DirectOut Technologies®

PRODUCER.COM

Manual

Version 0.9

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Table of contents

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About This Manual

How to Use This Manual

This manual guides you through the installation and operation of the PRODUCER.COM.

Use the Table of Contents at the beginning of the manual or Index Directory (*page 73)* 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 short cuts.

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

Warning

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

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CHAPTER 1: Overview

Introduction

Welcome to the PRODUCER.COM, DirectOut's solution for monitoring and communication via MADI as well as embedding and deembedding a variety of signals into or from a MADI stream.

The PRODUCER.COM provides two pairs of optical MADI inputs and outputs enabling powerful routing between two MADI streams. For extraction from or embedding signals into the MADI stream there are additional local interfaces for analog talkback, analog line input (mono) and output (stereo), telephone, serial data (RS 232, 422, 485), MIDI, 2x AES input and output and 2x ADAT input and output. Optional the device can be extended for support of RAVENNA.

Feature Summary

MADI Ports:	2x MADI input and output (Optical SC multi-mode connectors)
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%
AES Ports	2x AES input and output (XLR connectors)
ADAT Ports	2x ADAT input and output (Toslink)
RAVENNA Ports	2x Ethernet RJ45 (100 Mbit/s)
Clock Inputs	1x Wordclock — coaxial BNC (75 Ω termination switchable) This input also accepts an AES3 frame (AES11). 1x Video — coaxial BNC (75 Ω termination switchable), Black-Burst (PAL, NTSC)

PRODUCER.COM Manual - Version 0.9

Feature Summary (continued)

Clock Output	1x Wordclock coaxial BNC
Microphone	1x Mic input XLR connector phantom power switchable
Line Input	1x mono, 6.3 mm TRS jack
Auxiliary Output	1x stereo, 6.3 mm TRS jack
Line Output	1x stereo, 2x XLR connectors, trimmable
Headphone Output	1x stereo, 6.3 mm TRS jack, trimmable
MIDI	1x MIDI input and output, DIN connectors
Telephone	2x RJ45 connectors (Ethercon), MFV dial
Remote	1x RJ45 connector (Ethercon) for hardware remote
Serial Communication	RS-232 and RS-422 or RS-485
General Purpose	4x GPI (2x optocoupler, 2x voltage input with pull up) 4x GPO (2x optocoupler, 2x FET switch, e.g. for red light)
Remote Operation	USB 2.0 port for remote operation and servicing such as firmware updates.
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).

Applications

The PRODUCER.COM can be used to establish a connection of audio signals and for remote operation via a MADI signal. All signals connected to the local interfaces of the device can be transported by two independent MADI streams. Audio signals and control signals (e.g. serial data) are embedded into or deembedded from the MADI signal. Additionally all audio signals can be interconnected offering a wide range of routing possibilities. Signalling events (e.g "red light") are possible via GPO interfaces and can also be triggered by a GPI interface or directly using the remote control.

Typical applications include:

- recording session with communication and comfortable monitoring using a dedicated controller unit.

- communication via telephone, "red light" signalling and remote operation using GPIO and serial data transport over fibre optic.

- signal routing between different types of audio interfaces

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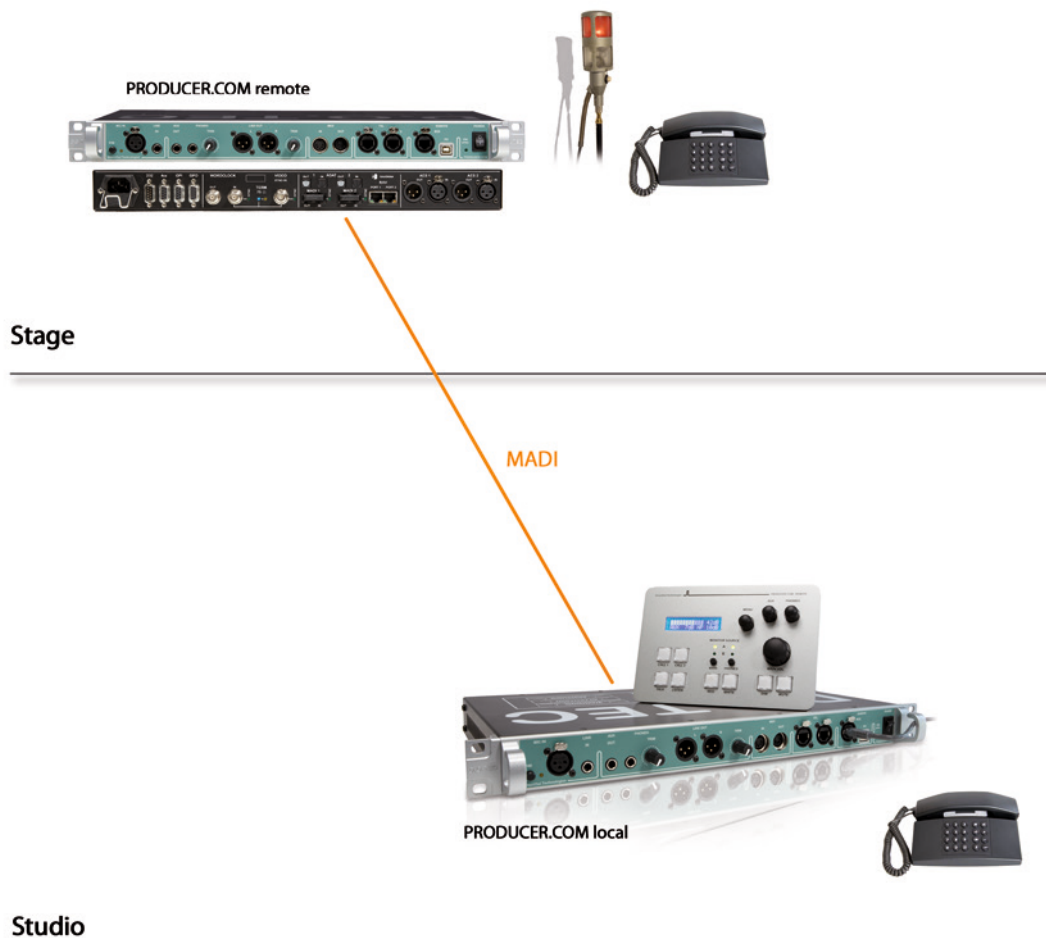
CHAPTER 2: Installation

Before Installing This Device

Warning

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

Warning

- 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 PRODUCER.COM 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 environmentals conditions.

Defective Parts/Modules

Warning

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

Warning

In the event of a hardware defect, please send the device to your local service 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.

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First Aid (in case of electric shock)

Warning

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.

Contents

The contents of your PRODUCER.COM package should include:

- 1 x PRODUCER.COM (19", 1 RU)
- 1 x power chord
- 1 x fixing unit for power plug
- 1 x Manual

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

PRODUCER.COM is designed for embedding and deembeding of audio signals and certain types of non-audio signals into and from a MADI signal (AES10). In this context non-audio signals are serial data (RS 232 / 422 / 485), MIDI signals and GPIO triggersignals (low voltage).

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.

Warning

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.

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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 Strasse 32

09648 Mittweida

Germany

Only stamped parcels will be accepted!

WEEE-Reg.-No. DE 64879540

Contact

DirectOut GmbH, Leipziger Strasse 32, 09648 Mittweida, Germany

Phone: +49 (0)3727 5665-100 // Fax: +49 (0)3727 5665-101

www.directout.eu

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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 suffcient air circulation for cooling.

3. Remove the protective cap from the optical MADI port if you wish to use it.

Note

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

4. Using the power cord provided connect 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 (84V – 264V).

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5. Unpack the PRODUCER.COM REMOTE.

6. Place the device on a non-slip horizontal surface.

7. Connect the PRODUCER.COM REMOTE with
the PRODUCER.COM using the delivered RJ45 cable.

Operation of the PRODUCER.COM REMOTE is described in „CHAPTER 6: PRODUCER.COM REMOTE" on page 44.

Note

For operation via software remote:

7a. Connect PRODUCER.COM to your PC using a standard
USB cable.

The use of software remote control requires an installation first. Read „CHAPTER 7: Software Remote" on page 67 for more details.

Note

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

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

Tip

CHAPTER 3: 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:

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

or

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

Global Control

The control on the right of the front panel indicates the power supply and sync status:

Power	Switch to enable / disable power supply.
ON (Sync)	LED OFF = Power supply inactive
	LED ON = Power supply active, device is synced
	LED flashing = Device is not locked
	LED flickering = Talkback is active

Note

The green LED (ON, Sync) indicates 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. Always unplug the power chord to ensure the power supply is disconnected.

Remote Operation

Up to two PRODUCER.COMs can be controlled using:

  • PRODUCER.COM REMOTE

and / or

  • Software Remote (on a Windows PC)

Both the PRODUCER.COM REMOTE and the Software Remote provide access to all functions and can be used in parallel. So when dealing with remote operation the term "REMOTE" is used throughout this manual.

PC	**USB socket** USB connection for software remote control. Requires a standard USB cable (Type B).
BOX	**RJ45 socket** Connection for PRODUCER.COM Remote Requires a standard CAT5 cable for connection of the proprietary signal and protocol. A second remote box (satellite box) can be connected at the second port of the PRODUCER.COM REMOTE.

All settings are stored within the device. So after a loss of power the last configuration is preserved.

Note

Control of two PRODUCER.COMs ("local" and "remote") is possible by switching between "local" and "remote" in the REMOTE interface. The control data to the "remote" device is tunnelled in the MADI signal (Port: MADI Com).

The use of software remote control requires an installation first. Read chapter „CHAPTER 7: Software Remote" on page 67 for more details.

Note

Use presets in the software remote to store / restore complex scenarios.

Tip

Monitoring

Three different analog output ports for monitoring are provided. Each port may output its own signal. The signal routing for each port is done in the REMOTE.

LINE OUT	**2x XLR socket (male) - balanced** Analog line signal output for use with external amplifier or active monitors. Volume level is controlled by REMOTE and can be trimmed locally. Output signal can be assigned arbitrary by routing matrix.
PHONES	**TRS Jack (6.3 mm, stereo)** Stereo signal output for headphones. Volume level is controlled by REMOTE and can be trimmed locally. Output signal is hardwired with the internal bus PHONES.
AUX OUT	**TRS Jack (6.3 mm, stereo) - unbalanced** Analog line signal output for use with external amplifier or active monitors. Volume level is controlled by REMOTE only. Output signal is hardwired with the internal bus AUX.

Tip

Use the monitor busses (MAIN MONITOR A/B, PHONES A/B and AUX) with dsp functions (DIM, MUTE, DUCK) for convenient monitoring.

Note

Range of Trim: ∞ to +18 dBu (= 0 dBFS; i.e. no analog gain)

Communication

Two analog inputs may be used e.g. for talkback and listen applications. Two telephone interfaces with DTMF detection can be used for communication between two PRODUCER.COMs.

MIC IN	**XLR socket (female) - balanced** Microphone input, connect a microphone here.
P48	**Switch** Enables / disables phantom power (48 volts) for MIC IN Mic gain (ON): + 20 dB Mic gain (OFF): + 30 dB Digital gain from -38 dB to +40 dB can be applied (Level setting of 20 equals to unity.).
P48 LED	**LED (yellow): indicates the status of the phantom power source,** LED OFF = phantom power inactive LED ON = phantom power active
LINE IN	**TRS Jack (6.3 mm, mono) - balanced** Line input, connect a line signal source here. Digital gain from -38 dB to +40 dB can be applied (Level setting of 20 equals to unity.).
TEL 1	**RJ45 socket** Analog telephone port, connect Tel 1 here.
TEL 2	**RJ45 socket** Analog telephone port, connect Tel 2 here.

The telephone interface can detect DTFM signal for incoming calls. However once the phone is picked up the connection is established without the need of calling first.

Note

Each telephone signal is transported transparently in an AES channel pair, thus allowing to output the signal directly to any sink or to receive any source at the telephone.

Note

Digital Audio Signals

A variety of different digital audio interfaces are provided for multi purpose applications. All signal ports can be connected to each other on single channel level.

AES 1 IN	**XLR socket (female)** AES3 input (2 ch), connect AES 1 input here.
AES 1 OUT	**XLR socket (male)** AES3 output (2 ch), connect AES 1 output here.
AES 2 IN	**XLR socket (female)** AES3 input (2 ch), connect AES 2 input here.
AES 2 OUT	**XLR socket (male)** AES3 output (2 ch), connect AES 2 output here.
ADAT 1 IN	**Toslink socket (optical)** ADAT input (8 ch), connect ADAT 1 input here.
ADAT 1 OUT	**Toslink socket (optical)** ADAT output (8 ch), connect ADAT 1 output here.
ADAT 2 IN	**Toslink socket (optical)** ADAT input (8 ch), connect ADAT 2 input here.
ADAT 2 OUT	**Toslink socket (optical)** ADAT output (8 ch), connect ADAT 2 output here.

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Digital Audio Signals - continued

MADI 1 IN	**SC socket (optical)**
	MADI input (64 ch), connect MADI 1 input here (MADI Local).
MADI 1 OUT	**SC socket (optical)**
	MADI output (64 ch), connect MADI 1 output here (MADI Local).
MADI 1 - LED Sync	**LED (green): indicates sync status of incoming MADI signal**
	LED ON = signal locked
	LED OFF = no signal present
	LED flashing = signal present, not locked
MADI 2 IN	**SC socket (optical)**
	MADI input (64 ch), connect MADI 2 input here (MADI Com).
MADI 2 OUT	**SC socket (optical)**
	MADI output (64 ch), connect MADI 2 output here (MADI Com).
MADI 2 - LED Sync	**LED (green): indicates sync status of incoming MADI signal**
	LED ON = signal locked
	LED OFF = no signal present
	LED flashing = signal present, not locked
RAVENNA Port 1 (optional)	**RJ45 socket (Ethernet)**
	Connect audio over ip network here.
RAVENNA Port 2 (optional)	**RJ45 socket (Ethernet)**
	Connect audio over ip network here.

MADI 1 equals "MADI Local" and MADI 2 equals "MADI Com".

Note

The remote control signal for the second PRODUCER.COM and the calling trigger signals for telephone are transported in the MADI Com stream (MADI 2).

Note

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Clocking

The PRODUCER.COM can be clocked internally or by wordclock or video or by one of the digital audio inputs. The system clock is output at the wordclock output additionally.

WORDCLOCK OUT	**BNC socket (coaxial),** connect wordclock output signal here.
WORDCLOCK IN	**BNC socket (coaxial),** connect wordclock or AES3 DARS (Digital Audio Reference Signal) here.
WORDCLOCK - SYNC	**LED (green): indicates the sync status of the incoming wordclock signal** LED ON = signal locked LED OFF = no signal present LED flashing = signal present, not locked
TERM 75 Ω	**Switch** Selects 75 Ω termination for wordclock and video input. To ensure proper operation of the device, an appropriate termination status must be selected
TERM 75 Ω - LED	**LED (yellow): indicates the termination status of wordclock and video input.** LED ON = termination enabled LED OFF = termination disabled
VIDEO SYNC-IN	**BNC socket (coaxial),** connect video reference signal here (Black burst PAL or NTSC; the Video standard is detected automatically).
VIDEO SYNC-IN - SYNC	**LED (green): indicates the sync status of the incoming video signal** LED ON = signal locked LED OFF = no signal present LED flashing = signal present, not locked

Note

Note that the output base rate (44.1k or 48k) is defined automatically by the wordclock or digital audio input signal if the clock source is set to wordclock or the corresponding digital audio input respectively.

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User Data

For remote application and signalling purposes there are connection possibilities for RS 232 / 422 / 485, DMX, MIDI and General Purpose Input Output (GPIO).

Serial signals can be routed either by using userbits of a MADI frame or by using a whole audio channel. The last may serve as a workaround for setups where the userbits are not being processed transparently by other devices in the chain.

4 GPOs can be triggered by 4 GPIs or push buttons at the REMOTE.

See also *„CHAPTER 5: GPIO / Serial Interfaces" on page 39* for detailed information about the use of GPIO.

MIDI IN	**DIN socket** connect MIDI input signal here.
MIDI OUT	**DIN socket** connect MIDI output signal here.

Note

All data is embedded into the MADI Com stream and taken from there. To pass through already embedded data from MADI Local to MADI Com set Tunnel to 'off' for the respective serial port (see *„Routing - User Data" on page 37).*

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User Data - continued

RS 232	**D9 sub socket (male)**
	Connect RS 232 signal here.
	Observe the correct pin assignment.
	For safe operation lock the connection using the jack bolts.
RS 4xx	**D9 sub socket (female)**
	Connect RS 422 or RS 485 or DMX signal here.
	Observe the correct pin assignment.
	For safe operation lock the connection using the jack bolts.
GPI	**D9 sub socket (female) - General Purpose Input**
	Connect GPI signals here.
	Observe the correct pin assignment.
	For safe operation lock the connection using the jack bolts.
GPO	**D9 sub socket (female) - General Purpose Output**
	Connect GPO signals here.
	Observe the correct pin assignment.
	For safe operation lock the connection using the jack bolts.

Consult the instructions in „CHAPTER 5: GPIO / Serial Interfaces" on page 39 for correct pin assignment of the D9 sub connectors.

Note

All data is embedded into the MADI Com stream and taken from there. To pass through already embedded data from MADI Local to MADI Com set Tunnel to 'off' for the respective serial port (see also „Routing - User Data" on page 37).

Note

CHAPTER 4: ROUTING

The PRODUCER.COM provides extensive routing capabilities between the various interfaces. Audio signals can be routed from and to each audio interface.

Routing - Terms

Term	Explanation	Members
INPUT	Hardware input for analog and digital audio signals.	MIC IN LINE IN TEL IN AES IN ADAT IN RAVENNA IN MADI IN
OUTPUT	Hardware output for analog and digital audio signals. Gets signal from <INPUT> or <BUS> or <VIRTUAL CHANNEL>.	LINE OUT AUX OUT PHONES TEL OUT AES OUT ADAT OUT RAVENNA OUT MADI OUT
BUS	Internal bus, gets signal from <INPUT> and is fed to <OUTPUT>, DSP operations (DIM, MUTE, DUCK) can be applied to.	MAIN MONITOR (A/B) PHONES (A/B) AUX
VIRTUAL CHANNEL	Internal channel, gets signal from <INPUT> and is fed or added to <OUTPUT> if activated. May trigger DSP function on <BUS>. Mono channel, fed to both channels, when routed to a pair.	TALKBACK LISTEN

Routing - Sketch

In general each node is seen from the output; i.e. the input source is assigned to a selected output. Internal busses are used for dsp operations (dim, duck and mute) to provide comfortable monitoring. Virtual channels help with communication applications. User data can be embedded in the MADI Com signal using whole audio channels or userbits to control remote devices or to trigger events (GPIO).

Mic In
Line In
Tel In
AES In
ADAT In
RAVENNA In
MADI In

Inputs

Routing

Outputs

Line Out
Phones Out
Aux Out
Tel Out
AES Out
ADAT Out
RAVENNA Out
MADI Out

Busses

DSP

Listen
Tel 1
Tel 2

Main Monitor (A/B)
Phones (A/B)
Aux

DIM
MUTE
Talkback
Listen
Call 1 / Call 2
Red / White
GPI

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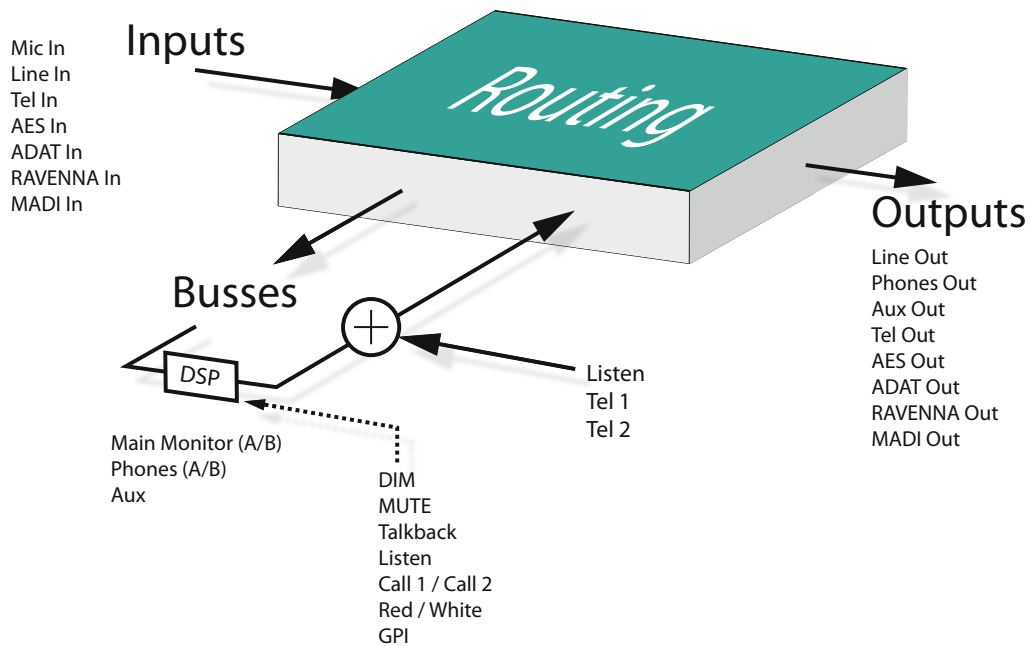
Routing - Inputs and Outputs

The patching for each output sink can be selected individually at channel level; i.e. it is e.g. possible to route single channels from a MADI port to a single channel of an ADAT port. Also multiple assignment of the same input source to many output sinks is possible; thus offering signal distribution. Digital signals are processed bittransparent as long as no embedding of user data is used *(See „Routing - User Data" on page 37).*

All routing can be selected similarly in both the PRODUCER.COM REMOTE and in the software remote.

Tip

Use presets in the software remote to store / restore complex scenarios.

Below an example for an output routing page. The menu for signal routing is explained completely in *„CHAPTER 6: PRODUCER.COM REMOTE - „Menu - Audio Routing" on page 52.*

Parameter	Subparameter	Value	Subvalue	Explanation
MADI local	1 - 64	no route		no signal to MADI local (1-64)
ADAT 1 = 1 - 8 ADAT 2 = 9 - 16 AES 1 = 1 - 2 AES 2 = 3 - 4		MADI local	1 - 64	MADI local (1-64) to MADI local (1-64)
		MADI com	1 - 64	MADI com (1-64) to MADI local (1-64)
		ADAT	1 - 16	ADAT (1-16) to MADI local (1-64)
		AES	1 - 4	AES (1-4) to MADI local (1-64)
		RAVENNA	1 - 8	RAVENNA (1-8) to MADI local (1-64)
		Mic In	1 - 40	Mic In (gain setting) to MADI local (1-64)
		Line In	1 - 40	Line In (gain setting) to MADI local (1-64)
		Main Monitor	1 - 2	Main Monitor (1-2) to MADI local (1-64), with DSP operation
		Talkback		Talkback to MADI local (1-64), with DSP operation
		Listen		Listen to MADI local (1-64), with DSP operation
		Tel 1		Telephone 1 Output to MADI local (1-64)
		Tel 2		Telephone 2 Output to MADI local (1-64)
		1:1		sets routing to corresponding port MADI com (1-64) In to MADI local (1-64) Out
		Serial		Serial signal to MADI local (1-64)

Routing - Busses

Three monitoring busses (MAIN MONITOR, PHONES, AUX) can be controlled by the REMOTE. They are fed by an arbitrary input source and - on their part acting as source - they can be routed to any output sink.

Combined with the telephone functions *(see „Calling - extended" on page 36)* a rich set of individual monitoring setups are possible.

Dedicated encoder on the REMOTE set the monitor level of each bus separately. In general the dsp functions DIM and MUTE are triggered by push buttons or by a GPI event *(see „GPI" on page 39)*. Each bus may be configured individually regarding the dsp functions.

Each bus acts as a stereo output sink that is routed as stereo pair (odd = left channel, even = right channel). The channel pair is patched irrespective the selection of the odd or even number of the channel pair.

Note

MAIN MONITOR

Alternative routing (A/B) is switchable for comparison between different sources. Level control is set by the encoder "MAIN VOL" on the REMOTE.

Five settings define the behaviour of the dsp functions:

- DIM: enables attenuation and defines its level once "DIM" is active.

- TALK: enables attenuation and defines its level once "TALK" is active.

- LISTEN: enables attenuation and defines its level once "LISTEN to BUS" is active. If enabled the signal of the "listen channel" is added to the bus.

- CALL 1: enables attenuation and defines its level once "CALL 1 to BUS" is active. If enabled the incoming signal of "Tel 1" is added to the bus (see „Calling - extended" on page 36).

- CALL 2: enables attenuation and defines its level once "CALL 2 to BUS" is active. If enabled the incoming signal of "Tel 2" is added to the bus (see „Calling - extended" on page 36).

Parameter	Subparameter	Value	Subvalue	Explanation
Main Monitor	A	no Route		no signal to Main Monitor
		MADI local	1 - 64	MADI local (1-64) to Main Monitor
		MADI com	1 - 64	MADI com (1-64) to Main Monitor
		ADAT	1 - 16	ADAT (1-16) to Main Monitor
		AES	1 - 4	AES (1-4) to Main Monitor
		RAVENNA	1 - 8	RAVENNA (1-8) to Main Monitor
		Mic In	1 - 40	Mic In (gain setting) to Main Monitor
		Line In	1 - 40	Line In (gain setting) to Main Monitor
	B	same as for Main Monitor <A>		
	Volume	--	1 - 64	Sets Volume level
	Dim	Attenuation	1 - 64, Mute	Sets attenuation level for DIM, ON = enable DIM
	Talk	On, Off	1 - 64, Mute	Sets attenuation level (DIM) for TALK, ON = enable DIM
	Listen	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for LISTEN, ON = LISTEN is added to bus
	Call 1	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 1, ON = Call to bus (Tel 1 is added to bus)
	Call 2	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 2, ON = Call to bus (Tel 2 is added to bus)

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

Stereo bus; i.e. selection of one channel involves patching of the corresponding channel.
E.g. MADI local 11 to Main Monitor A => MADI local 11 and 12 are patched.

Signal Routing

DSP Processing

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PHONES

Alternative routing (A/B) is switchable for comparison between different sources. Level control is set by the encoder "PHONES" on the REMOTE and can be trimmed locally. This bus is output at the "PHONES" jack only.

Five settings define the behaviour of the dsp functions:

- DIM: enables attenuation and defines its level once "DIM" is active.

- TALK: enables attenuation and defines its level once "TALK" is active.

- LISTEN: enables attenuation and defines its level once "LISTEN to BUS" is active. If enabled the signal of the "listen channel" is added to the bus.

- CALL 1: enables attenuation and defines its level once "CALL 1 to BUS" is active. If enabled the incoming signal of "Tel 1" is added to the bus (see „Calling - extended" on page 36).

- CALL 2: enables attenuation and defines its level once "CALL 2 to BUS" is active. If enabled the incoming signal of "Tel 2" is added to the bus (see „Calling - extended" on page 36).

Parameter	Subparameter	Value	Subvalue	Explanation
Phones	A	no Route		no signal to Phones
ADAT 1 = 1 - 8 ADAT 2 = 9 - 16 AES 1 = 1 - 2 AES 2 = 3 - 4		MADI local	1 - 64	MADI local (1-64) to Phones
		MADI com	1 - 64	MADI com (1-64) to Phones
		ADAT	1 - 16	ADAT (1-16) to Phones
		AES	1 - 4	AES (1-4) to Phones
		RAVENNA	1 - 8	RAVENNA (1-8) to Phones
		Mic In	1 - 40	Mic In (gain setting) to Phones
		Line In	1 - 40	Line In (gain setting) to Phones
	B	same as for Phones <A>		
	Volume	--	1 - 64	Sets Volume level
	Dim	Attenuation	1 - 64, Mute	Sets attenuation level for DIM ON = enable DIM
	Talk	On, Off	1 - 64, Mute	Sets attenuation level (DIM) for TALK, ON = enable DIM
	Listen	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for LISTEN, ON = LISTEN is added to bus
	Call 1	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 1, ON = Call to bus (Tel 1 is added to bus)
	Call 2	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 2, ON = Call to bus (Tel 2 is added to bus)

Signal Routing

DSP Processing

AUX

Level control is set by the encoder "AUX" on the REMOTE. This bus is output at the "AUX OUT" jack only.

Five settings define the behaviour of the dsp functions:

- DIM: enables attenuation and defines its level once "DIM" is active.

- TALK: enables attenuation and defines its level once "TALK" is active.

- LISTEN: enables attenuation and defines its level once "LISTEN to BUS" is active. If enabled the signal of the "listen channel" is added to the bus.

- CALL 1: enables attenuation and defines its level once "CALL 1 to BUS" is active. If enabled the incoming signal of "Tel 1" is added to the bus (see *„Calling - extended" on page 36)*.

- CALL 2: enables attenuation and defines its level once "CALL 2 to BUS" is active. If enabled the incoming signal of "Tel 2" is added to the bus (see *„Calling - extended" on page 36)*.

Parameter	Subparameter	Value	Subvalue	Explanation	
Aux Out	Volume	--	1 - 64	Sets Volume level	DSP Processing
	Dim	Attenuation	1 - 64, Mute	Sets attenuation level for DIM ON = enable DIM	
	Talk	On, Off	1 - 64, Mute	Sets attenuation level (DIM) for TALK, ON = enable DIM	
	Listen	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for LISTEN, ON = LISTEN is added to bus	
	Call 1	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 1, ON = Call to bus (Tel 1 is added to bus)	
	Call 2	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 2, ON = Call to bus (Tel 2 is added to bus)	
	Input	no Route		no signal to Aux Out	Signal Routing
		MADI local	1 - 64	MADI local (1-64) to Aux Out	
		MADI com	1 - 64	MADI com (1-64) to Aux Out	
		ADAT	1 - 16	ADAT (1-16) to Aux Out	
		AES	1 - 4	AES (1-4) to Aux Out	
		RAVENNA	1 - 8	RAVENNA (1-8) to Aux Out	
		Mic In	1 - 40	Mic In (gain setting) to Aux Out	
		Line In	1 - 40	Line In (gain setting) to Aux Out	

Routing - Virtual channels

Two mono virtual channels (TALKBACK and LISTEN) are used internally. They are fed by an arbitrary input source and - on their part acting as source - they can be routed to any output sink. The signal output is switchable by dedicated push buttons. Their use may trigger dsp operations (DIM, DUCK, MUTE, CALL to BUS and LISTEN to BUS) to the busses and the telephone channels (TALKBACK).

TALKBACK - how it could be used

The TALKBACK channel (mono) is fed by any input source. It is switched by the push button TALK on the REMOTE.

Switching behaviour:

• Press short to toggle between TALKBACK ON and OFF.

• Press and hold to activate TALBACK - release to deactivate.

Example:

Talkback source: MIC IN (local)

Destinations: MADI 1 - 63 ("recording") and MADI 2 - 63 ("to stage")

Once TALK is active the microphone signal may be recorded on track 63 for logging purpose and sent to a monitor mixing desk for communication or a second PRODUCER.COM on stage that can output the talkback signal on a monitor bus.

Depending of the setting the monitor bus is dimmed e.g. to prevent feedback.

The routed signal source of the TALKBACK channel is also sent to TEL 1 resp. TEL 2 once CALL 1 resp CALL 2 is active.

Note

The LED Sync at the front panel will flicker if TALBACK is active.

Note

Both virtual channels are mono. When routed to a stereo output sink the signal is sent to both channels of the channel pair - dual mono. The channel pair is patched irrespective the selection of the odd or even number of the channel pair.

Note

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LISTEN - how it could be used

The LISTEN channel (mono) is fed by any input source. It is switched by the push button LISTEN on the REMOTE.

Switching behaviour:

- Press short to toggle between LISTEN ON and OFF.

- Press and hold to activate LISTEN - release to deactivate.

Example:

Listen source: MADI 2 - 64 ("spy microphone on stage")

Destination: MADI 2 - 64 ("recording")

Once LISTEN is active the signal from MADI 2 - 64 is recorded on track 64 for logging purpose.

Additionally if "LISTEN to BUS" is activated in the bus setup ducking of the monitor signal is applied and the signal of the channel is added to the corresponding bus.

Routing - Telephone

The following part refers to the use of "TEL 1" only. Respectively the use of "TEL 2" is identical.

Calling - basic

Two PRODUCER.COMs (PC local and PC remote) each of with a telephone connected at "TEL 1". Both PRODUCER.COMs are bi-directional connected via the MADI Com port (MADI 2).

Routing (example):

PC local: TEL 1 gets MADI 2 - 64

PC remote: TEL 1 gets MADI 2 - 64

The microphone signal of the phone is transmitted in audio channel MADI 2 - 64. Once the phone is off-hook each phone receiver gets signal from input source that is routed to "TEL 1"; i.e. MADI 2- 64.

Calling is made using:

- Push button CALL 1
- Dialing "1" using the numeric key pad of the phone.

Wiring - RJ 45 jack (TEL 1 / TEL 2)
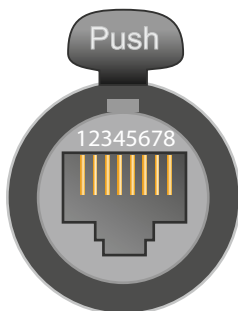
Pin	Signal
1	
2	
3	
4	a
5	b
6	
7	
8	

Calling trigger signals are transmitted in the MADI Com stream (MADI 2) only.

Note

Calling - extended

For conversation using the monitor bus(ses) and the TALKBACK channel an extended signal routing can be applied.

- "CALL 1 to BUS" will duck the monitor signal and add the "ear signal" to the bus once CALL 1 is active.

- <signal source> of the TALKBACK channel is added to the "mic signal". The summed signal is sent to all output ports that have "TEL 1" routed as signal source.

So a telephone conversation could be done e.g. using the PHONES for listening and using the local microphone for talking (TALKBACK source = MIC IN).

CALL to BUS can be applied for each bus (MAIN MONITOR, PHONES, AUX) separately.
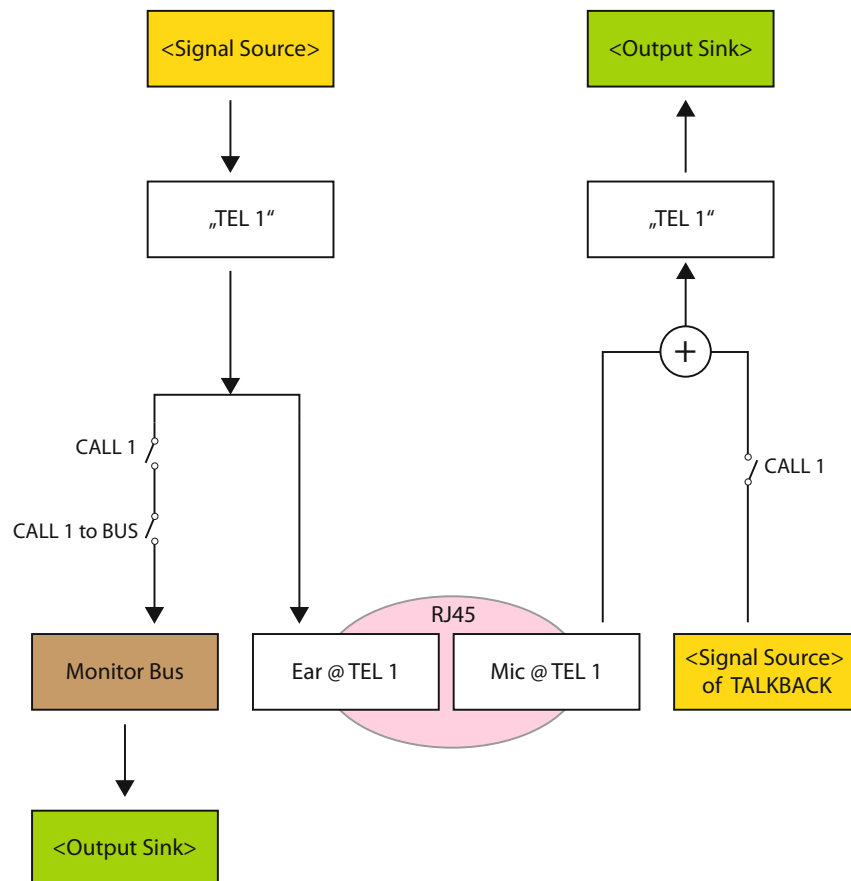
Routing - User Data

User data are serial signals (RS 232, 422, 485 and DMX) and MIDI signals.

In general all signals are processed bittransparent preserving user data that is already embedded in the signal.

Local ports offer the possibility to embed user data into or to extract user data from a MADI stream.

To transmit user data via the local ports a tunnel has to be setup first:

a) Embedding: Specify the tunnel where the user data is to be embedded.

b) Deembedding: Specify the tunnel from where the user data is to be extracted.

For bidirectional use of the local ports the tunnel settings of both PRODUCER.COMs must match.

Note

Serial signals are transmitted either by using userbits of a MADI frame or by using a whole audio channel. The last may serve as a workaround for setups where the userbits are not being processed transparently by other devices in the chain.

MIDI signals from the local MIDI ports can be tunnelled either by MADI local or MADI com.

It is not possible to tunnel more than one serial signal in a userbit tunnel. So e.g. if RS 232 reserves <Userbit 1> the RS 422 signal has to use either <Userbit 2> or an audio channel. If both RS ports are set to the same userbit the RS 232 port has priority.

How to setup RS xxx tunnel?

- Connect the serial signal to the D9 Sub port at the rear panel

- Select Parameter <RS xxx> and goto Subparameter <Tunnel>

- Define <U-Bit> (subvalue 1 or 2) for transmission via userbit

- Define <MADI Com> (subvalue channel 1-64) for transmission via audio channel. This requires an output patch of the selected channel to <serial> (Parameter: MADI Com, Value: Serial).

How to setup a MIDI tunnel?

- Connect the MIDI signal to the local MIDI ports at the front panel

- Select Parameter <MIDI>

- Define value <local> resp. <remote> for tunneling in MADI local resp. MADI com signal

See „Menu - User data" on page 63.

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| Note | *At a scaling factor of 4 FS tunnelling via <Userbit 2> is not possible.* |

Embedding User Data - Sketch

The Embedder/Deembedder can be used for extraction and embedding of user data. The combination of both offers the possibillity to setup a "user data channel" for bidirectional transmission between two PRODUCER.COMs.

Example:

- RS 232 signal is tunnelled in audio channel 64 of MADI Com. Identical tunnel settings => bidirectional transmission

- RS 422 is tunnelled in userbit 1 of MADI Com. Identical tunnel settings => bidirectional transmission

- A MIDI signal which has already been embedded in the MADI signal (MADI local) is deembedded at PRODUCER.COM #2.
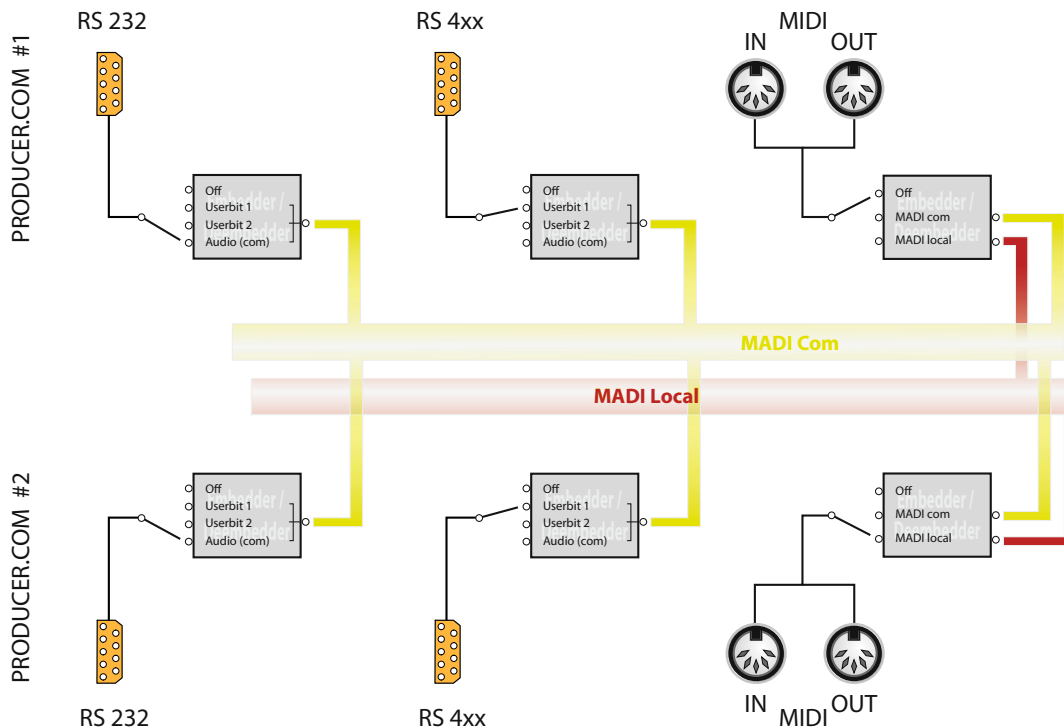
CHAPTER 5: GPIO / Serial Interfaces

GPI

A GPI is used to trigger an event or to toggle a switch by changing the status of a logic; i.e. from 0 to 1 or vice versa.

PRODUCER.COM provides four GPIs using two different methods (two each) for triggering:

Method 1: Optocoupler

Control voltage (5V) between the input pins causes the emitter of the optocoupler to change its level from low (0) to high (1).

Pins: 1/6 & 2/7

Method 2: Voltage Input with Pull-Up

Idle state of the input is high (1). By connecting the input pin to GND, the level will change to low (0).

Alternatively this input can be driven by a voltage source, of which the high (1) level can be as high as 30 V due to a safety limiter in the input.

Pins: 4/8 & 5/9

Method 1 avoids an electrical connection between input signal and the device reducing the risk of grounding issues.

Method 2 doesn't need more than a switch, but it can also accept voltage sources like TTL or CMOS outputs.

The following terms are used in the menu of the REMOTE:

- Optocoupler: Opto 1, Opto 2
- Voltage Input: Volt 1, Volt 2

Sketch GPI
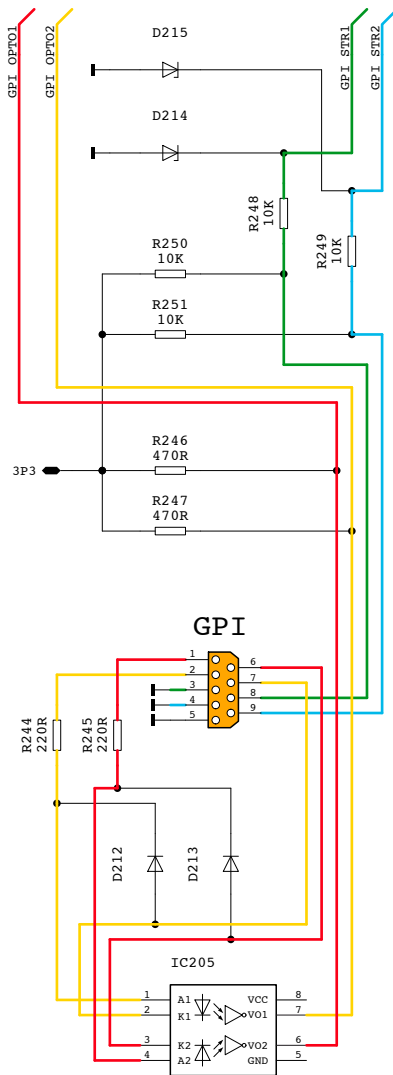
Numeration of pins corresponding the viewing perspective on the back panel:
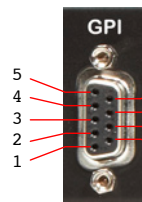
Pin	Signal
1	Optocoupler 1
2	Optocoupler 2
3	Ground
4	Ground
5	Ground
6	Optocoupler 1
7	Optocoupler 2
8	Voltage Input 1
9	Voltage Input 2

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GPO

A GPO provides the consequence of a triggered event (used by the GPI).

The PRODUCER.COM provides four GPOs using two different methods (two each):

Method 1: Solid State Relay

Two pins are connected to a switch, which is opened or closed by the control signal. The output is potential-free like a relay. It can handle a switching voltage up to 60 V and a current up to 600 mA.

Method 1 avoids an electrical connection between switch and device thus reducing the risk of grounding issues.

Pins: 1/6 & 2/7

Method 2: FET switch

The control signal enables or disables a low resistance switch to GND. It can handle an external voltage between 0 V and 12 V.

Pins: 8 & 9

In addition to the four GPO outputs, the ProducerCom provides a voltage source of 12 V for signalling purposes (Pins: 4 & 5). This output is current-limited to 200 mA and it can be used e. g. for signal lights together with the SSRs and FET switches.

The following terms are used in the menu of the REMOTE:

- Solid State Relay: Relais 1, Relais 2
- FET Switch: Volt 1, Volt 2
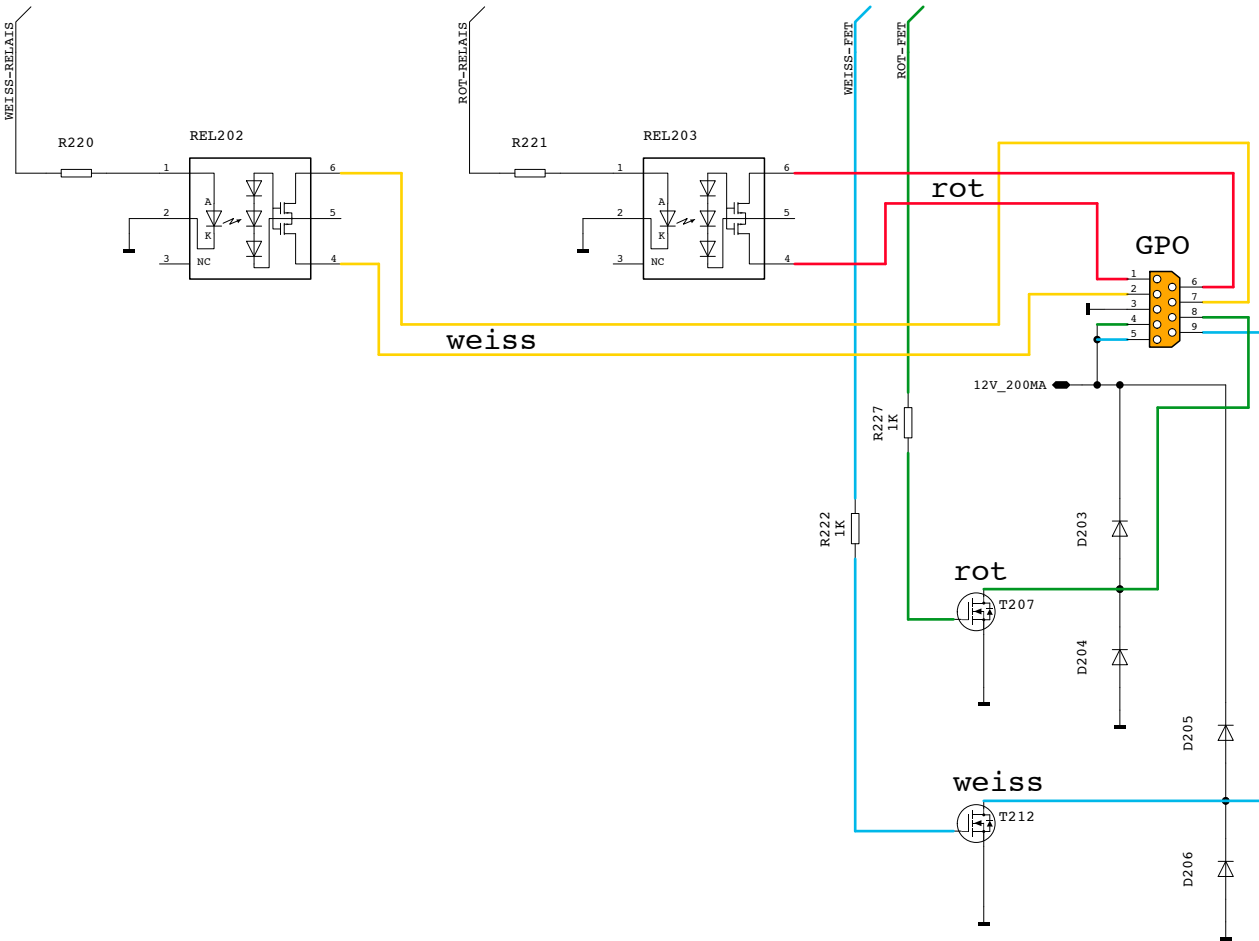
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Sketch GPO

Numeration of pins corresponding the viewing perspective on the back panel:
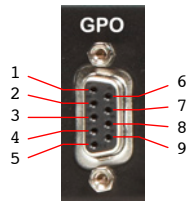
Pin	Signal
1	Optocoupler 1
2	Optocoupler 2
3	Ground
4	+ 12V (max. 200 mA)
5	+ 12V (max. 200 mA)
6	Optocoupler 1
7	Optocoupler 2
8	FET switch 1
9	FET switch 2

Sketch Serial Interfaces

Sketch RS 232

Numeration of pins corresponding the viewing perspective on the back panel:
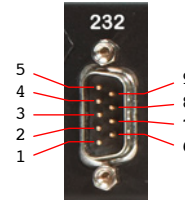
Pin	Signal
1	
2	RS 232 TX
3	RS 232 RX
4	
5	Ground
6	
7	
8	
9	

Sketch RS 422 / 485
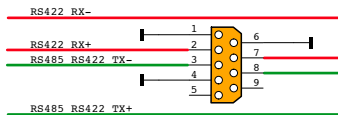
Numeration of pins corresponding the viewing perspective on the back panel:
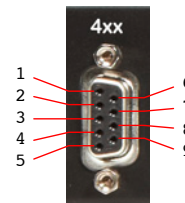
Pin	Signal
1	Ground
2	RS 422 RX+
3	RS 485 / RS 422 TX-
4	Ground
5	
6	Ground
7	RS 422 RX-
8	RS 485 / RS 422 TX+
9	

CHAPTER 6: PRODUCER.COM RE-MOTE

PRODUCER.COM can be controlled either using PRODUCER.RE-MOTE or via USB using a software interface on Windows PC.

Introduction

The hardware remote provides access to all controls of the device. A display informs about the adjusted monitor level of all three monitor outputs or busses.

Encoder are used for volume control and menu navigation.

Push buttons are used for dedicated functions, such as DIM, MUTE, Talkback, Listen, Red / White signal, calling telephone and for selection of monitor sources.

PC REMOTE - OPERATION

The hardware remote provides control without the need of touching a mouse or keyboard. Encoder are used for leveling the three monitor busses and menu navigation. Push buttons are used for direct access and visual feedback of dedicated functions (such as DIM and MUTE e.g.). A display informs about status and guides through the extensive menu.

MENU	**Encoder with push functionality**
	Press to enter the menu and for access of the parameters and values. Turn for navigation and for setting the values.
AUX	**Encoder**
	Turn for level control of AUX.
PHONES	**Encoder**
	Turn for level control of PHONES.
MAIN VOL	**Encoder**
	Turn for level control of MAIN MONITOR.
DISPLAY	Informs about level status (idle mode) and guides through the menu (menu mode).

Level setting of 50 equals to unity thus allowing a digital makeup of +14 dB.

For more details about the menu navigation see „Menu - Navigation" on page 49.

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PC REMOTE - OPERATION - cont.

MAIN	**Button** Push to toggle between MAIN MONITOR A and B (idle mode) or Push for *clockwise* navigation between the parameters (menu mode)
MAIN - LEDs	**2 LEDs (green):** indicate the active source (A or B) of the MAIN MONITOR bus.
PHONES	**Button** Push to toggle between PHONES A and B (idle mode) or Push for *counterclockwise* navigation between the parameters (menu mode)
PHONES - LED	**2 LEDs (green):** indicate the active source (A or B) of the PHONES bus.
RED	**Push Button** Toggles between RED Light (GPO event) ON and OFF. Lights red when active.
WHITE	**Push Button** Toggles between WHITE Light (GPO event) ON and OFF. Lights white when active.

PC REMOTE - OPERATION - cont.

DIM	**Push Button**
	Toggles between DIM ON and OFF. Level Dim on all three monitor busses (Dim level may be adjusted for each bus individually).
	Lights green when active.
MUTE	**Push Button**
	Toggles between MUTE ON and OFF. Affects all three monitor busses.
	Lights green when active.
CALL 1	**Push Button**
	Executes a call on TEL 1.
	Press short to toggle between CALL 1 ON and OFF.
	Press and hold to activate CALL 1 - release to deactivate.
	Lights green when active.
CALL 2	**Push Button**
	Executes a call on TEL 2.
	Press short to toggle between CALL 2 ON and OFF.
	Press and hold to activate CALL 2 - release to deactivate.
	Lights green when active.
TALK	**Push Button**
	Press short to toggle between TALKBACK ON and OFF.
	Press and hold to activate TALBACK - release to deactivate.
	Lights green when active.

PC REMOTE - OPERATION - cont.

LISTEN	Push Button
	Press short to toggle between LISTEN ON and OFF.
	Press and hold to activate LISTEN - release to deactivate.
	Lights green when active.

TALKBACK and LISTEN are virtual channels within the PRODUCER. COM only. They can have an input source and can be routed to any output sink but not to a bus.

See „Routing - Virtual channels" on page 33

TALKBACK may trigger dsp function (DIM or MUTE) on the monitor busses and activates the routed talkback channel (e.g. MIC IN). Once TALK-BACK is active the SYNC LED on the front panel is flickering.

LISTEN may trigger dsp function (DUCK or MUTE) on the monitor busses. The signal of the routed listen channel is summed on the monitor busses if "LISTEN to BUS" is activated there.

CALL 1 resp. CALL 2 causes a ring signal at the connected telephone. Furthermore it may trigger dsp function (DUCK or MUTE) on the monitor busses if activated there. The signal of the incoming telephone channel (TEL 1 resp. TEL 2) is added to the monitor busses then. The signal from local telephone input (TEL 1 resp. TEL 2) plus the signal that feeds the TALKBACK channel is sent to all outputs that have "TEL 1" resp. "TEL 2" as source.

See „Calling - extended" on page 36

Menu - Navigation

Use the knob labelled "MENU". Press to enter and navigate the menu and turn for changing parameters. The small push buttons (MAIN and PHONES) can also be used for navigation within the menu.

In "idle mode" the adjusted levels of the monitor busses are indicated. The display will return to "idle mode" automatically after a timeout in "menu mode".

The menu display is organized into four different categories:

Display
PRODUCER.REMOTE

<Parameter>	<Value>
<Subparameter>	<Subvalue>
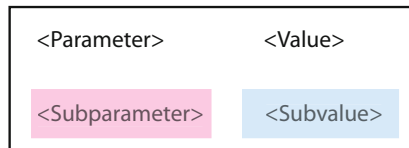
For better understanding the menu items are categorized into <source>, <destination>, <bus/virtual channel> and <non audio>.

Source	Source = signal port can be routed to a <destination>
Destination	Destination = signal port that receives signal from a <source>
Bus / Virtual Channel	Bus / Virtual Channel = can be both, <source> or <destination>, DSP operation (dim, mute) is applied to <bus>
Non Audio	Non Audio = system controls or trigger conditions

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Menu - System Settings

Control Mode

PRODUCER.COM - REMOTE can control up to two devices. The controlled device has to be selected in the menu (requires "Paired" = <On>).

How to set control mode?

- Goto <PARAMETER> and select CONTROL MODE.
- Goto <SUBPARAMETER> to select remote device (Control) or to specify the mode (Paired).
- Goto <VALUE> to define the remote device (Local, Remote) or to set the mode (Off, On).

Parameter	Subparameter	Value	Subvalue
Control Mode	Control needs „Paired" = <On>	Local	Selects local device for control
		Remote	Selects remote device for control
	Paired	Off	Only local device is controlled
		On	Enables individual control of two devices
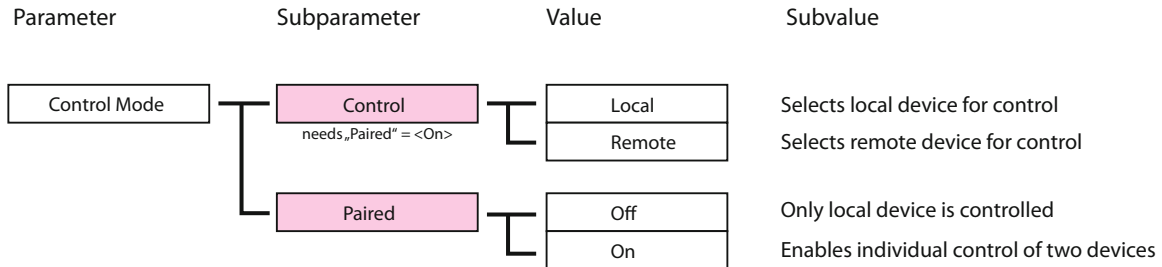
Note *Remote condition for the second device: MADI Com needs to be connected between both devices and in "paired mode".*

Note *To ensure proper behaviour of third party devices being connected to MADI Com make sure to disable the 'Paired Mode' if no second PRODUCER.COM is connected.*

PRODUCER.COM Manual - Version 0.9

Clock Setting

Select the system clock and the scaling factor of the samplerate.

How to set system clock?

- Goto <PARAMETER> and select SYNC.

- Goto <SUBPARAMETER> to select clock source (Source) or Range.

- Goto <VALUE> to define the clock source (WCK, Video, MADI local, MADI Com, AES, ADAT, RAVENNA, INTERN) or the scaling factor (1FS / 2FS / 4FS).

- Goto <SUBVALUE> to define the baserate (44.1, 48) or to specify the port for AES and ADAT (1 -2).

Parameter	Subparameter	Value	Subvalue	Explanation
Sync	Source	WCK		Sync to wordclock
		Video	44.1 / 48	Sync to black burst
		MADI loc		Sync to MADI local
		MADI rem		Sync to MADI com
		AES	1 - 2	Sync to AES (port 1-2)
		ADAT	1 - 2	Sync to ADAT (port 1-2)
		RAVENNA		Sync to RAVENNA
		Intern	44.1 / 48	Sync internally
	Range	1 FS / 2 FS / 4 FS		Sets scaling factor of samplerate
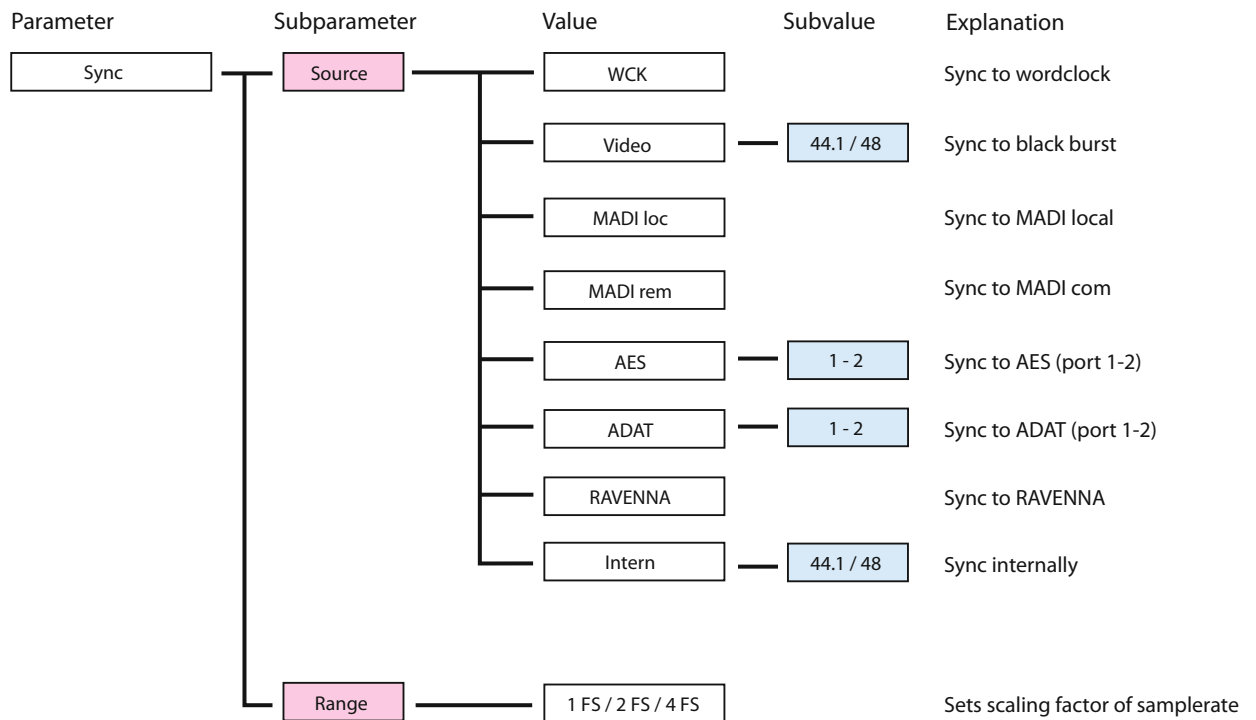
Menu - Audio Routing

The signal routing provides distribution and exchange between all digital interfaces and partially from or to analog interfaces.

Busses are used for DSP processing, such as attenuation (DIM / DUCK) or mute function.

How to patch audio signals?

- Goto <PARAMETER> to define the destination (interface port, virtual channel or bus).
- Goto <SUBPARAMETER> to define the channel.
- Goto <VALUE> to define the signal source (interface port, virtual channel or bus).
- Goto <SUBVALUE> to define the channel or to set the gain level.

MADI Local

Parameter	Subparameter	Value	Subvalue	Explanation
MADI local	1 - 64	no route		no signal to MADI local (1-64)
		MADI local	1 - 64	MADI local (1-64) to MADI local (1-64)
		MADI com	1 - 64	MADI com (1-64) to MADI local (1-64)
		ADAT	1 - 16	ADAT (1-16) to MADI local (1-64)
		AES	1 - 4	AES (1-4) to MADI local (1-64)
		RAVENNA	1 - 8	RAVENNA (1-8) to MADI local (1-64)
		Mic In	1 - 40	Mic In (gain setting) to MADI local (1-64)
		Line In	1 - 40	Line In (gain setting) to MADI local (1-64)
		Main Monitor	1 - 2	Main Monitor (1-2) to MADI local (1-64), with DSP operation
		Talkback		Talkback to MADI local (1-64), with DSP operation
		Listen		Listen to MADI local (1-64), with DSP operation
		Tel 1		Telephone 1 Output to MADI local (1-64)
		Tel 2		Telephone 2 Output to MADI local (1-64)
		1:1		sets routing to corresponding port MADI com (1-64) In to MADI local (1-64) Out
		Serial		Serial signal to MADI local (1-64)

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

MADI Com

Parameter	Subparameter	Value	Subvalue	Explanation
MADI com	1 - 64	no route		no signal to MADI com (1-64)
		MADI local	1 - 64	MADI local (1-64) to MADI com (1-64)
		MADI com	1 - 64	MADI com (1-64) to MADI com (1-64)
		ADAT	1 - 16	ADAT (1-16) to MADI com (1-64)
		AES	1 - 4	AES (1-4) to MADI com (1-64)
		RAVENNA	1 - 8	RAVENNA (1-8) to MADI com (1-64)
		Mic In	1 - 40	Mic In (gain setting) to MADI com (1-64)
		Line In	1 - 40	Line In (gain setting) to MADI com (1-64)
		Main Monitor	1 - 2	Main Monitor (1-2) to MADI com (1-64), with DSP operation
		Talkback		Talkback to MADI com (1-64), with DSP operation
		Listen		Listen to MADI com (1-64), with DSP operation
		Tel 1		Telephone 1 Output to MADI com (1-64)
		Tel 2		Telephone 2 Output to MADI com (1-64)
		1:1		sets routing to corresponding port MADI local (1-64) In to MADI com (1-64) Out
		Serial		Serial signal to MADI com (1-64)

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

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ADAT

Parameter	Subparameter	Value	Subvalue	Explanation
ADAT	1 - 16	no Route		no signal to ADAT (1-16)
		MADI local	1 - 64	MADI local (1-64) to ADAT (1-16)
		MADI com	1 - 64	MADI com (1-64) to ADAT (1-16)
		ADAT	1 - 16	ADAT (1-16) to ADAT (1-16)
		AES	1 - 4	AES (1-4) to ADAT (1-16)
		RAVENNA	1 - 8	RAVENNA (1-8) to ADAT (1-16)
		Mic In	1 - 40	Mic In (gain setting) to ADAT (1-16)
		Line In	1 - 40	Line In (gain setting) to ADAT (1-16)
		Main Monitor	1 - 2	Main Monitor (1-2) to ADAT (1-16), with DSP operation
		Talkback		Talkback to ADAT (1-16), with DSP operation
		Listen		Listen to ADAT (1-16), with DSP operation
		Tel 1		Telephone 1 Output to ADAT (1-16)
		Tel 2		Telephone 2 Output to ADAT (1-16)

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

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AES

Parameter	Subparameter	Value	Subvalue	Explanation
AES	1 - 4	no Route		no signal to AES (1-4)
		MADI local	1 - 64	MADI local (1-64) to AES (1-4)
		MADI com	1 - 64	MADI com (1-64) to AES (1-4)
		ADAT	1 - 16	ADAT (1-16) to AES (1-4)
		AES	1 - 4	AES (1-4) to AES (1-4)
		RAVENNA	1 - 8	RAVENNA (1-8) to AES (1-4)
		Mic In	1 - 40	Mic In (gain setting) to AES (1-4)
		Line In	1 - 40	Line In (gain setting) to AES (1-4)
		Main Monitor	1 - 2	Main Monitor (1-2) to AES (1-4), with DSP operation
		Talkback		Talkback to AES (1-4), with DSP operation
		Listen		Listen to AES (1-4), with DSP operation
		Tel 1		Telephone 1 Output to AES (1-4)
		Tel 2		Telephone 2 Output to AES (1-4)

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

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RAVENNA

Parameter	Subparameter	Value	Subvalue	Explanation
RAVENNA	1 - 8	no Route		no signal to RAVENNA (1-8)
		MADI local	1 - 64	MADI local (1-64) to RAVENNA (1-8)
		MADI com	1 - 64	MADI com (1-64) to RAVENNA (1-8)
		ADAT	1 - 16	ADAT (1-16) to RAVENNA (1-8)
		AES	1 - 4	AES (1-4) to RAVENNA (1-8)
		RAVENNA	1 - 8	RAVENNA (1-8) to RAVENNA (1-8)
		Mic In	1 - 40	Mic In (gain setting) to RAVENNA (1-8)
		Line In	1 - 40	Line In (gain setting) to RAVENNA (1-8)
		Main Monitor	1 - 2	Main Monitor (1-2) to RAVENNA (1-8), with DSP operation
		Talkback		Talkback to RAVENNA (1-8), with DSP operation
		Listen		Listen to RAVENNA (1-8), with DSP operation
		Tel 1		Telephone 1 Output to RAVENNA (1-8)
		Tel 2		Telephone 2 Output to RAVENNA (1-8)

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

Line Out

Parameter	Subparameter	Value	Subvalue	Explanation
Line Out	--	no Route		no signal to Line Out
		MADI local	1 - 64	MADI local (1-64) to Line Out
		MADI com	1 - 64	MADI com (1-64) to Line Out
		ADAT	1 - 16	ADAT (1-16) to Line Out
		AES	1 - 4	AES (1-4) to Line Out
		RAVENNA	1 - 8	RAVENNA (1-8) to Line Out
		Mic In	1 - 40	Mic In (gain setting) to Line Out
		Line In	1 - 40	Line In (gain setting) to Line Out
		Main Monitor	1 - 2	Main Monitor (1-2) to Line Out, with DSP operation
		Talkback		Talkback to Line Out, with DSP operation
		Listen		Listen to Line Out, with DSP operation
		Tel 1		Telephone 1 Output to Line Out
		Tel 2		Telephone 2 Output to Line Out

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

Stereo output sink that is routed as stereo pair (odd = left channel, even = right channel). The channel pair is patched irrespective the selection of the odd or even number of the channel pair.

Note

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MAIN MONITOR

MAIN MONITOR is a stereo bus with A/B source switching.

Parameter	Subparameter	Value	Subvalue	Explanation
Main Monitor	A	no Route		no signal to Main Monitor
		MADI local	1 - 64	MADI local (1-64) to Main Monitor
		MADI com	1 - 64	MADI com (1-64) to Main Monitor
		ADAT	1 - 16	ADAT (1-16) to Main Monitor
		AES	1 - 4	AES (1-4) to Main Monitor
		RAVENNA	1 - 8	RAVENNA (1-8) to Main Monitor
		Mic In	1 - 40	Mic In (gain setting) to Main Monitor
		Line In	1 - 40	Line In (gain setting) to Main Monitor
	B	same as for Main Monitor <A>		
	Volume	--	1 - 64	Sets Volume level
	Dim	Attenuation	1 - 64, Mute	Sets attenuation level for DIM, ON = enable DIM
	Talk	On, Off	1 - 64, Mute	Sets attenuation level (DIM) for TALK, ON = enable DIM
	Listen	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for LISTEN, ON = LISTEN is added to bus
	Call 1	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 1, ON = Call to bus (Tel 1 is added to bus)
	Call 2	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 2, ON = Call to bus (Tel 2 is added to bus)

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4

Stereo bus; i.e. selection of one channel involves patching of the corresponding channel.
E.g. MADI local 11 to Main Monitor A => MADI local 11 and 12 are patched.

Signal Routing

DSP Processing

Note

Stereo output sink that is routed as stereo pair (odd = left channel, even = right channel). The channel pair is patched irrespective the selection of the odd or even number of the channel pair.

PHONES

PHONES is a stereo bus with A/B source switching, hardwired to PHONES OUT.

Parameter	Subparameter	Value	Subvalue	Explanation	
Phones	A	no Route		no signal to Phones	Signal Routing
ADAT 1 = 1 - 8 ADAT 2 = 9 - 16 AES 1 = 1 - 2 AES 2 = 3 - 4		MADI local	1 - 64	MADI local (1-64) to Phones	
		MADI com	1 - 64	MADI com (1-64) to Phones	
		ADAT	1 - 16	ADAT (1-16) to Phones	
		AES	1 - 4	AES (1-4) to Phones	
		RAVENNA	1 - 8	RAVENNA (1-8) to Phones	
		Mic In	1 - 40	Mic In (gain setting) to Phones	
		Line In	1 - 40	Line In (gain setting) to Phones	
	B	same as for Phones <A>			
	Volume	--	1 - 64	Sets Volume level	DSP Processing
	Dim	Attenuation	1 - 64, Mute	Sets attenuation level for DIM ON = enable DIM	
	Talk	On, Off	1 - 64, Mute	Sets attenuation level (DIM) for TALK, ON = enable DIM	
	Listen	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for LISTEN, ON = LISTEN is added to bus	
	Call 1	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 1, ON = Call to bus (Tel 1 is added to bus)	
	Call 2	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 2, ON = Call to bus (Tel 2 is added to bus)	

Stereo output sink that is routed as stereo pair (odd = left channel, even = right channel). The channel pair is patched irrespective the selection of the odd or even number of the channel pair.

Note

AUX

AUX is a stereo bus without A/B source switching, hardwired to AUX OUT.

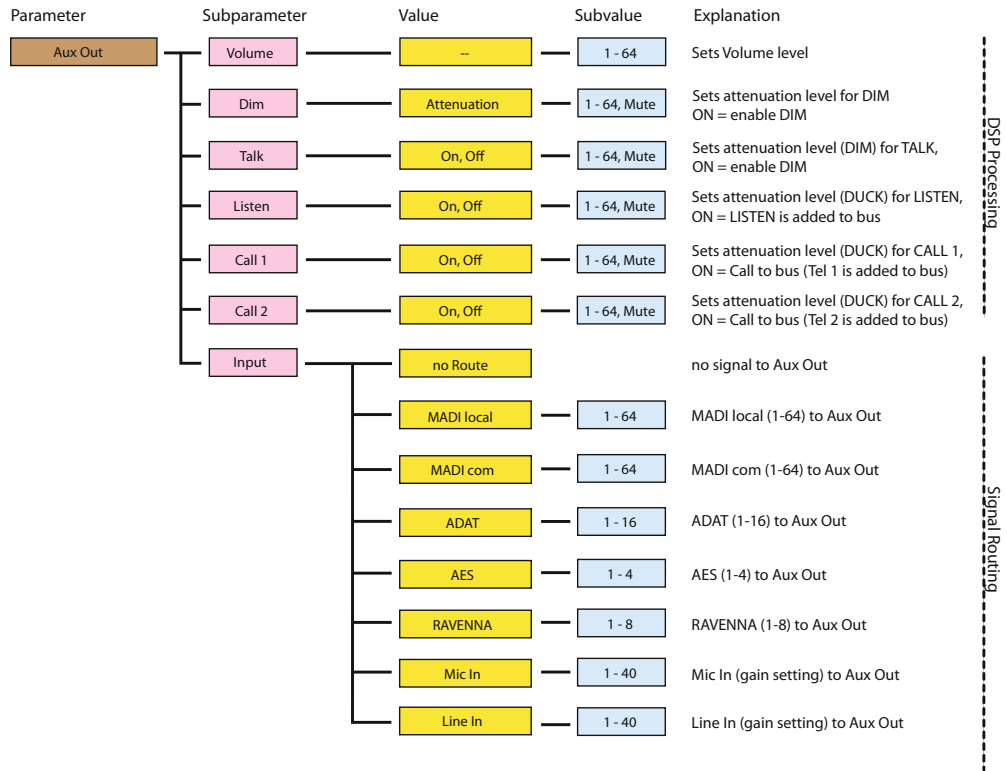| Parameter	Subparameter	Value	Subvalue	Explanation	
Aux Out	Volume	--	1 - 64	Sets Volume level	DSP Processing
	Dim	Attenuation	1 - 64, Mute	Sets attenuation level for DIM ON = enable DIM	
	Talk	On, Off	1 - 64, Mute	Sets attenuation level (DIM) for TALK, ON = enable DIM	
	Listen	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for LISTEN, ON = LISTEN is added to bus	
	Call 1	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 1, ON = Call to bus (Tel 1 is added to bus)	
	Call 2	On, Off	1 - 64, Mute	Sets attenuation level (DUCK) for CALL 2, ON = Call to bus (Tel 2 is added to bus)	
	Input	no Route		no signal to Aux Out	Signal Routing
		MADI local	1 - 64	MADI local (1-64) to Aux Out	
		MADI com	1 - 64	MADI com (1-64) to Aux Out	
		ADAT	1 - 16	ADAT (1-16) to Aux Out	
		AES	1 - 4	AES (1-4) to Aux Out	
		RAVENNA	1 - 8	RAVENNA (1-8) to Aux Out	
		Mic In	1 - 40	Mic In (gain setting) to Aux Out	
		Line In	1 - 40	Line In (gain setting) to Aux Out	

Note

Stereo output sink that is routed as stereo pair (odd = left channel, even = right channel). The channel pair is patched irrespective the selection of the odd or even number of the channel pair.

LISTEN

LISTEN is a virtual channel - mono, may trigger dsp functions.

Parameter	Subparameter	Value	Subvalue	Explanation
Listen	Input	no Route		no signal to Listen
		MADI local	1 - 64	MADI local (1-64) to Listen
		MADI com	1 - 64	MADI com (1-64) to Listen
		ADAT	1 - 16	ADAT (1-16) to Listen
		AES	1 - 4	AES (1-4) to Listen
		RAVENNA	1 - 8	RAVENNA (1-8) to Listen
		Mic In	1 - 40	Mic In (gain setting) to Listen
		Line In	1 - 40	Line In (gain setting) to Listen

ADAT 1 = 1 - 8
ADAT 2 = 9 - 16
AES 1 = 1 - 2
AES 2 = 3 - 4
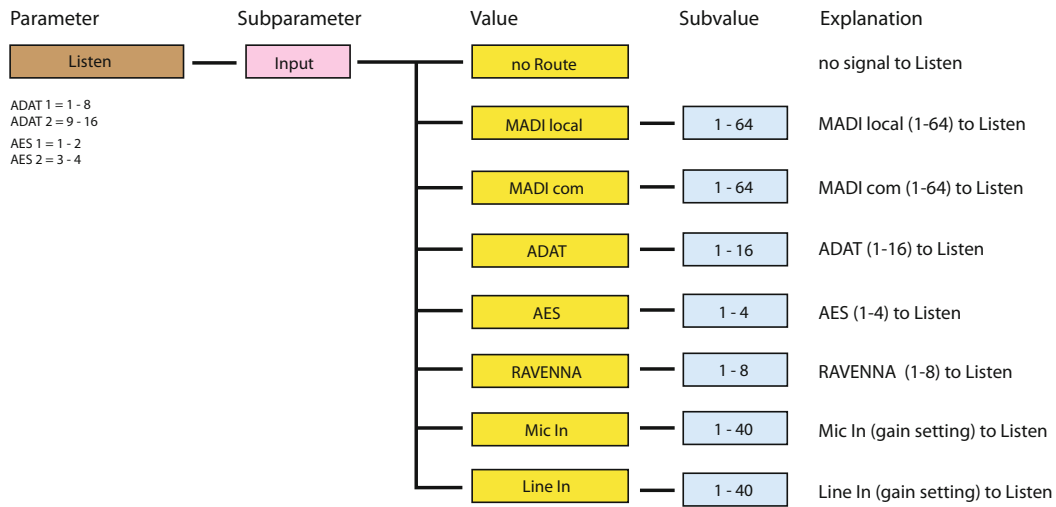
TALKBACK

TALKBACK is a virtual channel - mono, may trigger dsp functions.

Parameter	Subparameter	Value	Subvalue	Explanation
Talkback	Input	no Route		no signal to Talkback
		MADI local	1 - 64	MADI local (1-64) to Talkback
		MADI com	1 - 64	MADI com (1-64) to Talkback
		ADAT	1 - 16	ADAT (1-16) to Talkback
		AES	1 - 4	AES (1-4) to Talkback
		RAVENNA	1 - 8	RAVENNA (1-8) to Talkback
		Mic In	1 - 40	Mic In (gain setting) to Talkback
		Line In	1 - 40	Line In (gain setting) to Talkback

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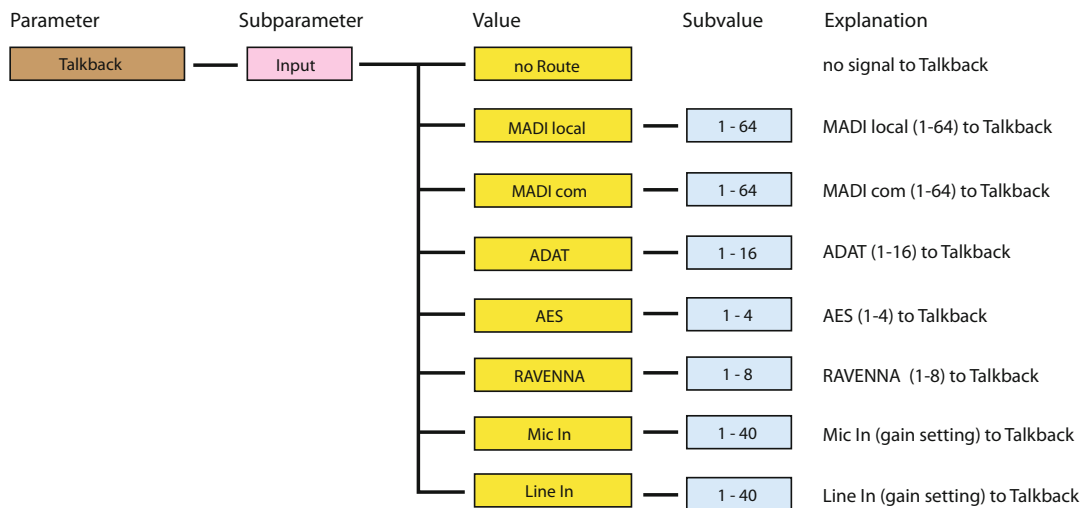
TELEPHONE

TELEPHONE is a communication channel - mono, may trigger dsp functions.

Parameter	Subparameter	Value	Subvalue	Explanation
Tel 1	Input	no Route		no signal to Tel 1
		MADI local	1 - 64	MADI local (1-64) to Tel 1
		MADI com	1 - 64	MADI com (1-64) to Tel 1
		ADAT	1 - 16	ADAT (1-16) to Tel 1
		AES	1 - 4	AES (1-4) to Tel 1
		RAVENNA	1 - 8	RAVENNA (1-8) to Tel 1
		Mic In	1 - 40	Mic In (gain setting) to Tel 1
		Line In	1 - 40	Line In (gain setting) to Tel 1
Tel 2	Input	no Route		no signal to Tel 2
		MADI local	1 - 64	MADI local (1-64) to Tel 2
		MADI com	1 - 64	MADI com (1-64) to Tel 2

same as for Tel 1

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Menu - User data

Serial Ports

Serial signals can be routed either by using userbits of a MADI frame or by using a whole audio channel. The last may serve as a workaround for setups where the userbits are not being processed transparently by other devices in the chain.
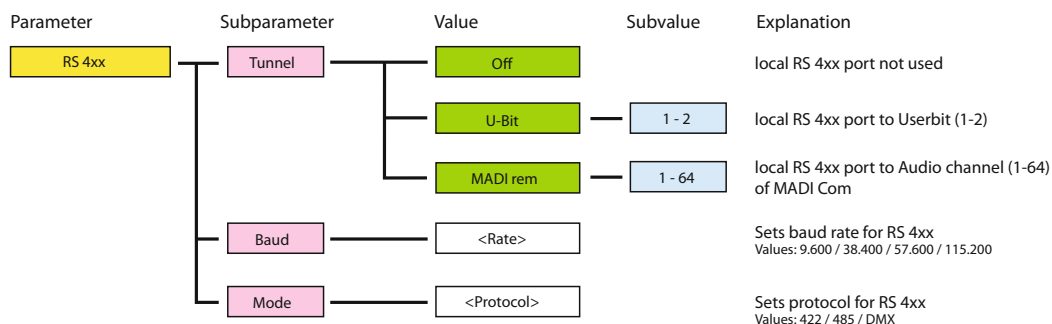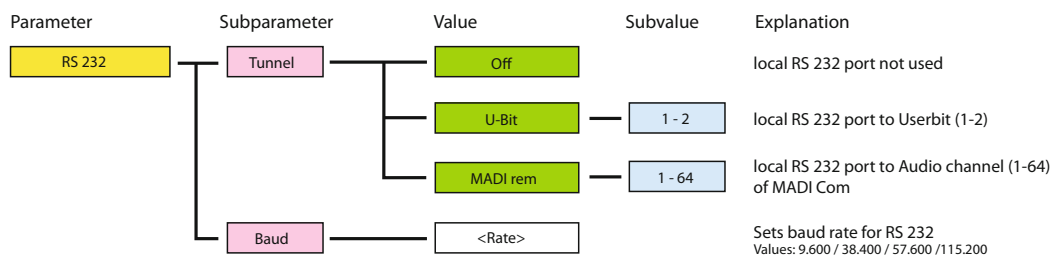
All data is embedded into the MADI Com stream and taken from there. To pass through already embedded data from MADI Local to MADI Com set Tunnel to 'off' for the respective serial port.

Note

How to tunnel serial data?

- Goto <PARAMETER> to define the RS port.

- Goto <SUBPARAMETER> to setup tunnel or baudrate or mode for RS 4xx (422 / 485 / DMX).

- Goto <VALUE> to define the tunnel (userbit or audiochannel) or the baudrate (9600 / 38400 / 57600 / 115200).

- Goto <SUBVALUE> to define the userbit (1-2) or audiochannel (1-64).

Parameter	Subparameter	Value	Subvalue	Explanation
RS 232	Tunnel	Off		local RS 232 port not used
		U-Bit	1 - 2	local RS 232 port to Userbit (1-2)
		MADI rem	1 - 64	local RS 232 port to Audio channel (1-64) of MADI Com
	Baud	<Rate>		Sets baud rate for RS 232 Values: 9.600 / 38.400 / 57.600 /115.200

Parameter	Subparameter	Value	Subvalue	Explanation
RS 4xx	Tunnel	Off		local RS 4xx port not used
		U-Bit	1 - 2	local RS 4xx port to Userbit (1-2)
		MADI rem	1 - 64	local RS 4xx port to Audio channel (1-64) of MADI Com
	Baud	<Rate>		Sets baud rate for RS 4xx Values: 9.600 / 38.400 / 57.600 / 115.200
	Mode	<Protocol>		Sets protocol for RS 4xx Values: 422 / 485 / DMX

For bidirectional use of the local RS ports the settings of both PRODUCER.COMs must match.

Note

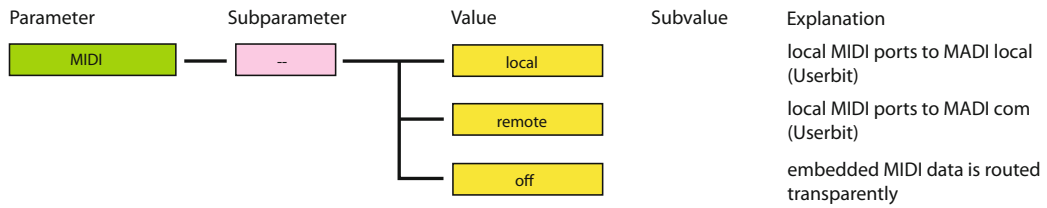**DirectOut Technologies®**

MIDI

MIDI data from the local ports can be transported within the MADI signal ("MIDI over MADI")

How to tunnel MIDI data?

- Goto <PARAMETER> and define the MIDI port.
- Goto <VALUE> to define the tunnel (local or com).

Parameter	Subparameter	Value	Subvalue	Explanation
MIDI	--	local		local MIDI ports to MADI local (Userbit)
		remote		local MIDI ports to MADI com (Userbit)
		off		embedded MIDI data is routed transparently

Note

For bidirectional use of the local MIDI ports the settings of both PRODUCER.COMs must match.

Menu - GPIO

4 GPOs can be triggered by 4 GPIs or push buttons.

GPO: There are 2 solid state relays (Relais 1/2) and 2 FET switches (Volt 1/2) for switching; additionally a voltage source (12 V / max. 200 mA) can be used e.g. for signal lights together with the solid state relays and FET switches.

GPI: 2 voltage inputs (Volt 1/2) and 2 optocouplers (Opto 1/2).

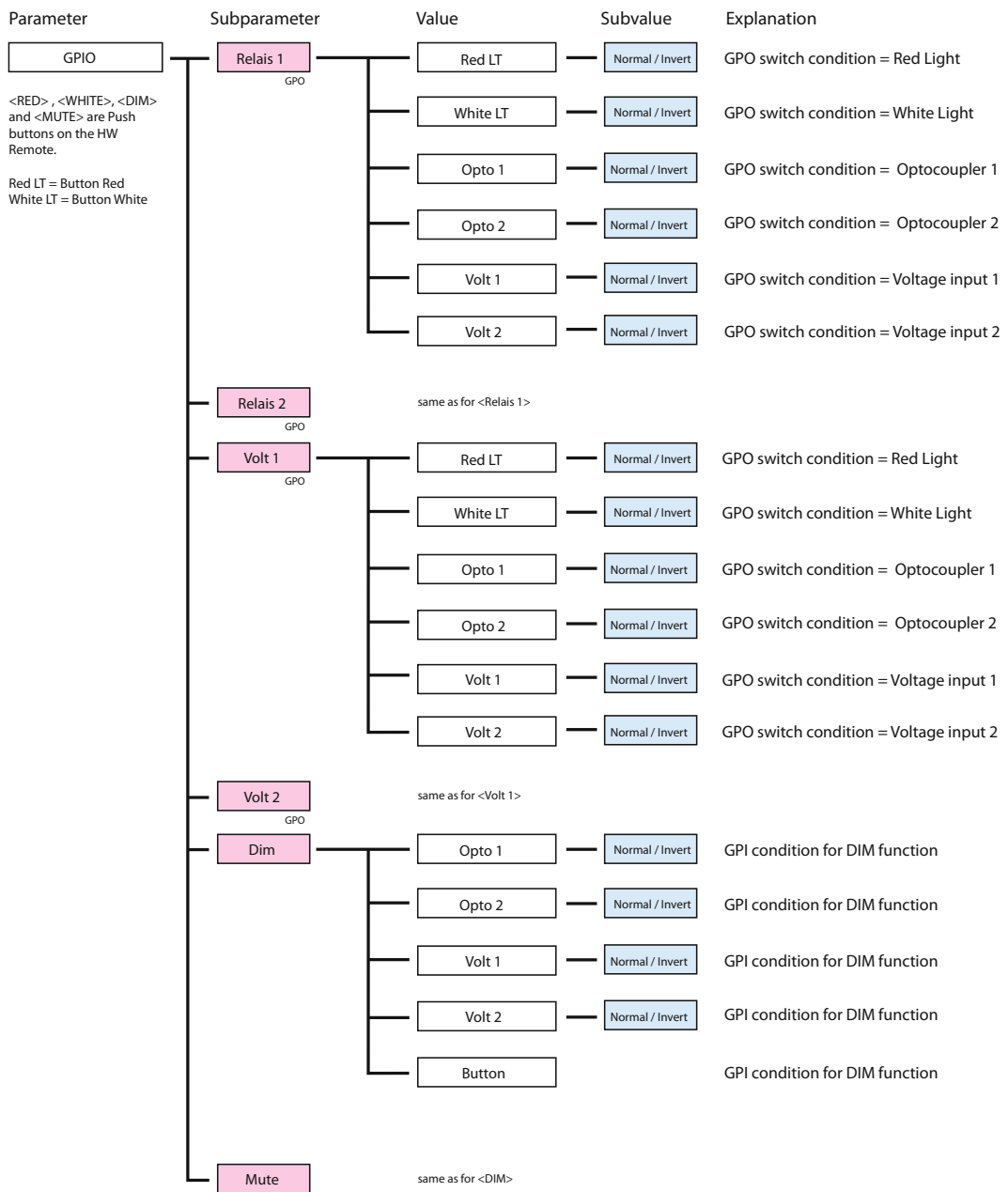Menu Map and explanation is provided on *page 65*.

For wiring and technical information see „*CHAPTER 5: GPIO / Serial Interfaces" on page 39.*

Note

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How to setup a GPO?

- Goto <PARAMETER> and select GPIO

- Goto <SUBPARAMETER> to define the GPO (Relais 1/2, Volt 1/2) or the dsp function (DIM, MUTE)

- Goto <VALUE> to define the switching condition for the GPO (push button, GPI).

- Goto <SUBVALUE> to define the switching behavior of the GPO (normal, inverted).

Parameter	Subparameter	Value	Subvalue	Explanation
GPIO	Relais 1 (GPO)	Red LT	Normal / Invert	GPO switch condition = Red Light
		White LT	Normal / Invert	GPO switch condition = White Light
		Opto 1	Normal / Invert	GPO switch condition = Optocoupler 1
		Opto 2	Normal / Invert	GPO switch condition = Optocoupler 2
		Volt 1	Normal / Invert	GPO switch condition = Voltage input 1
		Volt 2	Normal / Invert	GPO switch condition = Voltage input 2
	Relais 2 (GPO)	same as for <Relais 1>		
	Volt 1 (GPO)	Red LT	Normal / Invert	GPO switch condition = Red Light
		White LT	Normal / Invert	GPO switch condition = White Light
		Opto 1	Normal / Invert	GPO switch condition = Optocoupler 1
		Opto 2	Normal / Invert	GPO switch condition = Optocoupler 2
		Volt 1	Normal / Invert	GPO switch condition = Voltage input 1
		Volt 2	Normal / Invert	GPO switch condition = Voltage input 2
	Volt 2 (GPO)	same as for <Volt 1>		
	Dim	Opto 1	Normal / Invert	GPI condition for DIM function
		Opto 2	Normal / Invert	GPI condition for DIM function
		Volt 1	Normal / Invert	GPI condition for DIM function
		Volt 2	Normal / Invert	GPI condition for DIM function
		Button		GPI condition for DIM function
	Mute	same as for <DIM>		

<RED> , <WHITE>, <DIM> and <MUTE> are Push buttons on the HW Remote.

Red LT = Button Red
White LT = Button White

CHAPTER 7: Software Remote

The software remote provides full access to all controls of the device extended by a preset management. Configure a preset "offline" and transfer it when it is needed.

For use of the software remote please download the latest drivers and software versions from our website: www.directout.eu

Quick Setup:

1. Connect PRODUCER.COM to your PC. If you do this for the first time you will have to install the USB serial driver.

2. Start "Remote.exe"

3. Select the virtual COM-Port of PRODUCER.COM in the upper right corner of the toolbar.

4. Click the green "Connect" button.

To reset your PRODUCER.COM host to defined values please load "Preset 1.pcp" located in your installation folder and click "Transmit Preset to Host" (blue arrow in the toolbar).

Guide for the installation of the USB driver:

http://www.directout.eu/upload/software/DOTEC_Driver_CDM_V0103.zip

Note

*All parameters are overwritten by the hardware once the software remote is set to <online>. Make sure that you store your settings in a preset **before** connecting.*

Tip

All settings are stored within the device. So after a loss of power the last configuration is preserved.

Note

If you experience any difficulties setting up the software or for questions or comments please contact support@directout.eu.

CHAPTER 8: Interfaces

PRODUCER.COM provides a variety of audio and non-audio interfaces. The number of inputs and outputs is summed up in the table below. The last row explains how the signals are transmitted.

Ports	Description	Number of channels / signals	Tunnel (within MADI signal)
MADI Ports:	2 x MADI input and output (Optical SC multi-mode connectors)	256 (128 each)	
AES Ports	2 x AES input and output (XLR connectors)	8 (4 each)	
ADAT Ports	2 x ADAT input and output	32 (16 each)	
RAVENNA Ports	2 x Ethernet RJ45 (100 Mbit/s)	16 (8 each)	
Microphone	1 x Mic input (XLR connector, phantom power switchable)	1	1 audio-channel
Line Input	1 x mono, 6.3 mm TRS jack (balanced)	1	1 audio-channel
Auxiliary Output	1 x stereo, 6.3 mm TRS jack (unbalanced)	2	2 audio-channels
Line Output	1 x stereo, 2 x XLR connectors, trimmable	2	2 audio-channels
Headphone Output	1 x stereo, 6.3 mm TRS jack, trimmable	2	2 audio-channels
MIDI	1 x MIDI input and output, DIN connectors	1 / 0	Userbit
Telephone	2 x RJ45 connectors (Ethercon), MFV dial	4	4 audio-channels
Serial Communication	RS-232 and RS-422 or RS-485	1 / 0	1 audio-channel or Userbit
General Purpose	4 x GPI (2 x optocoupler, 2 x Voltage input with pull up) 4 x GPO (2 x optocoupler, 2 x FET switch, e.g. red light)	8	Userbit

CHAPTER 9: Applications

Many scenarios are possible with two PRODUCER.COMs - and even with one. In the following examples shall illustrate some options - so the routings described there are exemplified.

At higher scaling factors (2 FS / 4 FS) adhere to the limitations regarding the available number of audio channels (32 ch / 16 ch).

Example 1: Recording, red light, intercom

Two devices are used - one in the control room (#01), one on stage (#02). Both devices may be controlled from the device in the control room.

Requirements:

- recording signal from stage to control room to a DAW
- (pre-)mixing signal within DAW and monitoring mix
- intercom between stage and control room
- private communication to conductor
- red light signalling during recording

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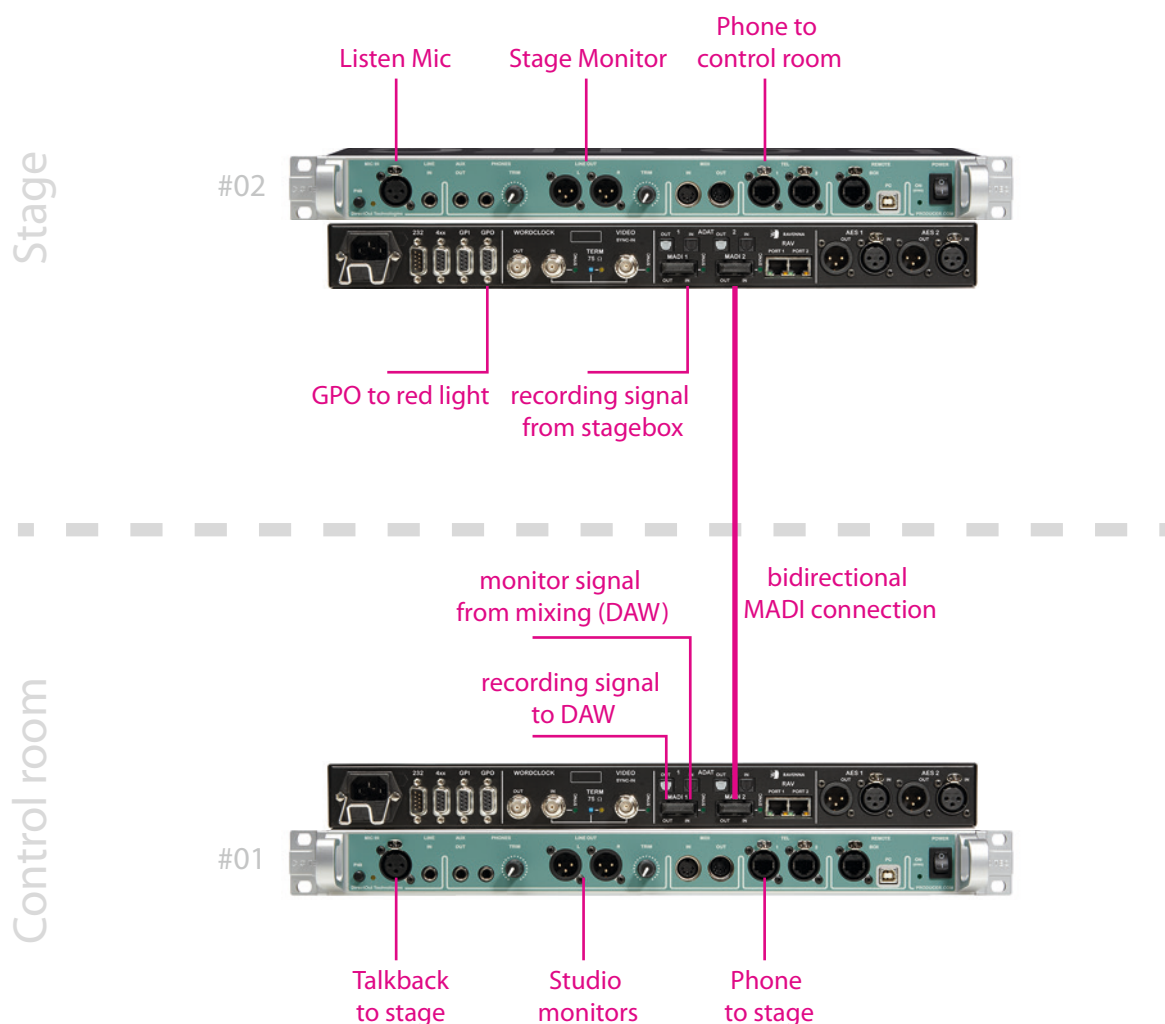
Settings PRODUCER.COM #1 (Control room)

Destination	Source	Note
MADI 1 ch 01 - ch 64	1:1	recording signal from stage to DAW (MADI 2 in to MADI 1 out)
MADI 2 ch 63	Talkback	talkback to stage
MADI 2 ch 64	Tel1	telephone to stage
Talkback	Mic in	talkback to stage
Listen	MADI 2 ch 63	Listen microphone from stage
TEL1	MADI 2 ch 64	telephone from stage
Main Monitor A	MADI 1 ch 63/64	mixing output from DAW
Main Monitor B	MADI 2 ch 01/02	optional: Main microphones from stage

Two audio signals are transmitted to stage: talkback and telephone. The local microphone input is routed to the talkback bus, which itself is output at MADI 2 - ch 63. The telephone signal is received and output on MADI 2 - ch 64.

The studio monitors (Line Out) may be switched between A and B signal.

Settings PRODUCER.COM #2 (Stage)

Destination	Source	Note
MADI 2 ch 01 - ch 62	1:1	recording signal from stagebox to control room (MADI 1 in to MADI 2 out)
MADI 2 ch 63	Mic in	Listen microphone to control room
MADI 2 ch 64	Tel1	telephone to control room
TEL1	MADI 2 ch 64	telephone from control room
Main Monitor A	MADI 2 ch 63	stage monitor
GPO	Button red (local off)	Red light signal on stage

There are 64 signals from stage to the control room. Channels 63 and 64 are used for the listen microphone and the telephone; the remaining channels may be used for the recording.

The local microphone input is routed to the listen bus, which itself is output on MADI 2 - ch 63. The telephone signal is received and output on MADI 2 - ch 64.

The left line out connector outputs the Main monitor signal (= talkback) to the stage monitor. The level may be adjusted at the Main Vol of the remote control (#2) and locally trimmed at the front panel.

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Check both settings to gain appropriate loudness.

The settings for the Main Monitor must be repeated for the phones output if headphones are used in parallel.
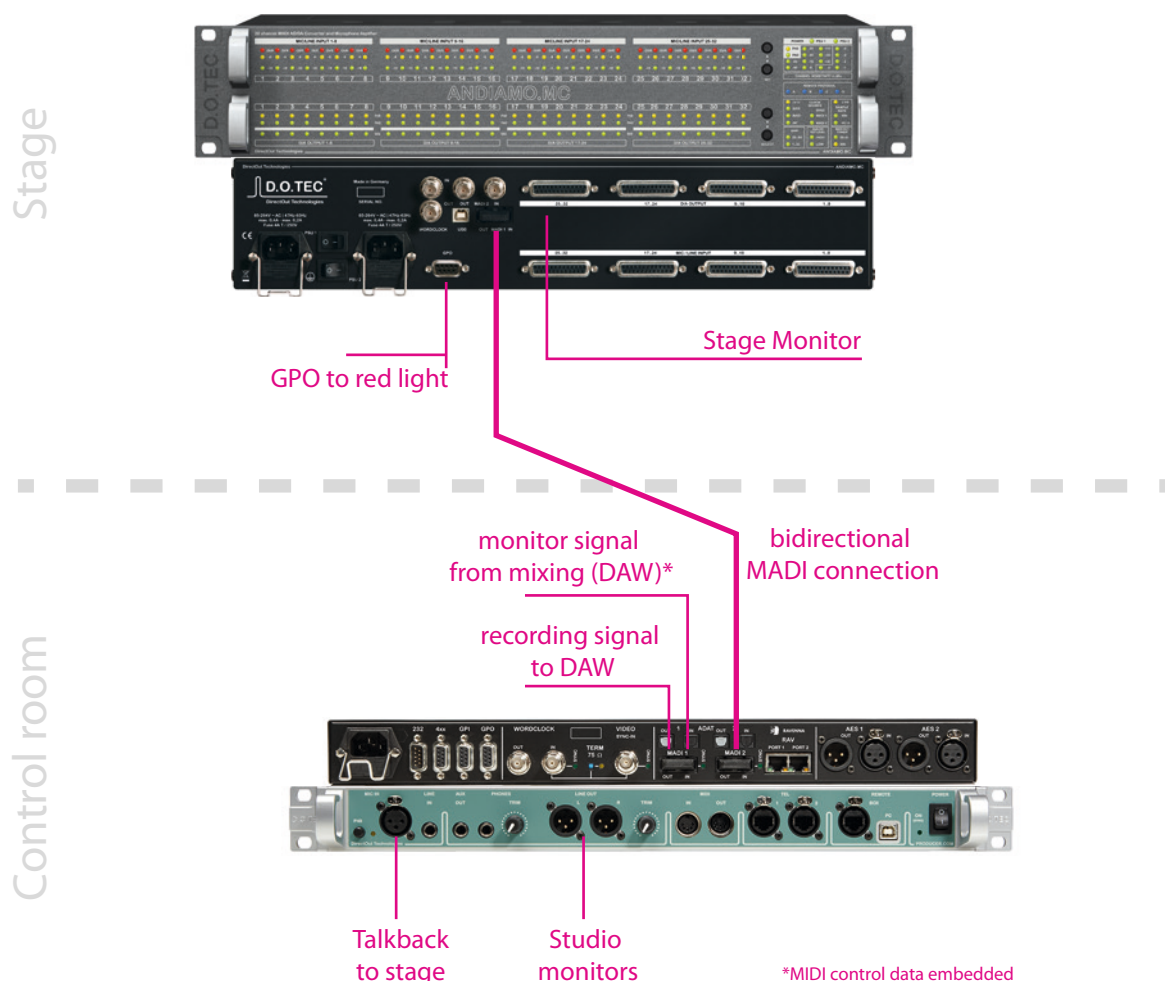
The local GPO switches the power supply for the red light.

Example 2: Recording, stage command

One device is used - in the control room. On stage one or more RME Micstasys are used - option slot with MADI card installed.

Requirements:

- recording signal from stage to control room to a DAW
- (pre-)mixing signal within DAW and monitoring mix
- command to a digital stage monitor
- remote control of the Micstasy

Stage

GPO to red light

Stage Monitor

monitor signal from mixing (DAW)*

bidirectional MADI connection

recording signal to DAW

Control room

Talkback to stage

Studio monitors

*MIDI control data embedded

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Settings PRODUCER.COM (Control room)

Destination	Source	Note
MADI 1 ch 01 - ch 64	1:1	recording signal from stage to DAW (MADI 2 in to MADI 1 out)
MADI 2 ch 01	Talkback	talkback to stage
Talkback	Mic in	talkback to stage
Main Monitor A	MADI 1 ch 63/64	mixing output from DAW
Main Monitor B	MADI 2 ch 01/02	optional: Main microphones from stage
MIDI	Off	MIDI control of the Micstasy, MIDI over MADI pass-through is in effect.

The microphone signals are gained and A/D converted by the Micstasy. The MADI signal is output at the optional MADI card.

The local microphone input is routed to the talkback bus, which itself is output at MADI 2 - ch 01 to the Micstasy (ID 1). On stage the talkback signal is output at the AES output (digital out set to 'oP') of the Micstasy (requiring a digital monitor).

Tip

Up to eight Micstasys can be cascaded to record up to 64 audio channels. The ID setting of each Micstasy defines the channel assignment within the MADI signal; e.g. ID 2 = MADI ch 09 - ch 16. In this example the Micstasy uses ID 1. So the local AES output will feed MADI channels 01 - 04.

The studio monitors (Line Out) in the control room may be switched between A and B signal. The settings for the Main Monitor must be repeated for the phones output if headphones are used in parallel.

The MIDI signal to control the Micstasy is tunnelled within the MADI signal ('MIDIoverMADI') - from MADI 1 to MADI 2. Select 'OPTN' for REMOTE at the Micstasy. In the Serial Embedder Setup of the PRODUCER.COM set MIDI tunnel 'off' to disable the local MIDI ports.

Note

To ensure proper behaviour with third party devices being connected to MADI 2 make sure to disable the 'Paired Mode' if no second PRODUCER.COM is connected - see „Menu - System Settings" on page 50.

Index

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