SMYTH RESEARCH

Realiser A16

Personalised 3D Audio for Headphones

- Precisely emulates up to 16 speakers in a sound room over stereo headphones

- Full suite of personalisation routines

- Internal audio bitstream decoding: Dolby Atmos, Auro-3D, DTS:X and all legacy Dolby and DTS formats

- Employs state-of-the-art SVS virtualisation with integrated head-tracking for realistic rendering

- Azimuth + elevation head-tracking

- Audio source inputs / outputs:
  USB 2.0 : 16ch in / 2ch out
  HDMI 2.0 : 8ch PCM i/o + bitstream in
  Analogue : 16ch in + 16ch out
  Optical : 2ch PCM i/o + bitstream in

- User interface and configuration via web browser

- Illusonic N:M channel upmixer

- Supports two simultaneous listeners with fully independent personalisation and head-tracking

- Low-delay live music rendering modes

- Dedicated audio i/o for video gaming

The Realiser-A16 audio processor re-creates immersive 3D audio over stereo headphones, rendering up to sixteen virtual loudspeakers in any location, with head-tracking.

An integrated audio codec decoding board allows formats such as Dolby Atmos, Auro-3D and DTS:X to be decoded internally via the HDMI bitstream, Toslink optical or USB interfaces, and rendered automatically to an appropriate virtual loudspeaker format.

In addition, discrete audio signals can be sourced from USB 2.0 and analogue (16-ch), from HDMI (8-ch), and from SPDIF optical and line-level inputs (2-ch).

The versatile Illusonic N:M up-mixer allows all source material from 2.0 stereo up to 7.1 discrete surround to be upmixed and rendered to any 16-ch immersive or 3D loudspeaker format.

The headphone processor is configured via a web browser, and can then be controlled either from the front panel, or with an IR remote or from a web browser.

Low-latency convolution modes allow rendering for live audio performances, with dedicated microphone and guitar-level inputs.
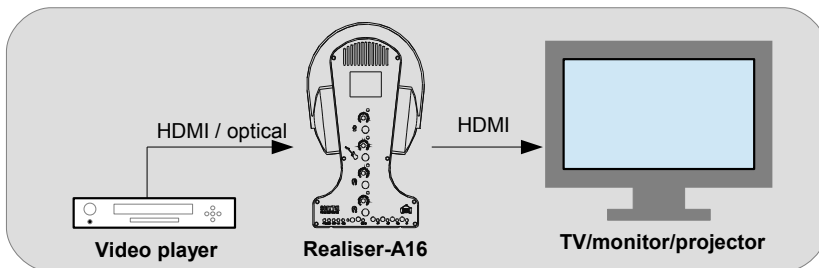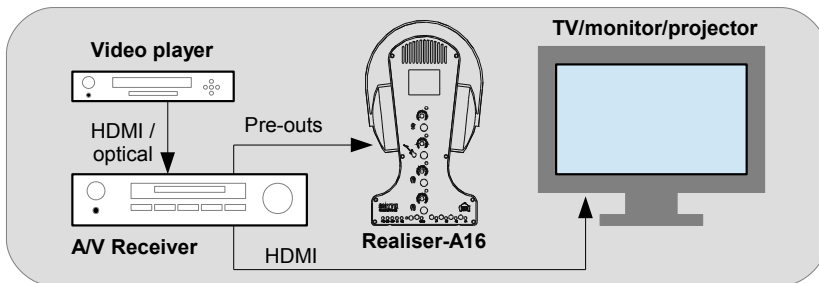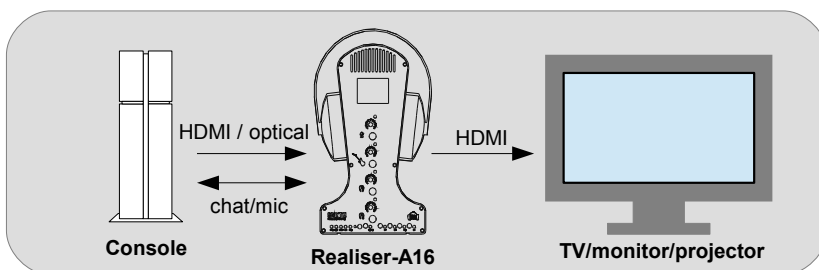
Launching soon on
KICKSTARTER

Applications

USB 2.0

PC/Mac Audio Editing Workstation   Realiser-A16
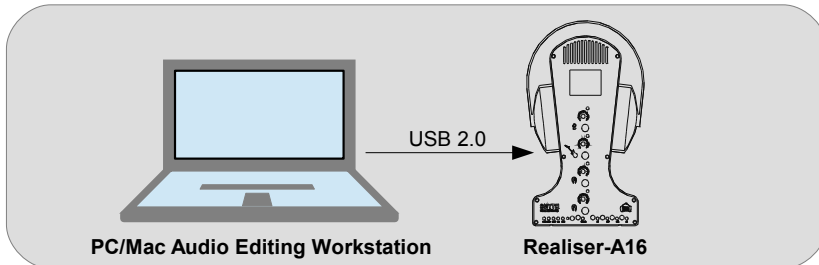
- **Watching 5.1 / 7.1ch movies**

- **Monitoring up to 16ch of immersive 3D audio at a digital audio workstation ASIO/PC, native/Mac**

HDMI / optical   **HDMI**

Video player   Realiser-A16   TV/monitor/projector

- **Watching movies in the home**

- **Monitoring of legacy Dolby Digital and DTS formats (5.1 / 7.1) and Dolby Atmos, Auro-3D and DTS:X audio formats from DVD/Blu-ray/Ultra HD Blu-ray players**

Video player

TV/monitor/projector

HDMI / optical   **Pre-outs**

A/V Receiver   **HDMI**   Realiser-A16

- **Watching movies in the home with an external AV receiver**

- **Monitoring decoded legacy Dolby Digital and DTS formats (5.1 / 7.1) and Dolby Atmos, Auro-3D and DTS:X audio formats through an external AV receiver**

HDMI / optical   **HDMI**

chat/mic

Console   Realiser-A16   TV/monitor/projector

- **Console or PC video gaming 5.1 / 7.1 / DTS / Dolby Digital / Dolby Atmos 7.1.4**

Live voice
Mic input

Live guitar / instrument
Guitar input

Backing tracks
Analogue inputs

Headphone Output A
Reverberant PA mix

Headphone Output B
Very-low delay IEM mix
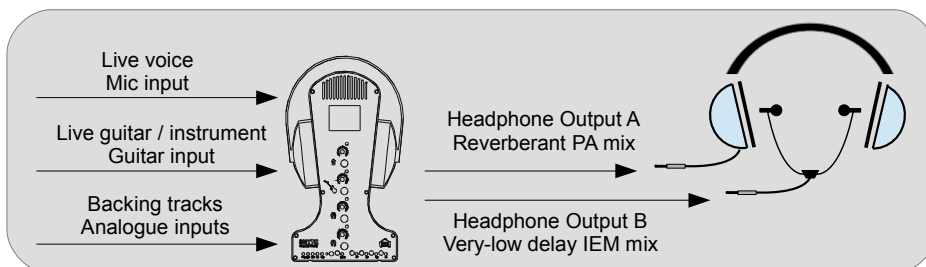
- **Live music / concert hall / live gig performance training with or without IEM monitoring**

Functional Block Diagram

Gaming console
4-way 3.5mm Jack

2-ch ADC

1-ch DAC

SVS microphone
2-ch input

Guitar in 1-ch

1/4" Jack

Mic in 1-ch

1/4" Jack

2-ch Low Latency ADC

USB 2.0 16-ch
Win / OSX

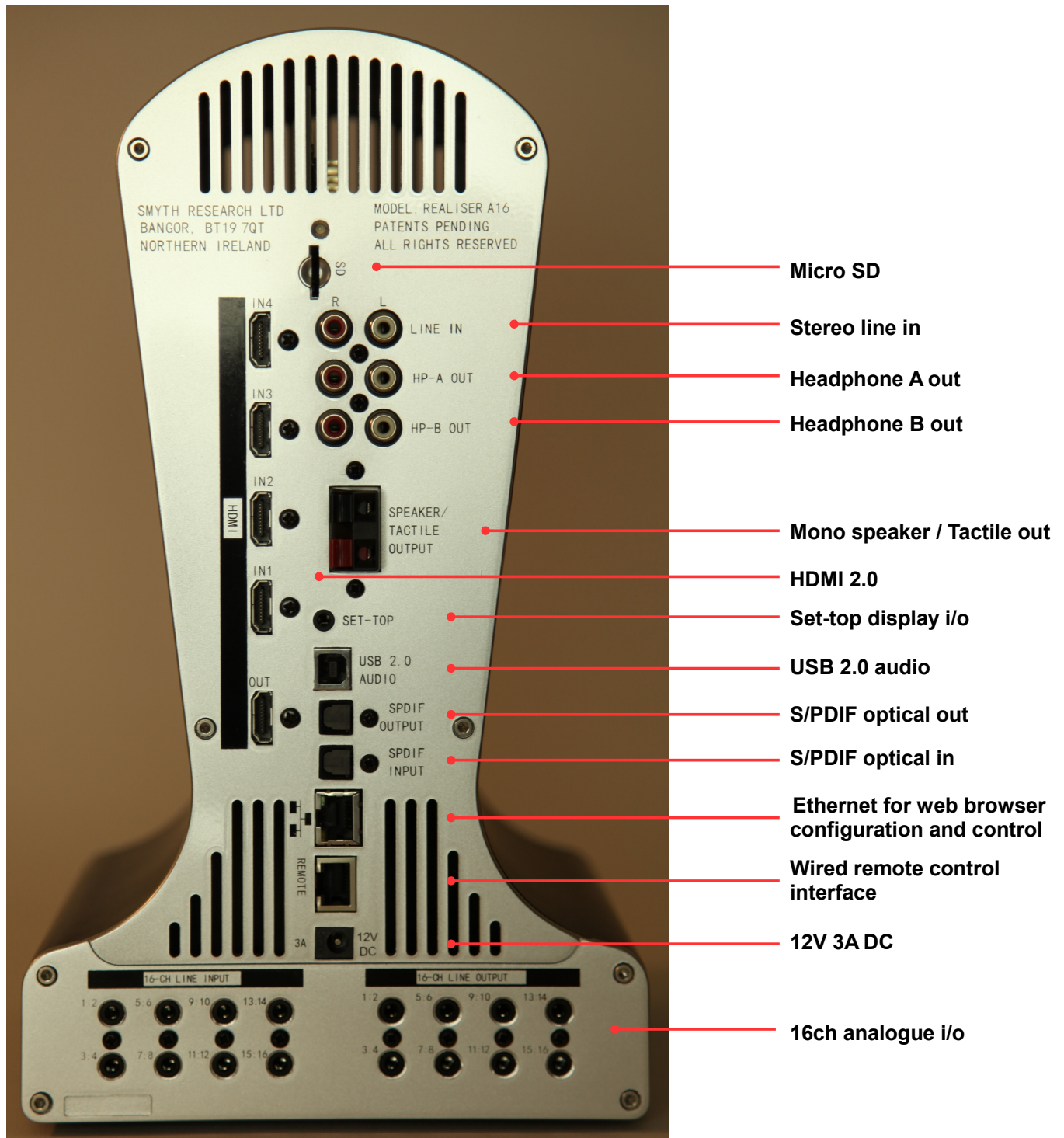16-ch USB 2.0 Audio IF

HDMI in
8-ch LPCM / bitstream

HDMI

HDMI 8-ch audio extract and insert

8-ch LPCM

BITSTREAM

HDMI thru
8-ch LPCM

HDMI

8-ch LPCM

SPDIF optical in
2-ch / bitstream

SPDIF optical out
2-ch

SMYTH SVS Processor
16-ch User A

Auro-3D decoder
or
Illusonic Upmixer
or
Smyth SVS Processor
16-ch User B

Dolby Atmos
7.1.4ch
or
DTS-X
7.1.4ch
or
MPEG-H Audio*

AUDIO ROUTER

Analogue in
16-ch

1/2 3/4
5/6 7/8
9/10 11/12
13/14 15/16

16-ch Low Latency ADC

Analogue out
16-ch

1/2 3/4
5/6 7/8
9/10 11/12
13/14 15/16

16-ch DAC

Microprocessor

Colour Graphic LCD display
240 x 320

Set-top display i/o

Head-tracker A input

Head-tracker B input

Micro-SD card

IR remote control

ETHERNET 100BaseT

RJ-45

Web browser configuration and control

RJ-45

Wired remote control

Headphone A output

1/4" Jack

2-ch Low Latency DAC

Headphone B output

1/4" Jack

2-ch Low Latency DAC

Mono Speaker / Tactile
1-ch output

20W Mono D-Class AMP

Headphone A VOLUME

Headphone B VOLUME

PRESET

1 2 3 4

Front panel hardware control

* MPEG-H Audio in development

Rear panel physical connections

Micro SD

Stereo line in

Headphone A out

Headphone B out

Mono speaker / Tactile out

HDMI 2.0

Set-top display i/o

USB 2.0 audio

S/PDIF optical out

S/PDIF optical in

Ethernet for web browser configuration and control

Wired remote control interface

12V 3A DC

16ch analogue i/o

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