User Manual

Digital Audio Matrix: **ZES-22**

SAFETY INSTRUCTIONS

Please read these safety instructions carefully.

1 Save this user manual for future reference.
2 Power connectors must be accessible for disconnection and where people cannot step on or trip. Disconnect the equipment from the AC/DC (AC) outlet before cleaning it.
3 The appliance must not be exposed to falling water or splashes and no liquid-filled objects should be placed on the appliance. Do not use liquid or spray detergent for cleaning. Do not expose this equipment to wet areas.
4 Bare flame sources, such as burning candles, should not be placed on the appliance.
5 Install this equipment on a secure surface. If you do not place the equipment on a safe surface, it may fall and be damaged.
6 The roof grilles are used for convection of air. DO NOT COVER THE GRIDS. Leave 5 cm of gap in front and on the sides for proper ventilation.
7 Never open the equipment. For safety reasons, the equipment should only be opened by qualified personnel.
8 The equipment must be connected to a protective ground outlet.
9 Pay attention to the connection polarity when operating the equipment with a DC (DC) power supply. The reverse polarity connection may cause damage to the equipment, or to the power supply.
10 If any of these situations arise, let the technical staff check the equipment:
    a) The power cord or plug is damaged.
    b) Liquid has infiltrated the inside of the equipment.
    c) The equipment has been exposed to moisture.
    d) The equipment has not worked well or does not work properly following the instruction manual.
    e) Equipment has fallen off and is damaged.
    f) If the equipment has obvious Signals of damage.
11 Wiring should be done only by trained personnel. Disconnect the audio inputs and outputs while making connections or disconnect the equipment from power. Make sure you use the right cables to make connections.

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1. INTRODUCTION

The ZES-22 Digital Audio Processor is an accessory in the NEO series that allows you to expand the system by adding distributed audio inputs.

It consists of 4 channels of analog audio that can be configured by software as input or output. It includes a crossover matrix that makes it possible to send or receive each channel to any other equipment in the system using the Cobranet protocol, allowing the transmission of up to 64 simultaneous channels of uncompressed audio on a 100Mbps network.
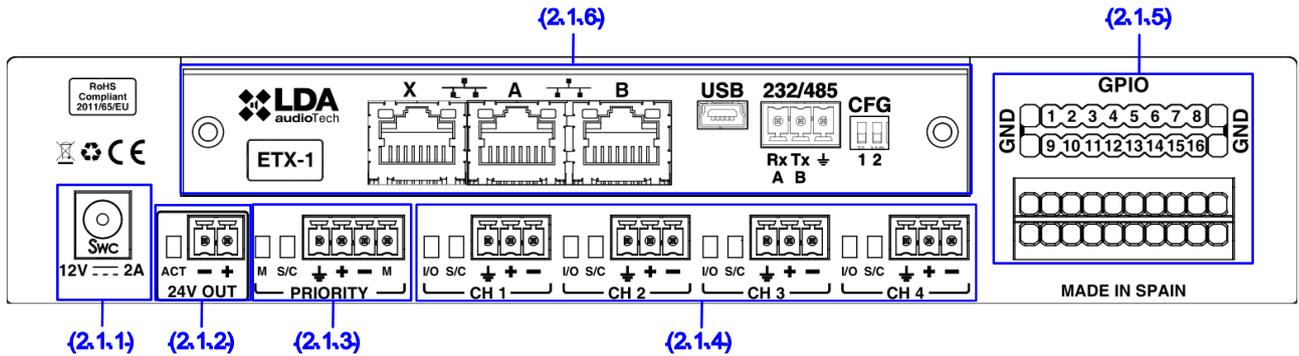
2. DESCRIPTION

Figure 1: Inputs and outputs

2.1. Inputs and outputs

2.1.1. Power supply

The ZES-22 is supplied with an external Barrel Jack type power supply 12V DC.

Figure 2: Power Input

2.1.2. Maneuver

Two-pole output to control dimmers or sirens. In the standby state they have a voltage of 0V. In the active state, each output has a voltage of 24 VDC (*) and 40 mA of maximum current.

The connection is made using a 2-pin female euroblock type connector and 3.81 mm pitch (supplied with the equipment). The cable cross-section range for each pole of this connector is: 0.14 → 1.5 mm2 (30 → 14 AWG).
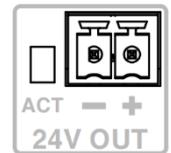
Figure 3: Output Maneuver

Brand	Description	Type	Signals	Activation
24V OUT	Attenuators or siren control output	Output	- +	24VDC 40mA max
ACT	Status LED	Status	Green	Ok
			Orange	Fault – Open Circuit/Short Circuit

Table 1: Maneuver

2.1.3. Priority input

The ZES-22 has priority audio input. This PA mode priority input is activated by a low-level maneuver on the "M" pin, routing the input audio to all outputs.

The connection is made using a 4-pin female euroblock type connector and 3.81 mm pitch (supplied with the equipment). The cable cross-section range for each pole of this connector is: 0.14 → 1.5 mm2 (30 → 14 AWG).
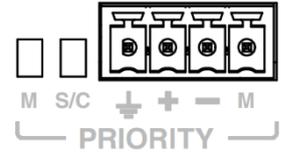
Figure 4: Priority Entry

Brand	Description	Type	Signals	Activation
PRIORITY	Balanced line-level audio	Input	⊥ + -	NA
	Activation maneuver	Input	⊥ M	0/5V TTL configurable
M	Maneuver status LED	Status	Orange	Active
S/C	VU Meter status LED VU Meter	Status	Green	Level above -50dB
			Orange	Level above -6dB
			Red	Level above 0dB

Table 2: Priority

2.1.4. Audio channels

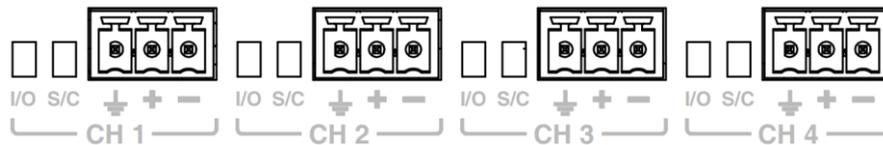4 audio channels can be configured by software as audio inputs or as audio output.

Figure 5: Configurable analog input/output channels

The connection is made through four 3-contact, 3.81 mm pitch female euroblock connectors (supplied with the equipment). The cable cross-section range for each pole of this connector is: 0.14 → 1.5 mm2 (30 → 14 AWG).

Brand	Description	Type	Signals	Activation
CH x	Balanced line-level audio	Input Output	⊥ + -	NA
I/O	Input/output status LED	Status	Blue	Audio input
			Orange	Audio output
S/C	VU Meter status LED	Status	Green	Level above -50dB
			Orange	Level above -6dB
			Red	Level above 0dB

Table 3: Input/Output Channels

2.1.5. GPIO Interface

The equipment has 14 programmable GPIO ports, through the software configuration application for TTL signal interface (0-5V) with the system.

The connection is made through a female air connector with 20 (2x10) contacts and 3.5mm pitch (supplied with the equipment). The cable cross-section range for each pole of this connector is: 0.14 → 1.5 mm2 (30 → 14 AWG).
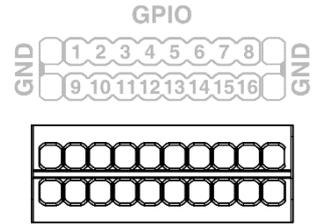

Figure 6: GPIO

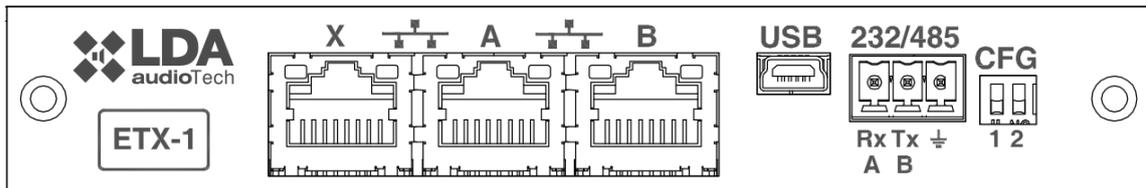| Brand	Description	Type	Signals	Activation
GPIO x	Configurable general purpose I/O port	Input Output	GND x	0/5V TTL configurable

Table 4: GPIO

2.1.6. System connection bay

Figure 7: System Connection Bay

(a)   SYSTEM INTEGRATION PORT X

The X port allows the connection of the system from an external Ethernet network that can be used for monitoring, management from external software, connection to other systems, adding Ethernet audio sources, etc. This port can be configured to disable itself when the system is in an emergency, thus increasing the security of the internal network.

(b)   SYSTEM CONNECTION PORT A, B

The equipment has two ports for connecting to the system. The behavior of these connection ports is configured according to the 2.1.6(e) CONFIGURATION SWITCH FOR SYSTEM CONNECTION section using the configuration switches. The default mode should be position 10, where port A is the primary connection, and port B is the redundant connection. In the event of a failure of the first port (A), the equipment will automatically switch the connection to the second port (B).

The connection is made via CAT5 or higher Ethernet network cable, RJ-45 T568B standard (a connection cable is supplied with the equipment).

Brand	Description	Type	Signals	Activation
X/A/B	System Connection Ports	Port	Ethernet CAT 5	Proprietary Command Protocol

Table 5: System Connection Ports

(c)   USB PORT (reserved)

The USB port (mini-USB type AB) available on the equipment is reserved.

Figure 8: Mini-USB port

(d)   SERIAL PORT INTEGRATION

The device has a two-wire serial port connection of the RS-485 type. Default settings for events: 19200 bps 8-bit, parity even, 1-bit stop for third-party system integration. The commands supported by this port trigger system events that can be configured through the configuration application.

Configuration for VCC. If the mode for use with VCC model wall controls is activated, it can no longer be used with other devices.

232/485

Rx Tx ⏚
A B

Figure 9: Serial port integration

The connection is made by means of a 3-pin female euroblock type connector and 3.81 mm pitch (supplied with the equipment). The cable cross-section range for each pole of this connector is: 0.14 → 1.5 mm2 (30 → 14 AWG). The use of braided cable is recommended for the connection of serial signals.
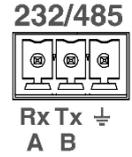
Brand	Description	Type	Signals	Activation
485-AB	Serial connection port for RS-485 integration Terminal A and B	Port	AB	RS-485 half duplex standard
485 ⊥	Chassis or cable shield	NA	NA	NA

Table 6: Serial port integration

NOTE: The 232 mark is reserved for future use.

(e)   CONFIGURATION SWITCH FOR SYSTEM CONNECTION

The equipment has a switch for configuring the behavior of the ports connecting to the system. According to their position

Brand	Description	Type	Signals	Activation	
CFG	X Port: Flexnet* Port A: Control data only Port B: Audio Data Only	Config.	NA	Position 00	↓ ⬜⬜ ↓
	X-Port: Control Data Only Port A: Flexnet* Port B: Flexnet*	Config.	NA	Position 01	↓ ⬜⬜ ↑
	X Port: Audio Data Only Port A: Flexnet* Port B: Flexnet*	Config.	NA	Position 10	↑ ⬜⬜ ↓
	X Port: Flexnet* Port A: Flexnet* Port B: Flexnet*	Config.	NA	Position 11	↑ ⬜⬜ ↑

Table 7: Settings System Connection

NOTE: For NEO+ devices, the B-mouth will usually remain inactive in modes 01, 10 and 11 to avoid the *storm* effect on the Flexnet ring. This port will only open when a NEO+ Bus Extension device falls or disconnects.

(*): Flexnet mode will have Control Data on VLAN1 + Audio Data on VLAN2. For more information on Flexnet, see NEO user manual.

2.2. Settings

The ZES-22 allows both injection and extraction of analog audio channels in a COBRANET network over Ethernet.

COBRANET allows up to 65536 bundles (where a bundle is a bundle with up to 8 channels of digital audio). A ZES-22 can receive up to 4 input and 4 output channels within the COBRANET network. These channels can be connected to any of the analog channels through the internal matrix.

In addition, it has digital signal processing (DSP) being able to adjust gain, equalizations, filtering, limiter, etc.

All these configurations will be made using the ZES-22App configuration application.

Analog input channels can be microphone inputs with 12V Phantom power or balanced line inputs, these inputs can be given a selectable gain from -10dB to +20dB. Analog audio outputs are balanced audio outputs. The rest of the possible configurations are as follows:
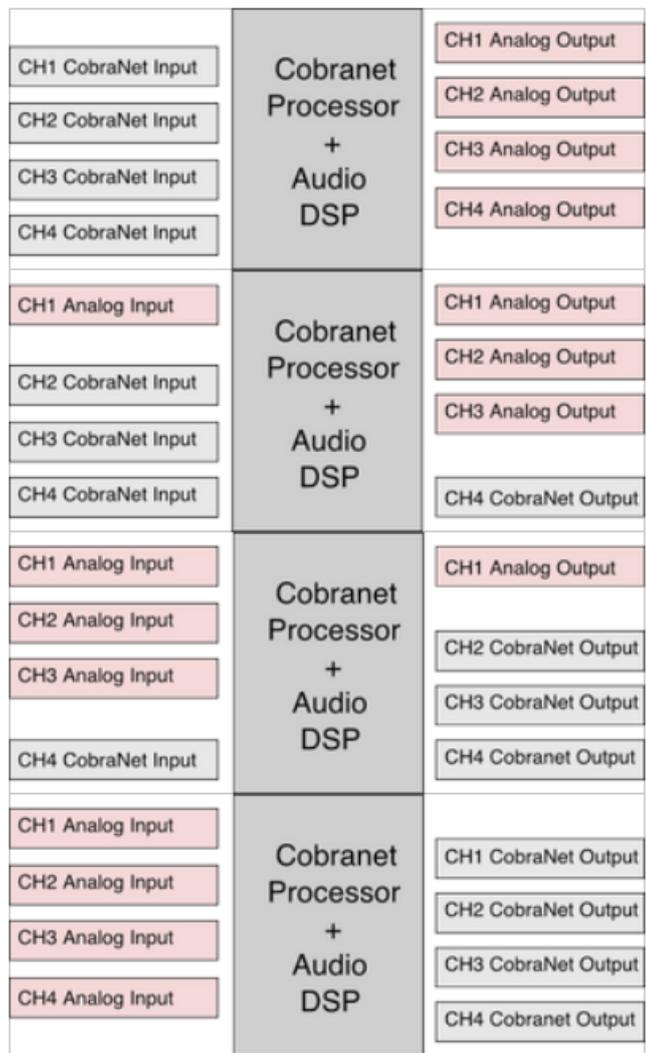

Figure 10: Possible configurations

3. CONNECTION AND COMMISSIONING

3.1. Analog connection

The ZES22 accepts and handles balanced and unbalanced audio devices. The following diagrams explain how to connect different types of audio devices.

Unbalanced Source Input

To connect a **2-wire unbalanced source** to the ZES22, connect the positive output of the unbalanced source to the positive input of the ZES22 I/O Input. Connect the ground of the input source with the ground of the ZES22 and join the negative input with the input ground of the ZES22.
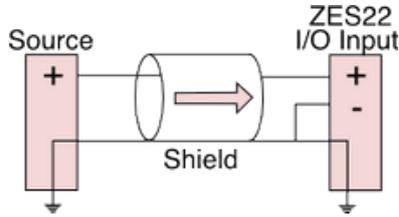

Figure 11: 2-wire unbalanced source input

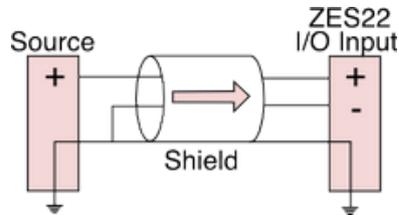To connect a 3-wire unbalanced source to the ZES22, attach the negative conductor and the source display.

Figure 12: Unbalanced 3-wire source input

Balanced Source Input

To connect a balanced source to the ZES22 connect the positive of the source to the positive of the ZES22, the negative of the source to the negative of the ZES22 and join the earths through the cable screen.
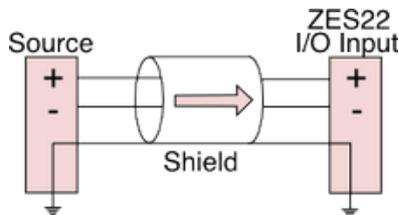

Figure 13:Balanced Source Input

Unbalanced Output to destination

To connect the ZES22 output to an unbalanced 2-wire input, connect the positive output to the positive input of the destination. Attach the ground of the ZES22 and the target device through the cable screen.
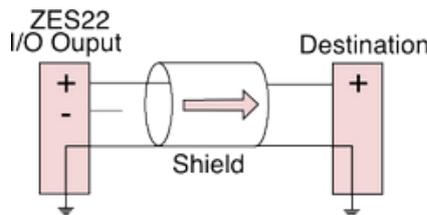

Figure 14: Unbalanced Output to destination

Balanced Output to destination

To connect to a balanced input of a target device, connect the positive, negative, and ground connections of the ZES22 and the target device.
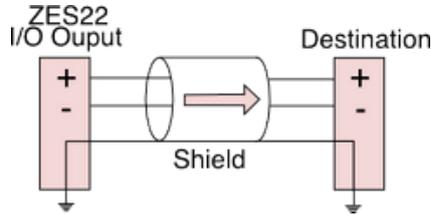

Figure 15: Balanced Output to destination

3.2. Installation of joining piece

Below are instructions for the installation and use of the joining piece intended to join two ZES-22 units and mount them together in a rack. This joining piece is supplied with the equipment itself and is designed to ensure safe and efficient installation.
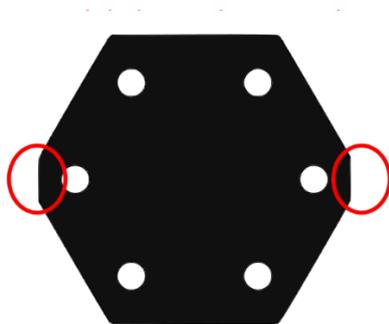

Figure 16: Joining Piece

1. Insert the part into the slot located on the sides of the equipment in the direction described, Figure 10.
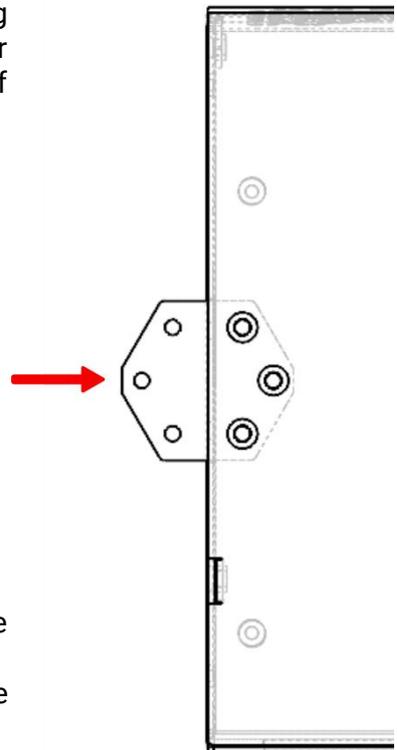2. Screw the part to the chassis to secure it properly, Figure 11.

Figure 17: Assembling joining piece

4. FIRMWARE UPDATE

To establish a connection with the equipment we must know the IP address assigned to it. By default, the IP address of the equipment is 192.168.0.3. In a web browser, we enter this address in the navigation bar and the page that can be seen in the following illustration will appear:

ZES-22 - ADMIN

NETWORK SETTINGS

MAC		Validated
IP	192.168.13.123	☐
Mask	255.255.255.0	☐
Gateway	192.168.0.1	☐
If these box are not checked, the device is waiting for a "Validate config" order to confirm the changes		☐

[Reset Changes] [Save Changes*] [Validate Config]

* When you change the settings, first you must save them and reload the page with the new IP address, then press the "Validate Config" button. For security, you will have 3 minutes to validate the config, passed this time the device will revert to the original settings.

Other Commands:
○ Select one:
○ Restore factory defaults
○ Reset device

[Send Command]

FIRMWARE UPDATE

[Elegir archivo] No se ha seleccionado ningún archivo [UPDATE]

Figure 18: Access to the equipment

At the bottom of the configuration screen in Figure 9 you can see how there is a field for the firmware update. The operation is as follows:

1. Select the update file by pressing the "Browse..." button that it will open a window to search for the file on our computer.
2. Launch the equipment update by pressing the "COLDFIRE" button.
3. The confirmation screen shown in Figure 10 will then be displayed, and the equipment will automatically restart.
4. After the equipment has been updated and restarted, the initial setup screen in Figure 19 will be displayed again with the new firmware already running.

LDA - FIRMWARE UPDATED

Update Success. The device will be restarted. Please wait for 10 seconds …

Figure 19: Loading the firmware

5. TECHNICAL SPECIFICATIONS

MODEL	ZES-22
Reference	LDAZES22S02
Power supply	110 - 240V ~ 50/60 Hz
Power consumption	< 20W
Phantom power	12V (on all inputs, configurable)
Frequency response	20Hz-20kHz +/-0.05dB
Input Sensitivity	1Vp, 0.707Vrms
Audio inputs	Analog, balanced
Sensitivity adjustment	+20dB / 0dB / -10dB
Signal to noise ratio	> 94dB @1Vrms
Audio Connectors	Euroblock type connector
DSP Resolution	48kHz 24bits
GPIO	16 configurable TTL 5V I/O
Ethernet and cobranet interface	2 x RJ-45
Maneuver output	24V 40mA, monitored and protected
Weight	1Kg
Dimensions (W x D x H)	218 x 153 x 42mm (1U high, width 1/2 rack unit)
Operating conditions	-5 ºC to +45 ºC / 23 ºF to 113 ºF 5% to 95% Relative Humidity (Non-Condensing)