DirectOut TECHNOLOGIES

ANDIAMO

Hardware Guide



Version 1.1

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Table of contents

About This Manual **5**
- How to Use This Manual ... 5
- Conventions ... 5

CHAPTER 1: Overview **6**
- Introduction ... 6
- Feature Summary ... 7
- Applications ... 7

CHAPTER 2: Legal issues & facts **8**
- Before Installing This Device ... 8
- Defective Parts/Modules ... 8
- First Aid (in case of electric shock) ... 9
- Updates ... 10
- Conditions of Warranty ... 10
- Intended Operation ... 10
- Conformity & Certificates ... 11
- Contact ... 11
- Contents ... 12
- Accessories ... 13

CHAPTER 3: Installation **16**
- Installing the Device ... 16

CHAPTER 4: Operation **20**
- Introduction ... 20
- Global Control ... 21
- Menu Control ... 22
- Clocking ... 24
- Sample Rates ... 25
- Level Meters ... 26
- Signal Routing ... 28
- Connecting Word clock ... 32
- Connecting Management ... 32
- Connecting MADI ... 33
- Connecting Audio Network ... 33
- Connecting Analog ... 34

CHAPTER 5: Menu Navigation **36**

CHAPTER 6: Troubleshooting and Maintenance **39**
- Troubleshooting ... 39
- Maintenance ... 39

CHAPTER 7: Technical Data 40

Appendix A - DSUB-25 Pin assignment 42

Appendix B - Firmware Update 43

Index 45

About This Manual

How to Use This Manual

This manual guides you through the installation and operation of the device. 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 hints and shortcuts.



NOTES

are used for important points of clarification or cross references.



WARNINGS!

alert you when an action should always be observed.



CHAPTER 1: Overview

Introduction

Welcome to the third generation of ANDIAMO, DirectOut's successful AD/DA converter for 32 audio channels. Evolving the legacy it features two MADI ports and an audio network option supporting RAVENNA or Dante or AVB / MILAN or SoundGrid.





Full remote control via globcon is achieved using the management network port, while basic functions are accessible at the front panel.

With one RU height, two redundant power supplies and excellent sounding converters the device offers best and reliable audio quality at a minimal need of rackspace.

Feature Summary

Audio Network Option	2 x RJ45 socket (Gigabit Ethernet) - RAVENNA (128 channels @ 1FS) - Dante (64 channels @ 1 FS) - AVB / MILAN (128 channels @1 FS) - SoundGrid (128 channels @ 1 FS)
MADI Ports	2 x SFP (empty cage without transceiver)
MADI Formats	56/64 channel, 48k/96k Frame, S/MUX 2/4
Sample Rates	44.1, 48, 88.2, 96, 176.4, 192 kHz ±12.5%
Analog I/O	32 x channels analog input and output, balanced via DSUB-25, AES59 compliant
Clock Inputs	1 x Word clock, coaxial BNC, 75 Ω termination switchable, This input also accepts an AES3 frame (AES11).
Clock Outputs	1 x Word clock, coaxial BNC
Signal Processing	8 Summing Busses
Signal Redundancy	EARS™ (Enhanced Automatic Redundancy Switching)
Management Port	1 x RJ45 Socket (Gigabit-Ethernet)
Routing Matrix	Channel based routing matrix
Device Control	remote: via globcon local: via push buttons
Power Supply	This device is equipped with two wide range power supplies (84 V to 264 V AC / 47 Hz to 63 Hz / safety class 1)

Applications

ANDIAMO can be used for conversion, monitoring, recording and routing of analog and digital signals.

Typical applications include:

- monitoring digital audio
- recording line signals
- redundant recording
- signal routing / distribution
- analog summing
- format conversion between audio network and MADI
- ...

CHAPTER 2: Legal issues & facts

Before Installing This Device



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 5° C and 45° 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!

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.

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 1.2.5.

Intended Operation

ANDIAMO is designed for conversion / routing between analog, digital and audio network signals. Digital audio refers to AES10, audio network refers to Dante, AVB / MILAN, SoundGrid and RAVENNA (including AES67 and SMPTE ST 2110-30 /-31).



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 36 months for all components that are essential for proper and intended operation of the device. The date of purchase is applied for this period.
Consumable parts (e.g. battery) are excluded from warranty claims.



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 2011/65/EU and 2015/863.

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:
DirectOut GmbH,
Hainichener Str. 66a
09648 Mittweida
Germany
Only stamped parcels will be accepted!
WEEE-Reg.-No. DE 64879540

Contact

DirectOut GmbH
Hainichener Str. 66a, 09648 Mittweida, Germany
Phone: +49 (0)3727 5650-00
Mail: sales@directout.eu
www.directout.eu

Contents

The contents of your ANDIAMO package include:

- 1 x ANDIAMO (19'', 1 RU)
- 2 x power chord
- 1 x Instruction Leaflet

Transceiver for the MADI SFP ports may be delivered separately and require installation first to complete the delivery.

TIP

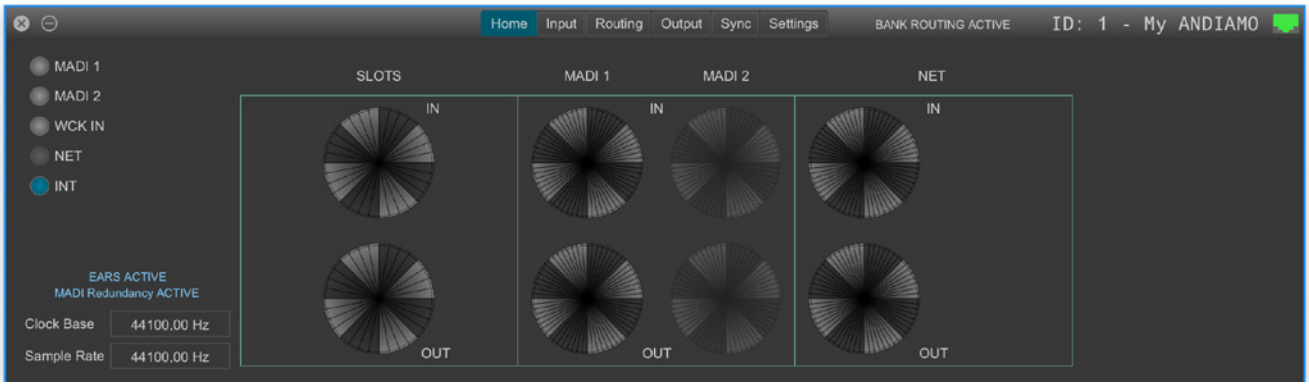
Keep any packaging in order to protect the device should it need to be dispatched for service.
Analog reference level is marked at the rear panel (standard is + 24 dBu)



Optionally the device can be configured to +15 dBu / + 18 dBu at order.

Remote Control

To access all functions of the device it is required to install the globcon remote control.



globcon is a free, global control software platform for the management of professional audio equipment. Almost all products of the DirectOut product portfolio are supported by globcon.

Link: www.globcon.pro

Accessories

BREAKOUT

The BREAKOUT series is a range of adaptor boxes available in different variants to extend the coverage of the ANDIAMO and PRODIGY series. They are equipped with XLR or BNC connectors on the front panel and DSUB-25 connectors on the rear panel. Audio signals are carried passively between the front and rear panels.

The small form factor and angle brackets also allow for mounting the devices on the back of an ANDIAMO or PRODIGY unit.



BREAKOUT.AN8 - analog input / output, 8 channels
Article code: DOBOB0889



BREAKOUT.AN16I - analog input, 16 channels
Article code: DOBOB0890



BREAKOUT.AN16O - analog output, 16 channels
Article code: DOBOB0891

Patch Chords

Cabling from Cordial provides appropriate connection of the BREAKOUT with your device to ensure proper transmission of the audio signals.

Name	Description	Article code
DSUB25.AN50	Analog patch cable for connection with BREAKOUT.AN16I, AN16O, AN8, transferring 8 audio channels, length 0.5 m	DOCAA0334
DSUB25.AN100	Analog patch cable for connection with BREAKOUT.AN16I, AN16O, AN8, transferring 8 audio channels, length 1.0 m	DOCAA0335

SFP Transceiver - MADI

Two different optical SFP transceiver for MADI transmission are available from DirectOut GmbH:

- Multimode SFP transceiver with LC connectors (No: DOICT0129)
- Singlemode SFP transceiver with LC connectors (No: DOICT0130)

Specification of the optical SFP transceivers:

SFP	Multimode	Singlemode
Wavelength TX nominal	1310 nm	1310 nm
Wavelenght RX nominal	1310 nm	1310 nm
Distance	2 km	10 km
Powerbudget (dB)	> 11 dB	> 12 dB
Protocols	Fast Ethernet OC3/STM1	Gigabit Ethernet, Gigabit Fibre Channel
Bandwidth from	100 Mbit/s	1.050 Gbit/s
Bandwidth	155 Mbit/s	1.250 Gbit/s
Laser	FP	FP
Receiver Type	PIN	PIN
Connector	LC	LC
Wavelength TX min	1260 nm	1260 nm
Wavelength TX max	1360 nm	1360 nm
Wavelength RX min	1260 nm	1260 nm
Wavelength RX max	1620 nm	1600 nm
Transmit min	- 19.00 dBm	- 9.00 dBm
Transmit max	- 14.00 dBm	- 3.00 dBm
Receive min	- 30 dBm	- 21.00 dBm
Receive max (Receiver overload)	- 5.00 dBm	- 3.00 dBm
Temperature (min)	0° Celsius	0° Celsius
Temperature (max)	70° Celsius	70° Celsius
Type of DDM/DOM	internal	internal
Extinction Ratio	8.20 dB	9 dB

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!

Avoid damage from condensation by waiting for the device to adapt to the environmental temperature. Proper operation can only be guaranteed between temperatures of 5° C and 45° C and a maximum relative humidity of 80%, non-condensing.
Ensure that the unit has sufficient air circulation for cooling.
Do not cover the fan outlets and the slots at the sides of the device!
Do not block the fans by putting objects through the protective grid!



3. Insert the transceivers for the MADI SFP ports.



4. Connect the signal cables for MADI and audio network.



5. Connect the signal cables for the analog audio signals to the DSUB-25 connectors.



WARNING!

Do not connect voltage sources to the analog outputs. This may cause damage at the output stages.

6. Connect a network cable to the RJ45-socket MGMT to control the device via network.



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



The delivered power cords provide a self-locking mechanism to prevent an accidental disconnect. To unlock the connection press the red release mechanism.



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).

NOTE

This device may operate with only one power supply. To provide power supply redundancy, it is recommended to connect both PSU 1 and PSU 2 to independent power supplies with separate fuses.

8. Turn on the power switch and check the status of PSUs on the front panel:



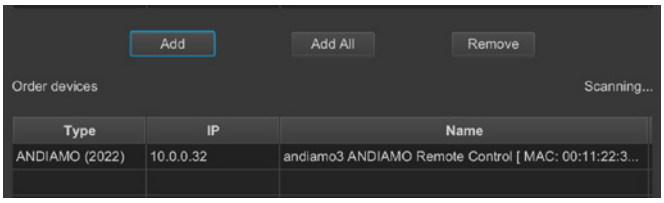
9. Install globcon on your computer
To access all functions the use of globcon is required - see page 12.

10. Launch globcon control
Select the port of the network where your device is connected to
Sidebar - My Devices - Click Discovery Methods
and set Ethernet Discovery to 'ON'



Select the device from the list and click 'Add'

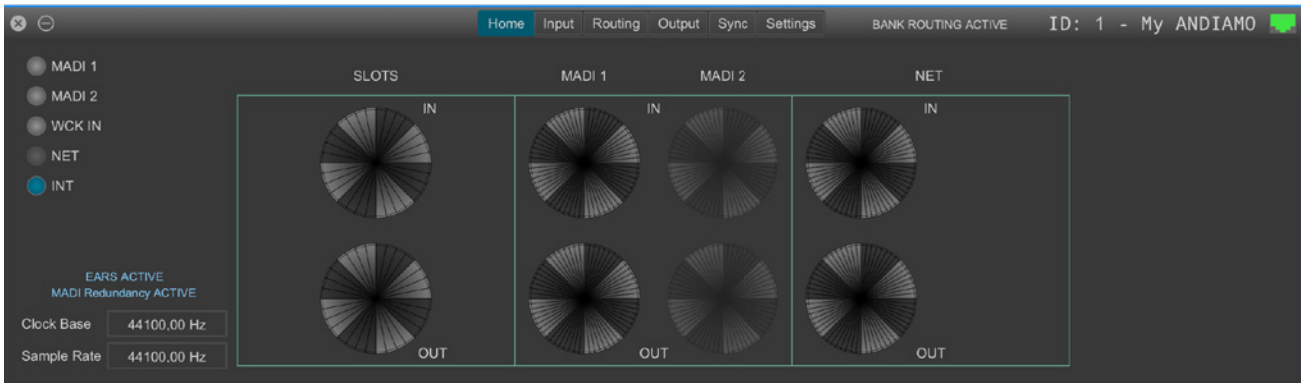




Confirm your selection with 'OK'
The device is displayed in the overview of globcon
Double-Click the tiny display of the device to open the control.



More information and video tutorials about globcon are available at www.globcon.pro.



NOTE

For globcon control of the device the network infastructure is required to have ports 5002, 5003 and 5004 unfiltered for TCP traffic.
Since the device discovery uses multicast-DNS (mDNS), the device may be discovered but cannot be controlled if the ports 5002, 5003 and 5004 are filtered.

NOTE

The IP address of the device is either fixed to 10.0.0.32 or obtained from a DHCP service (default) - see "IP Reset" on page 23

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 or 48 kHz = 1 FS
- 88.2 kHz or 96 kHz = 2 FS
- 176.4 kHz or 192 kHz = 4 FS

Global Control

The control on the right of the front panel indicates the power supply. Power switches are on the back panel:



PSU 1 & PSU 2 (rear)	**2 Switches** Enable / disable power supply.
PSU 1 & PSU 2 (rear)	**C13 socket** Connect the power supply here (84- 264 V AC).
PSU 1 & PSU 2 (front)	**2 LEDs: indicate the status of both power supply units** (OFF) = Power supply not working (ON, green) = Power supply working (blinking) = Power supply working after failure

NOTE

The green LEDs (PSU 1 & PSU 2) indicate that a working power supply is connected to the power supply unit. Note that an unlit LED does not guarantee that the device is free of voltage. To ensure that the device is completely disconnected from mains voltage, the power chords must be disconnected.

Menu Control

The basic functions of the converter can be accessed using a simple menu to allow for local operation. Two pairs of push buttons are used for navigation and settings.
See „CHAPTER 5: Menu Navigation“ on page 36.



SELECT	**Push button** Press longer than 2 seconds to enter the menu. Press short to cycle through the menu.
SET	**Push button** Only active in menu mode. Press short to adjust a setting.

When the menu mode is active a LED will blink in one of the sections while the remaining LEDs of this section are glowing weak.
This indicates:

- a setting can be adjusted in this section
- the blinking LED(s) is the selected option in this section

After a short period of time the menu mode is exit automatically.

NOTE

Blinking LEDs are also used to indicate an error (e.g. missing sync). Concentrate on the section where one LED is blinking and the remaining LEDs are glowing weak.

globcon Control

Further functions of the device are accessible via globcon remote control with the Matrix mode enabled - see "Bank Routing vs. Matrix Mode" on page 28:

- Input- level (gain & trim), mute, polarity
- Output- level, mute, polarity
- single channel routing
- EARS for MADI and audio network
- MADI redundancy switchable

IP Reset

The management network interface can be reset to a factory default (fixed) IP or DHCP from the front panel:

- press and hold SELECT and SET for about 5 seconds until the PSU LEDs start to flash
- use the SELECT button to toggle between both PSU LEDs blinking, PSU 1 or PSU 2 blinking
  - both PSUs: Reset to fixed IP assigned by the customer (via globcon)
  - PSU 1: Reset to fixed default IP address: 10.0.0.32
  - PSU 2: Enable DHCP
- push SET to acknowledge your selection
- to cancel, don't push a button; the front panel will return to its normal mode after 10 seconds

Clocking

The device offers several options for clocking.

- PTP (Precision Time Protocol) - IEEE1588-2008 / PTPv 1 & 2 *
- SoundGrid (SoE) *
- Word Clock / Video
- MADI input
- internal clock generator

* depending on the audio network card installed.

When PTP (network) is selected the device can either act as slave or as network grandmaster.

The front panel informs about selected clock sources and their lock / sync state. The clock setting can be altered via remote control or locally - see „CHAPTER 5: Menu Navigation“ on page 36.



WCK NET MADI 1 MADI 2	**LED - indicates lock / sync state of word clock, audio network and MADI and selected clock source** (ON, green) = set as clock source (blinking, green) = set as clock source and no signal present (blinking pattern, green) = signal locked but not in sync with clock source OFF = no signal present or signal present, in sync but not clock source
INT	**LED - indicates use of internal clock generator as clock source** (ON, green) = clock source set to internal generator (OFF) = clock source set to external input

Sample Rates

The scaling factor and the base sample rate are indicated by four LEDs.



2 FS	**LED - indicates scaling factor of sample rate** (ON, yellow) = scaling factor set to 2 FS (OFF, yellow)= scaling factor set to 1 FS or 4 FS
4 FS	**LED - indicates scaling factor of sample rate** (ON, white) = scaling factor set to 4 FS (OFF, white) = scaling factor set to 1 FS or 2 FS
48k	**LED - indicates the use of 48 kHz as base sample rate** (ON, green) = base rate of 48 kHz (or multiple of) is used (OFF, green) = base rate is different from 48 kHz
44.1k	**LED - indicates the use of 44.1 kHz as base sample rate** (ON, green) = base rate of 44.1 kHz (or multiple of) is used (OFF, green) = base rate is different from 44.1 kHz

NOTE

With the clock set to internal (INT) the sample rate can be adjusted in the menu. All other clock sources (word clock, MADI, NET) define the base rate automatically and the measured frequency of the clock source is indicated then.

The scaling factor of the sample rate has to be defined manually when the clock source is set to internal , word clock or MADI with S/MUX.

High Speed mode - Legacy mode

High Speed mode implements the AES 10-2020 standard, which means that the MADI frame type is always the same as the sampling frequency of a signal (48 kHz -> 48 kFrame, 96 kHz-> 96 kFrame, 192 kHz-> 192 kFrame). Optionally S/MUX can be configured.

In Legacy mode, which most MADI devices on the market are still exclusively using, for example a 96 kHz signal could be transmitted using 48 kFrame type (S/MUX). '96k Frame' defines a '2 FS' signal (e.g. 96 kHz).

Level Meters

All 32 analog channels have individual signal metering each with three LEDs. As the sensitivity of the converters may be varied the trigger threshold of each LED corresponds to the digital scale (dBFS).



INPUT OVR	**LED - indicates an analog input overload.** (ON, red) = analog input signal equals to more than -0.5 dBFS
INPUT SIG	**LED - indicates signal level of channel input.** (ON, green) = analog input signal equals to more than -80 dBFS. The light intensity of the LEDs depends on the audio level.
OUTPUT SIG	**LED - indicates signal level of channel input.** (ON, green) = analog output signal equals to more than -80 dBFS. The light intensity of the LEDs depends on the audio level.

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Signal Routing

Two methods of signal routing are available:

- 'Bank Routing'- signal routing of analog and digital I/Os as a whole, managed from the front panel.
- 'Matrix Mode'- individual signal routing of all analog and digital I/Os on a per channel basis. It is managed via a routing matrix in globcon.



Bank Routing vs. Matrix Mode

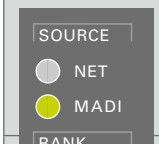
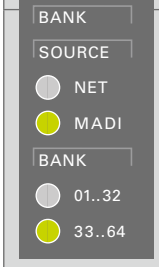
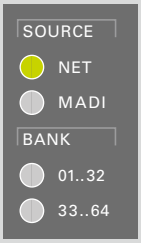
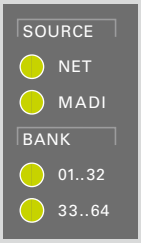
With Bank Routing a block of channels of a MADI stream or audio network stream (Bank) is selected to act as source for the analog outputs (DA) and destination for the analog inputs (AD). The remaining audio data passes the device unchanged. Bank Routing forces activation of MADI Redundancy and restricts the functionality to parameters that can be accessed via the front panel only.

The Matrix Mode offers assembling individual output signals from any input source, level adjustment and the optional use of MADI Redundancy or EARS.

The different modes (3 x Bank Routing and Matrix Mode) are are adjustable via the parameters 'SOURCE' and 'BANK' on the front panel or in globcon. Each mode is displayed by a combination of the four green LEDs.

Mode / Parameter	Bank Routing	Matrix Mode
input level adjust, mute, polarity	n/a	yes
output level adjust, mute, polarity	n/a	yes
signal routing	entire port / bank	single channel
EARS	n/a	switchable
MADI redundancy	forced	switchable

.

	Bank Routing MADI 1..32 MADI Redundancy active EARS @ MADI I/O inactive	A/D to MADI 1..32 MADI 1..32 to D/A MADI 33..64 loop through NET unchanged
	Bank Routing MADI 33..64 MADI Redundancy active EARS @ MADI I/O inactive	A/D to MADI 33..64 MADI 1..32 loop through MADI 33..64 to D/A NET unchanged
	Bank Routing NET MADI Redundancy active EARS @ MADI I/O inactive	A/D to NET 1..32 MADI 1..32 loop through MADI 33..64 loop through NET 1..32 to D/A NET 33..64 loop through
	Matrix Mode MADI Redundancy optional EARS @ MADI I/O optional	individual signal routing of all physical inputs to any physical output

MADI Redundancy

The two MADI inputs can be used individually or redundant.
When using MADI Redundancy the MADI outputs work in parallel.

There are three different redundancy modes that can be set in globcon.

Mode	Behavior	switch over	revert
No priority	The first MADI input that detects a valid signal will be used. If this input fails, the device will switch to the other input (if it is locked).	yes	no
Priority	The defined priority port is always selected automatically if a valid signal is detected. Selection will revert to the priority port, after switch over (due to signal loss).	yes	yes
Force	Automatic selection is overriden by forcing the input selection to a specific MADI input port.	no	no

EARS

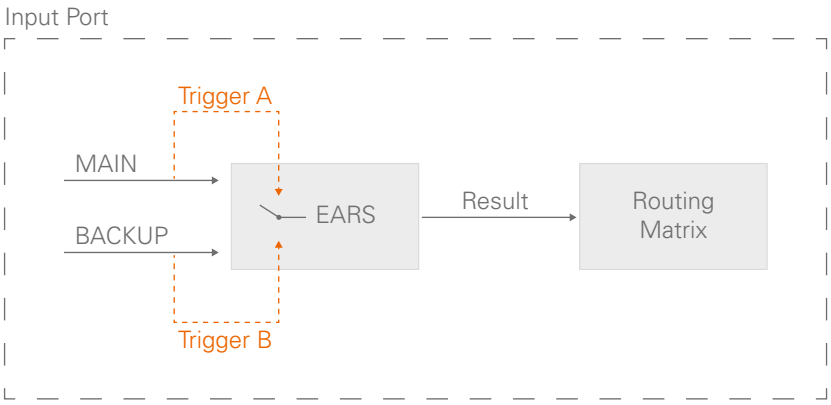
EARS™ (Enhanced Automatic Redundancy Switching) is a combination of DirectOut's successful BLDS™ technology and pilot-tone based switching.
A logic monitors a trigger signal contained in certain audio channels of the audio network and MADI inputs.

This smart redundancy input switching function is available for

- both MADI inputs in Matrix Mode
- audio network (NET)

To each input port (MAIN) a second signal source (BACKUP) is defined.
If the MAIN signal source fails, EARS automatically switches to the BACKUP signal.

The audio network is divided into NET A and NET B to cover streams with more than 64 channels.



Principal scheme of an input managed by EARS

- MAIN = physical input of the port managed by EARS (e.g. MADI 1)
- BACKUP = physical input, selectable (e.g. MADI 2)
- EARS logic decides for either MAIN or BACKUP
- Result of the decision is used as input for the routing matrix

Example:
If MAIN (MADI 1) fails, all patches of MAIN will be fed by the BACKUP source (MADI 2)

MADI Redundancy - EARS

The selected signal routing effects the usage of MADI Redundancy and EARS.

	MADI Redundancy	EARS
Bank Routing	forced	n/a
Matrix Mode	on	NET
	off	NET, MADI
	off	off

MADI Redundancy disables EARS from the MADI I/Os.

Connecting Word clock

The word clock output provides the system clock that is either derived from word clock input, MADI input or internal clock generator.



WCK OUT	**BNC socket (coaxial), 75 Ω** System clock output - connect for word clock output signal here.
WCK IN	**BNC socket (coaxial), 75 Ω** Connect word clock or AES3 DARS (Digital Audio Reference Signal) here.

The word clock input also accepts a AES3 frame (AES11).
Termination (75 Ω) for the word clock input is switchable locally or via remote control.

Connecting Management

ANDIAMO uses separate network links for managing the device and network audio transmission.



MGMT	**RJ 45 socket (1 Gbit/s)** Connect here for network control and firmware updates.
MGMT PORT	**LED orange - indicates the link state of the network connection.** (ON) = device link active (OFF) = device link not active
MGMT PORT	**LED green - indicates the activity state of the network connection.** (ON) = data sent or received (OFF) = no data transmission

Connecting MADI

The MADI ports are used for transmission of 64 audio channels (AES10).
Two SFP ports offer individual I/O configurations. *



MADI 1/2	**SFP cage** Insert SFP transceiver here and connect MADI input/output.

* matching SFP transceiver are available from DirectOut - page 15.

Connecting Audio Network

ANDIAMO can host one audio network card optionally*.
Audio network is connected via 2 x RJ45-sockets (Gigabit-Ethernet).



AUDIO NETWORK PORT 1 PORT 2	**RJ45 socket (1 Gbit/s)** Network interface - connect here for network transmission.
AUDIO NETWORK PORT 1 PORT 2	**LED orange - indicates the link state of the network connection.** (ON) = device link active (OFF) = device link not active
AUDIO NETWORK PORT 1 PORT 2	**LED green - indicates the activity state of the network connection.** (ON) = data sent or received (OFF) = no data transmission

* available options are RAVENNA, Dante, AVB / MILAN and SoundGrid.

Connecting Analog

Eight DSUB-25 ports (4 x input / 4 x output) are used for transmission of the analog audio signals. Each port transmits eight audio channels.



ANALOG OUTPUT 1..8	**DSUB-25 Port** Analog audio output (balanced) - connect audio channels 1 to 8 here
ANALOG OUTPUT 9..16	**DSUB-25 Port** Analog audio output (balanced) - connect audio channels 9 to 16 here
ANALOG OUTPUT 17..24	**DSUB-25 Port** Analog audio output (balanced) - connect audio channels 17 to 24 here
ANALOG OUTPUT 25..32	**DSUB-25 Port** Analog audio output (balanced) - connect audio channels 25 to 32 here
ANALOG INPUT 1..8	**DSUB-25 Port** Analog audio input (balanced) - connect audio channels 1 to 8 here
ANALOG INPUT 9..16	**DSUB-25 Port** Analog audio input (balanced) - connect audio channels 9 to 16 here
ANALOG INPUT 17..24	**DSUB-25 Port** Analog audio input (balanced) - connect audio channels 17 to 24 here
ANALOG INPUT 25..32	**DSUB-25 Port** Analog audio input (balanced) - connect audio channels 25 to 32 here

The pinout complies with AES59 ('TASCAM pinout') - see „Appendix A - DSUB-25 Pin assignment“ on page 42.

NOTE



The pinout of the digital and analog I/O is different. Check for appropriate cabling to ensure proper operation and to avoid damages caused by improper connections.

WARNING



Do not connect voltage sources to the analog outputs. This may cause damage at the output stages. Observe the technical specifications listed in this document.

WARNING



The line output is not servo balanced. Do not connect the negative lead to ground. This may cause damage at the output stage. Observe the technical specifications listed in this document.

CHAPTER 5: Menu Navigation

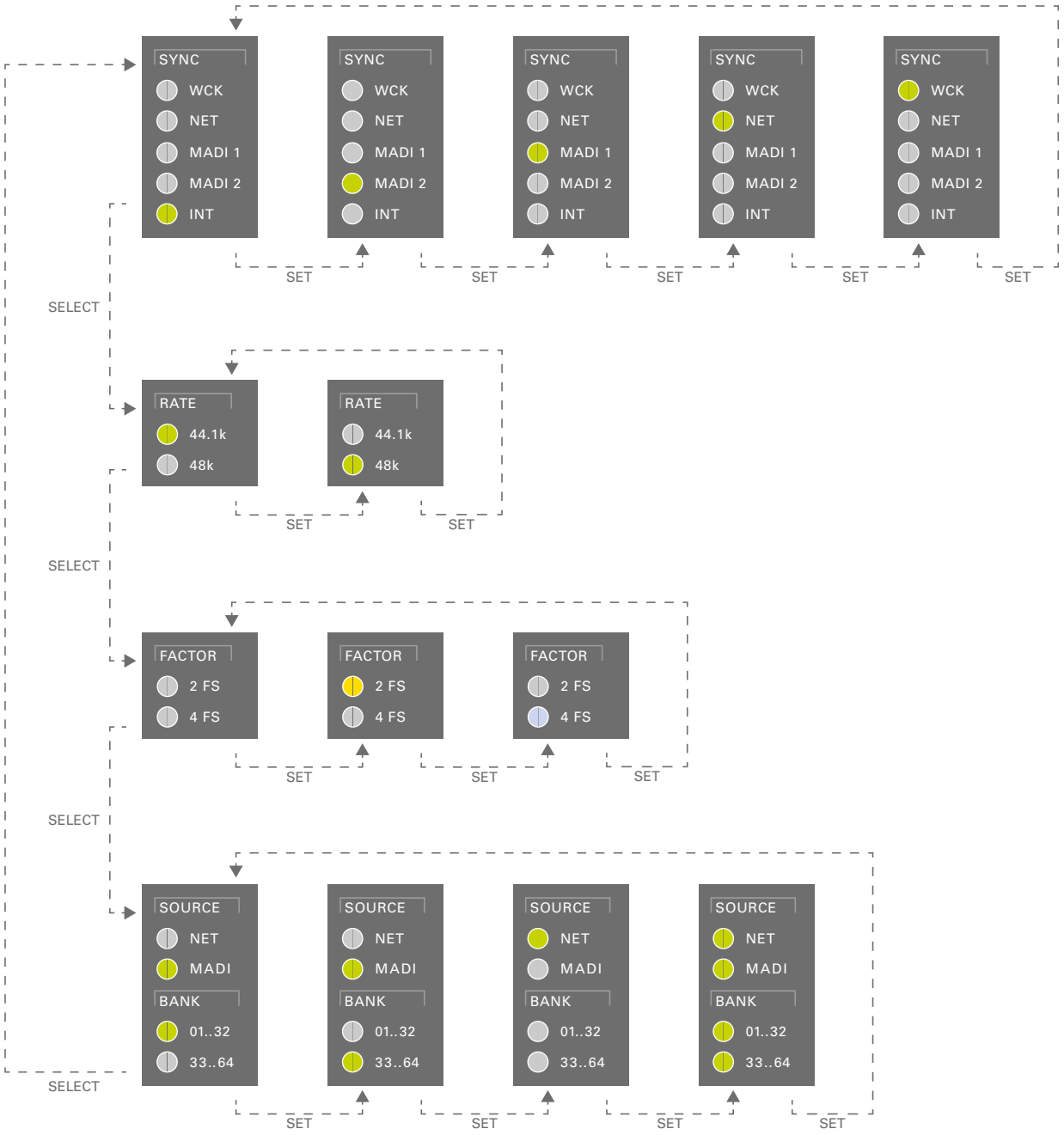
To setup the converter the menu mode has to be entered first. The unit will switch back to idle mode automatically after timeout.

- Press the button <SELECT> longer than two seconds to enter the menu mode
- Press <SELECT> to cycle through the menu.
- Press <SET> to change a setting.
- Press <SET> longer than two seconds to toggle the Matrix Mode



NOTE

Blinking LEDs are also used to indicate an error (e.g. missing sync). Concentrate on the section where one LED is blinking and the remaining LEDs are glowing weak.


SYNC
WCK
NET
MADI 1
MADI 2
INT
SET
SELECT
RATE
44.1k
48k
FACTOR
2 FS
4 FS
SOURCE
NET
MADI
BANK
01..32
33..64

This page is left blank intentionally.

CHAPTER 6: 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.
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.

NOTE



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

CHAPTER 7: Technical Data

Dimensions

- Width 19'' (483 mm)
- Height 1 RU (44.5 mm)
- Depth 10'' (254 mm)

Weight

- about 4.1 kg

Power Consumption

- 25 W

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

Network

- 1 x RJ45 Gigabit Ethernet
- for managing the device (remote control)

MADI Port SFP

- empty cage without transceiver

Analog Input

- 4 x DSUB-25 (8 analog audio channels each - balanced), AES59 compliant

Analog Output

- 4 x DSUB-25 (8 analog audio channels each - balanced), AES59 compliant
- The outputs are not servo balanced.

A/D Section

- SNR: -117.6 dB RMS (20 Hz - 20 kHz) / -119.9 dB(A)
- THD @ -1 dBFS: -119 dB
- Frequency response: -0.15 dB (10 Hz) / -0.15 dB (20 kHz)
- Input impedance: 20 kΩ (balanced) / 10 kΩ (unbalanced)
- Input level: + 24 dBu (variants: + 15 dBu or +18 dBu)

D/A Section

- SNR: -116.8 dB RMS (20 Hz - 20 kHz) / -119.5 dB(A)
- THD @ -1 dBFS: -109 dB
- Frequency response: -0,5 dB (10 Hz) / -0,15 dB (20 kHz)
- Output impedance: < 50 Ω
- Output level: + 24 dBu (variants: + 15 dBu or +18 dBu)

Sample Rate

- 44.1 / 48 / 88.2 / 96 / 176.4 / 192 kHz ± 12.5 %

MADI Format (I/O)

- 48k Frame, 96k Frame
- 56 channel, 64 channel
- S/MUX 2/4
- High Speed / Legacy Mode

Latency

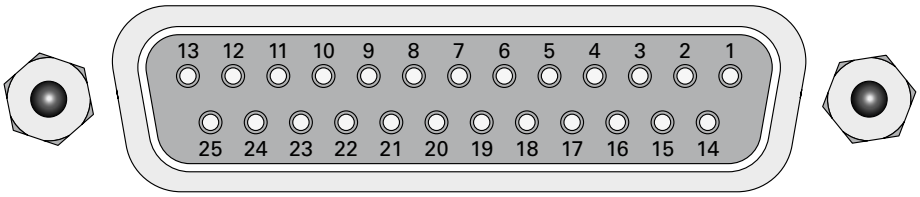
- about 1 ms (AD- DA)

Word Clock

- 1 x BNC socket (75 Ω impedance)- input
- 1 x BNC socket (75 Ω impedance)- output
- Termination 75 Ω switchable
- AES11 (DARS supported)

Appendix A - DSUB-25 Pin assignment

The pinout of the DSUB-25 connectors for the transmission of analog and AES3 audio signals follows the AES59 specification.



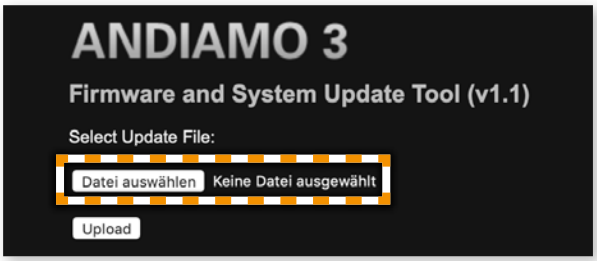
jack- female

PIN	Signal analog	Signal digital
1	CH 8 +	CH 4 OUT +
2	GND	GND
3	CH 7 –	CH 3 OUT –
4	CH 6 +	CH 2 OUT +
5	GND	GND
6	CH 5 –	CH 1 OUT –
7	CH 4 +	CH 4 IN +
8	GND	GND
9	CH 3 –	CH 3 IN –
10	CH 2 +	CH 2 IN +
11	GND	GND
12	CH 1 –	CH 1 IN –
13		
14	CH 8 –	CH 4 OUT –
15	CH 7 +	CH 3 OUT +
16	GND	GND
17	CH 6 –	CH 2 OUT –
18	CH 5 +	CH 1 OUT +
19	GND	GND
20	CH 4 –	CH 4 IN –
21	CH 3 +	CH 3 IN +
22	GND	GND
23	CH 2 –	CH 2 IN –
24	CH 1 +	CH 1 IN +
25	GND	GND

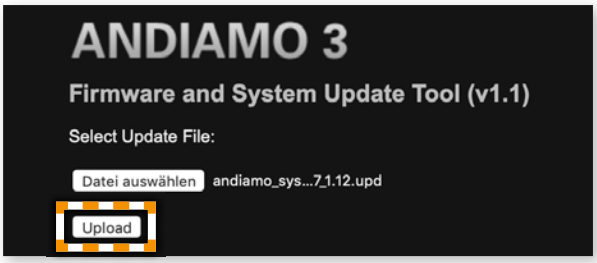
Appendix B - Firmware Update

Firmware and the system of ANDIAMO can be updated via a browser-based user interface:

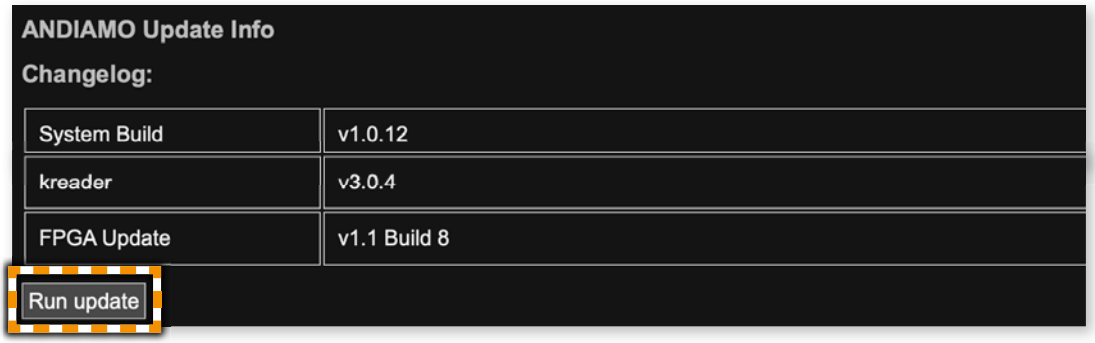
1. Open your browser and surf <ANDIAMO IP ADDRESS>:8080



2. Select an ANDIAMO update file (.upd) from your file system and click 'Upload'.



3. After the upload is finished, an update information page will be displayed.



4. Click 'Run update' to perform the update

NOTE

After the upate a reboot is required which will interrupt audio transmission for about 30 seconds.
Leave the page if you don't want to continue with the update.
During the update, status information will be shown on the webpage.
When the update is finished, a 'REBOOT' button will be displayed.
Click this button or power-cycle the device to activate the update.

Index

A
AES59 34

B
Bank Routing 28
BREAKOUT 13

C
Clocking 24
Conformity & Certificates
  CE 11
  RoHS 11
  WEEE 11
Contact 11
Contents 12
Conventions 5

D
Defective Parts/Modules 8
Dimensions 40
DSUB-25 ..... 42, 43

E
EARS 30
Environmental Conditions 16, 40

F
Feature Summary 7
Firmware Update 43
First Aid 9
Frequency response 40
Fuses 40

G
globcon 12

I
Impedance (input/output) 40
Intended Operation 10
IP Reset 23

L
Latency (AD/DA) 41
Level
  Meters analog 26
Level (input / output) 40
Local Mode see Bank Routing

M
MADI- High Speed mode 25
MADI Redundancy 30
Menu Control 22

P
Patch Chords 14
Pinout see DSUB-25

S
Sample Rate 41
Sample Rate Selection 25
Scaling Factor 20
SFP Transceiver 15
Signal Routing 28
  Bank Routing 28
SNR (AD & DA) 40
Support 39

T
Technical Data 40
THD (AD & DA) 40
Troubleshooting 39

U
Updates 10

W
Warranty 10

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