# HUB1616

DIGITAL MATRIXES

*16 outputs digital zoner with DSP*



## PRODUCT OVERVIEW

HUB1616 is a digital zone manager with 16 inputs and 16 outputs, an evolution of its predecessor eMIMO1616. It has the HANGAR embedded web-server application (control from standard web browser in Windows / MacOS, etc.) for its configuration; remote control from physical wall installation panels, call (paging) stations and applications for mobile devices (Android, iOS). Includes DSP with specific functions for both inputs and outputs.

HUB Series offers multiple possibilities, being intuitive and easy to configure. From the least experienced user to the most expert, you can set up a professional audio installation in a matter of minutes (Plug & Play). It is the perfect solution for any type of sound that requires managing and controlling different zones.

## KEY FEATURES

- 16 inputs, 16 outputs digital zoner with integrated DSP
- Easy programming and control by embedded web application, HANGAR, and standard web browser
- Control from the front panel and user remote control by:
  - eMCONTROL1 wall panels (up to 8)
  - eMPAGE paging consoles (up to 2)
  - Ecler pilot application, compatible with Android and iOS: control graphic panels set to user needs (pilot panels)
  - TP-NET protocol (RS-232 interface with DB9 connector) for control and integrating with third party systems
- Control available, by zone (output): selection of audio source (input), volume adjustment and MUTE, 3 band tone adjustment and general volume
- Four priority levels, ducker/pager functions
- Available DSP: frequency shifter, link stereo, delay, crossover filters, 8-band graphic EQ, compressor/limiter and much more
- Predefined setups for a quick installation (plug and play)
- MUTE port can be activated by closing the external dry contact, affecting programmed outputs to this effect

## APPLICATIONS

- Commercial
- Hospitality
- Education
- Corporate
- Sports and wellness
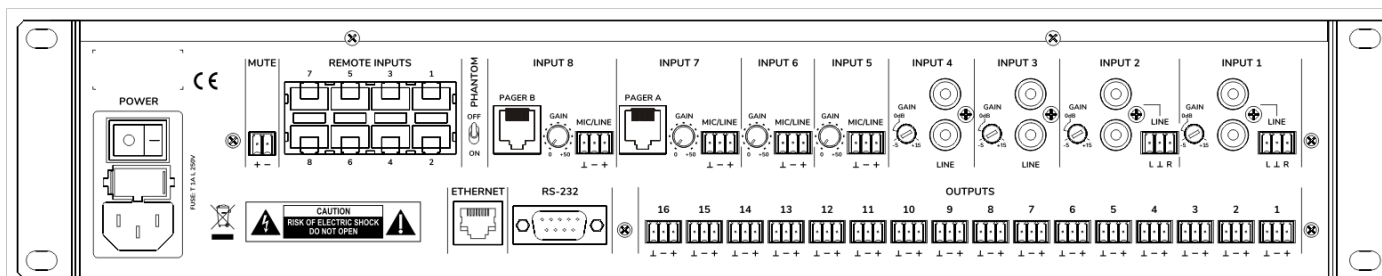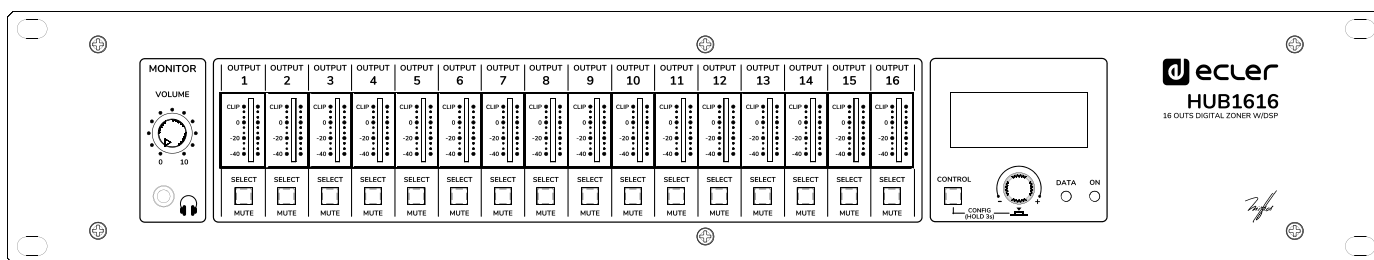
## ACCESSORIES & COMPATIBLE DEVICES

- eMPAGE
- eMCONTROL1

eMPAGE          eMCONTROL1

## MECHANICAL DIAGRAMS

## TECHNICAL SPECIFICATIONS

| HUB1616 | |
|---|---|
| **DIGITAL** | |
| **DSP** | |
| CPU | Floating point 32/64bit |
| Sampling rate | 48 kHz |
| Latency | <1.5 ms. |
| **Converters** | |
| Resolution | 24 bit, AKM |
| Dynamic range | AD:111dB, DA: 115dB |
| **ANALOGUE** | |
| **Input 1, 2, 3, 4 (Line)** | |
| Sensitivity | +5 / -15dBV External potentiometer adjust |
| Impedance | >13k |
| Input headroom | 12dBV |
| Connector | RCA female. Input 1 and 2 with Euroblock stack |
| Type | Unbalanced |
| **Input 5, 6, 7, 8 (Mic/Line)** | |
| Sensitivity | +0 / -50dBV External potentiometer adjustment |
| Impedance | >24k electronically balanced |
| Input headroom | 12dBV |
| Connector | Euroblock (Symmetrical) |
| Type | Balanced |
| Pagers | Input 7 and 8 (by RJ45 connector) |
| Phantom | +48VDC (rear panel switch) |
| CMRR | >60dB (20Hz - 20kHz) |
| **Input 9 to 16 (Remote Input)** | |
| Sensitivity | 0 dBV without adjustment |
| Impedance | >24k electronically balanced |
| Input headroom | 12dBV |
| Connector | RJ45 Connector |
| Type | Balanced |
| CMRR | >60dB (20Hz - 20kHz) |
| **Outputs 1 to 16 (Line)** | |
| Max output level | 12dBV |
| Connector | Euroblock 3-pin |
| Type | Balanced |
| **Headphones output** | |
| Selectable output | From Out1 to Out16 |
| Power | >200mW – 200Ω |
| Connector | Mini-Jack 3,5mm |
| **General** | |
| External mute | Normally open. Assignable to any output zone |
| Frequency response | <10Hz ~ 20kHz (+0dB / -0.5dB) |
| Output noise floor (FFT) | >110dB (from 20Hz to 20kHz) |
| THD + Noise) | < 0.005% (1kHz, 1Vrms) |
| Crosstalk | >90dB, 20Hz - 20kHz |

| | |
|---|---|
| CMRR | >60 dB Typical |
| Flatness | Better than ±0.1dB |

## PROCESSING

### Input level (x16)

| | |
|---|---|
| Volume | From Off to 0 dB |
| Mute | On-Off |
| Metering | Vumeter post fader |
| Stereo | On-Off (Inputs 5 to 8) |
| Polarity | On-Off |
| High pass filter | 50Hz to 150Hz (Inputs 5 to 8) |
| Frequency shifter | On-Off ; 5Hz (Inputs 5 to 8 ) |

### Noise gate (x4)

| | |
|---|---|
| Inputs | Input 5 to 8, Bypass ON - OFF |
| Threshold | From -80dBV to +12dBV |
| Depth | From 0 dB to 80 dB |
| Attack | From 0.1ms to 500ms |
| Hold | From 10ms to 3000ms |
| Release | From 10ms to 1000ms |

### Input EQ (x16)

| | |
|---|---|
| Type | Baxandall 3 way EQ |
| Gain | -10dB ~ +10dB in 0.1dB steps |
| Frequency | Low 200Hz    Mid 1kHz    High 6.3kHz |

### Output level (x16)

| | |
|---|---|
| Volume | From Off to 0 dB |
| Mute | On-Off |
| Metering | Vumeter post fader |
| Stereo | On-Off |
| Polarity | On-Off |

### Output EQ (x16)

| | |
|---|---|
| Type | Baxandall 3 way EQ |
| Gain | -10dB ~ +10dB in 0.1dB steps |
| Frequency | Low 200Hz    Mid 1kHz    High 6.3kHz |

### Output graphic EQ (x16)

| | |
|---|---|
| Type | 8-Band Graphic EQ |
| Gain | -10dB ~ +10dB in 0.1dB steps |
| Frequency | 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz |

### Output compressor (x16)

| | |
|---|---|
| Bypass | On-Off |
| Mode | Compressor / Limiter |
| Threshold | -36 dB to +12 dB |
| Ratio | 1 to 100 |
| Knee | Soft / Hard |
| Attack | 0.1ms to 500ms |
| Release | 10ms to 1000ms |
| Make-up gain | 0 dB to 10 dB |

### Output delay (x8)

| | |
|---|---|
| Outputs | 1 to 8 |
| Bypass | On-Off |
| Delay | 0 to 300ms |

| | |
|---|---|
| Unit | ms, meters, feet |
| **Output crossover (x8)** | |
| Outputs | 1 to 8 |
| Bypass | On-Off |
| Mode | High Pass Filter / Low Pass Filter |
| Frequency | 20Hz to 20kHz |
| **General volume** | |
| Volume | From Off to 0dB |
| Selectable outputs | Out 1 – Out 16 |
| **Ducker** | |
| Input | IN5 to IN8. In 7 and 8 selectable: DUCKER or PAGER |
| Outputs | Selectable: 1-16 zones |
| Priority | Four levels (1max-4min) |
| Priority volume | -40 dB to +6 dB |
| Threshold | -80dB to +12dB |
| Depth | 0dB to 80 dB |
| Attack | 5ms to 2000ms |
| Release | 50ms to 3000ms |
| Hold | 10ms to 3000ms |
| **Pager** | |
| Input | IN7 and IN8 selectable: DUCKER or PAGER |
| Outputs | Selectable: 1-16 zones |
| Functions | Two function buttons (F1, F2) |
| Priority | Four levels (1max-4min) |
| Priority volume | -40 dB to +6 dB |
| Chime volume | -12dB to +0dB |
| Chime melody | None, Melody 1, Melody 2 |
| Depth | 0dB to 80 dB |
| Attack | 5ms to 2000ms |
| Release | 50ms to 3000ms |
| **Pilot panels** | |
| General | On-Off, Public, Label, Users and Zone |
| Volume control | On-Off, Label and Style |
| Source selection | On-Off, Label and Allowed sources |
| Equalizer | On-Off, Label, and Style |
| Color | Controls, Text and Background |
| **OTHERS** | |
| **Mechanical** | |
| Dimensions | 482,6 x 88,0 x 210,0mm / 19.0"x 3.5" x 8,3" (WxHxD) |
| Weight | 3,66kg / 8.07 lb. |
| **Power supply** | |
| Mains | 90-240 VAC, 50-60Hz |
| Power consumption | 20W |
| **Connectivity** | |
| Management Connectivity | Ethernet Base-Tx 10/100Mb Auto X-Over CAT5 up to 100m |
| Remote bus | RS485 |
| Aux. Power Supply for Remotes | +12VDC, 0,6A max. (short circuit protected) |
| Programming and control | Hangar (embedded web application), Ecler pilot (Andorid/iOS applicaction), TPNET (UDP/RS232) |

## A&E SPECIFICATIONS

The Multi-Zone audio system shall comprise of 8 independent controllable output zones, 8 audio inputs, containing 4 balanced microphone inputs with priority function and phantom power possibility, and 8 remote audio inputs with RJ45 connection. The zone outputs shall be balanced and equipped with Terminal Block connectors.

Remote management shall be available via mobile devices. Remote control from third-party systems shall be available using TP-NET control protocol through Ethernet o RS-232 ports. The digital zoner shall include a factory setup and predefined configuration management for a plug & play installation. The system shall include an integrated webserver on which a fully functional web-based user interface is running, which can be accessed through a web browser without any special software requirement. Standard functions of the device shall be controllable via additional connected wall-panels and mobile devices, while the configuration settings of the device shall be controllable via third party devices using the TCP/IP, RS-232 connectivity possibilities.

On the front panel, the zoner shall include Power ON and Data status LEDs, outputs signal level indicator, monitor output jack and monitor level knob. On the rear panel, the matrix shall include power on switch, 2 analogue balanced (Euroblock connector) or unbalanced (RCA connectors) inputs, 2 unbalanced (RCA) line inputs, 4 balanced mic/line inputs, 2 pager RJ45 ports, phantom switch, 8 RJ45 remote inputs and 16 zone outputs (Euroblock connector). Also, a MUTE dry contact, RS-232 port (DB9 connector) and Ethernet RJ-45 port.

All internal processing shall be digital (DSP). Audio conversion shall have a resolution of 24-bit, and sampling rate should be 48 kHz in an architecture of 32/64 bit. The dynamic range shall not be lower than 111 dB for AD conversion and 115 dB for DA conversion. The DSP shall include treatment of channels in mono or stereo mode, level, mute, vumeters and phase adjustment in inputs and outputs, polarity test), 8 band parametric EQ, delays, noise gate, compressor on input channels, compressor / limiter on outputs, 4 priority levels (ducking) between input channels, and management of 2 physical paging consoles.

The zoner shall operate on a 100-240V AC - 50/60 Hz mains network and shall be equipped with a removable power cord having a standard shuko (CEE 7/7) AC plug. The connector on the zoner chassis shall be a fused IEC C14 type. The zoner chassis shall be a two rackspace 19'' housing. Depth from mounting surface to rear supports shall be 210 mm and the weight shall not exceed 3,66 Kg.

The digital zoner shall be the ECLER HUB1616.