



## User Manual



## ULTRA-DI DI20

Professional Active 2-Channel DI-Box/Splitter

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### Thank you

Thank you for the confidence you have placed in us by purchasing the ULTRA-DI DI20 professional active 2-channel DI-box/splitter.

**EN Warranty**

Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.



This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

**Caution**

To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.

**Caution**

To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.

**Caution**

These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

**9.** Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

**10.** Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

**11.** Use only attachments/accessories specified by the manufacturer.



**12.** Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when

moving the cart/apparatus combination to avoid injury from tip-over.

**13.** Unplug this apparatus during lightning storms or when unused for long periods of time.

**14.** Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

**15.** The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.



**16.** Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

## LEGAL DISCLAIMER

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Trident Chambers, Wickhams Cay,  
P.O. Box 146, Road Town, Tortola,  
British Virgin Islands

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## LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding MUSIC Group's Limited Warranty, please see complete details online at [www.music-group.com/warranty](http://www.music-group.com/warranty).

## 1. Welcome to the BEHRINGER Family!

On stage as well as in studios, it is sometimes advantageous to connect certain sound sources directly to the mixing console. Since many instruments (keyboards, for example) don't have balanced outputs they require a DI-box. Sometimes, even guitars can't be directly connected to mixing consoles because their impedance is too high.

By using a DI-box, you can directly tap into a high-impedance, unbalanced signal—for example, a signal between a guitar and a guitar amplifier. From this point, you can feed this signal directly to a mixing console.

There are active and passive DI-boxes. A passive DI-box is more affordable, but its performance is dependent on the impedance of the device to which it is connected. When the impedance on the mixing console's end changes, so does the impedance at the input of the DI-box. Such DI-boxes only function properly when the connected impedance values are strictly specified (high at the input, low at the output). Active DI-boxes are not affected by these impedance considerations. The input impedance of the DI20 is extremely high, and it absolutely does not influence the signal flow through the DI-box. The output impedance is balanced and always very low, whereby the signal is far less prone to being affected by noise.

- ◆ To prevent damaging your loudspeakers, first connect the DI-box and then hook up the respective channel. The same goes for alternating between battery and phantom power operating modes.

## 2. Controls

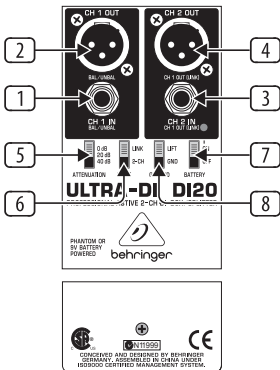


Fig. 2.1: Controls of the DI20

- 1 **CH. 1 IN** input is used to connect unbalanced as well as balanced signal sources to channel 1.
- 2 **CH.1 OUT** is the balanced output at mic level for channel 1.
- 3 **CH.2 IN** input is used to connect unbalanced as well as balanced signal sources to channel 2. In Link mode (see 6) this connector functions as output and sends the signal directly from channel 1.
- 4 **CH. 2 OUT** is the balanced output at mic level for channel 2. In Link Mode (see 6) this connector sends the signal directly from channel 1.
- 5 The **ATTENUATION** dampening switch considerably increases the useful operating range of the DI20 from low signal levels of a high-impedence microphone or a guitar, all the way to the speaker connectors of a guitar amplifier (solid state). You can select between 20 and 40 dB worth of attenuation.
  - ◆ **You should only use the ATTENUATION switch when your DI20 rather than the mixing console preamp begins distorting. Otherwise refrain from using this function to avoid excessive dampening.**
- 6 The **MODE** switch lets you select the operating modes of the DI20. In the 2-CH mode, two independent signals can be connected to channels 1 and 2 respectively. In **LINK** mode the DI-box functions as a splitter: One signal can be fed to the channel 1 input and split into two balanced signals (at outputs 1 and 2) and an unbalanced signal at CH.1 OUT. The un-balanced signal can, for example, be connected to an additional amplifier.
  - ◆ **When connecting a tube amplifier to the input of the DI20, please keep in mind that an appropriate load resistance (e. g. a loudspeaker) must be connected to the CH.1 OUT (LINK MODE) connector.**
- 7 The **BATTERY** switch activates the battery powered mode. Set the battery operating mode to OFF when your DI20 is connected to phantom power. While setting it to OFF, brief whistling noise may occur. This is completely normal and needs no further attention. However, you should not change the battery switch when you have an amp connected. For battery operation, you'll only need a commercial 9 V battery of the 6LR61 type.

8 By using the **GROUND** switch, you can interrupt (LIFT) the grounding between the input and output. Depending on how other devices connected to your DI-box are grounded, ground loops can be eliminated.

◆ **Never connect pin 2 or pin 3 to pin 1! Never remove the screen protection on pin 1. Otherwise, you won't be able to run the DI20 on phantom power (for example, phantom power from a mixing console).**

### Battery compartment

To access the battery compartment, loosen the screw on the rear.

## 3. Connection Options

### 3.1 Connecting a (bass) guitar

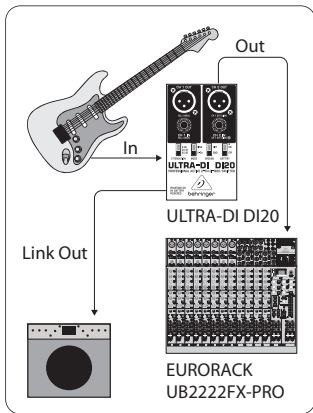


Fig. 3.1: Guitar ⇒ DI-box ⇒ guitar amp/mixing console

This illustration shows the standard application of a DI-box. The signal is fed unbalanced to a guitar amp and balanced to a mixing console (LINK mode). This application has advantages when used with bass guitars, because very few microphones are able to pick up low frequencies at high levels.



### 3.2 Converting output signals of a keyboard, DJ-mixer, etc.

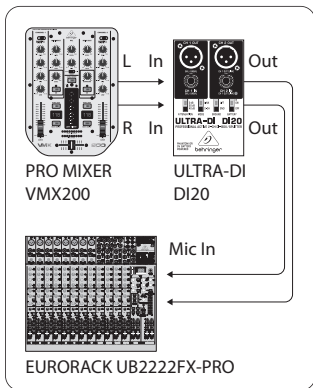


Fig. 3.2: DJ-mixer ➔ DI-box ➔ mixing console

This configuration is recommended when using a DJ-mixer or another signal source, which sends an unbalanced line level signal. In addition, if you need a separate monitor signal, the line level signal can be sent to another amplifier.

## 4. Audio Connections

The BEHRINGER ULTRA-DI DI20 features electronically servo-balanced standard inputs and outputs. The circuit design is equipped with automatic hum suppression for balanced signals and operates problem-free even at high levels. Externally induced mains hum is thus efficiently suppressed. The servo function automatically detects unbalanced pin connections and changes the nominal level internally by 6 dB so that there is no difference in level between input and output signals.

### Balanced use with XLR connectors



**input**

- 1 = ground/shield
- 2 = hot (+ve)
- 3 = cold (-ve)



**output**

For unbalanced use, pin 1 and pin 3 have to be bridged

Fig. 4.1: XLR connectors

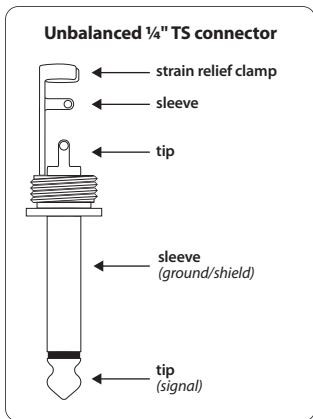


Fig. 4.2: ¼" TS connector

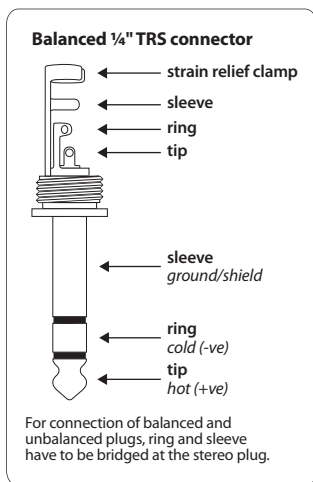


Fig. 4.3: ¼" TRS connector

## 5. Multilingual Documentation

- ◊ The following versions of this user's manual can be downloaded free of charge at <http://behringer.com>: German, French, Spanish, Italian, Dutch, Finnish, Swedish, Danish, Portuguese and Greek.

## 6. Specifications

Frequency response	10 Hz to 70 kHz (-3 dB)
Noise	100 dBu
Distortion	< 0.014% (1 kHz, 0 dBu in)
Input resistance	> 250 k $\Omega$
Connection impedance	> 600 $\Omega$
Input	¼" mono jack
Output	XLR balanced
Max. input level	+12/+32/+52 dBu
Phantom power	18 V DC to 48 V DC
Battery power	9 V 6LR91
Dimensions	approx. 6 x 5 x 2 ¾" approx. 150 x 130 x 60 mm
Weight	approx. 240 g

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