DirectOut Technologies®

Kyra

Manual

Version 1.0

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About This Manual

How to Use This Manual

This manual guides you through the installation and operation of the KYRA.
Use the Table of Contents at the beginning of the manual or Index Directory at the end of the document to locate help on a particular topic.

You can access more information and latest news by visiting on the DirectOut website at www.directout.eu.

Conventions

The following symbols are used to draw your attention to:

Tips – indicate useful tips and shortcuts.

Notes – are used for important points of clarification or cross references.

Warning

Warnings – alert you when an action should always be observed.

CHAPTER 1: Overview

Introduction

Welcome to KYRA, DirectOut's monitoring device for signal control in MADI environments.

KYRA provides three MADI inputs and outputs, an analog stereo line out and an AES I/O. Up to four stereo or eight mono channels can be summed with individual levels onto a main mix. The main mix is output by the integrated speakers and the other outputs.

Feature Summary

MADI Ports	1 x SC multi-mode connectors 1 x SFP (empty cage without module) 1 x coaxial BNC connectors with PFT technology (power fail through)
MADI Formats	56/64 channel, 48k/96k Frame
Sample Rates	44.1, 48, 88.2, 96 kHz +/-12.5%
AES Port	1 x AES3 I/O (DSUB-9)
Line Output	1 x stereo, balanced, +24 dBu (DSUB-9)
Speaker	2 x speakers
Headphone Output	6.3 mm TRS jack, stereo, +18 dBu
USB Port	USB 2.0 port for firmware updates and remote control.
Power Supply	This device is equipped with one wide range power supply (84 V to 264 V AC / 47 Hz to 63 Hz / safety class 1).

How it works

A channel pair or two single mono channels are selected via the source panel. Each of the four source panels can be configured to either stereo or mono.

The mono channels for left and right are summed with individual levels (mix level) onto the main mix (stereo).

The volume (master volume) of the four outputs (speakers, line out, phones, AES out) is adjusted (or muted) individually.

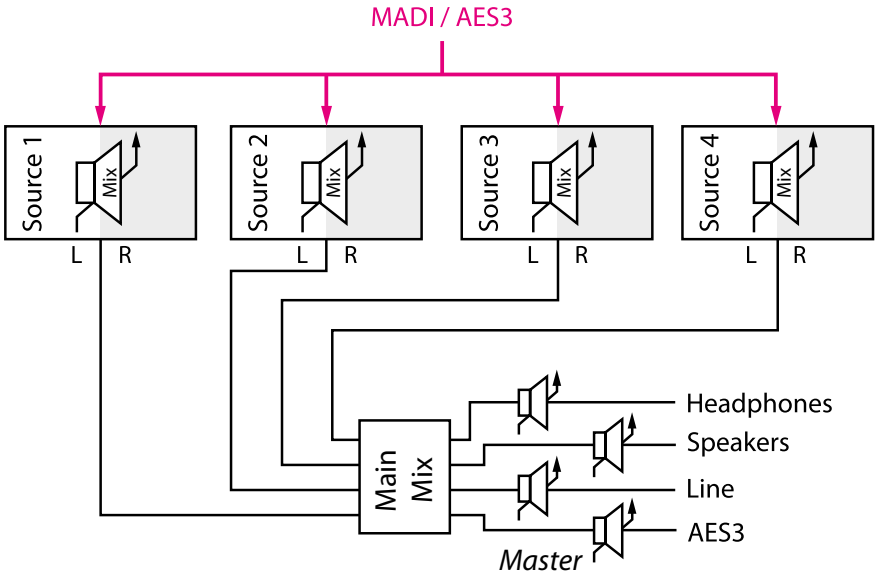
The channel selection can be locked against unwanted modification.

Applications

KYRA can be used for monitoring, line checking and mixing of digital signals.

Typical applications include:

- creation of individual monitor feeds for commentators
- flexible signal control of a MADI or AES signal
- basic mix of 4 stereo or eight mono channels
- format conversion of a MADI signal (SFP <> SC <> BNC)
- signal distribution (routing matrix) *[in a future release]*
- ...



CHAPTER 2: Legal issues & facts

Before Installing This Device

Warning

Warning

Please read and observe ***ALL*** of the following notes before installing this product:

- Check the hardware device for transport damage.
- Any devices showing signs of mechanical damage or damage from the spillage of liquids ***MUST NOT*** be connected to the mains supply, or disconnected from the mains immediately by pulling out the power lead.
- All devices ***MUST*** be grounded. The device is grounded through its IEC power connections.
- All devices ***MUST*** be connected to the mains using the three-cord power leads supplied with the system. Only supply electrical interfaces with the voltages and signals described in these instructions.
- Do ***NOT*** use the device at extreme temperatures. Proper operation can only be guaranteed between temperatures of 5º C and 45º C and a maximum relative humidity of 80 %, non-condensing.
- The cabinet of the device will heat up. ***DO NOT*** place the device close to heating sources (e.g. heaters). Observe the environmental conditions.

Defective Parts/Modules

Warning

Warning

This device contains no user-serviceable parts. Therefore do NOT open the device.

In the event of a hardware defect, please send the device to your DirectOut representative together with a detailed description of the fault.

We would like to remind you to please check carefully whether the failure is caused by erroneous configuration, operation or connection before sending parts for repair. See *„CHAPTER 5: Troubleshooting and Maintenance“ on page 29* for assistance with troubleshooting.

First Aid (in case of electric shock)

Warning

- ***DO NOT*** touch the person or his/her clothing before power is turned off, otherwise you risk sustaining an electric shock yourself.
- Separate the person as quickly as possible from the electric power source as follows:
  - ✓ Switch off the equipment.
  - ✓ Unplug or disconnect the mains cable.
- Move the person away from the power source by using dry insulating material (such as wood or plastic).
- If the person is unconscious:
  - ✓ Check their pulse and reanimate if their respiration is poor.
  - ✓ Lay the body down and turn it to one side. Call for a doctor immediately.
- Having sustained an electric shock, ***ALWAYS*** consult a doctor.

Updates

DirectOut products are continually in development, and therefore the information in this manual may be superseded by new releases. To access the latest documentation, please visit the DirectOut website: www.directout.eu.

This guide refers to firmware version 1.5.

Intended Operation

The KYRA is designed for monitoring and mixing of digital audio signals. In this context digital audio refers to a MADI signal (AES10) and an AES signal (AES3).

Warning

No compensation can be claimed for damages caused by operation of this unit other than for the intended use described above. Consecutive damages are also excluded explicitly. The general terms and conditions of business of DirectOut GmbH are applied.

Conditions of Warranty

This unit has been designed and examined carefully by the manufacturer and complies with actual norms and directives.

Warranty is granted by DirectOut GmbH over the period of two years for all components that are essential for proper and intended operation of the device. The date of purchase is applied for this period.

Warning

All claims of warranty will expire once the device has been opened or modified, or if instructions and warnings were ignored.

For warranty claims please contact the dealer where your device was acquired.

Conformity & Certificates

CE

This device complies with the basic requests of applicable EU guidelines. The appropriate procedure for approval has been carried out.

RoHS

(Restriction of the use of certain Hazardous Substances)

This device was constructed fulfilling the directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2002/95/EC.

WEEE

(Directive on Waste Electrical and Electronic Equipment)

Due to the directive 2002/96/EC for waste disposal this device must be recycled.

For correct recycling please dispatch the device to:

IMM Elektronik GmbH,

Leipziger Str. 32

09648 Mittweida

Germany

Only stamped parcels will be accepted!

WEEE-Reg.-No. DE 93924963

Contact

Sales:

DirectOut GmbH, Leipziger Str. 32, 09648 Mittweida, Germany

Phone: +49 (0)3727 6205-333 // Fax: +49 (0)3727 6205-56

www.directout.eu

Manufacturer:

IMM Elektronik GmbH, Leipziger Str. 32, 09648 Mittweida, Germany

Phone: +49 (0)3727 6205-0 // Fax: +49 (0)3727 6205-56

www.imm-gruppe.de

Contents

The contents of your KYRA package should include:

- 1 x KYRA (19'', 2 RU)
- 1 x power chord
- 1 x fixing unit for power plug
- 1 x Manual

To complete the delivery please download from the DirectOut website:

- D.O.TEC® USB Serial driver

www.directout.eu/en/support/downloads/kyra.html

Accessory

The Line Out and AES3 I/O are available as a DSUB-9 socket.
For adaption between DSUB-9 and XLR plugs an adaptor is offered optionally.

DSUB-9 to XLR adaptor

Signal	XLR
Line Out L	female
Line Out R	female
AES3 input	male
AES3 output	female

Pinout DSUB-9: *See „Appendix A: Wiring AES I/O, Line Out“ on page 32*

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CHAPTER 3: Installation

Installing the Device

1. Open the packaging and check that the contents have been delivered complete and undamaged.

2. Fix the device in a 19'' frame with four screws, or place it on a non-slip horizontal surface.

Warning

Warning

Avoid damage from condensation by waiting for the device to adapt to the environmental temperature. Proper operation can only be guaranteed between temperatures of 5º C and 45º C and a maximum relative humidity of 80%, non-condensing.

Ensure that the unit has sufficient air circulation for cooling.

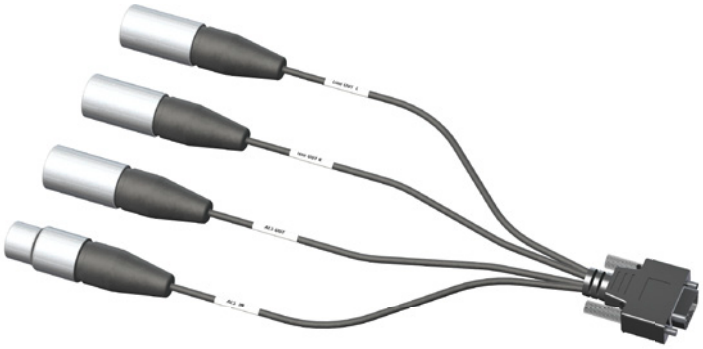
3. Remove the protective cap from the optical MADI port(s) before use.

Note

Retain the protective cap if the optical port is unused. This will protect against soiling which can lead to malfunction.

4. Connect signal cable(s) for the MADI signals.

5. Connect the signal cables for the analog and AES3 audio signals to the DSUB-9 adaptor. Connect the adaptor to the DSUB-9 plug at the rear panel.



The adaptor converts from DSUB-9 (male) to:

- 2 x XLR male (Line Out L/R)
- 1 x XLR male (AES3 output)
- 1 x XLR female (AES3 input).

Warning

Warning

Do **not** connect voltage sources to the analog outputs. This may cause damage at the output stages. Observe the technical specifications - see *„CHAPTER 6: Technical Data“ on page 30.*

6. Optional: Connect an USB cable to the USB port for remote control or firmware updates. This requires the D.O.TEC® USB driver (Windows) being installed first. The driver and the installation instructions are available at www.directout.eu.

Link: http://www.directout.eu/en/support/downloads/kyra.html

7. Using the power cord provided connect the PSU to a matching power supply:

Warning

Warning

This device **MUST** be connected to the mains using the three-cord power leads supplied with the system. Only supply the voltages and signals indicated (84 V – 264 V).

8. Turn on the power switch:

The first seconds after switch-on the actual firmware is indicated by source panels 1 and 2 - e.g. firmware version 1.5.

Tip

Use the D.O.TEC® Release Map to match your D.O.TEC® device with the latest firmware or software release.

Link: http://www.directout.eu/upload/dokumente/dotec_release_map.pdf

Note

To update the firmware an installed D.O.TEC® USB Serial driver (Windows) and the D.O.TEC® Update Tool are necessary. The software and the installation instructions are available at www.directout.eu.

Link: http://www.directout.eu/en/support/downloads/kyra.html

Keep any packaging in order to protect the device should it need to be dispatched for service.

9. Installation of D.O.TEC® USB Serial driver

- download the D.O.TEC® USB Serial driver
- download the ‘Installation Guide for USB Control’

Link: http://www.directout.eu/en/support/downloads/kyra.html

- follow the installation instructions in the ‘Installation Guide for USB Control’

CHAPTER 4: Operation

Introduction

This chapter describes the basic operation of the device.

Note that throughout this manual, the abbreviation FS refers to sample rate or sample frequency. So, when dealing with scaling factors, the following sample rates can be written as::

- 44.1 kHz = 1 FS; 88.2 kHz = 2 FS; 176.4 kHz = 4 FS

or

- 48 kHz = 1 FS; 96 kHz = 2 FS; 192 kHz = 4 FS

Global Control

The display on the front panel indicates the power supply. Power switch is on the back panel:

Power	**1 Switch** Enable / disable power supply.
Power	**C13 socket** Connect the power supply here (84 - 264 V AC).

Note

The display indicates that a working power supply is connected to the power supply unit. Note that an unlit display does not guarantee that the device is free of voltage. To ensure that the device is completely disconnected from mains voltage, the power chord(s) must be disconnected.

Input Selection

One of the three MADI inputs is used a input source.

Selection priority of locked inputs: BNC > SC > SFP

The selection state is indicated by two LEDs. The AES input is available as separate source in each source panel.

Selected MADI Input	LED BNC (green)	LED SC (green)
BNC	ON	OFF
SC	OFF	ON
SFP	ON	ON
no signal lock	OFF	OFF

The MADI input is used as sync source for the system clock. The AES input is used as clock source only if no MADI input signal is present.

The device will switch to 2 FS operation automatically when a 96k Frame signal has been detected.

Note

The channel mode (56ch <> 64ch) is detected automatically.

All MADI outputs carry the signal of the selected MADI input.

Channel Selection

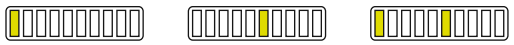
The upper part of the four source panels each provides access to the individual channels of the MADI signal or the AES input.

Each source panel can be set individually to stereo or mono mode:

- Stereo: a channel pair is used - e.g. channel <03> & <04>. The mix level setting is applied to both channels.
- Mono: individual channels for left and right are selectable - e.g. channel <03> & <26>. The mix level setting is applied to each channel individually.

In mono mode the right channel can be set to 'link' (<_L>) to copy channel selection and mix level from left to right channel e.g. <03> & <_L>.

All four source panels are operated identically.

1____2____ **'Source Channel'**	**2 x 5 LEDs (green) indicate channel mode and input signal level.**  Mono Left Mono Right Stereo The first LED in each channel LED field shows the selection of mono left / mono right / stereo. The other four LEDs show the input signal level of the selected audio channel (only left or right in mono mode).
Display	**2 x 7 Segment Display to indicate channel selection and level setting.***
Channel Mono/ Stereo	**Encoder to select channel and toggle channel mode.**** Turn to select the channel for monitoring. Push short to toggle between left and right channel in mono mode. Push longer than 2 s to toggle between mono and stereo mode.

* In idle state or while turning the upper encoder the display informs about the selected channel pair (stereo) or the selected single channels (mono). While turning the level encoder the display changes to the level setting.

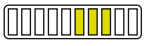
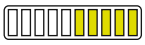
** As soon as an encoder is pushed, a decimal point lights up in the display.

Channel Display Values

Code	Function
<empty>	no source selected
01 .. 64	MADI channels 01 to 64 (in stereo mode, only odd numbers are selectable, source channels are odd/even for left/right)
A1	AES left channel
A2	AES right channel
A_	AES stereo
_L	Link (only available for right channel in mono mode, channel and volume settings are then copied from left channel)

Level Display

Input level in mono mode, right channel

LED	level range
	less than -48 dBFS
	> -48 dBFS
	> -24 dBFS
	> -12 dBFS
	> -6 dBFS

The channel settings can be locked - see „Channel Lock“ on page 27.

Note

Mix Level / Master Volume Setting

The lower part of each source panels provides access to the particular mixing level and the output master volume. Mix level refers to the source in the main mix, Master volume refers to main mix at the outputs (Phones, AES, Line, Speakers).

All four source panels are operated identically.

Mix__<Output>__ (Phones, AES, Line, Speakers) 'Volume Bar'	**2 x 5 LEDs (green) indicate mix or master level.**  Mix level Master volume The first LED in each channel LED field shows the selection of mix or master. The other four LEDs show the level/volume value.
Display	**2 x 7 Segment Display to indicate channel selection and level setting.***
Level Mix/<Output> (Phones, AES, Line, Speakers)	**Encoder to toggle between mix and master level and to adjust the level or mute.**** Turn to change level or to release mute. Push short to toggle mute. Push longer than 2 s to toggle between mix and master.

* In idle state or while turning the upper encoder the display informs about the selected channel pair (stereo) or the selected single channels (mono). While turning the level encoder the display changes to the level setting.

** As soon as an encoder is pushed, a decimal point lights up in the display.

Muting:

- Mute is not stored, all mutes are off when switching the device on.
- Mutes are separate parameters for mix level and master volume.
- Mute is displayed by blinking of the volume bar and blinking of the source channel LEDs.

Warning

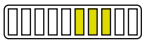
Toggling <Mute> may result in abrupt changes of loudness.

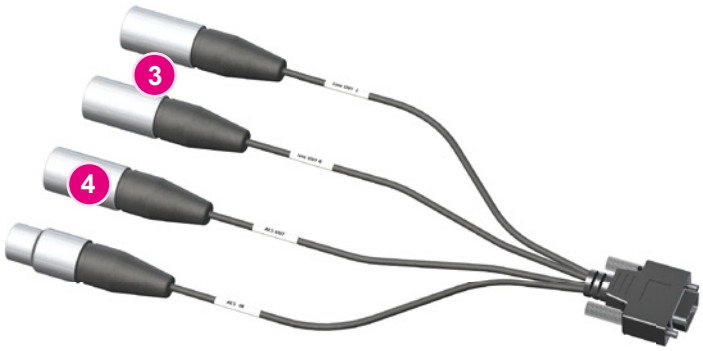
Level/Volume Display Values

Code	Function
oo	mute
01 .. 99	volume in 1 dB steps from (-100 + value) dBFS
+0 .. +9	0 to +9 dBFS

Level/Volume Display

Output master volume

LED	level/volume range
	mute
	-99 to -50 dBFS
	-49 to -24 dBFS
	-23 to 0 dBFS
	+1 to +9 dBFS



Monitoring

Four output sinks with individual volume settings are available:

- Headphones
- Speakers
- Line Out
- AES Out

Phones (1)	**6.3 mm TRS jack, stereo** Connect the headphones here to monitor the main mix.
Speakers (2)	**2 x speakers for monitoring of the main mix**
Line Out (3)	**2 x XLR connector (female)** Requires connected DSUB-9 adaptor at the rear panel.
AES Out (4)	**1 x XLR connector (female)** Requires connected DSUB-9 adaptor at the rear panel.

Signal Input / Output

BNC OUT/IN (1)	**2 x BNC socket (coaxial)** OUT: MADI output (64 ch), connect for MADI output signal here. IN: MADI input (64 ch), connect MADI input signal here.
SFP (2)	**1 x SFP cage*** Insert SFP module here and connect MADI input/output
SC OUT/IN (3)	**2 x SC socket (optical)** OUT: MADI output (64 ch), connect for MADI output signal here. IN: MADI input (64 ch), connect MADI input signal here.
AES I/O | LINE OUT (4)	**1 x DSUB-9 connector (female)** Connect delivered DSUB-9 adaptor here for XLR connection of AES I/O and Line Out.

* empty cage, module not included in delivery

All MADI outputs carry the signal of the selected MADI input.

Power Fail Through (PFT)

The coaxial I/O maintains the signal transmission from BNC input to BNC output in case of a power loss.

Warning

Only use the delivered adaptor or observe correct pin assignment - see *„Appendix A: Wiring AES I/O, Line Out“ on page 32.*

Servicing / Remote Control

An integral USB port is used for firmware updates and remote control.

USB	**USB 2.0 socket** (Type B) Connect here for firmware updates and remote control.

Note

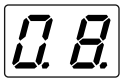
Remote Control will be available in a future release.

Channel Lock

The device settings can be locked against unwanted modification.

To toggle channel lock between ON and OFF push the channel encoders of source panel 1 and 4 (upper row, outer encoders) for a few seconds.

Channel lock is displayed by all decimal points lighting up.

	Channel lock OFF
	Channel lock ON

Factory Reset

Pushing all level encoders (lower row) for a few seconds recalls the company preset:

- Stereo (channel mode)
- Source Panel 1 to 4: ch. 01 / 03 / 05 / 07
- Mix volume +0
- Master volume phones / speakers 40
- Master volume AES / line +0

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CHAPTER 5: Troubleshooting and Maintenance

Troubleshooting

To identify a possible defect with the device please consult the following table.

If the fault cannot be resolved using these instructions, please contact your local DirectOut representative or visit support.directout.eu.

Issue	Possible reason	Solution
Device doesn't work.	Power supply is broken.	Check that the power supply switch is on, that the device is connected to the power supply and that the socket is working. Defective fuses must be exchanged by qualified service personal only.
Optical port does not work.	Optic is dirty.	Use an air supply to carefully remove any dust. Never use objects for cleaning.
No signal at the output port.	Connections (input / output) are mixed up.	Check the connections and change the cables if necessary. Check the routing matrix
No signal at the output port.	Signal cable defective.	Exchange the signal cable.
MADI signal at the input is not stable.	Signal source is defective or bad signal condition (Jitter > 1 ns) - e.g. due to exceeded length or bad screening attenuation of signal cable.	Change the source or use appropriate cables *(see „CHAPTER 6: Technical Data“ on page 30)*.
Clicks in the audiosignal.	Input source is not in sync with clock master of the box.	Check the status of input LED and check clock setting of the connected device.

Maintenance

To clean the device, use a soft, dry cloth. To protect the surface, avoid using cleaning agents.

The device should be disconnected from the power supply during the cleaning process.

Note

CHAPTER 6: Technical Data

Dimensions

- Width 19'' (483 mm)
- Height 1 RU (44.5 mm)
- Depth 7.8'' (200 mm)

Weight

- about 2 kg

Power Consumption

- 10 W (typical)

Power Supply

- 84 V - 264 V AC / 47 Hz - 63 Hz / Safety class 1

Fuses

- Fuse 250 V - 2 A (slow-blow) – 2 fuses per power supply

Environmental Conditions

- Operating temperature +5°C up to +45°C
- Relative humidity: 10% - 80%, non condensing

MADI Port SC optical

- 1 x SC socket FDDI (input / output)
- ISO/IEC 9314-3
- Wave length 1310 nm
- Multi-Mode 62.5/125 or 50/125

MADI Port BNC coaxial

- 2 x BNC socket (input / output)
- Impedance: 75 Ω
- 0.3 V up to 0.6 V (peak to peak)
- power fail through technology

MADI Port SFP

- 1 x SFP (empty cage without module)

Sample Rate

- 30 - 50 kHz @1 FS
- 60 - 100 kHz @ 2 FS

MADI Format (I/O)

- 48k Frame, 96k Frame
- 56 channel, 64 channel

Line Output

- 1 x DSUB-9 (adaptor to XLR included in delivery)
- balanced output
- Level: +24 dBu
- SNR: -114,5 dB / -117,3 dBA
- THD+N: -105,5 dB
- THD: -108 dB

Phones

- 1 x TRS jack 6.3 mm (stereo)
- Level: +18 dBu
- SNR: -114,2 dB / -117,1 dBA
- THD+N: -103 dB
- THD: -106 dB

Speakers

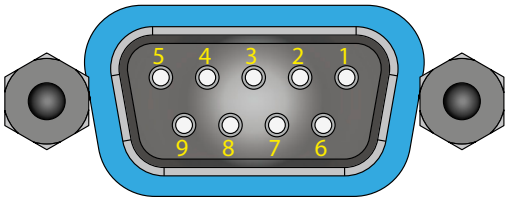
- Class-D power amplifier
- 2 speakers 2 W / 4 W (rated / max.)
- mean SPL 81 dB (1 W / 1 m)

USB

- 1 x USB socket (Type B)
- for firmware updates and remote control

Appendix A: Wiring AES I/O, Line Out

DSUB-9 (female)



Pin	Signal
1	AES RX+
2	AES TX+
3	GND
4	Line Out L-
5	Line Out R-
6	AES RX-
7	AES TX-
8	Line Out L+
9	Line Out R+

Note

The pinout does NOT comply with the adaptor delivered with MA2CHBOX.XT.

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Symbole

DirectOut GmbH
Leipziger Strasse 32
09648 Mittweida
Germany
T: +49-3727-99697-50
F: +49-3727-99697-52
www.directout.eu