

Dante® / AES67 Network Audio Monitor



BELLA 22

Summing Matrix Confidence Monitor



Highlights

May Be Powered
by PoE

20 Network AoIP
+ 2 Analogue
Audio Inputs

Dante® / AES67
Network Audio

DSP Controlled
Loudspeakers

10 Front Panel
Input Level Controls

32 Network AoIP
+ 3 Analogue
Audio Outputs

Overview

Bella 22 is a 2 buss summing matrix confidence monitor designed for outside broadcast trucks, studios, theatre and professional audio applications. It is perfect for easy and cost effective monitoring of multiple network audio sources, ideal for busy production environments and perfect for monitoring multiple network intercom & programme feeds.

The 2 front panel loudspeakers are driven from a DSP to compensate for their size, the result is surprisingly good, with clear crisp vocals and highly intelligible reproduction of wider band audio sources. They are driven from a class D amplifier and have more than sufficient output level for most environments.

Robust proven construction techniques, simple reliable interface and excellent specification will help make your technician's life hassle free. Whilst the low cost and long asset life will keep the accountant satisfied.



NETWORK & ANALOGUE INPUTS

- **20 Network Audio Inputs**

There are in total 20 network audio inputs that can be routed to the Bella 22. These are set out as pairs of inputs for each of the 10 front panel level controls.

- **2 Analogue Audio Inputs**

The 10th input level control can select its source either from the AoIP input source or from a pair of balanced line level analogue inputs located on XLRs fitted on the rear panel.

- **Channel On/ Solo Buttons**

Each of the 10 dual inputs has a single channel on/ off switch, that also acts as a solo selector. These switches are bright yellow illuminated push switches and operate in two ways. A short press turns the channel on/ off or a long hold solos that channels inputs. These switches effect the loudspeaker, headphone, analogue, AES3 and mix/ solo network outputs, they do not effect the 2nd mix buss.

- **Input Selection**

For each of the 10 input level controls there is a 3 position input select toggle switch. This switch allows either the left channel input, the right channel input or both of the channel inputs to be routed to the channel's output.

- **Level Control**

To produce a monitor mix suitable for the operator's application each of the 10 input channels has a gain control, this can increase input gain by 10dB and can also reduce the input level by up to 30dB.

- **Channel Output Routing**

A second 3 position toggle switch is provided for each of the 10 channels. This switch routes the selected channel input(s) to left, both or right mix, loudspeaker & headphone outputs. If a both (ie stereo) input is selected and routed to both outputs then this will be stereo, if however the both input is selected but then only routed to the left or right outputs then this stereo input will be mono'd.



LOUDSPEAKER & MIX OUTPUTS

- **Front Panel Loudspeakers**

Two front panel elliptical loudspeakers are fitted. When choosing these speakers we did extensive listening tests to every possible speaker that we could find on the market that would fit on a 1RU panel. The speakers that we choose and are fitted were the clear winners and had much clearer sounding vocals than all the other tested drive units.

It is possible to completely turn off the front panel loudspeakers in case you're using external speakers for monitoring. In this case the Dim and Cut controls still work as expected.

- **Digital Signal Processing of Internal Loudspeakers**

However good they are small loudspeakers have fundamental acoustical limitations, to provide the best possible audible solution for you we carefully measured the speakers fitted in the complete Bella 22 enclosure and provide advanced multi-point digital filtering to enhance the sound as much as possible.

- **Signal Present Indication**

A green LED is provided above each of the 10 input level controls. This LED will illuminate when the selected input signal reaches -20dBu to provide the operator an indication that a signal is present on that input. The LED stays lite all the time the input is above -20dBu (and usefully starts to flash if the input nears the input clip point). If the input signal reduces below -20dBu then the LED stays lite for 3 seconds before extinguishing.

- **Output Level Control**

An 11th front panel level control is provided alongside the 10 input controls. This adjust the overall output level to the loudspeakers, headphone and main mix outputs.

- **Dim & Cut Controls**

Front panel illuminated switches are provided to Cut and Dim the outputs. External GPI loop inputs are also provided to allow the outputs to be cut or dimmed from external switches.

- **Headphone Output**

A front panel 6.35mm stereo headphone jack socket is provided to allow the operator to monitor the Bella's output on headphones. Plugging in a pair of headphones automatically cuts the loudspeaker & analogue mix outputs.



NETWORK and OUTPUTS

- **Three Analogue Outputs**

Three balanced line level XLR analogue outputs are provided on the rear panel. There is a left and right output of the main mix/solo and a mono output (which is a sum of the left and right outputs). These outputs are all post front panel level control and Dim and Cut circuits.

- **Balanced AES3 Output**

One single AES3 output on a rear panel XLR is also provided. This is the left and right output mix/solo.

- **Network Audio Outputs**

In total there are 32 network audio outputs, the block diagram shows these in detail. There are 2 main network mix busses, the first called mix/solo follows the front panel channel on/ solo switches and the 2nd network mix buss is a permanent mix of the incoming sources and the mix is not effected by the front panel channel on/ solo switches.

A very useful feature is that for every network input there is an associated network output post that channels' level control. This means that the Bella 22 could easily be used as a network level controller.

- **GPO**

As well as the main Dim and Cut loop and just internal LS cut inputs there are also 2 solid state relay outputs, these are connected as outputs from the front panel dim and cut switches.

- **Network Interface**

Our widely used Dante®/ AES67 network interface is implemented in the Bella 22. It features 4 network ports, 2 x copper and 2 x SFP slots (normally used for fibre). These network ports can be set to operate in fully redundant mode or as a network switch for connecting other equipment to.

- **Power**

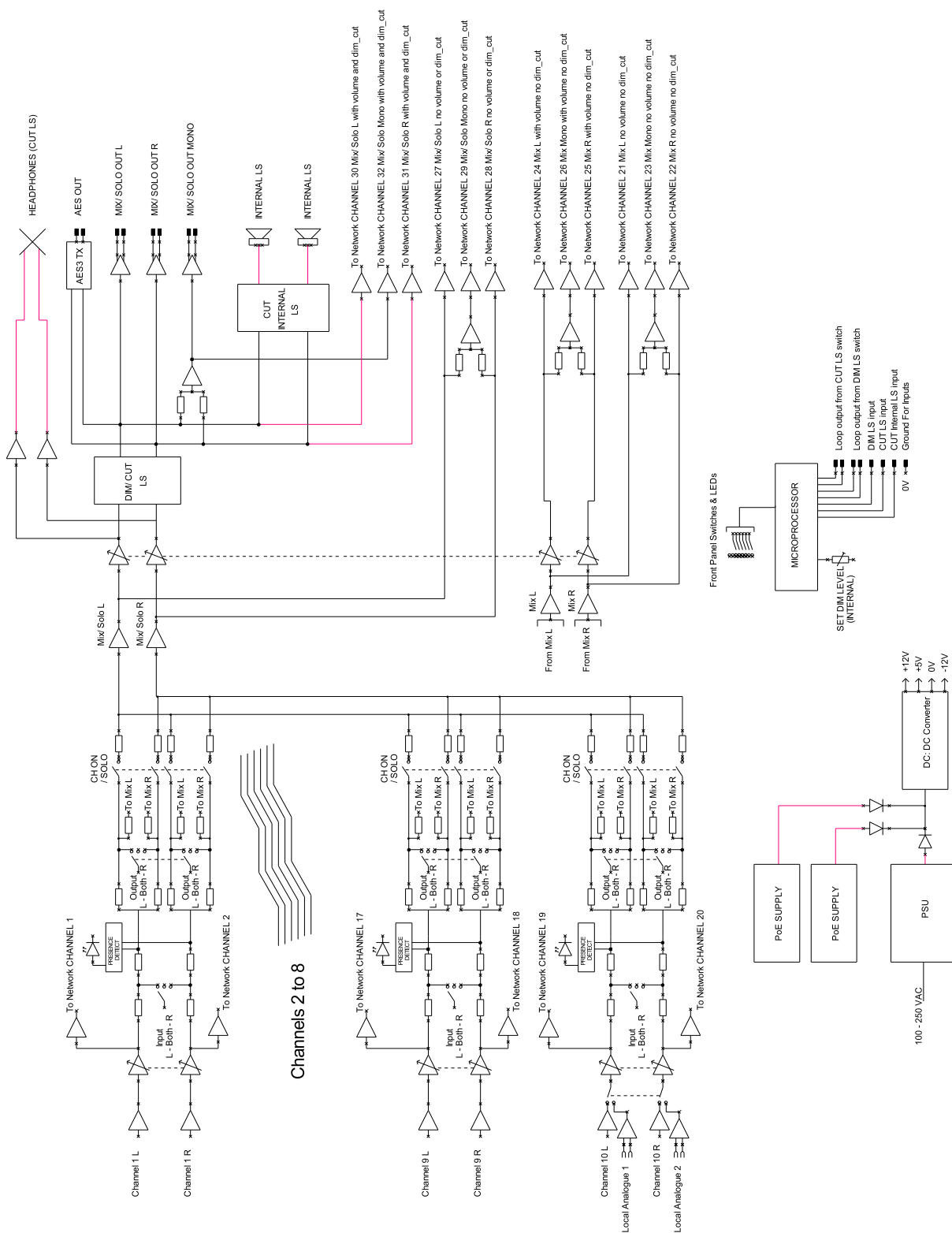
For versatility & redundancy there are 3 power options. An internal wide range mains supply & either of the 2 copper network interfaces can power the unit of connected to a PoE source.

In England there is a common phrase 'Listen To Your Mother' which as a child often means that you're in trouble!

Dante Alighieri's mother was Bella Abati.

We therefore hope that if you listen to our Bella 22 it will keep you out of trouble.

BLOCK DIAGRAM



Dante® / AES67 Audio Monitor

AUDIO

Channel Input Gain Controls

+10.6 to -31dB

Loudspeaker/ Headphone Gain Control

+10.6 to -31dB

Channel Off Switch

Fully muted (- infinity dB) when off

Channel Input Select Switch

Left Ch Only, Right Ch Only, Both Chs (Stereo)

Channel Output Routing Switch

Left Ch Only (Selected Inputs mono'd)
 Right Ch Only (Selected Inputs mono'd)
 Both Channels (Stereo if Both Chs I/Ps selected)

Analogue Input Type

Electronically balanced
 (can be wired unbalanced)

Analogue Input Impedance

>20kOhms

Analogue Input Connectors

Neutrik XLRs

Analogue Input Line Up

Line level (0dBu)

Analogue Input Frequency Response

>= 0.5dB 22Hz to 22kHz

Measured at Mix Output Mono

Analogue Input THD + Noise (ref +8dBu)

>= 0.004% @ 1kHz

Analogue Output type

Electronically balanced

Analogue Output Connectors

Neutrik XLRs

Analogue Output Impedance

+<50 Ohms

Maximum Analogue Output Level

+17.4dBu

Analogue Output Frequency Response

>= -0.1dB 22Hz to 22kHz

Analogue Output Noise

-91dB @ lineup (residual noise)

Analogue Out THD + Noise (ref =8dBu)

0.002% @ 1kHz

Headphone Impedance

100 - 1000 Ohms

Maximum Headphone Level

+17dBu into 600 Ohms

Present LED Threshold

-20dBu

Present LED Hold Time

3 seconds

Present LED Clip Indication

Flashes when within 1dB of clip point

SIZE & POWER

Dimensions

19" wide 1RU high 164mm deep (chassis)

Weight

1740g

Mains Input

100 to 240VAC 50/60Hz

Power Consumption

<10 Watts

PoE (Power Over Ethernet)

Maybe powered by standard PoE on either copper network interface

Shipping Weight

4Kg

Shipping Carton

Export quality cardboard carton
 62 x 41x 12 cms

INCLUDED ITEMS

Rj45 Cable

1 x 2M Rj45 network cable

Handbook

A4 user guide (download also available)

Mains Cable

1 x IEC Mains cable
 (UK & Europe Only)

NETWORK AUDIO

Network Protocol

Dante®

AES67

Compliant

DDM

Certified

Full Scale

0dBu = -18dBfs

Sample Frequency

48kHz

Resolution

24 Bit

Network Interface Type

Gigabit Ethernet

Network Interface Physical

2 x Rj45 copper
 2 x SFP Slots (SFP Modules Not Included)

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