

SPLIT.CONVERTER

User's Manual



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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.



This document relates to:

- SPLIT.CONVERTER (BNC / SC)
- SPLIT.CONVERTER optical (SC / SC)

CHAPTER 1: Overview

Introduction

The SPLIT.CONVERTER is a combined MADI format converter and signal splitter with four MADI ports.



With one RU height, two redundant power supplies and a straightforward source selector it allows for instantaneous conversion or distribution of MADI signals.

Feature Summary

MADI Ports	2 x SC-Socket multi/single-mode & 2 x coaxial BNC connector, 75 Ω (BNC/SC) or 4 x SC-Socket multi/single-mode (SC/SC)
MADI Formats	56/64 channel, 48k/96k Frame, S/MUX 2/4
Sample Rates	32 kHz up to 192 kHz
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

Using the rotary input selector for each port, any output can be fed from any input. All ports are independent from each other, allowing the SPLIT.CONVERTER to route and convert up to four asynchronous MADI streams simultaneously.

The signal routing is bittransparent and operates without any delays. All common sample rates and MADI formats are supported, and will pass through the unit without modification. It is therefore also possible to convert and route proprietary data formats.

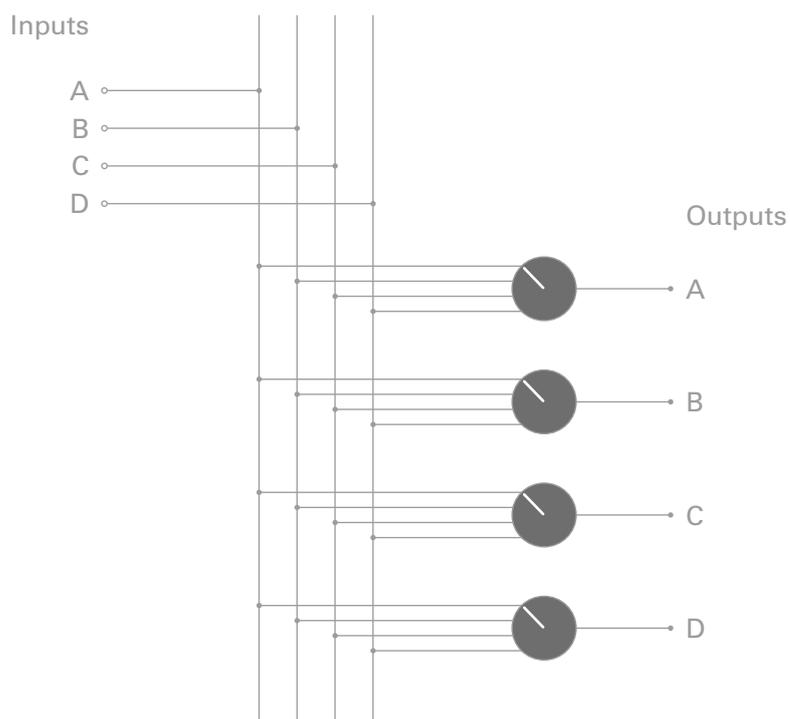
Applications

SPLIT.CONVERTER can be used to convert MADI signals in “mixed environments” or for distribution of MADI signals.

Typical applications include:

- Switching converter units between control rooms
- Redundancy splitting/switching (manually) during recording or live sound applications.
- Splitting signals for live events (FOH, monitoring, recording)
- Conversion between optical and coaxial connections to link devices
- Conversion between single-mode and multi-mode
- ...

Scheme



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.

Intended Operation

The SPLIT.CONVERTER is designed for the conversion and distribution of MADI signals (AES10) and other signals which meet the electrical specifications of MADI.



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.

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 SPLIT.CONVERTER package should include:

- 1 x SPLIT.CONVERTER (19", 1 RU)
- 2 x power chord
- 2 x fixing unit for power plug
- 1 x User's Manual

Two different MADI I/O configurations are available:



2 x SC-Socket & 2 x BNC coaxial (Version BNC / SC)



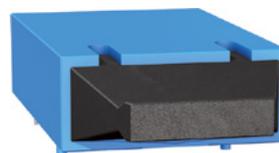
4 x SC-Socket (Version SC / SC, 'optical')

Single-Mode / Multi-Mode

The SC ports are multi-mode as default. It is possible to equip the device with single-mode SC ports. The housing of single-mode ports is colored blue.



multi-mode



single-mode

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.



3. Remove the protective cap from the optical MAD1 port(s) before use.



(Version BNC / SC)



(Version SC / SC)

NOTE



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

4. Connect the signal cables for the MADI signals to the device.



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



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.

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



TIP

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

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CHAPTER 4: Operation

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 (green): indicate the status of both power supply units LED OFF = Power supply inactive LED ON = Power supply active



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.

Connecting MADI

The MADI ports are used for transmission of 64 audio channels (AES10).
Two different MADI I/O configurations are available:



Version BNC / SC



Version SC / SC

PORT A OUT	SC socket (optical) MADI output (64 ch), connect for MADI output signal here
PORT A IN	SC socket (optical) MADI input (64 ch), connect MADI input signal here
PORT B OUT	SC socket (optical) MADI output (64 ch), connect for MADI output signal here
PORT B IN	SC socket (optical) MADI input (64 ch), connect MADI input signal here
PORT C OUT	BNC socket (coaxial), 75 Ω or SC socket (optical) MADI output (64 ch), connect for MADI output signal here
PORT C IN	BNC socket (coaxial), 75 Ω or SC socket (optical) MADI input (64 ch), connect MADI input signal here
PORT D OUT	BNC socket (coaxial), 75 Ω or SC socket (optical) MADI output (64 ch), connect for MADI output signal here
PORT D IN	BNC socket (coaxial), 75 Ω or SC socket (optical) MADI input (64 ch), connect MADI input signal here

NOTE



SC Ports may be equipped with multi-mode or single-mode modules. Mixed combinations offer the comfortable conversion between multi-mode and single-mode I/Os. See „Examples“ on page 19.

Signal Routing

All four MAD I input signals are fed to a routing matrix where they can be distributed to any output. This allows the SPLIT.CONVERTER to convert and distribute MAD I signals:



PORT A (ABCD)	Encoder Turn the rotary control to the desired position to select the desired input source for output A.
PORT B (ABCD)	Encoder Turn the rotary control to the desired position to select the desired input source for output B.
PORT C (ABCD)	Encoder Turn the rotary control to the desired position to select the desired input source for output C.
PORT D (ABCD)	Encoder Turn the rotary control to the desired position to select the desired input source for output D.



NOTE

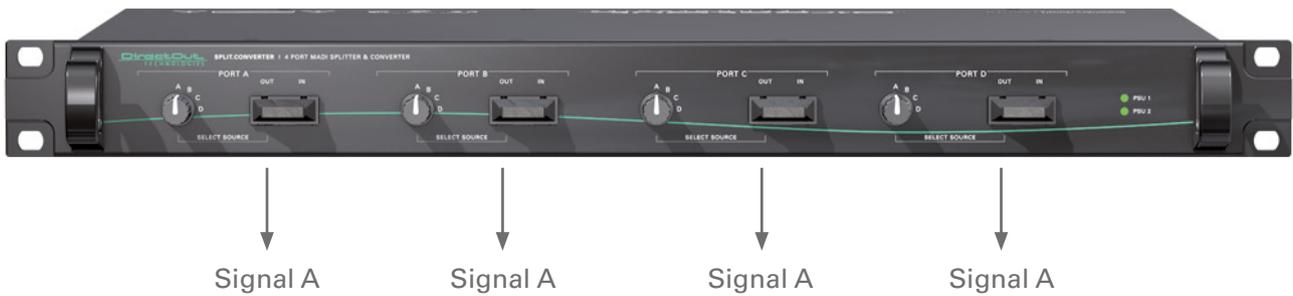
- The ports are independent from each other, the MAD I signals are not required to be in sync to each other.
- The routing is bit transparent and works without delay, even proprietary adaptations of MAD I will pass through the unit in their native state.
- All common sample rates (up to 192 kHz) and MAD I formats (48k/96k frame, 56/64 channels) are supported.

Examples

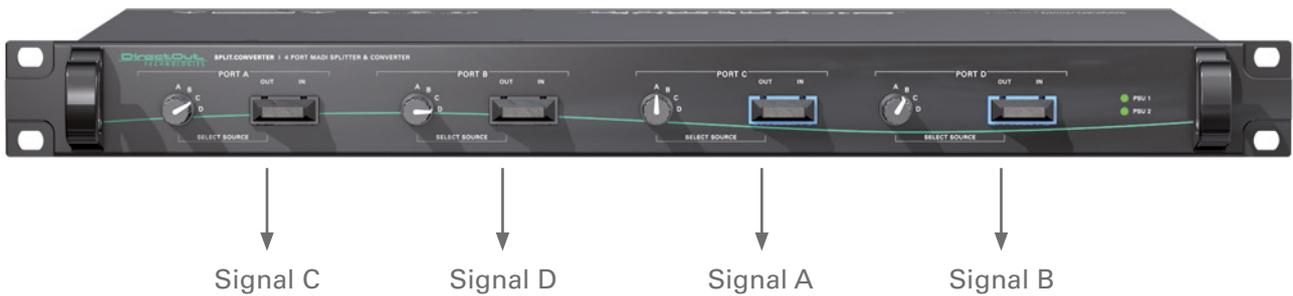
Format conversion of four MADi signals (coaxial < > optical)



Signal distribution of one MADi signal (4 x optical, '1:4')



Format conversion of four MADi signals (single mode < > multi-mode)



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 (75 Ω, screening attenuation better than 85 dB.)
Output port does not transmit the desired signal.	Wrong input selected.	Change the input using the rotary control on the front panel.

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 6: Technical Data

Dimensions

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

Weight

- about 3.4 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

MADI Port - (Version BNC/SC)

- 2 x BNC socket (1 x input / 1 x output)
- Impedance: 75 Ω
- 0.3 V up to 0.6 V (peak to peak)

MADI Port - (Version BNC/SC or SC/SC)

- 2 x or 4 x SC socket FDDI (input / output)
- ISO/IEC 9314-3
- Wave length: 1310 nm
- Multi mode 62.5/125 μm or 50/125 μm
- optional: single mode 9/125 μm

Sample Rate

- 32 kHz to 192 kHz

MADI Format (I/O)

- 48k Frame, 96k Frame
- 56 channel, 64 channel
- S/MUX 2/4

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DirectOut GmbH

Leipziger Strasse 32
09648 Mittweida
Germany

T: +49-3727-5665-100
F: +49-3727-5665-101
www.directout.eu