INSTALLATION & OPERATION MANUAL

inDESIGN

ZM SERIES

ZM824 DIGITAL ZONE MIXER

CONTENTS

INTRODUCTION
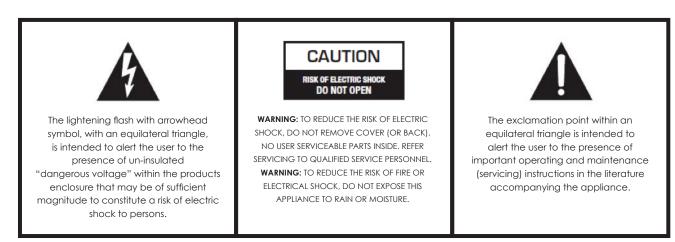
The inDESIGN ZM824 is a high-quality zone mixer for commercial and industrial audio applications.

The ZM824 features 8 input channels with switchable balanced mic/line connectors and dual RCA connectors, including 2 priority channels, useful for paging announcements. Each channel also has individually selectable +24V Phantom Power available.

The ZM824 provides matrixing between the 8 input channels and 4 output channels.

The mixer features 4 on-board alarms: CHIME, ALERT, BELL and EVAC, which can be triggered via external mounted screw terminals.

RS232 control is available as well as 24V DC backup power.

This product is part of the inDESIGN Install Series, which also includes mixer amplifiers and power amplifiers. These units provide excellent features and value.

Electrical and Safety Warnings
CAUTION

THESE SERVICE INSTRUCTIONS ARE FOR USE BY QUALIFIED SERVICE PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.

The lightening flash with arrowhead symbol, with an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.	**CAUTION** **RISK OF ELECTRIC SHOCK DO NOT OPEN** **WARNING:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. **WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. To prevent injury please refer to these instructions for electrical and safety information before installing or operating the apparatus.

6. No naked flame sources such as lighted candles should be placed on the apparatus.

7. Operation of this apparatus is recommended for moderate climates only.

8. This apparatus must not be exposed to dripping or splashing liquid.
No object filled with liquid, such as a vase, should be placed on the apparatus.

9. Clean only with a dry cloth.

10. Do not block any of the ventilation openings. Install in accordance with the manufacturer's instructions.

11. Do not install near any heat sources such as radiators, heaters, stoves, or other apparatuses (including amplifiers) that produce heat.

12. Unplug this apparatus during lightening storms or when not in use for long periods of time.

13. ⏚ Protective Earthing Terminal:
The apparatus should be connected to a mains socket outlet with a protective earthing connection.

14. The mains plug/appliance coupler is used as a disconnect device, the disconnect device shall remain readily operable.

15. When not in use and during transportation, please take care of the power cord set, for example, tie up the power cord set with a cable tie/something similar. It should be kept away from sharp edges and the like that can cause abrasion of the power cord set. When put into use again, check that the power cord set is not damaged. If any damage is found, have the unit checked by a qualified service person to replace the power cord set specified by the manufacturer.

16. The terminals marked with symbol of " ⚡ " may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to the terminals requires installation by a qualified service person or the use of ready-made leads or cords.

17. Only use attachments/accessories specified by the manufacturer.

18. Check speaker line load prior to connecting to amplifier using an impedance meter.

19. Refer all servicing to qualified service personnel. Servicing is required if the apparatus has been damaged in any way, such as power-supply cord or plug breakage, damage due to liquid or objects falling onto the apparatus, exposure to rain or moisture, or if the apparatus does not operate normally, or has been dropped.
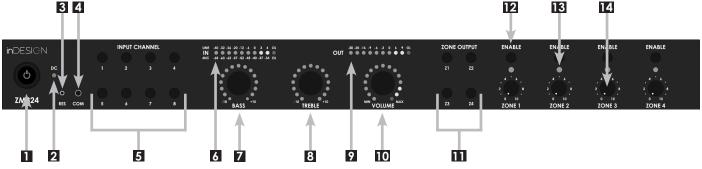
20. 🗑 Correct Disposal of this Product:
This marking indicates that this product should not be disposed of with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental-safe recycling.

WARNING: There are no user serviceable parts inside. Refer all servicing to qualified service personnel.

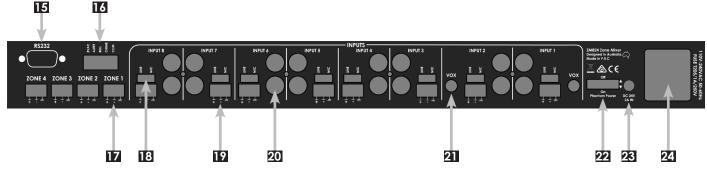## FRONT PANEL

1. **Power Switch:** Turns mains power on and off. The 24V DC backup power bypasses the power switch and is always active while connected.

2. **24V DC Backup Power Indicator:** Red Indicates if DC backup power is connected and available. Orange indicates DC backup power is currently being used.

3. **Reset:** Press and hold to perform a soft reset of the mixer. This is required to reactivate front panel control after RS232 has been disconnected.

4. **RS232 Communication:** Blue light indicates RS232 control is active. See page 6 for settings and a list of RS232 commands.

5. **Channel Select:** Selects one of the 8 input channels to allow level, EQ and matrix adjustment.

6. **Input Level Indicator:** Shows if input signal is present. To set for optimum working level, normal signal should be kept under 0dB.

7. **Bass:** Adjust the Bass level on the associated channel. Increasing Bass may make music sound fuller, reducing the Bass in reverberant spaces may improve speech intelligibility.

8. **Treble:** Adjust the treble on the associated channel. Increasing the treble may improve intelligibility, decreasing the treble may reduce the onset of high frequency feedback.

9. **Channel Volume Indicator:** Shows post fader level of the selected channel.

10. **Channel Volume:** Adjusts level of the selected channel.

11. **Zone Matrix:** Press to enable/disable channel routing to the associated output zone. Blue light indicates routing is that zone is active.

12. **Output Channel Enable:** Press to enable/disable output for the associated zone. Blue light indicates output from the zone active.

13. **Output Level Indicator:** Shows output level for the associated zone. To set for optimum working level, normal signal should be kept under 0dB. The LED light will illuminate red when the output signal is in excess of +6dB.

14. **Output Level:** Adjusts the output level of the associated zone.

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REAR PANEL

15. **RS232:** DB-9 connector for RS232 control. See page 6 for settings and a list of RS232 commands.

16. **Tone generator connections:** There are four alarm triggers: CHIME, ALERT, BELL and EVAC. These are connected via the rear panel Phoenix connector. Each alarm is triggered by a (normally open) switch/relay contact joined between the trigger and the "COM" pin.
CHIME: Triggered by shorting 'CHIME' to COM, it will sound only once for each time the trigger is activated.
BELL: Triggered by shorting 'BELL' to COM, the sound will continue to repeat until the short is released.
ALERT: Triggered by shorting 'ALERT' to COM, the sound will continue to repeat until the short is released.
EVAC: Triggered by shorting 'EVAC' to COM, the sound will continue to repeat until the short is released.

17. **Output Connector:** Balanced line level euroblock outputs.

18. **Input Mic / Line Switch:** Switches between microphone and line level input on the associated channel.

19. **Microphone / Line Input:** Balanced euroblock input for the associated channel.

20. **Line Input:** Line level RCA inputs for the associated channel. The dual RCA are internally summed to mono.

21. **Priority Adjust:** Adjusts the threshold to activate the Priority Mute for the associated channel. Channel 1 has priority over Channel 2. When activated, all other channels will mute to allow for paging and priority sounds on this channel.

22. **Phantom Power DIP switches:** Switches +24V Phantom Power on/off for the associated channel. Used for powering condenser microphones. Always check microphone specifications before use.

23. **24V DC Backup Power Socket:** 2.1mm, centre positive barrel connector for backup power. Requires 24V DC, 2A

24. **IEC Socket:** The unit is connected to the mains circuit with a standard IEC type power lead. This socket contains a rated slow blow fuse.

NOTE: Only use a fuse equal to the marked specification.

RS232

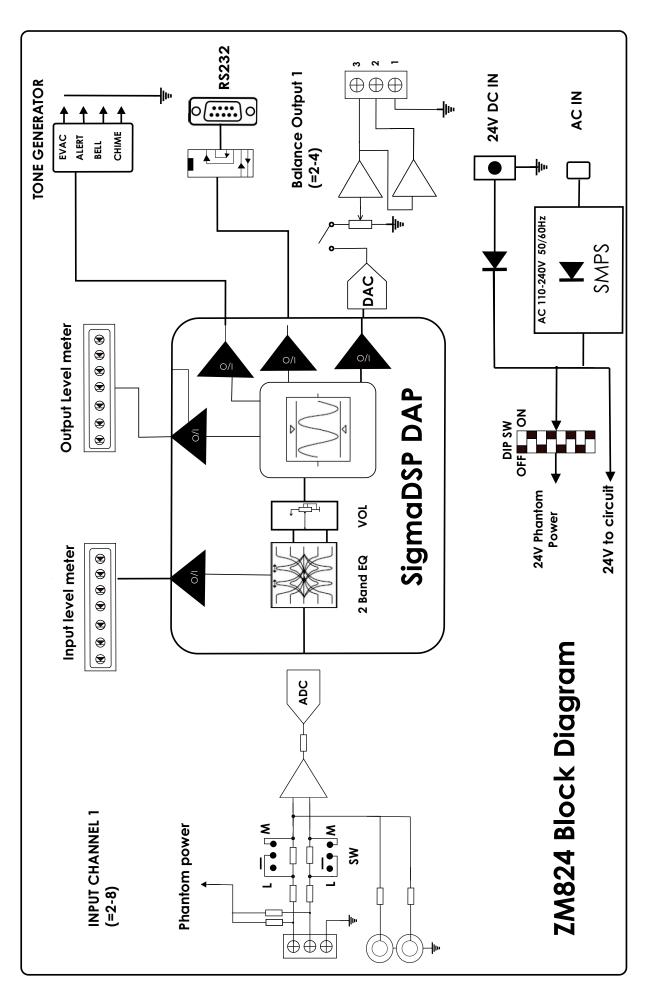**Baud Rate:** 115200   **Data Bits:** 8   **Parity:** None   **Stop Bits:** 1   **Handshaking:** None

Description	Command	Return	Parameter	Parameter Description	Parameter Range
Set input channel level	%PVAL:Vxyy<CR>	%PVAL:Vxyy<CR>	V	Input level	
			x	Channel	1 - 6
			yy	level value	00 - 20
Input channel level query	%PVAL:Vx??<CR>	%PVAL:Vxyy<CR>	V	Input level	
			x	Channel	1 - 6
			yy	level value	00 - 20
Set input channel bass	%PVAL:Bxyy<CR>	%PVAL:Bxyy<CR>	B	Bass	
			x	Channel	1 - 6
			yy	Bass Level	00 - 10
Input channel bass query	%PVAL:Bx??<CR>	%PVAL:Bxyy<CR>	B	Bass	
			x	Channel	1 - 6
			yy	Bass Level	00 - 10
Set input channel treble	%PVAL:Txyy<CR>	%PVAL:Txyy<CR>	T	Treble	
			x	Channel	1 - 6
			yy	Treble Level	00 - 10
Input channel treble query	%PVAL:Tx??<CR>	%PVAL:Txyy<CR>	T	Treble	
			x	Channel	1 - 6
			yy	Treble Level	00 - 10
Input to zone matrix enable	%PVAL:Ixyyyy<CR>	%PVAL:Ixyyyy<CR>	I	Matrix	
			x	Input channel	1 - 8
			yyyy	Matrix value (Bit)	0000 - 1111
					0 = Off
					1 = On
					Bit1 = Z1
					Bit2 = Z2
					Bit3 = Z3
					Bit4 = Z4
Input to zone matrix query	%PVAL:Ix????<CR>	%PVAL:Ixyyyy<CR>	I	Matrix	
			x	Input channel	1 - 8
			yyyy	Matrix value (Bit)	0000 - 1111
					0 = Off
					1 = On
					Bit1 = Z1
					Bit2 = Z2
					Bit3 = Z3
					Bit4 = Z4
Enable output zone	%PVAL:Exyy<CR>	%PVAL:Exyy<CR>	E	Output zone	
			x	x	1 - 4
			yy	yy	00 - 01
					00 = Off
					01 = On
Output zone status query	%PVAL:Ex??<CR>	%PVAL:Exyy<CR>	E	Output zone	
			x	x	1 - 4
			yy	yy	00 - 01
					00 = Off
					01 = On
Set output zone level	%PVAL:Oxyy<CR>	%PVAL:Oxyy<CR>	O	Output level	
			x	Channel	1 - 4
			yy	level value	00 - 20
Output zone level query	%PVAL:Ox??<CR>	%PVAL:Oxyy<CR>	O	Output level	
			x	Channel	1 - 4
			yy	level value	00 - 20
Set priority threshold	%PVAL:Xxyy<CR>	%PVAL:Xxyy<CR>	X	Priority threshold	
			x	Channel	1 - 2
			yy	Threshold value	00 - 10
Priority theshold query	%PVAL:Xx??<CR>	%PVAL:Xxyy<CR>	X	Priority threshold	
			x	Channel	1 - 2
			yy	Threshold value	00 - 10
System status query	%PVAL:S2??<CR>	%PVAL:S2yy<CR>	S2	System firmware	
			yy	Firmware version	

BLOCK DIAGRAM

TONE GENERATOR

EVAC
ALERT
BELL
CHIME

RS232

Balance Output 1
(=2-4)

3
2
1

24V DC IN

AC IN

Output Level meter

O/I
O/I
O/I
O/I

DAC

Input level meter

O/I

SigmaDSP DAP

VOL

2 Band EQ

AC 110-240V 50/60Hz

SMPS

DIP SW
OFF   ON

24V Phantom
Power

24V to circuit

ADC

INPUT CHANNEL 1
(=2-8)

M

M

L

L

SW

Phantom power

ZM824 Block Diagram

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SPECIFICATIONS

Frequency response	20- 20000Hz (-3 dB)
Gain	50dB- +13.5dBu
Distortion (THD+N)	<0.1%@ 1 kHz, 0dBu output
Signal-to-noise ratio	95dB
Dynamic range	103.5dB
Balanced input channel 1-8	
Characteristics	Electronically balanced
Input impedance	MIC 600 Ω / Line 47K
Input level	MIC -50dB / Line -10dB
Phantom power	24V, switchable
Connection	Phoenix connector balanced input
Priority control	Adjustable ducking function on input 1 overrides all inputs, input 2 overrides inputs 3-8
Stereo line input channel 1-8	
Characteristics	RCA line input
Input impedance	47kΩ
Input level	-10dBu
Connection	2 x RCA
Channel cross-talk	≥80dB
Equalisation	
Bass	100Hz, ±10dB
Treble	10kHz, ±10 dB
Main outputs	
Characteristics	4 x Electronically balanced, switchable On/Off
Output impedance	20KΩ
Output level	+13.5dBu, 3.45V
Connector	Phoenix connector
Tone signal generation	Chime / Alert / Bell / Evac
Trigger control	Phoenix connector
RS232 control	DB9 PC connector
Operating temperature	10 - +40 °C
Mains supply	AC 110 - 240 V 50 - 60 Hz
DC power supply	24V / 2A DC
Power consumption	Maximum 48W
Dimensions	19"/1 U Rack Unit (1.75") (H x W x D / 44 x 483 x 135 mm)
Weight	2.9 kg

Disclaimer: *Instructions and specifications are correct at time of printing.*
Information within may be subject to change without notice.

NOTES

NOTES

WARRANTY INFORMATION – Terms of Warranty – 5 Years

Consumer Guarantees

When you purchase a NAS Solutions distributed product, you have the peace of mind in knowing that your product is covered by the NAS warranty. The NAS warranty is provided by NAS Solutions (ABN 50 085 679 894), 127 Merrindale Drive, Croydon, Victoria 3136. ['NAS']

The Australian Consumer Law protects consumers by giving them certain guaranteed rights when they buy goods and services. Rights guaranteed under the Australian Consumer Law include;

• The goods are of acceptable quality;

• The goods match their description or any sample or demonstration model;

• The goods are fit for any represented purpose or purpose which the consumer has made known;

• Repairs and spare parts are reasonably available (unless notice has been provided that repairs or spare parts would not be available); and

• The services are carried out with reasonable care and skill and are completed within a reasonable time

These rights are called 'Consumer Guarantees' and apply automatically whenever goods or services are supplied to a consumer. These Consumer Guarantees cannot be refused, changed or limited.

Consumer Guarantees have no set time limit and depending on the price and quality of goods a Consumer may be entitled to a remedy after any manufacturers' or NAS's extended warranty has expired.

The Specific Warranty Table Information outlines the warranty period, warranty type and any specific exclusions for your NAS product. NAS considers the warranty period specified in the Specific Warranty Table to be a reasonable warranty period having regard to the price, design, manufacture and expected use of the product.

General Warranty ('Warranty')

NAS products come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure or if the goods fail to be of acceptable quality. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and failure does not amount to a major failure. What constitutes a major failure is set out in the Australian Consumer Law.

Subject to the terms and conditions set out below, and unless otherwise specified in the Specific Warranty Information for your NAS product, NAS agrees to repair or replace, at NAS's cost, the NAS product purchased by you in Australia or New Zealand from NAS or a NAS authorised reseller when the product does not perform substantially in accordance with the specifications during the warranty period specified in the Specific Warranty Table for your NAS product. NAS makes no other express warranties in respect of your NAS product. To make a claim under this Warranty, valid proof of purchase must be presented when the warranty claim is made, along with any other required information. The Warranty offered by NAS is not transferable.

The Warranty will only apply if your NAS product has been installed and used in accordance with NAS's recommendations as noted in the operating instructions.

Warranty Exclusions

The Warranty does not cover damage caused by;

• Misuse or abuse of the product by You;

• Incorrect operation or not following the operation instructions (as noted in the operating instructions);

• Improper installation;

• Incorrect or improper maintenance or failure to maintain the product;

• Failure to clean or improper cleaning of the product;

• Incorrect voltage or non-authorised electrical connections;

• Adverse external conditions such as incorrect or fluctuations in electrical voltage, thunderstorm activity, acts of God, acts of terrorism, damage caused by vermin, or any other circumstance beyond NAS's control;

• Exposure to excessive heat, moisture or dampness;

• Exposure to abnormally corrosive conditions;

• Alterations or modifications to the product made by You or a third party; or

• Damage as a result of accident, liquid, grit, impact or lack of proper care as indicated in the operating instructions;

• Damage resulting from the use of cleaning solvents such as acetone

The Warranty does not apply if any serial number or appliance plate on the product has been tampered with, removed or defaced.

The Warranty does not apply if the product has been repossessed under any financial agreement.

The Warranty excludes accessories and consumable goods which have ceased working through normal wear and tear such as, but not limited to, batteries, lamps and other parts classifiable as a consumable part. **This includes the CD mechanism and laser fitted to the inDESIGN iDCDP-110. These parts carry a 3 month warranty.**

The Warranty does not cover the loss of any data howsoever caused. You shall be responsible for backing up and protecting data against loss, damage or destruction.

Products presented for repair may be replaced by refurbished products of the same type rather than being repaired. Refurbished parts may be used to repair the products. Replacement of the product or a part does not extend or restart the Warranty Term.

The product will be at the owner's risk whilst in transit to and from all NAS authorised service centres, unless transported by NAS or its authorised representatives.

NAS and its authorised service centres may seek reimbursement of any costs incurred by them when the product is found to be in good working order.

The cost of claiming under this warranty, including return of any product to NAS is to be borne by the consumer.

The Warranty excludes removal or reinstallation costs.

*** All inDESIGN products come with a 5 year warranty term.**

For further information and warranty claims, refer to our **Support** page at **www.nas.solutions**