OPERATING INSTRUCTIONS
LEHLE P-ISO XLR TRS

Dear Musician!

Thank you for purchasing your LEHLE P-ISO XLR TRS!

I have been building units that switch, split and route signals with no technical compromises and with maximum musical fidelity since 1999.

Your new LEHLE P-ISO XLR TRS comprises only the very best components.

Every assembly of your LEHLE P-ISO XLR TRS has been made and tested in Germany.

Your LEHLE P-ISO XLR TRS is of extremely robust design and construction, to make sure that you get absolutely years and years of enjoyment from it.

If you should nonetheless have a problem, or simply a question, just mail me or a member of the Lehle team at:

support@lehle.com

I wish you the very greatest pleasure and success using your LEHLE P-ISO XLR TRS!

CONTENT

INTRODUCTION

The LEHLE P-ISO XLR TRS combines passive isolation with the highest possible signal fidelity.

Its applications range from isolation and eliminating hum, to balancing and reamplification in recording applications along with any signal routing that requires a clean signal free from noise.

At its core is the high-end LEHLE TRANSFORMER HZ, which galvanically isolates the signal, eliminating any possibility of ground loops.
The LEHLE TRANSFORMER HZ was specially designed for use with high-impedance signals but also processes low-impedance signals with uncompromising sound quality.

The classic application for the LEHLE P-ISO XLR TRS is as reamplification box to eliminate hum noise and unbalancing of the signal.

Frequently background noise caused by ground loops occurs when two grounded electronic devices are connected to each other.

The LEHLE P-ISO XLR TRS provides a simple, but extremely effective remedy when installed between the two units. By using the isolator, the devices are galvanically isolated and background noise becomes a thing of the past.

Thanks to its ability to use it in both directions and the choice of balanced or unbalanced processing, the LEHLE P-ISO XLR TRS is eminently suitable for many signal types and in numerous situations.

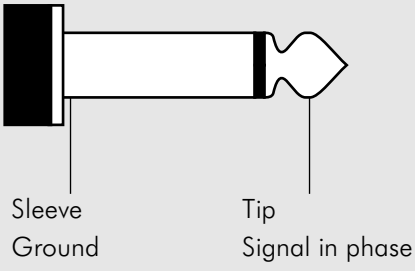
And just in case you are looking for a power connection:
the LEHLE P-ISO XLR TRS performs all its functions without any need for a power supply.
And due to its optimised size and low weight, it fits easily below your pedalboard or in any pocket.

TECHNICAL DATA

Weight	206 g
Length	71.5 mm
Width	49 mm
Overall height	34 mm
Max. level	+20 dBu (THD < 1%, 50 Hz - 20 kHz)
Total harmonic distortion	0.003 % (0 dBu, 1 kHz)
Frequency range	20 Hz – 100 kHz -0.1/ +0.4 dB (source 600 Ω, load 1 MΩ)
Input impedance (transformer impedance load)	min. 2 MΩ at 2 kHz

UNBALANCED SIGNAL ROUTING

Unbalanced signal lines predominate when instruments such as guitars, basses and keyboards are used.
These signal lines have two conducting cores.
The signal itself is present on the signal conductor and is connected to the tip of the jack plug.
The second core, which is connected to the sleeve of the jack plug, screens the signal conductor and constitutes the signal ground.



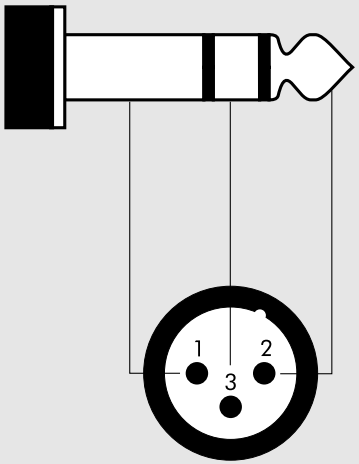
UNBALANCED SIGNAL ROUTING

JACK	Cable	JACK
Sleeve	Ground	Sleeve
Tip	Signal in phase	Tip

BALANCED SIGNAL ROUTING

Balanced signal lines are used to cross larger distances without interference. They are generally fitted with XLR connectors or TRS (Tip Ring Sleeve) jack plugs.

Here, three cores are required:
there are two signal conductors. In a balanced signal line, the signal is present in phase at the tip, as in the case of an unbalanced signal line (XLR Pin 2).
The second signal conductor carries the same signal, but with the opposite polarity or mirror-image phase (Ring, XLR Pin 3).
The third conductor is the screening, and again constitutes the signal ground (Sleeve, XLR Pin 1).



BALANCED SIGNAL ROUTING

JACK	Cable	XLR
Sleeve	Ground	Pin 1
Ring	Signal in mirrored phase	Pin 3
Tip	Signal in phase	Pin 2

GENERAL DESCRIPTION

1. XLR SOCKET XLR

Connect the output from an effects unit, keyboard or DAW here.

The input signal is fed into this socket. The LEHLE P-ISO XLR TRS operates entirely passively. The input signal remains connected to the output at all times, with no semiconductors or any other active components in the signal path.
The signal can be either balanced or unbalanced, since the LEHLE TRANSFORMER HZ is capable of handling both types.

2. TRS SOCKET TRS

Connect the audio input of your amplifier or a mixer here.

The TRS SOCKET has an input signal which is isolated by means of the LEHLE TRANSFORMER HZ. A balanced or an unbalanced signal is possible, irrespective of the type of signal fed from the input.

PHASE FLIP

The advantages of the LEHLE P-ISO XLR TRS are its compact dimensions, uncomplicated usage and high-quality attributes.

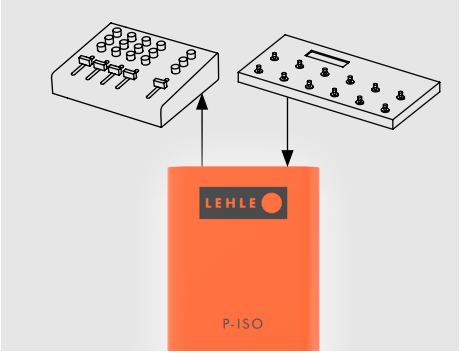
If you're used to using the LEHLE P-SPLIT III, you might be looking around for the appropriate switch on the LEHLE P-ISO XLR TRS when you need to flip the phase. But no worries: you will be able to flip the phase at the LEHLE P-ISO XLR TRS with no switch at all.

All you need is an XLR-XLR cable where you have reversed pin 2 and 3.

You can use this cable at the XLR SOCKET (1) so that the LEHLE TRANSFORMER HZ will flip the phase for you.

This is how the modified cable looks like.

TYPICAL USES
LEHLE P-ISO XLR TRS AS LINE ISOLATOR – THE UNIVERSAL CURE FOR HUM LOOPS



The LEHLE P-ISO XLR TRS can be used in any scenario to eliminate noise resulting from ground loops or hum.

Ground loops occur when units grounded by a protective earth conductor ("PE conductor") are connected to each other. The protective earth conductor and the ground connection of the audio signal create a loop which will pick up external interference generated, for example, by coils.
Such interference will impair the signal.

The LEHLE TRANSFORMER HZ included in the LEHLE P-ISO XLR TRS galvanically isolates the ground connection. The hum loop is thus broken at this point.

DEVICE CONNECTION

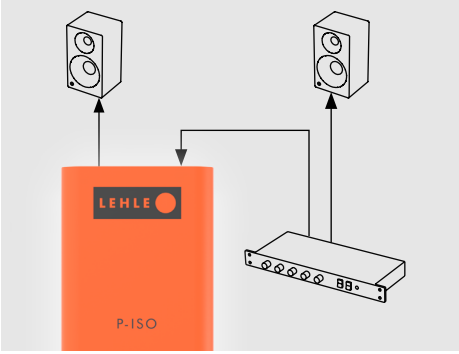
XLR Output signal source

TRS Input mixer

The LEHLE P-ISO XLR TRS can work with balanced or unbalanced signals.

How to do this:
1. Connect the signal source (e.g. an effects pedal) to the XLR SOCKET (1) of the LEHLE P-ISO XLR TRS.
2. Connect the TRS SOCKET (2) to the signal input of the mixer.
3. There you go!

LEHLE P-ISO XLR TRS AS ISOLATOR IN A STEREO SETUP



DEVICE CONNECTION

XLR Output effects pedal

TRS Input speaker

Background noise can often occur if you connect the stereo outputs of an effects pedal to two active speakers.
Here again, ground loops occur when units grounded by a protective earth conductor ("PE conductor") are connected to each other – in this case the two active speakers.

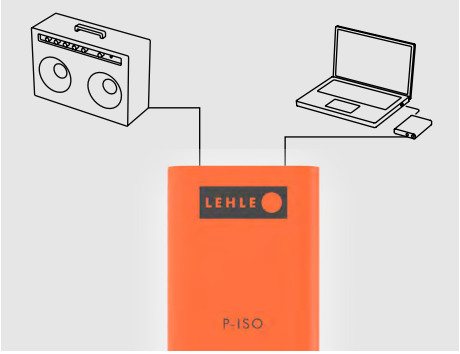
If you place the LEHLE P-ISO XLR TRS in between one effects pedal output and a speaker, this connection is isolated but the setup is still stereo.

The LEHLE P-ISO XLR TRS can work with balanced or unbalanced signals.

How to do this:
1. Connect the first output of the stereo effects pedal directly to the first speaker.
2. Connect the second output of the stereo effects pedal to the XLR SOCKET (1) of the LEHLE P-ISO XLR TRS.
3. The TRS SOCKET (2) needs to be connected to the input of the second speaker.

If the background noise isn't eliminated, you possibly need to isolate the first speaker with a LEHLE P-ISO XLR TRS, too. Proceed the same as with the second speaker.

LEHLE P-ISO XLR TRS AS A REAMPLIFICATION BOX



DEVICE CONNECTION

XLR Output audio interface

TRS Input amplifier

Once you've recorded the dry signal, it can be fed through an amplifier during mixing; connecting the amp to the sound card or DAW will almost certainly generate a ground loop, causing undesirable noise.

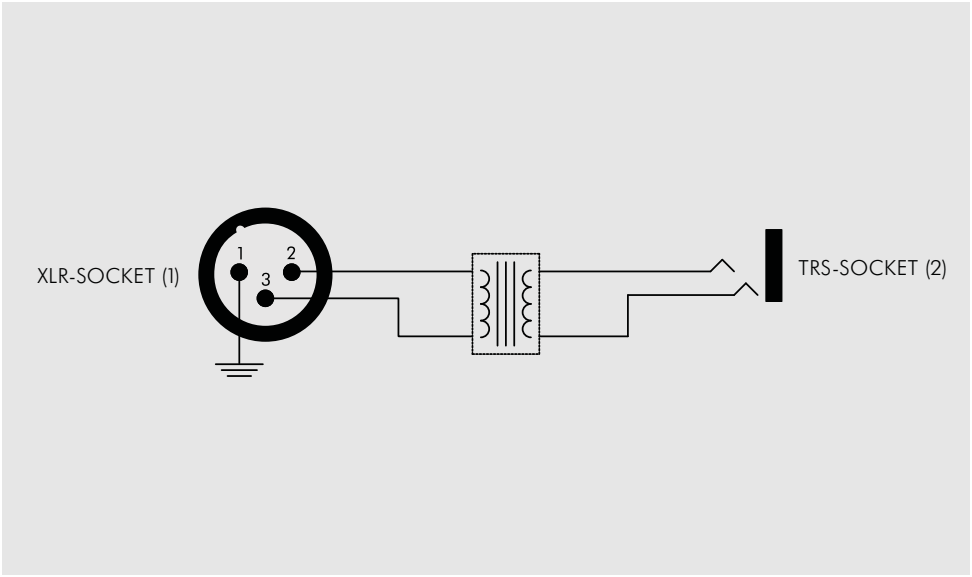
This problem can be effectively eliminated using the LEHLE P-ISO XLR TRS.

The built-in LEHLE TRANSFORMER HZ galvanically isolates the ground connections, and functions perfectly with both balanced and unbalanced signals from a sound card or a DAW.

How to do this:

1. Connect your sound card or DAW to the XLR SOCKET (1) of the LEHLE P-ISO XLR TRS.
2. Connect the TRS socket (2) to the input of your amp. Use a standard, unbalanced cable.
3. There you go!

LEHLE P-ISO XLR TRS
SIGNAL FLOW DIAGRAM



LEHLE GmbH · Grenzstrasse 153 · 46562 Voerde · Germany

www.lehle.com · support@lehle.com

LEHLE P-ISO XLR TRS OPERATING INSTRUCTIONS EN V1.0 · 2022-09-01