



MINFERNO

MINFERNO/2

Commentary For Dante® Audio Networks

Highlights

Dante® Network
Audio Interface

Low Noise Mic
Amp with Referee
Compressor

AES67 Compliant

Redundancy On
Network Links &
Power Supplies

Copper & Fibre
Network Interface

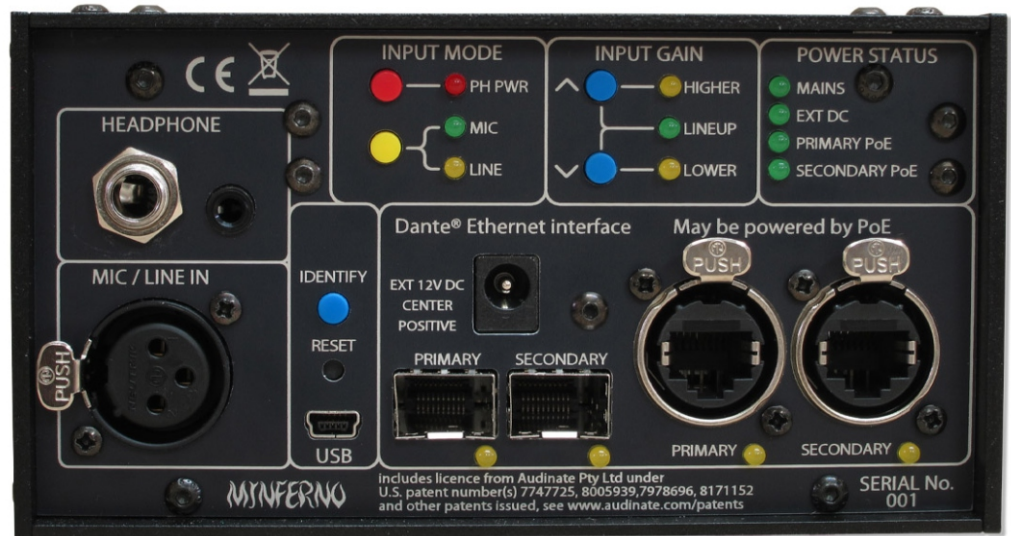
Designed
For 24/7 Operation

Overview

MinFerno/2 is a new smaller and even easier to use version of our exceptionally popular Inferno network audio commentary box.

MinFerno/2 is designed for a single commentator/ announcer to use and like its big brother the Inferno provides the very best possible commentary microphone amplifier and compressor limiter circuit for amazing on air sound.

The MinFerno/2 is easy to use for Commentators who would rather be talking about the game than working out how the equipment works, and is also built to our exacting rugged & robust standard to make it a reliable piece of broadcast equipment for the busy engineer.



MinFerno/2 Commentator's Box

Key Points

MinFerno/2 Commentator's Box

- Single user Dante® commentary box
- System is scalable with multiple commentators as part of a Dante® network
- Can connect to any Dante® compatible network
- Single low noise mic/line/48v input
- Our popular Referee compressor/limiter keeps even the loudest commentator sounding natural
- Headphone mixer has 3 inputs supplied from the Dante® network, plus the local input (sidetone)
- Each headphone input has left/both/right headphone switching
- 2 talkback circuits
- Large illuminated on air and talkback switches
- Multiple power options including PoE, & External DC
- Network connections on Copper (Cat5) and Fibre (SFP slots)
- Primary & Secondary network connections allowing completely transparent network redundancy
- Large bright PPM level meter
- Inbuilt web server for setup and remote control via web browser of mic gain & mic on/off switch

DANTE® Audio Network

- AES67 Compliant
- Multi channel, digital media network technology
- Offers compatibility with hundreds of systems from other manufacturers
- Scalable from a pair up to thousands of channels
- Fully redundant glitch free audio transport
- Easy, reliable & free routing software for Point to point or point to multipoint audio routes
- Works across standard network switches



MinFerno/2
Commentator's Box

Rear Panel Features

- Redundant Powering Options**

The MinFerno/2 can be powered from any of 3 different sources:

 - 1) PoE on the Primary CAT5 Network link
 - 2) PoE on the Secondary CAT5 Network link
 - 3) External 12VDC

Four off rear panel LEDs show the availability of the 3 power sources.
- Primary & Secondary SFP Slots**

The SFP (Small Form-Factor Pluggable) fibre slots are standard networking ports that accept standard SFP modules. This means that you decide what type of fibre and connector style you want to use just by the SFP module that you insert. The primary & secondary network circuits allow for glitch free redundancy across both the Fibre & Copper network interfaces.
- Primary & Secondary Copper Network Connections with PoE**

Two CAT6 connections on Neutrik Ethercons (that accept standard networking cables) are provided to allow copper connections to local network switches to carry the Dante®/ AES67 audio. Two connections are fitted to allow redundant circuits to be used if required.

Both these connectors can accept a PoE power source for providing the power to the MinFerno/2.
- Input Mode & Gain**

One pair of push buttons selects the input type of the front panel XLR to be either microphone, line or microphone with 48V phantom power. 3 LEDs indicate which input mode is selected.

Two push buttons are used to alter the gain of the input. LEDs indicate if the gain setting is above or below our pre-configured 'lineup' levels. The front panel PPM of course provides an accurate indication of the input level.

The gain can also be altered remotely by a web browser pointing at the MinFerno/2 web page.



MinFerno/2
Commentator's Box

Front Panel Features

- Incoming Audio Volume Controls**

On the top panel are four rotary headphone volume controls. Three of these are connected to 3 incoming audio circuits from the Dante®/ AES67 network. These are normally used for such sources as mixed programme or cue, talkback to director, talkback to producer, talkback to engineer etc.
- Sidetone Volume Control**

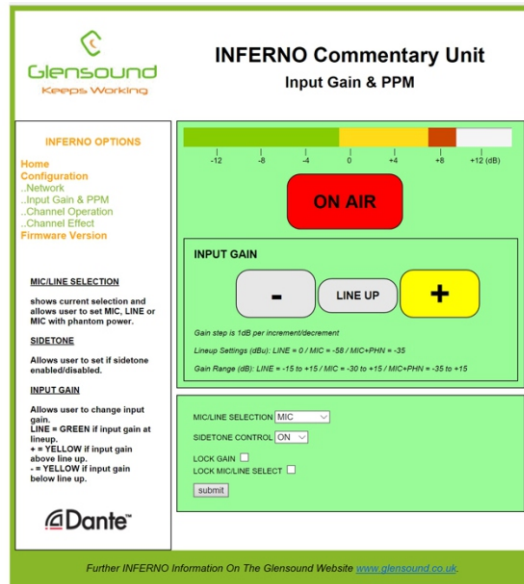
The 4th front panel rotary headphone volume control is 'sidetone'. Sidetone is the commentator's own voice in their own ears.
- Headphone Routing**

All of the 4 headphone volume controls has an associated left ear, right ear, both routing switch located next to the volume knob. This single push button switch routes the associated source to just the left, just the right or both channels of the stereo headphone amplifier.

To enable the commentator to know how they are routing a circuit the first time a routing switch is pressed a pair of LEDs on the front panel indicate its current routing arrangement. The next time the routing switch is pressed then the next routing option is selected.
- Robust Mic on and Talkback Buttons**

There are 3 off large bright illuminated buttons (1 for programme and 2 for talkback). These switches route the outgoing microphone circuit onto up to 3 different Dante®/ AES67 network audio circuits. The operation of these switches (momentary, latching etc) and the interaction of these switches (i.e. pressing a talkback switches mutes the main mic) can be fully configured via the web page.
- 15 segment LED PPM Meter**

Audio input level is indicated on the 15 segment PPM meter.



PPM & Mic On Web Page



Audio Technology

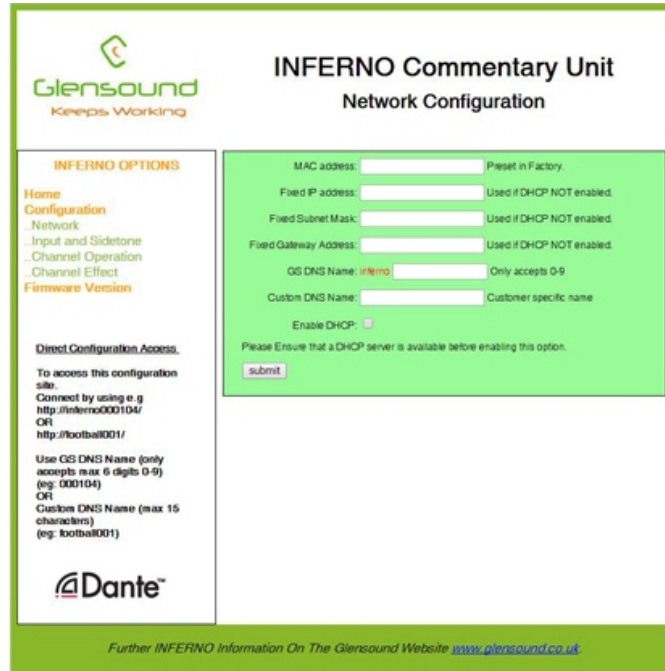
- Low Noise Microphone Amplifier With Remote Gain**

We spent a long time optimising the performance of the THAT corporation microphone amplifier used in the original Inferno and used again on the MinFerno/2. It features very low noise & distortion circuit that we remote control the gain of in 1dB steps, which allows us to provide the remote webpage gain control as well as the rear panel gain push buttons. We also optimised the circuits to allow correct source impedance switching depending on whether the input has been set as a mic or line input.
- Referee Compressor Limiter**

As with all our commentary units the MinFerno/2 features our very popular Referee compressor limiter circuit. This circuit starts to compress the commentator's voice gradually and slowly increases the compression ratio as the input level becomes overly high resulting in a very natural sounding and distortion free audio output capable of taming even the loudest of commentators.
- High Quality Analogue To Digital Converter (ADC)**

Dante®/ AES67 network audio is a digital circuit and as such the best analogue microphone amplifier would be wasted if we hadn't paired it up with the best analogue to digital converter. The ADCs job is fairly simple when you look at our tech spec you'll see that we've made ours work incredibly well.
- Unique Headphone Amplifier**

The commentator's headphones are a vitally important tool so we take as much care with our headphone amplifiers as with our on air microphones. Our unique headphone amplifier provides the correct output level regardless of the impedance of the attached headphones, meaning that broadcasters can now pick and choose between low impedance 'cheap' headphones and high impedance traditional broadcast ones.



Web Page Remote Control

- **Web Page Remote Control**

The MinFerno has an internal web server that provides web pages for an operator to view when pointing a web browser at the MinFerno/2 web address. The MinFerno/2 uses a very useful network protocol called DNS (Domain Name System) allowing just 'MinFerno and the units serial number' to be entered in a browser's address bar to connect. This is very useful if the IP address is not known. The webpages provide full setup & on air controls for the MinFerno/2.

- **Mic ON/OFF, Gain & Meter**

One of the web pages allows access to the gain of the microphone meaning that the input gain can be adjusted completely remotely. The same page also provides the ability to turn the microphone on/off (and of course see its current state). A level meter is also provided on the same page so as any gain adjustments can be accurately monitored.

- **Channel Operation Configuration Page**

Full control of how each of the 3 (2 talkback & 1 main mic) switches operate is provided. Each switch can be set to operate in the following modes: off, momentary on, latching, intelligent, momentary off (cough). The routing of the associated headphone input can also be forced or locked and the ability to fully attenuate the incoming source is also available.



- **Channel Effect Configuration**

The MinFerno/2's channel effect page allows the interaction between the talkback & mic switches to be set. Each channel can be set individually to either temporarily or permanently suppress (or not) any of the other channels that are already active when it is operated.



Designed For Sport News & Events

Specification

AUDIO**Mic Input Gain Range**

-30dB to +15dB

Dynamic Mic Line Up

58dB

Mic + Phantom Power Line Up

35dB

Line Input Line Up

0dBu (Gain range +/-15dB)

Mic Input Impedance

2k4

Line Input Impedance

100k

Equivalent Input Noise127dBu (22-22kHz RMS terminated
300 Ohms)**Maximum Input Level Before Clipping**

Dynamic Mic: +10dBu

Mic + 48V PH: +18dBu

Line: +18dBu

Frequency ResponseMic: > +/-0.25dB 50Hz to 22kHz
(-2 @ 25Hz)

Line: >= -0.1dB 22Hz to 22kHz

THD + Noise (Ref +8dBu)

100Hz = 0.023%

1kHz = 0.012%

10kHz = 0.014%

POWER**PoE**May be powered by PoE on either
network port

Complies to: IEEE 802.3af-2003

Classification Class 0

Consumption

<8 Watts

DC Input

2.5mm Barrel, Centre +Ve, 9 - 15 Volts

Power On LED

Bright Blue

INCLUDED ITEMS**Handbook**

Available by download

RJ45 Network Cable

2 metre Cat5 RJ45plug /RJ45plug cable

Headphone Impedance

16 to 1000 Ohms

(Auto output level to match impedance)

Maximum Headphone Output

+16.8dB into 600 Ohms

Headphone Frequency Response

>= -0.1dB 22Hz to 22kHz

Headphone Noise

-76.6dB @ lineup (residual noise)

Headphone THD + Noise (ref =8dBu)

0.008% @ 1kHz

Headphone Volume Pot Range+10dB to Off (+10dB to -30dB configuration
option)**Headphone Impedance**

200 - 2000 Ohms

Dante/AES67 Network Interface

Sample Frequency: 48kHz

Resolution: 24 Bit

Can be configured for AES67

PHYSICAL**Size**

144 x 179 x 76mm (WxDxH)

Weight

1.01Kg 2lb3oz

MechanicsAll aluminium construction, anodized and
laser etched, powder coated sides**Shipping Carton**Rugged export quality cardboard carton
610 x 420 x 170mm (WxDxH)**Shipping Weight**

2.5Kg

ENVIRONMENTAL**Operating Temperature**

0 to +50 °C (32 to 122 °F)

Storage Temperature

-20 to +70 °C (-4°C to 158 °F)

Relative Humidity

0 to 95% non-condensing

OPTIONAL ITEMS**SFP Fibre Modules**Multi Mode & Single Mode standard modules
Bi-directional single fibre module**External Power Supply**

Desktop style switch mode PSU

E & OE