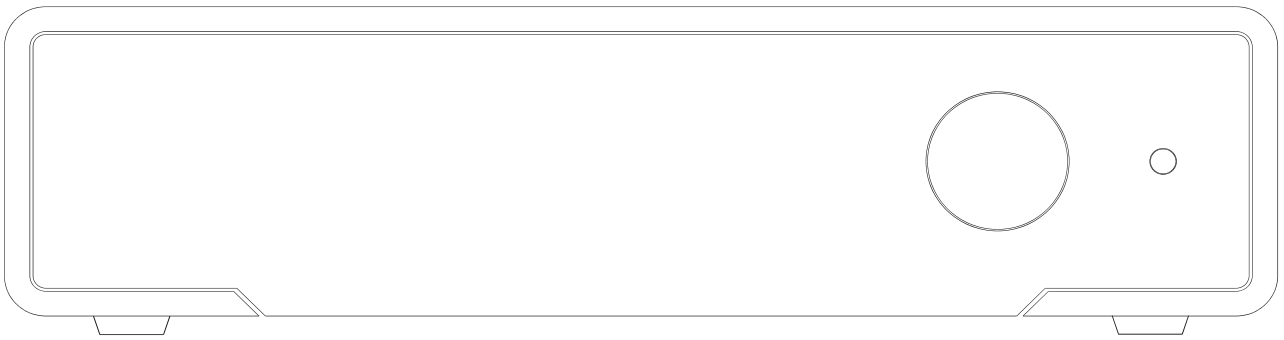


M2TECH  
TOSH  
BALANCED LINE PREAMPLIFIER

USER MANUAL



REV. PRA – 6/2023



## Warning!

***Modifications or alterations not authorized by the manufacturer can invalidate compliance with CE regulations and make the appliance no longer suitable for use. The manufacturer declines all responsibility for damage caused to people or things due to improper use or malfunctioning of an appliance subject to unauthorized modifications.***



This appliance complies with CE standards: CEI EN 55022:2009 Class B (Irradiated Emissions), CEI EN 55024:1999, CEI EN 55024:A2/2003, CEI EN 55024:IS1/2008 (Radio Frequency Electromagnetic Fields, Immunity Test to the 50Hz Magnetic Field and Electrostatic Discharges – ESD).

**For correct operation of this appliance, all connections to other appliances in the system must be made with all appliances switched off. Failure to comply with this rule may cause damage to the TOSH.**



The label above, visible on the shell of the appliance, indicates that the product, at the end of its use, cannot be improperly managed as generic waste, but must be treated as an electrical and electronic appliance by an adequate disposal system in accordance with the regulations by the WEEE directive (or WEEE directive, Waste of Electrical and Electronic Equipment).

Once this product is recycled properly, you will avoid potential damage to the environment and human health, which could be caused by being disposed of as unsorted municipal waste. Proper reuse of materials also reduces waste of resources. For more detailed information on the disposal of this product, please contact M2Tech Srl.

**WARNING:** The information contained in this manual is believed to be reliable and accurate. M2Tech reserves the right to change or modify this information at any time, without notice. Customers are invited to make sure they are consulting the most recent version of this manual.

Dear Customer,

Thank you for purchasing TOSH. You are in possession of a very high quality line preamplifier with many unique features, designed to obtain the maximum performance together with any other M2TECH product.

TOSH implements a unique package of functional and technological solutions, from the totally discrete component design, to the balanced amplifier structure, to the rich set of inputs, to the Bluetooth® module for control and configuration, to the trigger output.

TOSH is designed for low noise and high dynamic operation, to ensure that all the sound quality of the music provided by the sources is delivered to the power amplifiers without any loss.

The remarkable drive capabilities make the TOSH perfect for driving even active loudspeakers in the best possible way, even with connection cables of considerable length.

We are sure that your expectations will be fulfilled by purchasing TOSH: you will hear your favorite music like never before, get ready for a new listening experience!

Marco Manunta, CEO

Please note the serial number of your TOSH for future reference:

S/N: \_\_\_\_\_ Date of Purchase: \_\_\_\_\_

Place of purchase: \_\_\_\_\_

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## 1. Opening the Packing and Positioning the Device

Place the box on a table and open it with a cutter or knife, being careful not to damage the inner box. Take out the inner box and open it. The following items are contained in a cardboard tray:

- one TOSH;
- one remote control;
- two AAA type batteries;
- one 15V wall adaptor;
- two 7-pole male XLR to 3 x female 3-pole XLR adaptors.

If one or more items are missing, contact your dealer.

Remove the TOSH from the cardboard tray and place it on a stable base away from heat sources. Avoid direct sunlight. Leave ample space around it to the device to ensure adequate ventilation and for easy connection between the TOSH Bluetooth® module and your smartphone/tablet.

The TOSH is a highly efficient device; for this reason it does not produce much heat during its operation. Nevertheless, it is recommended to allow adequate ventilation around the unit. Furthermore, in all situations in which the remote control is used, it is recommended to position it so that the infrared signals from the remote control can easily reach its front panel.

Prevent smoke, humidity, dirt and water from reaching the appliance. Note that any sign of abuse will void the warranty.

Do not place the appliance on thick carpets or inside a box or inside a mobile, or in close contact with curtains.





## 2. Front Panel

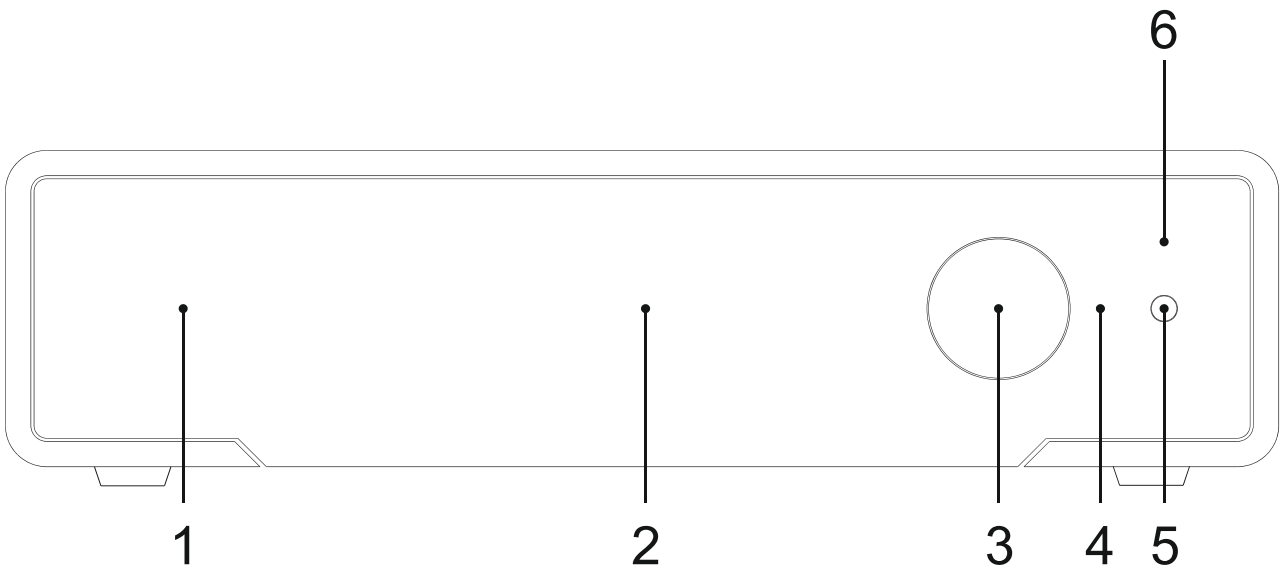


Figure 1

- 1) Bluetooth® receiver.** The area behind this area of the front panel houses the Bluetooth® receiver which allows you to control the TOSH from any smartphone. Keep this area clear of metal objects.
- 2) Display.** OLED multifunction display. During normal operation, it indicates the selected source and listening level. When entering the menu, the display shows the selected menu item and the current value.
- 3) Encoder.** It allows user to access and navigate the menu, select inputs and adjust the volume. It can be rotated and pressed. Refer to Chapter 7 for more details.
- 4) Standby LED.** When the TOSH is in standby, this LED is lit to indicate to the user that the device can be turned on using the supplied remote control. It is possible to change the operation of the LED when the TOSH is in standby from the menu.
- 5) Activation/standby/mute/menu exit button.** Press this button to activate the TOSH when in standby. When the TOSH is active, a short press activates/deactivates the mute, unless the menu is active: in this case, a short press will cause the exit of the menu and the cancellation of any modification to the configuration. A longer press while the TOSH is active will put it in standby.
- 6) IR Receiver.** Aim the remote at this point to send commands to the TOSH.



### 3. Rear Panel

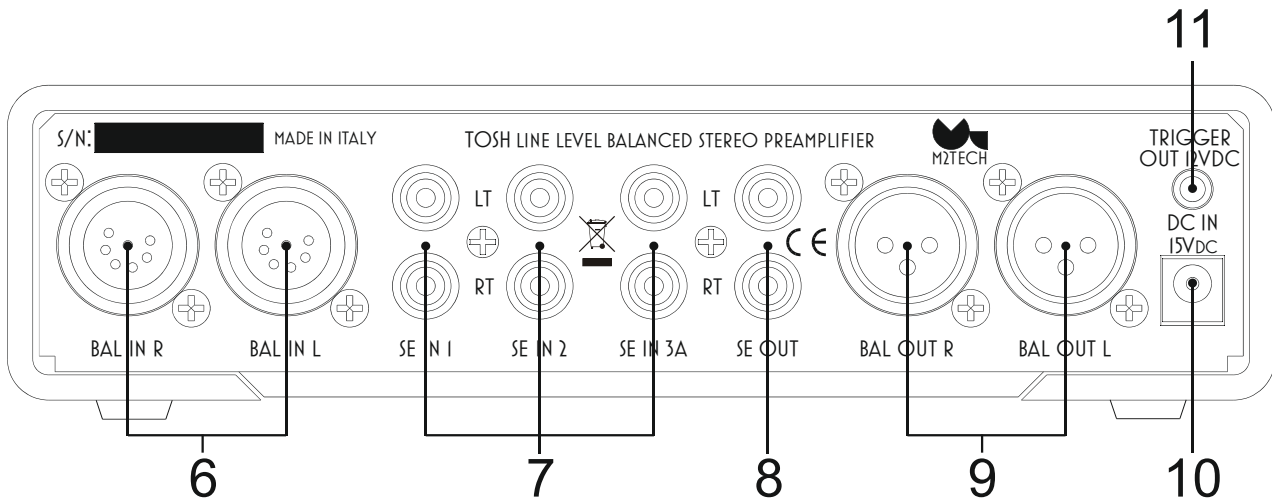


Figure 2

**6) Composite balanced inputs.** Connect the two adapters supplied with the TOSH. The three balanced inputs are available on the 3-pole female XLR connectors of the above adapters.

7-pin female XLR female on the device, 3 x 3-pin female XLR on the free end of the adapters.

**7) Single-ended inputs.** Connect your single-ended sources to these connectors. Female RCA.

**8) Single ended output.** Connect a stereo power amp or two mono power amps equipped with single-ended inputs to this output using interconnect cables terminated in RCA connectors. This output is always active together with the balanced one. Female RCA.

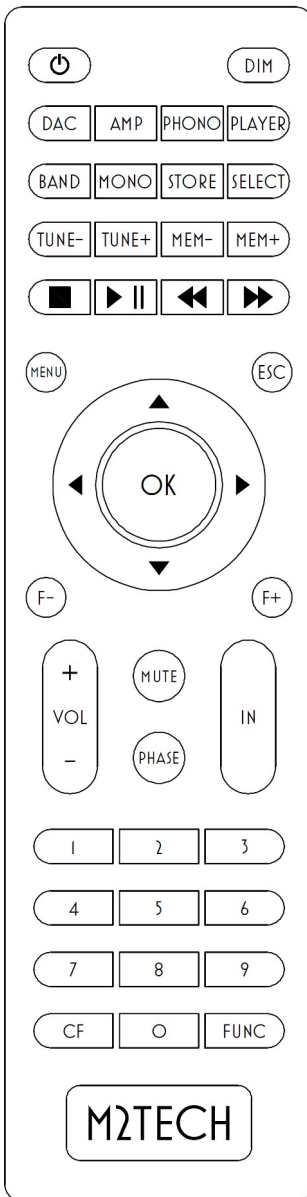
**9) Balanced output.** Connect a stereo power amp or two mono power amps equipped with balanced inputs to this output using interconnect cables terminated in XLR connectors. This output is always active together with the single-ended one. Male XLR.

**10) 15V<sub>DC</sub> power input.** Connect the supplied power supply to this input. To increase the TOSH's performance, it can be powered via the Van Der Graaf MkII. 5.5/2.1mm barrel plug with positive on internal contact.

**11) Trigger output.** Connect the trigger input of another device to this output to turn it on and off automatically via the TOSH. It delivers 12V<sub>DC</sub>. Female 3.5mm jack.



## 4. Remote Control



The TOSH comes with a versatile remote that allows user to adjust all of its controls, as well as control other M2TECH products from the Rockstars series.

Note that when a command is sent to the TOSH the "AMP" button flashes green. If, on the other hand, one of the "DAC", "PHONO" or "PLAYER" buttons flashes, the TOSH will not receive the command. In this case, press the "AMP" button to select the right command codes for the TOSH.

Below is a brief description of the buttons used for TOSH.

**Standby button:** allows you to put the TOSH in standby (long press) and to activate it.

**DIM:** display dimming.

**AMP:** instructs the remote to send commands using the amplifier code

**MENU:** gives access to the configuration menu.

**ESC:** exits the menu without changing the parameters.

**Arrow buttons:** allow navigation of the menu.

**OK:** exits from the menu with application of the changes made.

**VOL+/VOL-:** volume setting.

**MUTE:** muting toggle (-20dB).

**IN+/IN-:** sequential selection of inputs.

**KEYPAD:** the buttons from 1 to 6 allow the direct selection of the inputs.

Figure 3



## 5. Connections and Power Delivery to the Appliance

**WARNING: All connections between the TOSH and other equipment of the system must be carried out with all the appliances switched off. Failure to observe this rule may cause harm to TOSH or to others appliances.**

Refer to chapter 3, “Back Panel”.

Connect your sources to the dedicated inputs (Fig. 6 and 7). The balanced sources will be connected using the appropriate adapters. Refer to the labels on each 3-pin XLR female connector for the source number.

Connect the TOSH output (Fig. 2, 8 and 9) to the input of your power amp. It is possible to connect one amplifier to the balanced output and one to the unbalanced output. Since the two outputs are active at the same time, it is possible to use two power amps to implement passive biamping. If, on the other hand, they are used to drive a pair of loudspeakers each (therefore for an alternative use), the unused power amplifier must be kept off.

If you want to use the trigger function, connect a mono cable equipped with 3.5mm jack plugs to the trigger output of the TOSH (Fig. 2, 11).

**CAUTION: Be sure to apply a voltage within the tolerated extremes.**

Connect the supplied power adapter to the power input of the TOSH (Fig. 2, 10) and to a power outlet.

NOTE: If you also own the VAN DER GRAAF MKII and wish to power the TOSH from it, do not connect the supplied power supply and instead connect the TOSH to the VAN DER GRAAF MKII using one of the barrel jack cables supplied with the VAN DER GRAAF MKII.

NOTE: as soon as the TOSH is powered, it immediately goes into standby or activates according to the menu setting.

## 6. Cleaning the Appliance

The TOSH should be cleaned with a soft, slightly damp cloth. Do not use alcohol or other cleaners to avoid damaging the unit.

Be careful not to drip the cleaning liquid inside the appliance. Any damage caused by liquids entering the unit will not be covered by the guarantee.

Be careful not to scratch the front Plexiglas screen.





## 7. Using the TOSH

On power-up, the TOSH takes a short time for its supplies to reach their nominal level, during which time the product name is shown on the display.



At the end, some general information is shown on the TOSH display: the selected input and the listening level.



### 7.1. Source selection

The TOSH is provided with various inputs, so you can connect different sources and select which one to listen to.

To select a source, press the encoder briefly. The current source name will start flashing on the display. Rotate the encoder until the desired source is displayed. Then, press the encoder again to confirm: the new source will be selected.

If the user changes his mind and keeps the current source, it is sufficient to press the button on the right of the front panel (item 5, Fig. 1) or to avoid doing anything else: after a few seconds the TOSH automatically returns to its "idle" state " without changing the source settings.

Sources can also be selected using the remote control, with the IN- and IN+ keys and also with the 1 to 6 buttons.

### 7.2. Menu navigation

The TOSH allows for the configuration of various parameters, some of which (those less frequently changed) are grouped into a menu which can be navigated either using the front panel controls or the dedicated keys on the remote.

To access the menu, press and hold the encoder for at least two seconds or press the "MENU" button on the remote control.

It is possible to scroll through the various menu items with successive short presses of the encoder or with the "arrow up" and "arrow down" keys on the remote control.

Once the desired menu item is displayed, it is possible to choose the desired value from the allowed values by turning the encoder or using the "left arrow" and "right arrow" keys on the remote control.

The new value can then be confirmed with a new short press of the encoder or by pressing the "OK" button on the remote control.

If, at this point, the user changes his mind and wishes to keep the current value, the menu can be exited by pressing the left button on the front panel or by pressing the "ESC" key on the remote control.

Below is a description of all menu items.

### 7.2.1. BALANCE: channels balance setting

The TOSH is equipped with a function for balancing the relative level of the two channels, which can be modified in 1/2dB steps between 0 and 6dB towards the left or towards the right. Being a command to be used very rarely, it has been included in the menu and is not directly accessible from the remote control or from the front panel.



This feature is applied in real time to give the user the ability to feel the results immediately.

### 7.2.2. DISPLAY BACKLIGHT: display backlight setting

The backlighting of the TOSH display can be set to two different modes: AUTO OFF and ALWAYS ON. In AUTO OFF mode, the display is always off except when a command is executed. In ALWAYS ON mode, the display is always on.

To set the backlight mode you need to enter the first menu item or use the "DIM" key on the remote control.



### 7.2.3. VOLUME STEPS: setting the granularity of volume control

The TOSH volume control allows the user to adjust the listening level in 0.5dB steps. Sometimes, this precision can be too much and volume adjustment can be awkward. In this case, the user can decide to adjust the volume in 1dB steps. To do this, you need to use this menu item.



### 7.2.4. VOLUME MODE: setting the listening level indication

It is possible to view the listening level in steps ("STEPS") or in decibels ("DECIBELS"). Since the volume control is an attenuator, the step "0" will correspond to the maximum attenuation and to the step with the highest value the minimum attenuation. In deciBel mode, the attenuation is indicated by a negative number, the magnitude of which is greater the greater the attenuation. Therefore, a listening level of -45dB is lower than a listening level of -30dB. The maximum level (minimum attenuation) is indicated by the 0dB value.



In both cases, the display will show the volume as shown below:



### 7.2.5. FADE CONTROL: setting of the gradual transition from one input to another

The customer can activate the fading between one input and another. It consists of avoiding an abrupt transition of the music when switching inputs. Fading means that, when passing from one input to another, before switching the volume falls gently to the minimum, to then go back up to the value set by the user after the change of source. The operation makes the source change more pleasant and is still fast enough not to cause discomfort.



### 7.2.6. POWER ON VOLUME: setting of the listening level at power on/activation

It is possible to decide which listening level the TOSH will present upon activation: maximum attenuation (“MUTED”) or the last value set before switching off (“LAST”).



### 7.2.7. AUTO OFF: automatic shutdown setting

In compliance with EU energy saving requirements, the TOSH is able to automatically shut down after a certain period of inactivity. “Inactive” means a time interval in which the user does not have access to any controls.



The user can set the automatic shutdown time (between 10 and 240 minutes in 10 minute steps) or can disable this function.

**NOTE: to disable this function, it is necessary to select the "OFF" value, which is one of the allowed values.**

### 7.2.8. STANDBY LED: set the behaviour of the front panel LED

The TOSH front panel LED (Fig.1, 2) can be set to behave in three different ways, at the user's choice:

- ON: the LED will remain lit when the TOSH is in standby.
- FLASHING: The LED will flash when the TOSH is in standby
- OFF: the LED will remain off when the TOSH is in standby

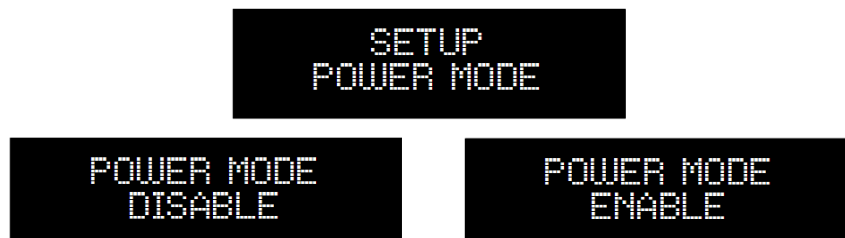


### 7.2.9. POWER MODE: set the behaviour of the TOSH when power is applied

The TOSH can behave in different ways when power is applied to its connector (Fig.2, 10), depending on the user's needs. The behavior depends on this setting.

In particular, if power is applied to the TOSH, the three available settings for POWER MODE work as follows;

1. Disable: When power is applied, the TOSH goes into standby. The user can activate the TOSH by pressing the button on the front panel (Fig.1, 1), by sending an "on" command from the IR remote control or by sending an "on" command from the Android app;
2. Enable: When power is applied, the TOSH activates immediately;



Option 2 is to be used when the TOSH is powered via the VAN DER GRAAF MKII: activating the output of the latter to which the TOSH is connected will cause it to turn on, thus avoiding having to act on it too . This is very convenient as it is possible to configure the VAN DER GRAAF MKII to turn on from the remote control.

### 7.2.10. REMOTE POWER: instruct the TOSH to accept/ignore the IR remote ON/OFF command

When the TOSH is used in conjunction with the VAN DER GRAAF MKII and the power mode is set to "enable", it may be desirable to inhibit the on/off command from the infrared remote control, as the VAN DER GRAAF MKII will receive and execute the on command instead /off from the remote control.

This way, pressing the on/off button on the remote will instruct the VAN DER GRAAF MKII to enable/disable its outputs to turn on/off the TOSH and other connected M2TECH units in the programmed order. Please read the VAN DER GRAAF MKII user manual for details.



### 7.2.11. BLE CONTROL: enabling/disabling the Bluetooth® LE receiver

The user can choose to enable or disable the Bluetooth® Low Energy interface. This can be done by accessing this menu function.



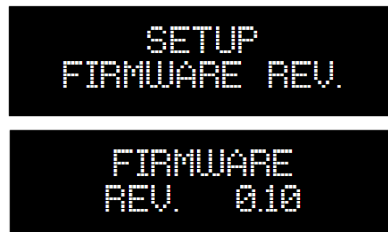
### 7.2.12. SET STARTUP ITEM: decide which menu item to see first at each access

The user can decide to start from the first item of the TOSH menu at each access or from the last one used at the previous access.



### 7.2.13. FIRMWARE REVISION: display the firmware revision number

All TOSH functionality is managed by a microcontroller. It might be useful to check the version of firmware running by the microcontroller, using this menu function.



### 7.2.14. DEFAULT: restore the factory settings

The user may need or want to reset to factory settings. This can be achieved by accessing this menu item. Please note that all previous settings will be lost.



### 7.2.15. EXIT: menu exit

The user may want to exit the menu immediately - the relevant menu item is available to select.







## 8. Trigger Output

The TOSH can provide a trigger signal to another device. Typically, this is a power amplifier, which is thus switched on and off by TOSH itself. To avoid disturbing speaker noises when switching on and off, the trigger output is activated after the TOSH has completed its switch-on phase and is switched off before the preamplifier switch-off phase begins.



## 9. TOSH Gain and Output Level Considerations

The TOSH can supply a maximum output voltage of 9Vrms on the unbalanced output and 18Vrms on the balanced output. These values are more than sufficient to drive any power amplifier, even in the presence of very long connection cables. The very low output impedance of the TOSH means that the parasitic reactive components of the cable (inductance and capacitance) do not significantly alter the frequency response of the system.

The gain of the TOSH depends on which input and which output you are using.

The balanced output offers 6dB more gain than the unbalanced output.

On the other hand, given that when a single-ended input is used the signal passes through a balancer circuit which also determines a gain of 6dB, it results that, with the same voltage available at the input, a single-ended input will have 6dB of gain over a balanced input. It is very common, however, for a balanced source to offer a higher signal level than a single-ended source.



## 10. Specifications

Frequency response:	5Hz to over 80kHz, +0/-1.5 dB ( $V_{in} = 2V_{rms}$ , volume = 0dB e -20dB)
Residual noise:	4 $\mu V_{rms}$ (balanced – 20Hz-20kHz, volume = -85 dB) 3 $\mu V_{rms}$ (single-ended – 20Hz-20kHz, volume = -85 dB)
Gain:	4.30 (12.6dB – single-ended -> single-ended) 8.65 (18.7dB – single-ended -> balanced) 2.15 (6.7dB – balanced -> single-ended) 4.30 (12.6dB – balanced -> balanced)
Signal-to-noise ratio:	130 dBA (single-ended -> single-ended) 122 dBA (single-ended -> balanced) 111 dBA (balanced -> single-ended) 126 dBA (balanced -> balanced)
THD+N:	0,005 % (single-ended -> single-ended) 0,003 % (single-ended -> balanced) 0,004 % (balanced -> single-ended) 0,003 % (balanced -> balanced)
Crosstalk:	-104 dB (R->L), -105 dB (L->R) SE -> SE -101 dB (R->L), -110 dB (L->R) SE -> balanced -94 dB (R->L), -110 dB (L->R) balanced-> SE -106 dB (R->L), -111 dB (L->R) balanced -> balanced
Input impedance:	47 kOhm (single-ended) 20 kOhm (balanced)
Maximum output level:	8,60 $V_{rms}$ (single-ended, $V_{in} = 2 V_{rms}$ , volume = 0dB) 17,3 $V_{rms}$ (balanced, $V_{in} = 2 V_{rms}$ , volume = 0dB) 12VDC (trigger)
Supply voltage:	15V <sub>DC</sub>
Power requirement:	4,5 VA
Supply input:	5.5/2.1mm barrel jack with positive on the internal contact
Size:	200x50x200mm (l x h x p)
Weight:	2.0kg (device and ancillaries) 2.4kg (packed)