8X8 AUDIO DIGITAL MATRIX

MIMO88

NEW! FREQUENCY SHIFTER
Function to avoid feedback loops
(Larssen Effect)

MIMO88 is an 8 in / 8 out digital audio matrix, fully programmable and linkable to a second unit to become a 16x16 matrix, with real routing from any input to any output. It can be configured and managed via Ethernet with the included EclerNet Manager software, also offering many other external control options: networked webserver-webclients control system (a graphical, custom-made screen for each user, run from computers, tablets, smartphones, etc.), TP-NET third-party control protocol for the integration with external control hardware like Crestron®, AMX®, RTI®, etc., digital WPTOUCH wall panels, digital MPAGE16 paging station, 8 GPIO ports, etc. using the MIMO88 Ethernet or RS-232 ports.

Key features

- 8 MIC/LINE balanced inputs, with phantom power selection and mono or stereo management
- 8 balanced outputs with mono or stereo management
- 2 additional monitoring outputs
- Expandable to 16 inputs / 16 outputs to become a real 16 x 16 matrix (using the digital audio bus between MIMO88 units, a CAT5 connection which can handle 100 meter distances)
- Ethernet and RS-232 comm ports
- 8 GPI ports (General Purpose Inputs): 0-10 VDC control inputs assignable to MIMO functions, like volume control, MUTE, preset recall, etc.
- 8GPO ports (General Purpose Outputs): relay contacts to remote control external devices, like motors, lights, etc.
- Digital control bus for the WPTOUCH (digital touch-sensitive) wall panel and the MPAGE16 (digital & touch sensitive paging station)
- Fully programmable and controllable via EclerNet software (with a straight PC-MIMO88 cable connection or by means of an Ethernet network)
- Ethernet remote control, based on webserver multiple clients: the EclerNet Manager projects can include several control panels, which have been customised for the needs of each user. The panels can be recalled and operated from client devices such as computers, tablets, smartphones, etc. (an Internet browser is used as the client app.)
- A few processing bits: signal generator, delays, full parametric EQ filters at inputs and outputs, inputs noise gate, level, mute, phase, vu-meters, outputs compressor / limiter, ducking (priority & overriding), virtual and physical paging stations management, automatic mixer function, presets save & recovery, scheduled events triggering
- NEW! FREQUENCY SHIFTER function to avoid feedback loops (Larssen Effect). Available for each INPUT channel

Applications

- Centralized, distributed or hybrid fixed installation
- BGM & Paging solutions, with message priorities and source/volume independent selection
- Integration in installation global control systems
- Conferencing (automatic mixing)
- P.A. management (multi-way speaker processing, delay adjustment, etc.)
- Installations requiring remote supervision, diagnostic and adjustment via Internet
- Live sound (WiFi management is possible from a PC, tablet, smartphone, etc.)

Accesories

- **MPAGE16** touch-sensitive digital paging station
- **WPTOUCH** touch-sensitive digital wall panel control
- **WPmSCREEN** touch-screen wall panel
- **WPmMIX-T**, **MICRO+LINE** wall panel mixer with talkover function
- **WPm**, series wall panel controls

Recommended amplification

- **MPA**, multichannel series
- **NXA**, multichannel networkable series
- **DPA** and **GPA** stereo series
- **HZA**, multichannel 100V line series
- **HSA**, 100V line series

The new MIMO88 CONFERENCE has been specially designed for those applications that involve conferencing, microphone automatic mix processing and feedback loops (Larsen effect) cancellation.

The MIMO88 CONFERENCE version presents these peculiarities compared to the MIMO88 standard version:

- Identical hardware for both versions
- Different firmware for the standard and conference version

Therefore, any MIMO88 hardware unit (existing or new one) can get a firmware upgrade to be converted into a MIMO88 standard unit or into a MIMO88 CONFERENCE unit. The upgrade process is fast, simple and straightforward, and can be done as many times as required.
This is an incredible advantage in terms of flexibility: keeping a single physical stock for the MIMO88 hardware units, it's possible to deliver to customers one or the other version, depending on the project it will belong to.
On top of the new features included, most of the standard MIMO88 features are still available in the CONFERENCE version, like presets management, events management, GPIO analogue remote control, digital remote control via WPTOUCH, TP-NET external control via Ethernet or RS-232, etc.

AUTOMIXER section Key features
(see EclerNet Manager user manual for further information)

- 8x8 configuration: up to 4 independent output mixes & 4 auxiliary outputs
- 16x16 configuration: up to 8 independent output mixes & 8 auxiliary outputs
- Two working modes:
  - NOMA ("Number of Open Microphones Attenuated"): in this mode, the automatic mixing algorithm allows a fixed number of input signals (usually microphones) to become simultaneously part of the mix, reducing or increasing their total gain automatically
  - EXCLUSIVE: in this mode only a single microphone is part of the mixer channel at a given moment, once the algorithm considers that it complies with its requirements. Another microphone can be used when the first one has released the channel
- Full set of working parameters: MAX. NOMA, LAST ON, PRIORITY, THRESHOLD DEPTH, etc.

FEEDBACK KILLER section key features
(see EclerNet Manager user manual for further information)

- 2 automatic notch filter banks
- 8 notch filters included in each bank
- Fixed / dynamic filters free configuration
- Filter WIDTH, RECYCLE TIMER, LOCK, RESET and BYPASS parameters
- 4 working mode presets

MIMO88SG

8X8 AUDIO DIGITAL MATRIX

MIMO88SG (MIMO88 SINGLE) is an EclerNet digital audio device that keeps the heart and soul of the standard MIMO88, its main features and its audio quality, to become a simplified and cost-effective version of this acclaimed digital matrix.

Key features

- 8x8 digital matrix (not expandable)
- 8 MIC/LINE balanced inputs and 8 balanced outputs, with mono or stereo management
- Ethernet and RS-232 communication interfaces
- 8 GPI ports (General Purpose Inputs): 0-10 VDC control inputs assignable to MIMO functions, like volume control, MUTE function, preset recall, etc.
- Digital control bus to connect up to 16 WPTOUCH units (digital touch-sensitive wall panel) and 3 MPAGE16 units (digital & touch sensitive paging station)
- Fully programmable and controllable via EclerNet software (directly wired to a PC or by means of an Ethernet network)
- UCP (User Control Panels) remote control system, compatible with WPmSCREEN and third-party devices, such as computers, tablets, smartphones, etc.
- TP-NET protocol compatible, for third-party control systems integration
- A few processing bits: signal generator, delays, full parametric EQ filters at inputs and outputs, inputs noise gate, level, mute, phase, vu-meters, outputs compressor / limiter, paging and ducking (priority & overriding), virtual and physical paging stations management, presets save & recovery, scheduled events triggering, etc.
- FREQUENCY SHIFTER function to avoid feedback loops, available in 4 inputs
- STANDARD and CONFERENCE firmware versions available

Applications

- A/V corporate, retail and education applications
- BGM & Paging solutions, with message priorities and source/volume independent selection
- Integration in installation global control systems
- Conferencing
- P.A. management (multi-way speaker processing, delay adjustment, etc.)

Accesories

- **MPAGE16** touch-sensitive digital paging station
- **WPTOUCH** touch-sensitive digital wall panel control
- **WPmSCREEN** touch-screen wall panel
- **WPmMIX-T**, **MICRO+LINE** wall panel mixer with talkover function
- **WPm**, series wall panel controls

Recommended amplification

- **MPA**, multichannel series
- **NXA**, multichannel networkable series
- **DPA** and **GPA** stereo series
- **HZA**, multichannel 100V line series
- **HSA**, 100V line series

Technical Characteristics		MIMO88SG
DSP	DSP	2X 32/64 bit
	Sampling rate	48kHz
	Latency IN to OUT	<2.9ms (+1ms for 16 x 16)
Converters	Resolution	24 bit AKM
	Dynamic Range	AD:110dB, DA: 115dB
Analog	8+8 Input/Output	Terminal block (Symmetrical)
	Analog Input headroom	+27dBV = +30dBu
	Max. output level	+18dBV = +21dBu
	Input sensitivity @ 0dBV out	From -50dBV to +10dBV in 0.5dB step
	Input Impedance	Balanced, >4kΩ
	Phantom power	+42VCD, 5mA max. software switched
	Frequency response (-3dB)	5Hz to 24 kHz
	Flatness	Better than ±0.1dB
	THD+Noise @ 1kHz, 0BV input (line)	<0.004%
	THD+Noise @ 1kHz, -40dBV input (mic)	<0.008%
	Output Noise floor FFT (20Hz - 20kHz)	Better than 115dB
	Interchannel crosstalk (20Hz - 20kHz)	Better than 90dB (100dB typ.)
	Channel leakage (20Hz - 20kHz)	Better than 100dB (115dB typ.)
	CMRR 20Hz - 20kHz	65dB typ.

Processing	MIMO88SG
Input Level (x8)	Range: from Off to 0 dB
	Mute: Yes
	Signal Polarity reverse: Yes
	Metering: VU+clip pre & post fader
Output Level (x8)	Range: from Off to 0 dB
	Mute: Yes
	Solo: Yes
	Signal Polarity reverse: Yes
	Metering: VU+clip pre & post fader
Output Gain (x8)	Range: from 0 to +6 dB
Input Delay (x8)	from 0 to 1000 ms
	Units: sec/ms/m/cm.
Output Delay (x8)	from 0 to 1000 ms
	Units: sec/ms/m/cm.
Parametric Eq. Types (4 max per input)	Bypass / On-Off all channels
	Param Eq. Freq: 20Hz-20kHz;
(6 max per output)	Gain: -60/+12 dB
	Q: 0.3 to 200
	Low & High Shelf 6/12 dB/oct
	Low & High Pass 6/12 dB/oct
	All Pass 1/2 order

Processing	MIMO88SG
High & Low pass output Crossover filters (x8)	Bypass On-Off
	Butterworth in 6/12/18/24 dB/oct
	Bessel in 12/18/24 dB/oct
	Linkwitz-Riley in 12/24 dB/oct
Input Noise Gate (x8)	Bypass On-Off
	Threshold: from -80 dBV to +18 dBV
	Depth: 0 dB to 80 dB
	Knee: hard / soft
	Attack time: from 0,1 ms. to 500 ms.
	Hold time: from 10 ms. to 3000 ms.
	Release time: from 10 ms. to 1000 ms.
Input Compressor / Limiter (x8)	Bypass On-Off
	Threshold: from -36 dBV to +18 dBV
	Ratio: 1:1 to inf:1 (limiter)
	Knee: hard / soft
	Attack time: from 0,1 ms. to 500 ms.
	Release time: from 10 ms. to 1000 ms.
	Make up gain: from 0 to +10 dB
Input Frequency Shifter (x4) (Feedback Loop Reducer)	Available on IN1 to IN4. ON / OFF function

Processing	MIMO88SG
Output Limiter (x8)	Bypass On-Off
	Threshold: from -36 dBV to +18 dBV
	Ratio: inf:1 (limiter)
	Attack time: from 0,1 ms. to 500 ms.
	Release time: from 10 ms. to 1000 ms.
Built in Signal Generator	Sine: from 20 Hz to 20 kHz
	Polarity: from 20 Hz to 20 kHz
	White noise
	Pink noise
Stereo Linking	Adjacent input / output channels
	Linked processing
	Matrix routing linked
Mix Matrix	Size: 8x8
	Vol: Input, Output, Crosspoint
	Mute: Set/Clear individual, row, column, all
	Input /output Mono/stereo selector
	Meter: Input /output VU and clip
Pager (x3)	Input: IN1 to IN8
	Priorities: 3 (1 max, 3 min)
	Depth: 0 dB to 80 dB
	Attack time: from 0,1 ms. to 500 ms.

		MIMO88SG
Processing	Pager (x3)	Release time: from 10 ms. to 1000 ms.
		Chime Source: None, Melody 1, Melody 2
		Chime Volume: from -12 dB to 0 dB
Mechanical	Dimensions	482.6x44x266.5 mm
	Weight	3.5 kg
Supply	Mains	90-264VCA 47-63Hz
	Power consumption	75VA
Miscellaneous	Management Connectivity	Ethernet Base-Tx 10/100Mb Auto X-Over CAT5 up to 100m.
	Remote Bus	over twisted pairs; up to 1km (see specific specs.)
	GPI	8, from 0 to 10VDC or TTL level
	Aux. Power Supply for Remotes & GPI	+12VDC, 1.2A. max. (short circuit protected)
	Time and date retention (battery)	100 hours aprox. (ambient temperature dependant)
	RTC accuracy	±1 minute / month
SOFTWARE	EclerNet Manager	From v3.03r4 version.

MPAGE16

MPAGE16 is a digital paging station for the MIM088. It features 21 touch-sensitive keys that, together with the MIM088 hardware, allow for an easy, flexible and user-friendly configuration of a paging system that can coexist with other MIM088 functions and with other control hardware and/or software control systems.
(for more information visit the MPAGE series product page)

Key features

- 16 zone selection keys
- SELECT ALL, CLEAR and PAGE keys
- Two user-defined functions keys (for recalling presets, for example)
- Gooseneck integrated microphone
- Several MPAGE16 or software (virtual) paging stations can work simultaneously (priorities and zones availability is managed by the MIM088 software setup)

WPTOUCH

WPTOUCH digital wall panel control for zone source selection, preset recall, volume and MUTE control, etc. (see WPm series for more details about this and other available wall panel accessories)

WPTOUCH

MPAGE16

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	Sampling rate	48kHz
	Latency IN to OUT	<2.9ms (+1ms for 16 x 16)
Converters	Resolution	24 bit AKM
	Dynamic Range	AD:110dB, DA: 115dB
Analog	8+8 Input/Output	Terminal block (Symmetrical)
	2 monitor output	Terminal block (Symmetrical)
	Headphones related	Jack ¼
	Analog input headroom	+27dBV = +30dBu
	Max. output level	+18dBV = +21dBu
	Input sensitivity @ 0dBV out	From -50dBV to +10dBV in 0.5dB step
	Input impedance	Balanced, >4kΩ
	Phantom power	+42VCD, 5mA max. software switched
	Headphones	>200mW/200Ω
	Frequency response (-3dB)	5Hz to 24 kHz

		MIM088
Analog	Flatness	Better than ±0.1dB
	THD+Noise @ 1kHz, 0BV input (line)	<0.004%
	THD+Noise @ 1kHz, -40dBV input (mic)	<0.008%
	Output Noise floor FFT (20Hz - 20kHz)	Better than 115dB
	Interchannel crosstalk (20Hz - 20kHz)	Better than 90dB (100dB typ.)
	Channel leakage (20Hz - 20kHz)	Better than 100dB (115dB typ.)
	CMRR 20Hz - 20kHz	65dB typ.
Mechanical	Dimensions	482.6x44x266.5 mm
	Weight	3.5 kg
Supply	Mains	90-264VCA 47-63Hz
	Power consumption	75VA

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