VERMONA

ELEKTROAKUSTISCHE MANUFAKTUR

twinOUT

User Guide

Introduction

The perfect sound has been patched, a brilliant sequence adjusted and then, there‘s NOISE, HUM or CRACKLING. This is not just annoying – it may also ruin your recording or live performance. The reason for this often is the cable connection to your mixing console or audio-interface. 3.5-mm-jacks are useful for patch purposes but not suitable for long cable runs. Here, you need a solid and electrically reliable wire.

twinOUT delivers exactly this: It equips your modular synthesizer with reliable connections. This module saves you from trouble and makes life a little easier. Invaluable, isn‘t it?

Enjoy the twinOUT module and of course enjoy patching!

Your VERMONA crew from the
Elektroakustischen Manufaktur, Erlbach

Unpacking

To ensure top quality, we carefully inspected the module before packaging. Nevertheless, the unit could have been damaged during transportation. Therefore, we ask you to take a serious look at the module when unpacking. Do not hesitate to contact us, should there be anything unusual with the unit or its packaging.

You should find the following items in the box:

- of course the twinOUT module itself
- one system connection chord (10-pin to 16-pin)
- four rack mounting screws 3×6 mm with suitable flat washers
- this manual

Setup

We designed twinOUT to work with modular synthesizer systems using the common eurorack format. Its power supply, connectors and dimensions match common specifications as used on the VERMONA Modular Case 104, Doepfer‘s A100 and compatible systems. To mount the module into your system‘s frame, carry out the following steps:

1. **Switch off the power supply and remove the detachable power cable from your frame.** Security always comes before comfort!
2. Connect the supplied ribbon cable to the module‘s rear (*see “Figure 1: twinOUT rear with DIP switches and system bus connector” on page 15*.

⚠ **twinOUT is equipped with a shroud connector. Thus, the 10 pin ribbon cable connector will only fit in one direction. The color coded side of the provided VERMONA ribbon cable points towards -12 volts when connected to twinOUT. This might not be the case with other manufacturers‘ ribbon cables. So always use the provided ribbon cable to connect twinOUT to the system bus!**

3. Connect the ribbon cable‘s other side (with the 16-pin ribbon connector) to an empty socket of your frame‘s system bus. Make sure cable’s color coded side points towards -12 volts!

⚠ **Connecting the ribbon cable with reverse polarity can lead to damage of your module when powering the system! Please check the connection twice before continuing.**

4. Mount the twinOUT to your modular frame using the four provided screws. Use the provided plastic washers to prevent scratches on the module’s surface.
5. Reconnect the power cable to your frame and switch on the power supply. The module is now ready to work.

Congratulations, twinOUT is now ready to work.

twinOUT – connecting to the outer world

twinOUT offers two functions. On the one hand it allows comfortable control over a modular system‘s output level without needing to change your patch or VCA settings. On the other hand, the output signal is electrically balanced allowing long cable runs while being resistant to cross-feed. As a bonus, twinOUT provides an additional stereo output that can be used for line level signals or as headphone output.

twinOUT is able to amplify and attenuate signals allowing the output level of a modular system to match any situation required. This way, it is possible to protect the sensitive AD-conversion of an audio-interface against clipping while the analogue inputs of mixing consoles may be addressed with higher levels.

twinOUT has been engineered with an input level that will basically work with all available modules. At the same time, the output levels comply with the predominant studio standards.

Connections and Controls

twinOUT‘s two channels offer identical functions and are therefore described only once here. Solely, the differentiation between STEREO and DUAL modes will be explained separately.

LEVEL

The **LEVEL** control sets the output level of the channel. Here, XLR- and line outputs behave differently.

Balanced XLR output:
When setting **LEVEL** to its central/noon position, the input level equals the output level. Amplification is 0 dB.
Turned fully clockwise, the output level is amplified by 12 dB.
Turning **LEVEL** counterclockwise from the central position will attenuate the output level until the signal is fully muted.

The LINE OUT offers two options:
Two DIP switches on the circuit boards allow separate attenuation of the output channels. With the DIP switches set to **OFF**, the output level is +6 dBu with **LEVEL** being turned fully up. With attenuation being active (DIP switches **ON**), the output level is at -4 dBu when fully turned up.

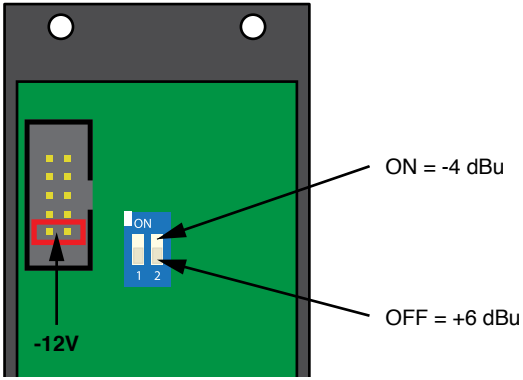

Figure 1: twinOUT rear with DIP switches and system bus connector

Clip-LED

The Clip-LED will be lit whenever the level at the XLR inputs exceeds +12 dBu or 0 dBu for the line-output. However, distortion at the output will not occur at this point because twinOUT offers additional headroom of 12 dB. The maximal output voltage can therefore be +24 dBu.

☛ **By all means, clipping may even have a positive sound-effect. Generally, moderate clipping is harmless when using the twinOUT with analogue equipment. However, when connecting your modular synthesizer to a digital recording medium, it is absolutely necessary to avoid clipping.**

MODE The **MODE** switch selects between **STEREO** and **DUAL** operation modes.

STEREO:
In this mode, **LEVEL** control 1 adjusts both channels (XLR outputs) commonly. **LINE OUT** outputs a stereophonic signal with channel 1 being routed to the left and channel 2 routed to the right. This operating mode is recommended whenever the modular synthesizer creates or processes stereophonic signals or whenever a monophonic signal is connected to a stereo input of a mixer, amplifier or audio-interface.

DUAL:
In this mode, both channels work independently with their levels being adjusted individually using the **LEVEL** control. **LINE OUT** outputs both signals as a mix on both left and right channels.

In- and Outputs

Both twinOUT channels offer individual 3.5-mm-jack inputs and XLR-outputs as well as a common stereo output.

INPUT Is the unbalanced input for signals of the modular synthesizer. In case only **INPUT 1** is used, the signal will also be routed to channel 2. Because the signal is immediately split after the input jack, the volumes of both channels can be controlled individually.

OUTPUT The XLR OUTPUT is electronically balanced. Connect the signal from here to an external mixing console or an audio-interface.

LINE OUT The stereo output (3.5-mm-jack) allows connecting a headphone or can be used as a line output. When using a low-impedance-headphone it is recommended to set the circuit boards' DIP switch to **ON** (*see "Figure 1: twinOUT rear with DIP switches and system bus connector" on page 15*). When using a higher-impedance-headphone (300 ohms or higher or the use as line output, set the DIP switch to **OFF**.

The wiring of the stereo output follows the standard: tip – left channel, ring – right channel, sleeve – ground.

In practice

Do you need balanced cables and XLR-connectors in a modular system?

Balanced connections are recommended when transferring audio over longer distances where interspersion or cross-feed may occur. For example: in a club or stage that use light systems, in a studio where cables run near power lines or past unshielded units. The balanced signal transmission, where the negative phase and the ground are separated can avoid possible sonic problems.

Also, XLR connectors have advantages when compared to TRS-jacks: With TRS-jacks being inserted or removed, the tip will shortly contact the ground. This may lead to noise at high levels. This is not only unwanted but may also harm your equipment. This is not possible when using XLR connectors! In addition, the ground pin of a XLR connector is slightly moved to the front. This connection is therefore established first. Also, XLR connectors offer a larger contact area and therefore better contact security. Finally, XLR connectors are often protected against accidental removal.

Which kinds of balanced cables can be used with the twinOUT?

In principle, all three conductor XLR cables can be used. It is important that the negative (minus) and ground pins are not combined - which wouldn‘t be a balanced connection. Also, XLR speaker cables are not suited because these often do not use the ground pin.

Assembled cables as offered by MI-retailers can be used without hesitation.

The cable impedance is irrelevant when using with the twinOUT.

Technical Specifications

Audio Properties	
Frequency Range	20 Hz - 20 kHz (±0,2 dB)
Signal-to-Noise ratio	> 90 dB
THD+Noise	0,01%
Inputs	
Nominal Input Level	+6 dBu
max. Input Level	+24 dBu
Input Impedance	100 kΩ
Outputs	
max. Output Level	+24 dBu (XLR)
Output Impedance	600 Ω
Amplification	+12 dB
CLIP LED	+12 dBu (XLR) +6 dBu (TRS without damper) –4 dBu (TRS with damper)
Power Consumtion	
+12V	25 mA
–12V	25 mA
Dimensions / Weight	
Width / Height	8 HP / 3 U
Depth	36 mm
Weight	110 g

VERMONA

ELEKTROAKUSTISCHE MANUFAKTUR

HDB electronic GmbH
Badesteig 20
08258 Markneukirchen
GERMANY

Phone **+49 (0) 37422 4027 - 0**
Email **info@vermona.com**
Web **www.vermona.com**