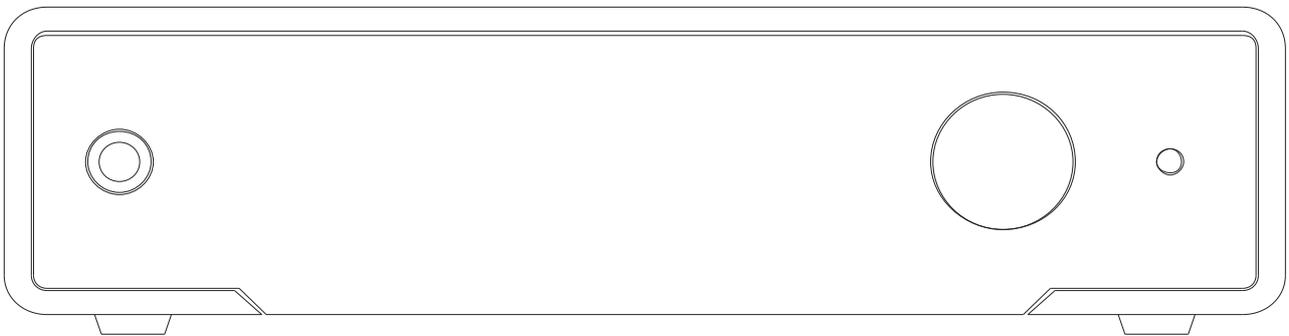


M2TECH

YOUNG MKIV

HIGHEST RESOLUTION DIGITAL-TO-ANALOG CONVERTER
PREAMPLIFIER

USER MANUAL



REV. PRB – 12/2020

Warning!

Changes or modifications not authorized by the manufacturer can invalidate the compliance to CE regulations and cause the unit to be no more suitable to use. The manufacturer refuses every responsibility regarding damages to people or things due to the use of a unit which has been subject to unauthorized modifications or to misuse or to malfunction of a unit which has been subject to unauthorized modifications.



This unit is compliant with the following CE regulations: CEI EN 55022:2009 Class B (Radiated Emissions), CEI EN 55024:1999, CEI EN 55024:A2/2003, CEI EN 55024:IS1/2008 (Radio Frequency Electromagnetic Fields, 50Hz Magnetic Field Immunity Test and Electrostatic Discharges – ESD).

For a proper operation of this unit, all connections to other equipment in the system must be done when all equipment are off. Failing to comply with this advice may lead to damage to the YOUNG MKIV.



The label above, printed on the product case, indicates that the product, when no more usable, can't be treated as generic garbage, but must be disposed of at a collection point for recycling of electrical and electronic equipment, in compliance with the WEEE regulation (Waste of Electrical and Electronic Equipment).

By making sure that this unit is correctly recycled, you will help preventing potential damages to environment and human health, which could be caused by a wrong treatment of this product as generic garbage. Materials' recycling helps saving natural resources. For more in-depth information about recycling this product, please contact M2Tech Srl.

WARNING: the information contained in this manual are considered to be reliable and accurate. M2Tech reserves the right to change or modify the information any time, without prior advice. It's up to the customer to ensure that the manual being consulted is the latest version.

Dear customer,

Thank you for purchasing YOUNG MKIV. You are the owner of a very high quality digital-to-analog converter with many unique features designed to obtain the best performance in every hi-fi system.

YOUNG MKIV implements a specific set of technological and functional solutions, from the asynchronous USB interface, to the MQA[®] decoder on all inputs, to passive anti-alias filtering, to the ability of delivering a high output level with the purpose of exalting sonic performances, ease of use and reliability. Moreover, YOUNG MKIV shares many features with preamplifiers, therefore it is recommended to directly drive power amplifiers. YOUNG MKIV is provided with a complete set of digital and analogue inputs, to allow for using every kind of source. The Bluetooth[®] receiver with aptX[®] decoder makes high-quality music streaming from your smartphone or tablet straightforward.

The balanced and single-ended outputs allow for driving every kind of amplifier. The ability of setting the maximum output level to two values ensures that the maximum power will be reached even with the most inefficient tube amplifier whenever the YOUNG MKIV is used as a preamplifier.

The fully-loaded remote control allows for total control of both YOUNG MKIV and most audio players running on the computer attached to its USB input, as well as other M2Tech Rockstars series products.

We're sure that your expectations will be fulfilled by purchasing YOUNG MKIV: you'll hear your favourite music as never before, so you can now prepare for a whole new listening experience!

Marco Manunta, CEO

MQA[®] and the Sound Wave Device are trade marks of MQA Limited © 2016.

MQA is an award-winning British technology that delivers the sound of the original master recording. M2Tech has adopted MQA technology, which enables you to play back fully authenticated MQA audio files and streams, delivering the sound of the original master recording.

'MQA' or 'MQA Studio' indicates that the product is decoding and playing an MQA stream or file, and denotes provenance to ensure that the sound is identical to that of the source material. 'MQA Studio' ['MQA.'] indicates it is playing an MQA Studio file, which has either been approved in the studio by the artist/producer or has been verified by the copyright owner.*

The Bluetooth[®] word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by M2Tech Srl is under license. Other trademarks and trade names are those of their respective owners.

Qualcomm aptX[®] is a product of Qualcomm Technologies International, Ltd.

Please note here your YOUNG MKIV serial number and purchase info for future reference:

S/N: _____ Date of Purchase: _____
Place of Purchase _____

Note: Proof of retail purchase, such as your purchase receipt, will be required in the unlikely event that any warranty service will be required.

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1. Unpacking and Placing the Unit

Lay the package on a table and open the external box by removing or cutting the adhesive tape seal. Then extract the internal box and open it by lifting the front wing. The following items are included:

- one YOUNG MKIV;
- one wall wart (AC-to-DC adapter);
- one USB A-B cable;
- one remote control;
- two AAA type batteries.

Should one or more item be missing, please contact your retail dealer.

Remove the YOUNG MKIV from the box and place it onto a stable base, far from heat sources. Avoid full sunlight on the unit. Allow for ample room around the unit for venting.

The YOUNG MKIV is a high efficiency device; therefore it doesn't produce relevant heat during its operation. Regardless, it's recommended to guarantee an adequate air flow around the unit. Moreover, every time it will mainly be operated by remote control, it's recommended to place it so as the remote control's infrared signals can easily reach its front panel.

Avoid smoke, moisture, dirt and liquids from reaching the unit. Please note that any signs of abuse will void warranty coverage.

Do not place the unit on thick carpets or inside a box or piece of furniture, not even close to curtains.

2. Front Panel

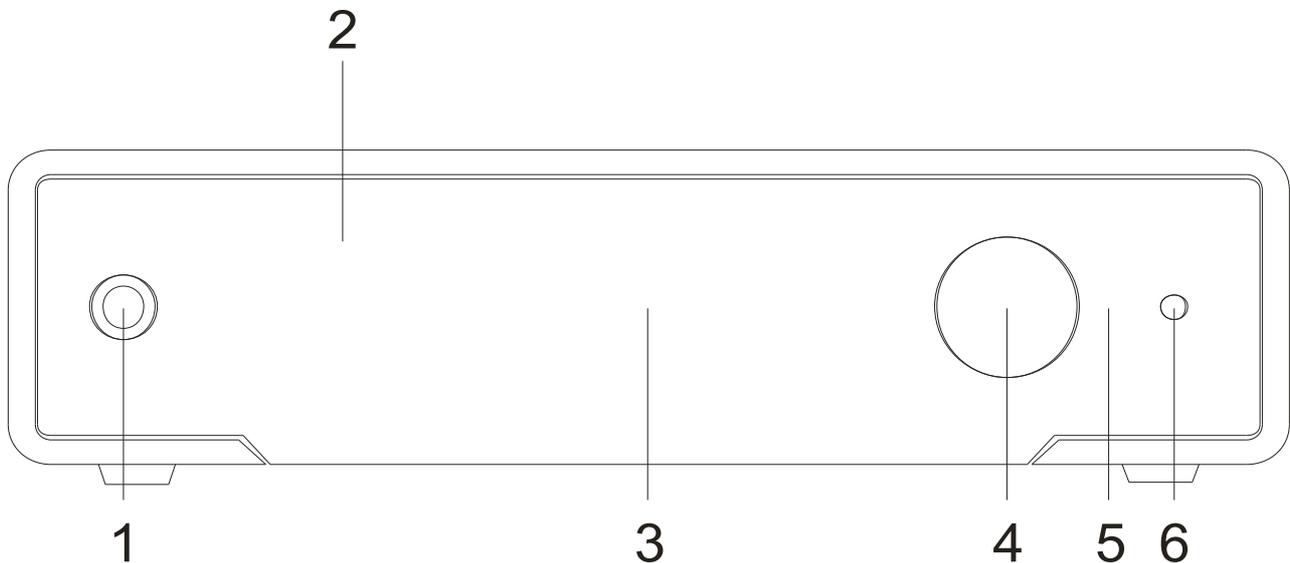


Figure 1

1) Headphones output. Connect your headphones set to listen to your YOUNG MKIV. Stereo 6.35mm (1/4") jack.

2) IR receiver. Aim the remote control to this point to send commands to the YOUNG MKIV.

3) Display. Multifunction OLED display. During normal operation, it indicates the listening level, the selected source, the sampling frequency (not for analog), the format (not for analog) and the status of mute and phase (if set). When the menu is accessed, the display shows the selected menu item and its current value.

4) Encoder. It allows for accessing and navigating the menu, selecting inputs and setting the volume. It can be rotated and pushed. Please refer to Chapter 7 for more details.

5) Standby LED. When the YOUNG MKIV is in standby mode, this LED blinks to indicate to the user that the device can be switched on by the included remote control. This LED is steadily lit during the firmware update procedure.

6) Power on/power off/mute/menu exit button. Press this button to switch the YOUNG MKIV on when it's off. When the YOUNG MKIV is on, a short press will toggle mute, unless the menu is active: in this case a short press will cause the menu to exit discarding any configuration change. A more prolonged press while the YOUNG MKIV is on will cause it to switch off.

3. Back Panel

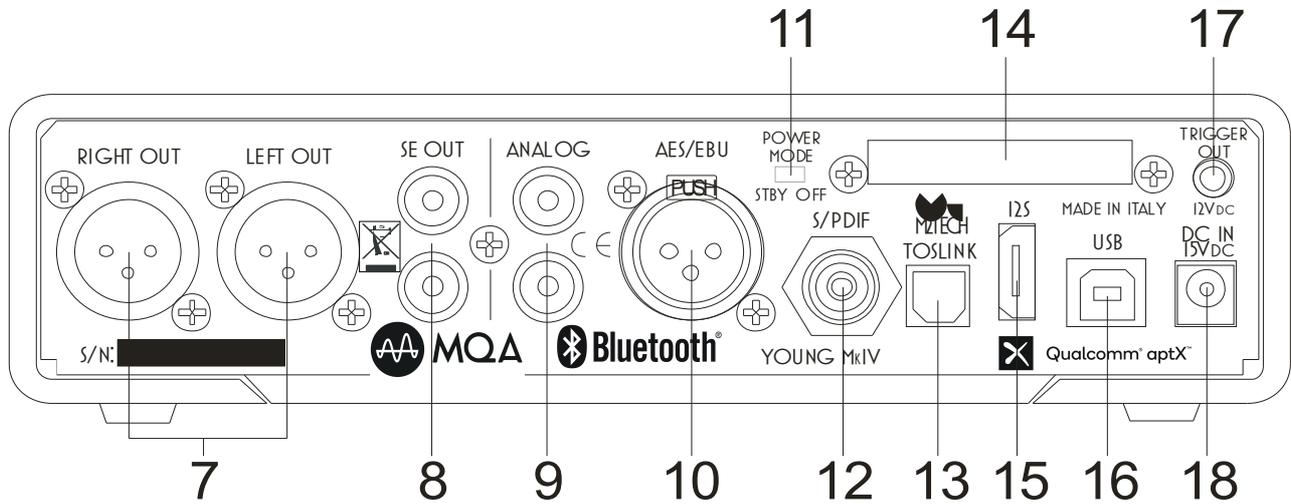


Figure 2

7) Balanced outputs. Connect the YOUNG MKIV to your amplifier/preamplifier with balanced inputs using balanced cables terminated with three-pole XLR connectors. Gold-plated male XLR sockets.

NOTE: Ground on pin 1, send (hot) on pin 2, return (cold) on pin 3. If your amplifier requires hot on pin 3 and cold on pin 2, the connection will be inverting. In this case the absolute phase can be obtained using the “phase” feature of the YOUNG MKIV (please refer to chapter 7 for more details).

8) Single-ended outputs. Connect the YOUNG MKIV to your amplifier/preamplifier with single-ended inputs using coaxial cables terminated with RCA connectors. Gold-plated female RCA sockets.

9) Analog input. Connect an analogue source provided with single-ended line level output Female stereo RCA socket.

10) AES/EBU digital input. Connect a source provided with 110 Ohms pro AES/EBU output. Female three-pole XLR socket.

11) Power mode switch. Allows to choose between the “always powered” status and the normal status in which the YOUNG MKIV can be totally switched off by the front panel button.

12) S/PDIF digital input. Connect a source provided with 75 Ohms S/PDIF output. Gold-plated female RCA socket.

13) Toslink™ optical digital input. Connect a source provided with a Toslink™ digital output. Toslink™ type connector.

14) Bluetooth® module receiver antenna. Keep this antenna clear from metal shields or covers.

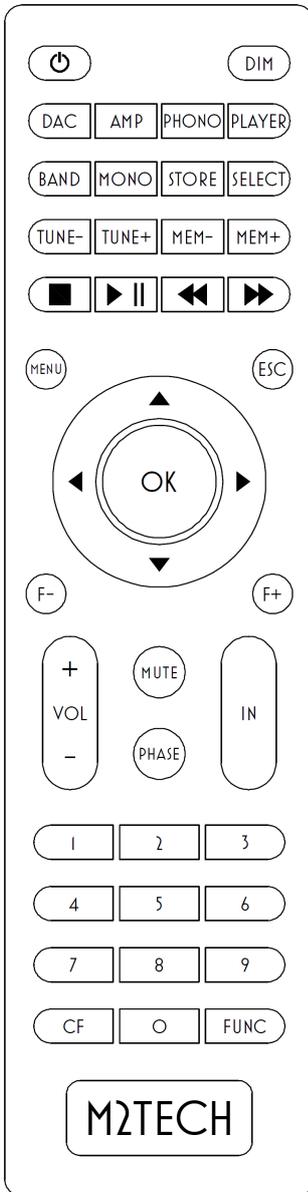
15) I2S connector. Connect to the PS Audio compliant I²S output of a streamer, digital disc player or other I²S digital source using a standard HDMI cable. Female HDMI connector.

16) USB connector. Connect to the USB 2.0 port of a computer using the stock USB cable. Type “B” female USB connector.

17) Trigger output. Connect to the trigger input of any other device accepting 12V_{DC}. Female 3.5mm jack.

18) Power supply input. Connect the connector from the stock 15V-1.2A adaptor or from the VAN DER GRAAF MKII. 5.5/2.1mm jack with positive on tip.

4. Remote Control



The YOUNG MKIV comes with a fully-loaded remote control which allows for setting all of its controls, as well as for controlling other M2Tech Rockstars series products.

Please note when a command is sent to the YOUNG MKIV the “DAC” key blinks in green. If any of the other key “AMP”, “PHONO” or “PLAYER” blinks instead, the YOUNG MKIV will not receive the command. In this case, press the “DAC” key to select the right commands codes for the YOUNG MKIV.

Below is a brief description of the relevant keys for the YOUNG MKIV.

Standby key: This allows for putting the YOUNG MKIV in standby mode (prolonged push) and for awakening it.

DIM: Display dimming.

DAC: Instructs the remote to send commands using the DAC system code.

PHASE: Analogue output phase toggle.

MENU: Configuration menu access.

ESC: Menu exit with changes discarded.

Cursor keys: Allow for menu navigation.

OK: Menu exit with changes stored.

VOL+/VOL-: Volume setting.

MUTE: Mute toggle on/off.

IN+/IN-: Input selection.

Player Controls: these buttons are dedicated to the control of an audio player running on the computer attached to the YOUNG MKIV. The following commands can be sent: Play/pause, stop, next, track, previous track

Figure 3

5. Connecting and Powering the Unit

WARNING: All connections between the YOUNG MKIV and other equipment must be made when all units are turned off and completely powered down or unplugged. Failing to do so may cause damage to the YOUNG MKIV and/or other units.

Please refer to chapter 3, “Back Panel”.

Connect the digital sources (CD/SACD/DVD player, satellite receiver, DAB receiver) and the analogue source to the inputs (Figure 2, 10-12-13). The Bluetooth® connection will be done after powering the unit.

Connect your streamer or any other I²S-provided source to the YOUNG MKIV I²S input (Figure 2, 15).

Connect your computer to the YOUNG MKIV USB input (Figure 2, 16).

If you want to use the YOUNG MKIV as a preamplifier, connect the analog outputs to the inputs of a power amplifier; otherwise connect the outputs to a pair of inputs on an integrated amplifier or preamplifier (Figure 2, 7/8).

Connect the trigger output (Figure 2, 17) of the YOUNG MKIV to the trigger input of any device accepting 12V_{DC} which you want to power subsequently to the YOUNG MKIV turn-on.

Connect the plug from the stock wall wart or from the VAN DER GRAAF MKII to the YOUNG MKIV power input (Figure 2, 18).

Connect the wall wart or the VAN DER GRAAF MKII to a mains outlet. Both will automatically accept any voltage from 90V_{AC} to 265V_{AC}.

Switch the YOUNG MKIV on by pushing the front panel button (Figure 1, 6). If you’re using the VAN DER GRAAF MKII, and you have set the power mode switch (Figure 2, 11) for immediate operation, then the YOUNG MKIV will switch on when activating the VAN DER GRAAF MKII. Please see paragraph 7.5.11 for details.

NOTE: whenever the YOUNG MKIV is used as a preamplifier, it is a good habit to switch the power amplifier on after switching the YOUNG MKIV on, and to switch the power amplifier off before switching the YOUNG MKIV off. This may be accomplished by using the YOUNG MKIV trigger output.

NOTE: it is possible to use a dedicated low noise power supply in place of the wall wart, to increase the sonic performance M2Tech provides a device for this purpose, the VAN DER GRAAF MKII. Should the user opt for use of a non-M2Tech power supply, M2Tech reserves the right to void the YOUNG MKIV warranty.

6. Cleaning the Unit

The YOUNG MKIV should be cleaned with a soft, slightly damp cloth. Do not use alcohol or any other types of cleaning fluids as they could damage the unit.

Avoid fluids from dropping or leaking inside the unit. Fluids of any type poured into the unit will void your warranty.

Be careful not to scratch the Plexiglass front screen.

7. Using the YOUNG MKIV

At activation, the YOUNG MKIV spends a little time to ensure that all supplies reach their nominal levels, during which the model name is displayed.



After the activation delay is expired, some general operational information is shown on the YOUNG MKIV display: the selected source, the format (not for analogue input), the volume level and the phase setting. Muting is indicated by the volume level flashing.



7.1. Volume Setting

Volume setting is done by either rotating the encoder knob (item 4, Figure 1), or pushing the VOL+ e VOL- keys on the remote control.

Volume can be set from -70dB (minimum) to 0dB (maximum) in 0.5dB steps.

Depending on the chosen volume display mode, the display will show attenuation in dB or in steps on a scale such that step "0" is equivalent of the minimum level possible.

7.2. Mute Toggle

The YOUNG MKIV is provided with a feature (muting) which allows for immediately lowering of the listening level by 20dB without touching the encoder knob. This feature is useful when it is necessary to listen to another person for a while, or to operate the source to change track, answer the telephone, etc.

Muting is toggled by a short press of the front panel's right button (item 6, Figure 1). When muting is active, the volume level flashes.

To reset muting the user only needs to push the front panel button once more: the original listening level will be immediately restored and the volume level will stop flashing.

As an alternative it is possible to toggle mute on and off by pushing the "MUTE" key on the remote control.

WARNING: pay attention to the volume setting when the muting is active: if volume is raised too much, once the muting is reset the listening level could be too high so as to damage the speakers or even the listener's ears. It is always wiser to limit volume when in mute mode and even when turning on and off the YOUNG MKIV.

7.3. Choosing the Signal's Phase

The YOUNG MKIV allows user to choose the phase of the outgoing analog signal. This feature is useful in various ways. For example, it's known that some recordings were made with inverted phase. Absolute phase can therefore be restored applying a second phase inversion into the DAC. Moreover, balanced connections come in two different standards, depending on whether a certain piece of equipment was designed in Japan or in a western Country: When connecting a Japanese gear to an American or European one, a phase inversion is obtained. In this case, too, a second phase inversion restores absolute phase.

To invert or restore the phase, just press the "PHASE" key on the remote control. When the phase is inverted, the indication "PH" appears on the display.

7.4. Source Selection

The YOUNG MKIV is provided with various inputs, therefore it is possible to connect different sources and select which one to listen to.

To select a source, press the encoder shortly. The name of the current source 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. Should the user change his/her mind and keep the current source, it is sufficient to push the button to the right of the front panel (item 6, Fig. 1) or avoid doing anything else: After a few seconds the YOUNG MKIV will automatically return in its "idle" status without changing the source setting.

7.5. Menu Navigation

The YOUNG MKIV allows for configuring various parameters, some of which (the ones less frequently changed) are grouped in a menu which can be navigated by both the front panel's controls and the dedicated keys on the remote control.

To access the menu, keep the encoder pressed for at least two seconds or push the "MENU" key on the remote control.

It is possible to scroll the various menu items with successive short pushes 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 amongst the allowed values rotating the encoder or using the "arrow left" and "arrow right" keys on the remote control.

The new value can therefore be confirmed with a new short push of the encoder or by pushing the “OK” key on the remote control.

If, at this point, the user changes his/her mind and wants to keep the current value, it’s possible to exit the menu by pressing the front panel’s left button or by pushing the “ESC” key on the remote control.

Following is a description of all menu items.

7.5.1. BALANCE: Balance Setting

The YOUNG MKIV allows for setting the balance (that is, the relative level between left and right channel) within a +/-6dB range in 0.5dB steps. To set balance it is necessary to access the first menu item.



Left channel is increased with regards to right channel by rotating the encoder counter clockwise or by pushing the “arrow left” key on the remote control; right channel is increased with regards to left channel by rotating the encoder clockwise or pushing the “arrow right” key on the remote control.

To confirm or discard the newly chosen balance setting, proceed as described in paragraph 7.5.

Changes to the balance can be heard in real-time while rotating the encoder knob or pushing the “arrow left” and “arrow right” keys on the remote control. The new balance setting is immediately stored in memory.

7.5.2. FADER: Fader Setting

The YOUNG MKIV is provided with two line-level outputs (single-ended and balanced) which can be used simultaneously to drive two amplifiers or a power amplifier and a powered subwoofer. Different level settings may be necessary, due to differences in amplifiers sensitivity. This can be accomplished thanks to the Fader setting. Levels difference can be set between 0dB (levels are same for single-ended and balanced) and 6dB in 0.5dB steps.





Set the fader to “B” to increase the balanced output level versus the single-ended output level by rotating the encoder knob clockwise or using the right arrow on the remote control; set fader to “S” to increase the single-ended output level versus the balanced output level by rotating the encoder knob counter clockwise or using the left arrow on the remote control.



The display will show the Fader setting as displayed above: “SF” means that the single-ended output has a higher output level than the balanced output; no indication means levels are same; “BF” means that the balanced output has a higher level than the single-ended output.

7.5.3. DISPLAY BACKLIGHT: Setting the Display Backlight

The YOUNG MKIV display backlight 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 it is necessary to access the first menu item or to use the “DIM” key on the remote control.



As for the balance, this feature is applied in real-time to give user the possibility to immediately see the results; a short message indicating the present setting appears on the display when the “DIM” key is used.

7.5.4. I2S INPUT MCLK: Choosing I²S input master clock ratio

The YOUNG MKIV is provided with an I²S input in PS Audio format. This input provides raw digital audio signals which include a master clock. Depending on the value of the input master clock, it might be necessary to divide it by 2 before feeding the clock management circuit.



“1:1” means that the master clock is left unchanged. This is indicated when the master clock frequency is below 27MHz. “2:1” means that the input master clock frequency is halved. This is mandatory when the input master clock is 45.1584MHz or 49.152MHz.

7.5.5. DSD FILTER: Choosing the DSD Filter

The YOUNG MKIV allows user to choose amongst two different FIR filters for DSD which differ for cut-off frequency and spurious attenuation.



7.5.6. THD+N VS S/N: Optimizing DAC performance

The YOUNG MKIV conversion process can be optimized for best harmonic distortion (THD+N) or for best signal-to-noise ratio. The first option is mostly relevant with high level recordings, while the second one is to be preferred with high dynamic recordings with a lot of low-level passages and low-level detail.



7.5.7. BAL OUT VOLTAGE: Choosing the Maximum Balanced Output Level

The YOUNG MKIV can be used as either a normal source (when it's connected to one of the inputs of an integrated amplifier or a preamplifier), or as a preamplifier (when it's connected to a power amplifier). The two setups require the YOUNG MKIV to provide different output levels. In fact, many power amplifiers require higher voltages than those

provided by a normal DAC to reach the full output power, voltages which, on the other hand, are largely excessive for a preamplifier.

The YOUNG MKIV is capable of delivering an output voltage up to 10Vrms in balanced mode, more than sufficient to drive even the most challenging single-ended tube power amplifier. It's obvious that should this ability be used to drive a preamplifier or a solid state power amplifier, the user would be forced to always keep volume very low, wasting a large part of the YOUNG MKIV's great low noise and dynamic performance.

For this reason, it is possible to choose the maximum output level the YOUNG MKIV must deliver by the menu. The choice for the balanced output is between two values: 5Vrms and 10Vrms. The first value is preferred when driving low-sensitivity power amplifiers, while the second value is best suited to when using the YOUNG MKIV as a true source connecting it to a preamplifier or when a high sensitivity power amplifier is to be driven.



7.5.8. SE OUT VOLTAGE: Choosing the Maximum Single-ended Output Level

As YOUNG MKIV line outputs are independent each other in terms of level settings, the maximum output level for the single-ended output is set in a separate menu item than the one used to set the balanced output maximum level.

The choice for the single-ended output is between two values as well: 2.5Vrms and 5Vrms.



7.5.9. HP OUT GAIN: Choosing the Gain of the Headphones Amplifier

The YOUNG MKIV is provided with a high quality headphones amplifier. Depending on the sensitivity of the used headphones and on the peak level of the chosen recording, it might happen that the SPL generated by the system is not enough for a realistic and involving listening experience. On the other hand, when the headphones are very sensitive, only a small part of the volume range can be used before the SPL becomes too high for comfort. To cope with this important interface issue, the Young MkIV headphones amplifier can be

set to three different gain settings: -6dB for high sensitivity headphones, 0dB for average sensitivity headphones, +6dB for low-sensitivity headphones.



7.5.10. VOLUME STEPS: Choosing Volume Steps

The YOUNG MKIV output level can be set with two different granularity intervals: 1dB or 0.5dB. Choosing 1dB will allow for a broader but faster level setting, while 0.5dB will allow for finer but slower setting, as the available steps double.



7.5.11. VOLUME MODE: Choosing Volume Mode

The YOUNG MKIV listening level can be displayed in two fashions: either in deciBels or in steps. Moreover, it is possible to freeze the listening level to the current value (this is useful when the YOUNG MKIV is used as a true source connected to a preamplifier or integrated amplifier).

In decibel mode, the maximum level is 0dB, while negative values with increasing magnitude indicate decreasing listening levels. For example, a listening level of -15dB is higher than a listening level of -20dB.

In steps mode, the maximum listening level is 140, while positive values with decreasing magnitude indicate decreasing listening levels. For example, a listening level of 40 will be higher than a listening level of 30.



Below please see how the various volume modes are displayed:



NOTE: Choosing one mode or the other doesn't change the way the volume is actually set: the YOUNG MKIV allows for a setting between 0 and -70dB in 0.5dB steps. Only the way the volume is displayed is modified by the setting described above.

7.5.12. VOLUME CONTROL: Choosing How Volume Control Affect Levels

The YOUNG MKIV line level outputs can be controlled independently each other. As well, one can be set for a fixed level while the other can be set for a variable level. This can be useful when one output feeds an integrated amplifier while the other one feeds a power amplifier in a double setting system.

Four combinations are available: both outputs variable (ENABLE), both output fixed (BAL+SE DISABLE) and one variable and the other fixed (BAL DISABLE and SE DISABLE).



Below are examples of how the various settings are shown on the idle screen:



“BO” means “balanced only” and “SO” means “single-ended only”.

7.5.13. HEADPHONES FADE: Setting the Auto-fader for Headphones Connection

As the listening level for the headphones output is set regardless the level settings for line level outputs, it might happen that an abrupt level change be heard when plugging and unplugging the headphones jack. To avoid this, an automatic fader can be enabled.



7.5.14. POWER ON VOLUME: Choosing the Volume Set at Power-on

The user can choose which volume the YOUNG MKIV will set at power-on: volume can be set to minimum (MUTED) or to the last level set before previous power-off.



7.5.15. AUTO OFF: Setting the Automatic Switch-off

To comply with UE requirements regarding energy saving, the YOUNG MKIV is able to automatically switch off after a certain idle time. Idle means a time lapse in which user didn't access any control, like volume or mute.

User can set the auto switch-off time (between 10 and 240 minutes in 10 minutes steps) or he/she can disable this feature.



NOTE: To disable this feature, the value "OFF" must be selected, which is one of the allowed values.

7.5.16. STANDBY LED: Setting the Front Panel LED behaviour

The front panel LED of the YOUNG MKIV (Fig. 1, 2) can be set to operate in three different modes, at user's convenience:

- ON: the LED will be continuously on when the YOUNG MKIV is in standby
- FLASHING: the LED will blink when the YOUNG MKIV is in standby
- OFF: the LED will be off when the YOUNG MKIV is in standby



7.5.17. AUTO ON: Setting the YOUNG MKIV Behaviour when power is applied

The YOUNG MKIV may have different behaviours when power is applied to its power socket (Fig. 2, 18).

User may choose to have the YOUNG MKIV immediately on and operative or wait for the front panel button (Fig. 1, 6) to be pressed.

When the YOUNG MKIV is used standalone with its stock wall adaptor, the latter is the preferred choice. On the other hand, when the YOUNG MKIV is used with the VAN DER GRAAF MKII or any other power supply which is slave to a global activation control or trigger, having the YOUNG MKIV immediately on after applying power is the best choice.

The YOUNG MKIV behaviour is set by jointly operating the rear panel power mode switch (Fig 2, 11) and this menu feature. For more details, please see Chapter 7.7.



7.5.18. REMOTE ON/OFF: Setting the YOUNG MKIV to Accept/Ignore the IR Remote ON/OFF command

When the YOUNG MKIV is used together with the VAN DER GRAAF MKII and the auto-on feature is enabled, it may be desirable to inhibit the on/off command from the IR remote

control, as the VAN DER GRAAF MKII will receive and execute the on/off command from the remote instead.

This way, pushing the on/off key on the remote will instruct the VAN DER GRAAF MKII to enable/disable its outputs to power the YOUNG MKIV and other attached M2TECH units on/off in the programmed order. Please read the VAN DER GRAAF MKII user manual for details.



7.5.19. BLUETOOTH®: Enabling/Disabling the Bluetooth® Receiver

User may choose to enable or disable the Bluetooth® interface. This can be done accessing this menu feature.



7.5.20. BLE® CONTROL: Toggling the BLE® Interface

The YOUNG MKIV is provided with a Bluetooth® Low Energy interface which implements the connection with all smartphones to control the unit by the free app provided by M2TECH. If desired, this interface can be disabled.



7.5.21. SET STARTUP ITEM: Choosing the item to be shown when accessing the menu

The YOUNG MKIV configuration menu includes many items. It may be desirable that any access to the menu starts from the last item displayed in previous access. This is particularly useful when different settings of a certain item are to be tested.



7.5.22. FIRMWARE REVISION: Accessing Firmware Revision Information

The YOUNG MKIV is a complex device in which different microcontrollers interact for correct operation. User may, whenever needed, update the firmware of the USB controller of the YOUNG MKIV. As well, M2Tech might launch a call for general update of the internal controllers. Therefore it's necessary to access to YOUNG MKIV current firmware release information to decide whether an update is required or not. This can be accomplished by accessing the menu as one of the items is that related to firmware revisions.

Of course, user can't change the displayed values by the front panel controls nor the remote: they only change when a firmware update is performed as described in Chapter 10.



7.5.23. DEFAULT SETTINGS: Restoring Factory Settings

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



7.5.24. EXIT: Exit from Menu

User may want to exit from the menu. This item should be selected to this purpose.



7.6. Connecting a Bluetooth® source for streaming

The YOUNG MKIV is provided with an audio Bluetooth® receiver with aptX® decoding capability. The receiver is always ready for pairing, therefore user only needs to look for it in its smartphone's Bluetooth® devices list.

Various hosts can be connected at once. However, only one can stream music to the YOUNG MKIV. When one host is streaming, the other connected hosts can only control the unit. When no host is streaming, all hosts can start streaming, in a “first come first served” fashion.

7.7. Power Mode and Standby

Depending on the setting of the rear panel switch (Fig. 2, 11) The YOUNG MKIV can be powered off by a prolonged push on the front panel's left button (Fig. 1, 6). After a couple seconds the unit switches off, reducing its current draw to zero.

It is also possible to put the YOUNG MKIV in standby by the related key on the remote control. In this case, the YOUNG MKIV, while stopping operation as when it is switched off by the front panel, will keep a minimum current consumption because the main controller, the Bluetooth® receiver and the IR receiver will stay on, waiting for an activation command from the remote control (another push on the standby key), a power on command from the app on any coupled Bluetooth® source or any action on the front panel button.

Standby mode is indicated by a LED lit on the front panel (Fig. 1, 5) unless otherwise set by user via the related menu item (Paragraph 7.5.10).

NOTE: Even in the off condition, the YOUNG MKIV actually draws a very little current which is virtually negligible.

NOTE: When the power mode switch is set for immediate activation, it is not possible to completely switch the YOUNG MKIV off: the prolonged press of the front panel button will only lead to the standby.

When the power mode switch is set to “STBY”, the YOUNG MKIV may immediately activate when power is applied. Whether or not this actually happens depends on the “auto-on” setting in the menu.

When the power mode switch is set to “OFF”, the YOUNG MKIV cannot immediately activate when power is applied and user must push the front panel button to switch the YOUNG MKIV on.

8. Using a Computer as Digital Source

While the connection of the various legacy digital sources (CD/DVD/Blu-Ray player) to the YOUNG MKIV is quite straightforward, the connection to the computer by the USB port requires a few configuration steps by the user.

Fortunately, the YOUNG MKIV is provided with an USB 2.0 interface which is compatible with USB Audio Device Class 2. Therefore, Apple and Linux computers natively support the YOUNG MKIV, that is they do not need a driver and immediately recognize the DAC in a plug'n'play fashion. A PC running Windows 10 offers a limited native support to UAC2 devices (up to 192kHz sampling rate and no DSD). Older Windows versions offer no support at all. Therefore, a computer provided with a Microsoft operating system requires a suitable driver which can be downloaded from M2Tech website (www.m2tech.biz). Look under “Support” and then under “Drivers” to find this driver for download to your PC.

8.1. Plug'n'Play Operation with Apple OSx

As explained in the introductory paragraph to the present chapter, the YOUNG MKIV is provided with an USB interface compatible with USB Audio Device Class 2 which is natively supported by Apple OSx since the 10.6.4 release, without the need for any driver: It is sufficient to connect the YOUNG MKIV to the Mac with the stock USB cable to have it recognized by the Mac, which will then include it in the audio output device list

8.1.1. DSD files playback with OSx

The YOUNG MKIV is able to play music files recorded with the DSD format in both native and DoP formats. OSx doesn't support native DSD, while it does support DoP. A player able to send DSD data to the YOUNG MKIV in DoP must be used.

8.2. Plug'n'Play Operation with Linux

As explained in the introductory paragraph to the present chapter, the YOUNG MKIV is provided with an USB interface compatible with USB Audio device Class 2 which is natively supported by Linux with ALSA since its 1.0.24 release.

NOTE: given the wide availability of different Linux distributions, often heavily customized, it may be necessary to check that both kernel and ALSA versions are suitable for native USB Audio Device Class support. When in doubt, ask the creator of your Linux distribution for more information.

As with Apple OSx, with Linux it is necessary to choose the YOUNG MKIV as the output device. This can be done accessing the audio management window and setting the various parameters.

8.2.1. DSD files playback with Linux

The availability of DSD audio files is quite recent, therefore it's possible that your player is not able to play DSD files, or maybe its most current release it is, but not the one you have installed on your computer. For example, MPD player, by far the most used under Linux, only supports DSD since its 0.17 release. Be sure that your player supports DSD and refer to the instructions provided by the player creator, or install a player which you're sure supports DSD.

8.3. Using the YOUNG MKIV with Windows

As explained in the introductory paragraph to the present chapter, at the moment only Windows 10 offers a limited support to USB Audio Device Class 2. To listen to music files with the YOUNG MKIV connected to a computer running Windows it is therefore strongly suggested (Windows 10) or necessary (Windows 8.1 and older versions) to install a driver. Please read the related Application Note on M2Tech website for details about driver installation.

The Windows driver is compliant to ASIO, therefore it supports native DSD.

NOTE: The YOUNG MKIV is designed to implement the HID interface for remote control of the player running on a computer attached by USB (see chapter 11). This could lead to compatibility problems with Windows XP. We strongly suggest updating the operating system to a more recent version than Windows XP before installing the driver.

9. Using the YOUNG MKIV I²S Input

I²S is a standard designed for inter-IC audio transfer. It communicates digital audio over 3 wires or signals: SDATA, LRCK and SCLK. A fourth wire carrying the master clock (MCLK), is also usually necessary, unless the audio signal is sent to a sample rate converter provided with its local master clock.

The YOUNG MKIV accepts I²S in differential LVDS physical format on an HDMI connector (PS Audio standard). Both PCM and DSD can be transferred over this connection. Some constraints apply to both SCLK and MCLK.

LRCK is the PCM sampling rate, it can be 44.1kHz to 768kHz.

SCLK must be 64 x LRCK and can be as high as 49.152MHz.

MCLK must always be present. It can be 22.5792MHz or 45.1584MHz for 44.1kHz-based files (that is, files which sampling frequency is 44.1kHz or a multiple) or 24.576MHz or 49.152MHz for 48kHz-based files.

When DSD is transferred over I²S, SCLK becomes the DSDCLK and can be 2.8224MHz to 22.5792MHz. MCLK is mandatory with DSD, too.

As no constraints are indicated for MCLK in the PS Audio standard, it might happen that a certain I²S source delivers higher master clocks than those accepted by the YOUNG MKIV. In this case, it is possible to halve the master clock frequency by enabling the related circuitry by menu (Please see 7.5.4).

10. Optimizing Distortion Performance or Signal-to-Noise Ratio

The YOUNG MKIV has a menu feature (7.5.6) which allows users to optimize its performance with regards to total harmonic distortion or to signal-to-noise ratio.

A lower distortion is desired when listening to a recording with frequent high level peaks and reduced dynamic, while a better signal-to-noise ratio is to be preferred with recordings featuring a wide dynamic range and frequent low-level passages.

Usually (but not always), a better THD performance is to be preferred with rock music, while a higher SNR ratio suits classical and jazz recordings.

11. Controlling the Computer Player by Using the YOUNG MKIV Remote Control

The USB interface of the YOUNG MKIV implements the HID protocol, which allows for sending commands to the player running on the computer to which the YOUNG MKIV is connected. This feature is very useful whenever the computer is placed close to an audio system, therefore away from the user, who can now conveniently use the YOUNG MKIV remote control.

Three keys are present on the remote control (Fig. 3) which allow to start, pause and stop playback, as well as to skip to the next or previous track.

This feature is not available with all players nor with all operating systems, or with all versions of a certain operating system. Therefore, it is up to the user to check whether or not the chosen player and the operating system in use are HID ready.

12. Updating YOUNG MKIV Firmware

As mentioned in Paragraph 7.5.22, user may, if needed, update the firmware of the YOUNG MKIV USB interface. In case, please contact M2TECH support for details.

Other YOUNG MKIV controllers firmware can only be updated in-factory. Should M2TECH launch a global call for update, please get the Firmware release information as detailed in Paragraph 7.5.22 and contact M2TECH support.

WARNING: never try to update the YOUNG MKIV USB controller's firmware using any firmware found on the Internet! Unauthorized updates may lead to YOUNG MKIV misoperation and damages and will void warranty!

13. Controlling the YOUNG MKIV by the Bluetooth® Interface

User can control the YOUNG MKIV, as well as set all operative parameters, by any iOS and Android smartphone thanks to the apps developed by M2TECH which are available for free on App Store and Google Play.

Please visit Google Play and App Store and search for M2Tech apps.

14. Specifications

Inputs:	AES/EBU on female XLR socket S/PDIF on female RCA socket Optical on Toslink™ connector Async USB compatible with USB Audio Device Class 2/1 “B” type female USB connector Analog on stereo female RCA sockets I2S on HDMI connector (PS Audio standard) Bluetooth®
Outputs:	Balanced analogue on gold-plated male XLR connectors Single-ended on gold-plated female RCA connectors Headphones on 6.35mm stereo jack Trigger on 3.5mm jack
Power input:	5.5/2.1mm jack with positive on tip
Output voltage:	2.5Vrms @0dBFS (single-ended, “normal”) 5.0Vrms @0dBFS (single-ended, “high”) 5.0Vrms @0dBFS (balanced, “normal”) 10Vrms @0dBFS (balanced, “high”) 5.5Vrms @0dBFS (headphones, gain = 0dB)
Output impedance:	100 Ohms (single ended) 200 Ohms (balanced) 10 Ohms (headphones)
Signal-to-noise ratio:	122dB (0dBFS, SE and balanced, “A”-weighted)
THD+N:	0.0008% (0dBFS, 1kHz)
Sampling frequency PCM:	44.1, 48, 88.2, 96, 176.4, 192, 352.8*, 384*, 705.6*, 768*kHz
DSD formats	64x*, 128x*, 256x*, 512x*
DoP formats	64x, 128x*, 256x*
PCM resolution	16 to 32 bit (USB and I ² S) 16 to 24 bit (other inputs)
Volume setting	0dB to -70dB in 0.5dB steps
Muting	-20dB
Balance setting	+/-6dB in 0.5dB steps
Fader setting	+/-6dB in 0.5dB steps
Phase:	0°, 180°
Automatic switch-off	10 to 240 minutes in 10 minutes steps, plus disabled
Supply:	15V _{DC} 390mA
Power consumption:	5.9VA 0.15VA standby
Size:	200x50x200mm (w x h x d)
Weight:	2kg (device and ancillaries) 2.5kg (packed)

* USB and I²S Only