. Products repaired under warranty will be returned freight prepaid by LOUD Technologies to any location within the boundaries of the USA or Canada.

G. LOUD Technologies warrants all repairs performed for 90 days or for the remainder of the warranty period. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse, or to exterior appearance. This warranty is recognized only if the inspection seals and serial number on the unit have not been defaced or removed.

H. LOUD Technologies assumes no responsibility for the timeliness of repairs performed by an authorized service center.

I. This warranty is extended to the original purchaser. This warranty may be transferred to anyone who may subsequently purchase this product within the applicable warranty period for a nominal fee. A copy of the original sales receipt is required to obtain warranty repairs or replacement.

J. This is your sole warranty. LOUD Technologies does not authorize any third party, including any dealer or sales representative, to assume any liability on behalf of LOUD Technologies or to make any warranty for LOUD Technologies Inc.

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