![DirectOut Technologies logo]

MADI.BRIDGE

User's Manual

Version 1.2

Copyright

Table of contents

This page is left blank intentionally.

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 MADI.BRIDGE, DirectOut's solution for easy and elegant routing and switching of up to 8 MADI signals. It features six coaxial (BNC) and two optical (SC) MADI I/Os to link between MADI devices from any manufacturer.
Recently updated and redesigned, it acts as a patchbay, signal distributor, signal buffer and input selector all in one device.

Feature Summary

MADI Ports	2 x SC multi-mode connectors 6 x coaxial BNC connectors
MADI Formats	56/64 channel, 48k/96k Frame, bit-transparent
Sample Rates	44.1, 48, 88.2, 96, 176.4, 192 kHz +/-12.5%
Preset Memory	9 configuration presets
MIDI Port	2 x DIN connectors (In/Out) for remote control
USB Port	USB 2.0 port for firmware updates
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)

How it works

The input signal of each input port is gained and reclocked. Each port features push buttons to select and a segment display to monitor the signal source (port number) for it's output. The input signal is not altered and processed bit-transparent to the desired output. So even proprietary formats can be handled smoothly.
User definable presets can be used for fast configuration changes.
A 64 dot matrix allows to preview a preset or offers a quick overview about the current routing setup.
To prevent accidental changes the device can be locked against remote or local operation.
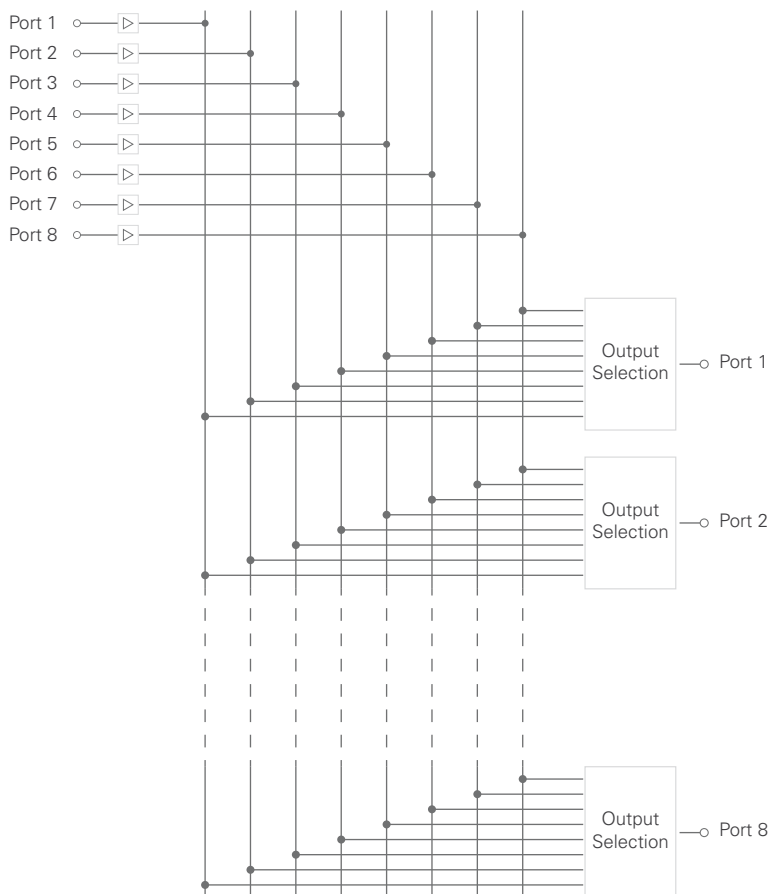
Applications

MADI.BRIDGE can be used for distributing, converting, selecting and reclocking MADI signals.

Typical applications include:

- signal distribution
- input selection
- conversion between coaxial and optical and vice versa
- reclocking ('signal refresh')
- ...

Scheme

DirectOut
TECHNOLOGIES

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 2.4

Intended Operation

The MADI.BRIDGE is designed for routing and distributing of digital audio signals. In this context digital audio refers to a MADI signal (AES10).

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 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:
DirectOut GmbH,
Leipziger Str. 32
09648 Mittweida
Germany
Only stamped parcels will be accepted!
WEEE-Reg.-No. DE 64879540

Contact
DirectOut GmbH
Leipziger Str. 32, 09648 Mittweida, Germany
Phone: +49 (0)3727 5665-100
Fax: +49 (0)3727 5665-101
Mail: sales@directout.eu
www.directout.eu

Contents

The contents of your MADI.BRIDGE package should include:

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

To complete the delivery please download from the DirectOut website: www.directout.eu
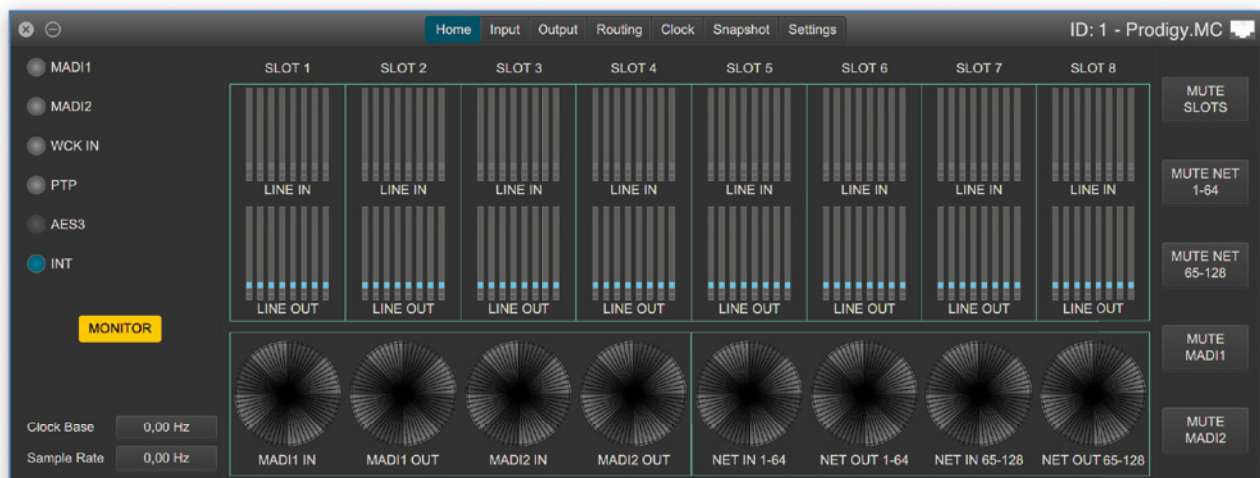
- USB Serial driver

TIP

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

Remote Control

To manage the device via remote control 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

This page is left blank intentionally.

CHAPTER 3: Installation

Installing the Device

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

NOTE

The surface of the pane at the front panel is covered by a protection layer. The foil can be peeled away from a corner. Avoid damaging the surface by using a sharp or rough tool. The fingernail works perfect.

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.

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. Optional: Connect a USB cable to the USB port for firmware updates. This requires the USB Serial driver (Windows) being installed first.
The driver and the installation instructions are available at www.directout.eu.

6. Optional: Connect MIDI cables to the DIN connectors for remote control.

NOTE

Remote control is available via globcon- see page 12..

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

The left socket is switched by the power supply switch. The right socket will power up the device immediately when connected to the mains.

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:

While the device is booting the currently installed firmware is indicated in the front panel displays - e.g. firmware version 2.1.

NOTE

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

9. Installation of USB Serial driver
- download the USB Serial driver
- download the 'Installation Guide for USB Control'
- follow the installation instructions in the 'Installation Guide for USB Control'

10. Install globcon on your computer - see page 12.

11. Launch globcon control
Select the port of the network where your device is connected to
Sidebar - My Devices - Click Discovery Methods
and set MIDI (MADI Bridge) Discovery to 'ON'
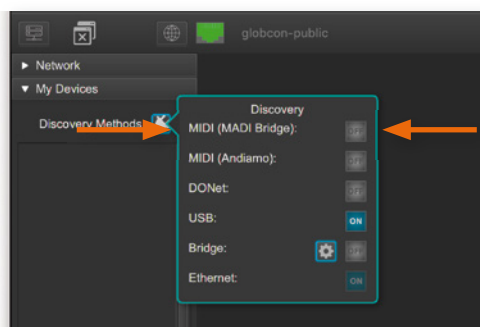
Select the device from the list and click 'Add'
Confirm your selection with 'OK'
The device is displayed in the overview of globcon
Double-Click the tiny display of the device to open the control.

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

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

Power	**1 Switch*** Enable / disable power supply.
Power	**2 x C13 socket*** Connect the power supply here (84- 264 V AC).

* The left socket is switched by the power supply switch. The right socket will power up the device immediately when connected to the mains.

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.

Signal Input / Output

The device is equipped with six BNC coaxial (75 Ω) and two SC optical MADI ports.

1	**BNC OUT / IN** port 1 to 6	**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.
2	**SC OUT / IN** port 7 & 8	**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.

* The input signal is reclocked and routed to the output. If no valid signal is detected at the input, the buffered signal is output then.

Signal Routing

Each MADI output port is fed by one of the eight input ports. Push buttons for each port allow to select the output source which is monitored by the individual segment display.

8	**INPUT** port 1 to 8	**Segment display (green) indicates the input source for the MADI output.** Values: 1 to 8 = port 1 to 8 0 = no source selected (mute) The decimal point indicates that the source selection differs from the selected preset.
▲ ▼	**SELECTION** port 1 to 8	**Push buttons (up / down) to alter the selection of the input source.** up = increasing value down = decreasing value A change will have immediate effect at the signal output.

The active signal routing is stored in the device and recalled after power cycle.

Preset Memory

Different signal routing scenarios can be stored into presets. Before recalling a preset a 64 dot matrix shows a preview of the routing. This allows to navigate through all presets without changing anything at this time.

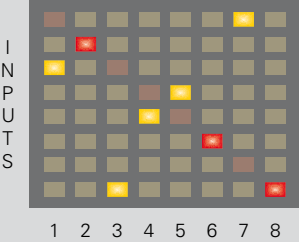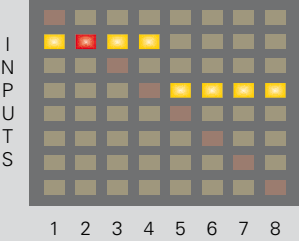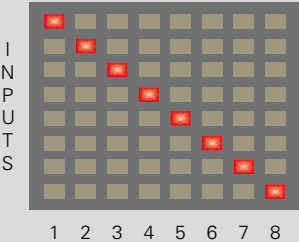|		
	PRESETS	**Segment display (red) indicates the input source for the MADI output.** Values: 1 to 9 = preset 1 to 9 0 = all outputs mute (read-only) empty = display monitors the active routing The decimal point indicates that the preset selection differs from the active signal routing.
▲ ▼	**SELECTION**	**Push buttons (up / down) to navigate the preset memory.** up = increasing value down = decreasing value
	STORE	**Push button to overwrite a preset.** Press and hold > 2 s to store the active signal routing into the displayed preset. The decimal point will disappear.
	RECALL	**Push button to recall a preset.** Press and hold > 2 s to overwrite the current signal routing with the signal routing that is previewed in the dot matrix.

NOTE

In the segment displays the decimal point adjacent to the number indicates, that the displayed information differs from the current and active preset. So a RECALL would change the signal routing at the outputs.

DOT Matrix

The dot matrix is useful:

- to preview stored presets before recalling them
- to monitor the active signal routing, when preset memory is set to none (empty display)

The red dots mark a 1:1 routing; i.e. output and input signal are identical.

Individual signal routing:

output 1 < input 3
output 2 < input 2
output 3 < input 8
output 4 < input 5
output 5 < input 4
output 6 < input 6
output 7 < input 1
output 8 < input 8

Distributing signals:

output 1 to 4 are fed with signal of input port 2
output 5 to 8 are fed with signal of input port 4

1:1 routing:

output and input signals are identical each

NOTE

A 1:1 routing may cause a feedback loop at the connected device.

Device Lock

The device settings can be locked against unwanted modification.
Both disable of local access and disable of remote access are available individually.

LOCK KEYS	**Push button to enable / disable local lock.** Press to lock / unlock the front panel.
LOCK KEYS	**LED (red), indicates the lock state of the front panel.** ⚪ OFF = lock inactive 🔴 ON = lock active
LOCK REMOTE	**Push button to enable / disable remote lock.*** Press to lock / unlock the remote access.
LOCK REMOTE	**LED (red), indicates the lock state of the remote access.*** ⚪ OFF = lock inactive 🔴 ON = lock active

* Remote access is available via MIDI using globcon control - see page 12.

Servicing / Remote Control

MIDI

The MIDI I/O is provided for remote control* of the device. Since the input receives control data and the output sends status information of the device, both connections are required for remote control.

MIDI	2 x DIN 5-pin connector
OUT / IN	OUT: MIDI output, connect for MIDI output signal here.
	IN: MIDI input, connect MIDI input signal here.

* Remote access is available via MIDI using globcon control - see page 12.

USB

The USB port is used for firmware updates of the device.

USB	USB 2.0 socket (Type B)
	Connect here for firmware updates.

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.

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.

This page is left blank intentionally.

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
- 15 W

Power Supply
- 2 x C13 sockets
- 84 V - 264 V AC / 47 Hz - 63 Hz / Safety class 1

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

MADI Ports SC optical (2)
- 2 x SC socket FDDI (input / output)
- ISO/IEC 9314-3
- Wave length 1310 nm
- Multi-Mode 62.5/125 or 50/125

MADI Ports BNC coaxial (6)
- 12 x BNC socket (input / output)
- Impedance: 75 Ω
- 0.3 V up to 0.6 V (peak to peak)

Sample Rate
- 30 - 50 kHz @1 FS
- 60 - 100 kHz @2 FS
- 120 - 200 kHz @4FS

MADI Format (I/O)
- 48k Frame, 96k Frame
- 56 channel, 64 channel

MIDI (I/O)
- 2 x DIN 5-pin connectors
- Optocoupled, ground-free input
- MIDI Thru functionality

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

Appendix A - Remote Control MIDI Program Changes

MIDI Program Changes consist of two bytes. The first byte normally defines the command ‚Program Change' and the MIDI channel, the second one is a data value byte.

The Program Change command in the MADI.BRIDGE is used as follows:

Code	Function
0xC0 0x<vv>	loads preset 0..9 (vv = 0..9).
0xC<n> 0x<vv>	selects source vv (vv = 0..8) for output n (n = 1..8)

Index