PALAB

DAC-M1 D/A CONVERTERS
USER'S MANUAL

DSD
Direct Stream Digital

MQA

DXD
Digital eXtreme Definition

FCC Notice - Declaration of Conformity Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment o and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit di erent from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

WARNING : Only peripherals complying with the FCC class B limits may be attached to this equipment.

Changes or modi cations made to this equipment, not expressly approved by us or parties authorized by us could void the user's authority to operate the equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

EU Declaration of Conformity

Hereby, PALAB Audio, Inc. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC.

The manufacturer of this product is PALAB Audio, Inc., No. 33, Cukengkou Rd., Ruifang Dist., New Taipei City 224, Taiwan .
The Authorized Representative for EMC and product safety is PALAB Audio, Inc., No. 33, Cukengkou Rd., Ruifang Dist., New Taipei City 224, Taiwan .
For any service or guarantee matters please refer to the addresses given in separate service or guarantee documents.

For customers in Europe

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)
This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.

SAFETY INSTRUCTIONS

There are two categories of Safety Instructions included in this manual :
- Product Warnings, (i.e., what must never be done to assure avoiding those hazards that could cause bodily injury or property damage); and
- User Directions (i.e., what must always be done to assure the safe use of your device).

The Safety Instructions contained in this manual have been categorized in accordance with the seriousness of the potential hazards through the use of Signal Words. Those Signal Words, and their intended meanings, are as follows:

DANGER : Indicates that a failure to observe the Safety Instructions could result in death or catastrophic bodily injury.

WARNING : Indicates that a failure to observe the Safety Instructions could result in serious bodily injury.

CAUTION : Indicates that a failure to observe the Safety Instructions could result in minor bodily injury or property damage.

NOTE : Designates important information that relates to activities and/or conditions that might result in loss of data and/or damage to your device.

Safe Use and Operation of Your Device

This equipment emits stray RF energy and will interfere with the reception of signals by airborne electronic navigational devices or medical devices. Do not operate this equipment near any sensitive medical devices.

WARNING : Use only grounded AC power cords.

Always immediately disconnect the power to the equipment in the event the device emits an unusual odor or sound or generates smoke.

WARNING : Never attempt to disassemble, repair or make any modi cation to your device. Disassembly, modi cation or any attempt at repair could cause bodily injury or property damage, as well as damage to the device itself.

WARNING : Your device is not a toy. Never allow children to play with your device. Misuse, rough or improper handling of your device by children could result in serious bodily injury for any of the enumerated safety warnings in this manual. In addition, always keep all accessories and components out of the reach of small children as small parts might present a choking hazard. Seek immediate medical attention if choking occurs or if any small part has been swallowed.

CAUTION : Never raise the sound volume level too high when using your device with earphones. An excessive sound volume level could cause damage to your hearing.

WARNING : To reduce the risk of re or electric shock, do not expose the unit to moisture or water.

Do not allow foreign objects to get into the enclosure. If the unit is exposed to moisture, or a foreign object gets into the enclosure, immediately disconnect the power cord from the wall. Take the unit to a quali ed service person for inspection and necessary repairs.

Read all the instructions before connecting or operating the component.
Keep this manual so you can refer to these safety instructions.
Heed all warnings and safety information in these instructions and on the product itself. Follow all operating instructions.

Do not use this unit near water.

You must allow a minimum 10 cm or 4 inches of unobstructed clearance around the unit. Do not place the unit on a bed, sofa, rug, or similar surface that could block the ventilation openings. If the unit is placed in a bookcase or cabinet, there must be ventilation of the cabinet to allow proper cooling. Keep the component away from radiators, heat registers, stoves, or any other appliance that produces heat.

The unit must be connected to a power supply only of the type and voltage speci ed on the rear panel. Connect the component to the power outlet only with the supplied power supply cable or an exact equivalent. Do not modify the supplied cable.

Do not route the power cord where it will be crushed, pinched, bent, exposed to heat, or damaged in any way. Pay particular attention to the power cord at the plug and where the cord exits the back of the unit.

The power cord should be unplugged from the wall outlet during a lightning storm or if the unit is to be left unused for a long period of time.

Immediately stop using the component and have it inspected and/or serviced by a quali ed service agency if:

- The power supply cord or plug has been damaged.
- Objects have fallen or liquid has been spilled into the unit.
- The unit has been exposed to rain.
- The unit shows signs of improper operation.

The unit has been dropped or damaged in any way

Quick Start Guide

1. Front Panel View

DAC-M1 D/A CONVERTERS

PALAB

M
P

MQA

PHONES
6.3   4.4

VOLUME ● MUTE

2   4   3   5   6   7   8   9

1
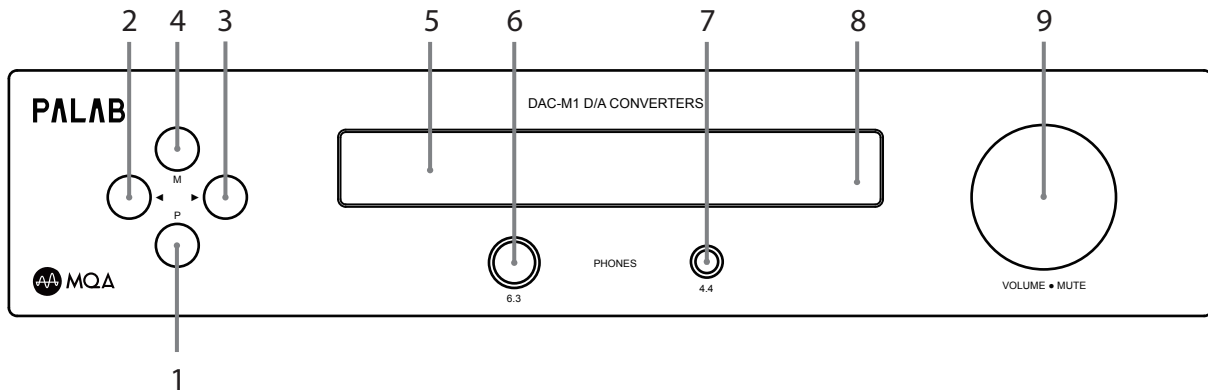
1. Press to turn on or off the power

2. & 3. Input switch or switch menu item

A. Press to switch between inputs
B. Use to change menu items in menu mode

4. Press to turn on or off the menu

5. Display

6. Standard 6.3mm (1/4") stereo headphone jack

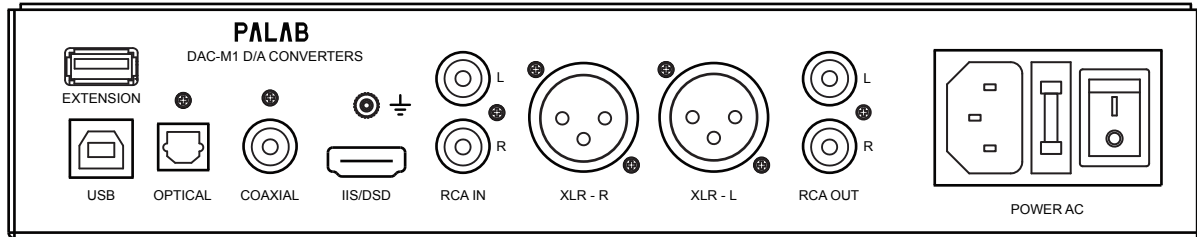7. 4.4mm "Pentaconn" balanced headphone jack

8. Standby led

9. Volume adjust / mute and change item values

A. Press to mute / unmute.
B. Use to adjust the volume.
C. Use to change setting values when a menu item is shown.

2. Rear Panel View

Digital Inputs :

USB : USB slot is for connecting with the B Type USB to A Type USB 2.0 version cable to PC's USB port which is able to send digital audio up to PCM 384KHz / DSD up to 256 and MQA.
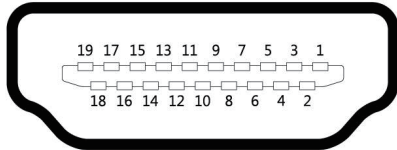
Optical : Accept up to PCM 192KHz and MQA.

Coaxial : Accept up to PCM 192KHz and MQA.

IIS/DSD : With HDMI cable to transfer IIS and DSD data from PALAB source devices. Do not connect to the HDMI output of Set Top Box or BD / DVD player.

Extension : For Bluetooth or Wi-Fi module. (option)

IIS / DSD Pin define

PIN1 : SDATA - / DSD L-   PIN6 : BCK - / DSD CLK -   PIN11 : GND   PIN16 : NC

PIN2 : GND   PIN7 : LRCK - / DSD R -   PIN12 : NC   PIN17 : GND

PIN3 : SDATA + / DSD L+   PIN8 : GND   PIN13 : NC   PIN18 : NC

PIN4 : BCK + / DSD CLK +   PIN9 : LRCK + / DSD R +   PIN14 : NC   PIN19 : + 3.3V OUTPUT

PIN5 : GND   PIN10 : NC   PIN15 : NC

Note : DAC- M1 does not guarantee that all IIS/DSD source will operate and be compatible due to wide variety of brands and custom specs.

Analog Input :

RCA IN : Stereo analog for CD/DVD/BD players, TV and any analog source device .
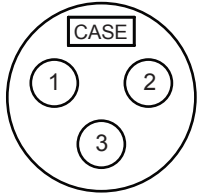
Analog Outputs :

1x Balanced Stereo Audio Output (XLR MALE)

1x Stereo Audio Output (RCA)

1x MMCX 4.4mm balanced headphone jack

1x 6.3 TRS headphone jack

XLR MALE Pin define

Pin 1 : Ground

Pin 2 : Positive (+)
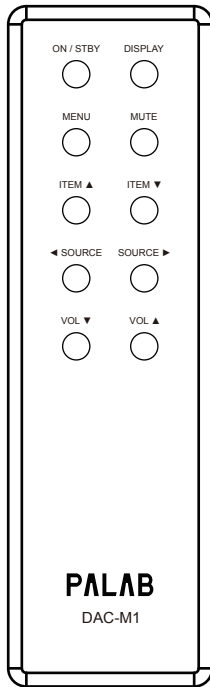
Pin 3 : Negative (-)

Others :

Ground terminal : Chassis ground.

AC Inlet : Connect the supplied mains lead to the AC IN (115V or 230 V) terminal on the rear of the DAC.

AC Voltage Selector : Make sure that the AC voltage selector switch at the bottom of the unit is switched to the appropriate voltage for your country. All PALAB products are shipped with the switch set to 230V AC in order to prevent accidental damage.

230

3. Remote Control

```
ON / STBY    DISPLAY
   ◯           ◯
  MENU        MUTE
   ◯           ◯
 ITEM ▲      ITEM ▼
   ◯           ◯
◄ SOURCE    SOURCE ►
   ◯           ◯
 VOL ▼       VOL ▲
   ◯           ◯



  PALAB
   DAC-M1
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• ON / STBY : Press to put the unit into standby mode or turn it on.

• DISPLAY : Display Input signal sampling frequency.

• MENU : Press to enter setting mode or return to the previous screen.

• MUTE : Mute / Unmute audio.

• ITEM ▲▼ : Press button to show the item that you want to set.

• SOURCE ◄► : Select the playback source or change the setting value in menu mode.

• VOL ▲▼ : Increase / Decrease volume

Battery Replacement:

To change the battery, please remove the 4 screws and the bottom cover
to reveal the battery casing.

4. Start Up

Turn on the DAC-M1 display will first show DAC-M1.

DAC-M1

Next, the usage status when the power was last turned off will be displayed. For example, the input is USB and the volume is 88.

USB VOL 88

5. Display sample rate

Press the display button to display the locked sample rate, For example

PCM sample rate

PCM 44.1K or PCM 352.8K

DSD sample rate

DSD 64 or DSD 256

MQA original sample rate

MQA 44.1K or MQA352.8K

MQA Studio original sample rate

MQA STUDIO ➡ 352.8KHz

6. Setup menu

Pressing the MENU button will display the set value when you left the menu last time, For example
Sample rate adjustment

SRC : OFF

Digital filter selection

DF : LIN FAST

Output setting

OUTPUT : L - R

DOP decode
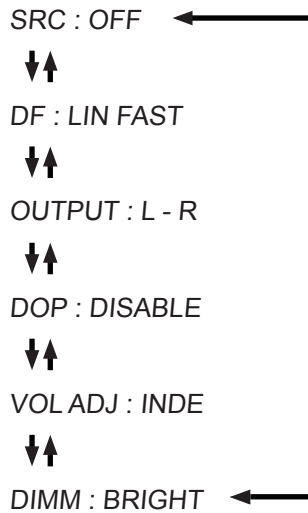
DOP : DISABLE

Volume control mode

VOL ADJ : INDI

Display brightness

DIMM : BRIGHT

7. Menu structure

The menu items appear in the following order

SRC : OFF

DF : LIN FAST

OUTPUT : L - R

DOP : DISABLE

VOL ADJ : INDE

DIMM : BRIGHT

Sample rate

SRC : OFF

SRC : PCM 44K

SRC : PCM 48K

SRC : PCM 88K

SRC : PCM 96K

SRC : PCM 176K

SRC : PCM 192K

SRC : PCM 352K

SRC : PCM 384K

SRC : DSD 64

SRC : DSD 128

SRC : DSD256

Digital filter

DF : LIN FAST

DF : LIN SLOW

DF : MIN FAST

DF : MIN SLOW

DF : APODIZING

DF : CORRECTED

DF : BRICK WALL

Output setting

OUTPUT : L - R

OUTPUT : R - L

OUTPUT : L - L

OUTPUT : R - R

DOP Decoder

DOP : DISABLE

DOP : ENABLE

Volume control mode

VOL ADJ : INDi

VOL ADJ : LINK

Display brightness

DIMM : BRIGHT

DIMM : HALF

DIMM : DARK

7-1. Sample rate conversion

Use to activate the up or down conversion circuit when receiving PCM or DSD signals.

SRC : OFF (default)

The original input signal is sent directly to the D/A converter without conversion.

SRC : PCM xxK or SRC : DSD xx

The input source is converted to PCM or DSD digital format, and then sent to the D/A converter.

7-2. PCM digital filter

The Digital Filter function primarily changes characteristics outside the audible frequency, They cannot affect changes within the audible frequency, You can choose the following digital filter.

DF : LIN FAST (Linear phase fast roll-off filter) (default)

DF : LIN SLOW (Linear phase slow roll-off filter)

DF : MIN FAST (Minimum phase fast roll-off filter)

DF : MIN SLOW (Minimum phase slow roll-off filter)

DF : APODIZING (Apodizing fast roll-off filter)

DF : CORRECTED (Corrected minimum phase fast roll-off filter)

DF : BRICK WALL (Brick wall filter)

7-3. Analog output

You can choose to have the left and right channel outputs swapped or work in single channel mode.

OUTPUT : L - R (default)

OUTPUT : R - L

OUTPUT : L - L

OUTPUT : R - R

7-4. DOP (DSD over PCM) decod

Enable this feature when you want to use Coaxial or Optical to receive DOP signals, When the DOP decoder is enabled, the MQA decoding function will be turned off at the same time.

DOP : DISABLE (default)

DOP : ENABLE

Note : MQA signal cannot be decoded after DOP is enabled

7-5. Volume control mode

The volume can be adjusted individually for each input, or all inputs can be adjusted together.

VOL ADJ : INDI (Individually) (default)

VOL ADJ : LINK

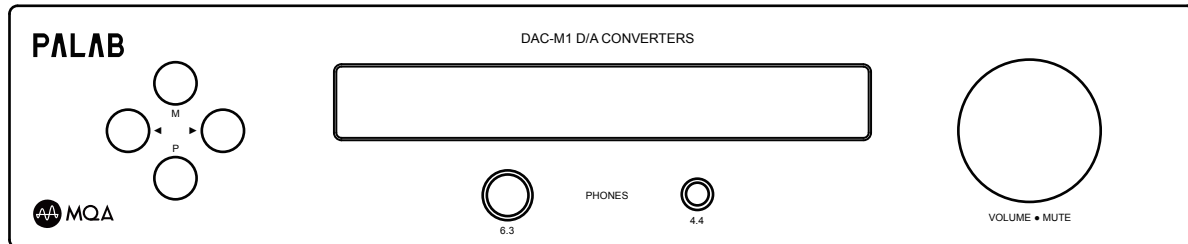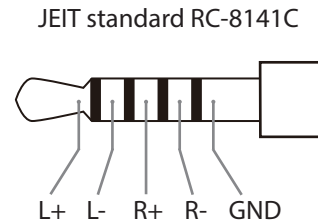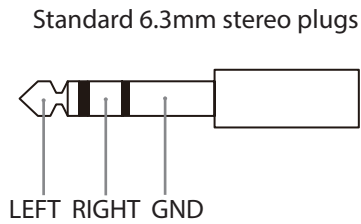### 7-6. Display brightness

Three-level display brightness adjustment.

DIMM : BRIGHT (default)

DIMM : HALF

DIMM : DARK

8. Connections (Front Panel)

Wiring illustration

Standard 6.3mm stereo plugs

LEFT RIGHT GND

JEIT standard RC-8141C

L+ L- R+ R- GND

DAC-M1 D/A CONVERTERS

PALAB

M
◄ ►
P

MQA

PHONES
6.3   4.4

VOLUME ● MUTE
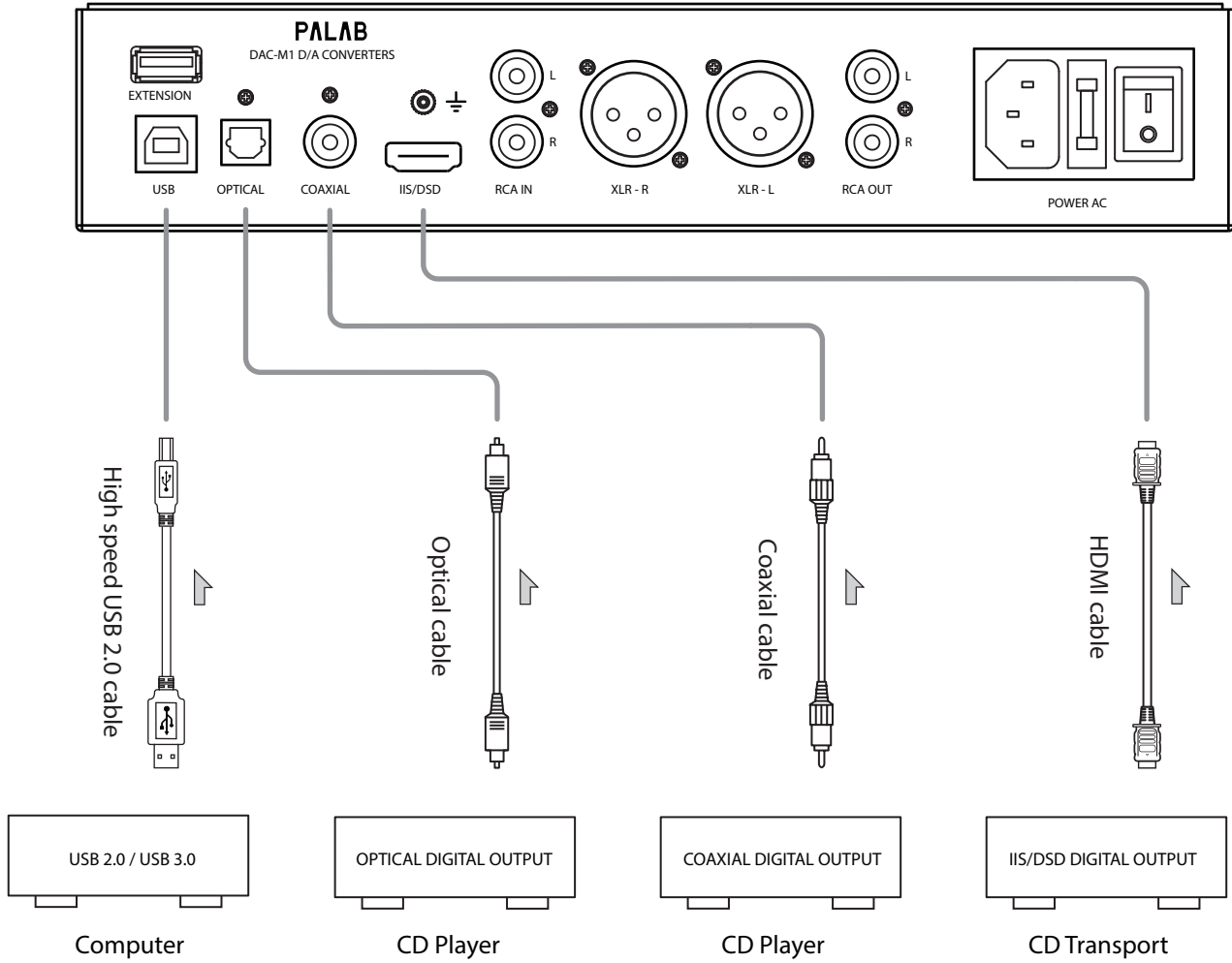
If headphones are connected, sound will
stop being output from the rear panel
connectors.
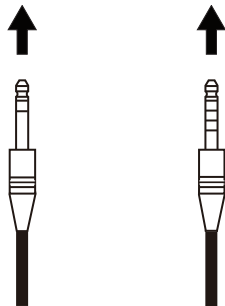
9. Connections (Rear Panel)

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EXTENSION				L			L	
USB	OPTICAL	COAXIAL	IIS/DSD	RCA IN	XLR - R	XLR - L	RCA OUT	POWER AC
				R			R	

High speed USB 2.0 cable

Optical cable

Coaxial cable

HDMI cable

| USB 2.0 / USB 3.0 | OPTICAL DIGITAL OUTPUT | COAXIAL DIGITAL OUTPUT | IIS/DSD DIGITAL OUTPUT |
| Computer | CD Player | CD Player | CD Transport |

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DAC-M1 D/A CONVERTERS

EXTENSION

USB   OPTICAL   COAXIAL   IIS/DSD   RCA IN   XLR - R   XLR - L   RCA OUT   POWER AC

L
R

L
R

RCA Audio Cables

XLR Audio Cables

RCA Audio Cables

Bluetooth or
Wi-Fi Module
(Option)

LINE OUTPUT

CD Player

XLR AUDIO INPUT

STEREO AMPLIFIER

RCA AUDIO INPUT

STEREO AMPLIFIER

TO MAINS

10. Windows Driver install

10-1. System requirements

Win 7 / 8 / 8.1 / 10 (32/64-bit)

10-2. Windows Installation Process

Please connect the DAC-M1 to the computer before installing the Windows driver.

10-3. Driver install

1. Please visit www.palabaudio.com and download the latest driver.

2. Open the driver folder and click setup.exe the driver will installer. connect the unit along with the source device.

3. Follow the onscreen directions. Please allow 3 ~ 5 minutes for the installer to complete. On older computers, it may take longer.

Note ：During the setup the hardware device must be connect to your PC source device and when the message appear to ask for disconnect and reconnect, follow the instruction and when finish doing so click on "OK". The source device should recognize the PALAB USB device and a message will show on the bottom.

11. Uninstall Windows Driver

1. Open the Control Panel from START and double click on the Control Panel then select Add or Remove Programs.

2. Select PALAB USB USBAudio Driver and click Remove.

3. Click Yes to confirm the removal.

12. Mac Installation Process

There is no installation require for Mac system however, a simple setting is require in order to allow the USB HD Audio to be active.

13. MQA - Master Quality Authenticated

The DAC-M1 includes MQA technology,which enables you to play back MQA audio files and streams, delivering the sound of the original master recording. The front panel display indicates if the MQA stream is detected. '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' 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. For more about MQA please visit: http://www.mqa.co.uk/

'MQA and the Sound Wave Device are registered trade marks of MQA Limited.© 2016'

Note: During MQA playback, the Sample rate conversion function will be disabled and force to off mode also digital filter function will be disabled and force to MQA custom filter mode.

14. Technical Specifications

Inputs : Rear panel

• USB : Type B 2.0 Hi-Speed, Windows OS : data stream up to 384KHz/24Bit and Native DSD 256.

      Type B 2.0 Hi-Speed, Mac / Lunix OS : data stream up to 384KHz/24Bit and DOP DSD 128.

• OPTICAL : Supports PCM 44.1KHz ~ 192KHz/24Bit and DOP 64.

• COAXIAL : Supports PCM 44.1KHz ~ 192KHz/24Bit and DOP 64 and128.

• IIS/DSD : Supports PCM 44.1KHz ~ 768KHz/32Bit and DSD 64 ~ DSD 256 data streams.

• RCA : Up to 2 Vrms audio signal.

• EXTENSION : Supports PCM 44.1KHz ~ 192KHz/24Bit.

Outputs : Front panel

• TRS 6.3mm :

Output power: 1700 mW, 32 ohms, <0.01% THD (watts per channel).

Output power: 135 mW, 600 ohms, <0.005% THD (watts per channel).

• MMCX 4.4mm :

Output power: 1700 mW, 32 ohms, <0.01% THD (watts per channel).

Output power: 135 mW, 600 ohms, <0.005% THD (watts per channel).

Outputs : Rear panel

• RCA unbalanced outputs : 4 Vrms

• XLR balanced outputs : 8 Vrms

• Output Impedance: < 50 Ohm.

• Frequency response: 20 Hz - 20 KHz / ±0.3 dB.

• SNR: > 110 dB.

• THD+N: < 0.0005%.

15. GENERAL

• Power Supply: AC voltage selector switch at the bottom of the unit, 115V or 230V.

• Dimensions [W x H x D]: 250mm x 59mm x 310mm

• Weight: 2.7Kg

• Power consumption: Standby under 0.9W

16. Package content

• The DAC-M1 (Black)

• Aluminum remote (Black)

• Power cord

Note

• Design and specifications are subject to change without notice.

• Illustrations in this manual might differ slightly from production models.

PALAB Limited Warranty and Limitation of Liabilities

ADDITIONAL RIGHTS

For consumers, who are covered by consumer protection laws or regulations in their country of purchase or, If different, Their country of residence, The benneﬁts conferred by thid warranty are in addition to all rights and remedies converyed by such consumer protection laws and regulations. This warranty does not exclude, Limit or suspend any rights of consumers arising out of nonconformity with a sales contract. Some countries, States and provinces do not allow the exclusion or limitation of incidental or consequential damages or allow limitations on how long an implied warranty or condition may last, So the limitations or exclusions described below may not apply to you. This warranty gives you speciﬁc legal rights, And you may also have other rights that vary by country, State or province. This limited warranty is governed by and construed under the laws of the country in which the product purchase took place.

LIMITED WARRANTY

For a period of ONE (1) Year from the date of retail purchase by the original end-user purchaser ("Warranty Period"), PALAB warrants (in) this product against defects in materials and workmanship, and (ii) that each product, unmodiﬁed and under normal use and conditions, will substantially comply with PALAB ' applicable written technical documentation for the product. PALAB reserves the right to make substitutions and modiﬁcations from time to time in the speciﬁcations of products sold by PALAB, provided that such substitutions or modiﬁcations do not materially aﬀect overall product performance.

If a hardware defect exists and a valid claim is received within the Warranty Period, at its option and to the extent permitted by law, PALAB will (1) repair the hardware defect at no charge, using new or refurbished replacement parts, (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or (3) refund the purchase price of the product. PALAB may request that you replace defective parts with user-installable new or refurbished parts that PALAB provides in fulﬁllment of its warranty obligation. A replacement product/part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes PALAB's property. When a refund is given, your product becomes PALAB's property.

OBTAINING WARRANTY SERVICE

If you purchased the product in the U.S., deliver the product, at your expense, to any PALAB Service Center located in the U.S. If you purchased the product outside of the U.S., deliver the product to any PALAB Authorized Importer in the country where you purchased the product. Be aware, however, that not all countries have PALAB Authorized Service Providers ('NASP') and not all Authorized Service Providers outside the country of purchase have all parts or replacement units for the product. If the product cannot be repaired or replaced in the country it is in, it may need to be sent to a different country or returned to the country of purchase at your expense for repair or replacement. If you seek service in a country that is not the country of original purchase, you will comply with all applicable import and export laws and regulations and be responsible for all custom duties, V.A.T. and other associated taxes and charges. Where international service is available, PALAB may repair or exchange defective products and parts with comparable products and parts that comply with local standards. You can always deliver the product to PALAB U.S. main service center for obtaining warranty service, however, you may have to pay for return shipping cost.

PALAB may send you user-installable new or refurbished replacement product or parts to enable you to service or exchange your own product ("DIY Service"). Upon receipt of the replacement product or part, the original product or part becomes the property of PALAB and you agree to follow instructions, including, if required, arranging the return of original product or part to PALAB in a timely manner.

When providing DIY Service requiring the return of the original product or part, PALAB may require a credit card authorization as security for the retail price of the replacement product or part and applicable shipping costs. If you follow instructions, PALAB will cancel the credit card authorization, so you will not be charged for the product or part and shipping costs. If you fail to return the replaced product or part as instructed or the replaced product or part is not eligible for warranty service, PALAB will charge the credit card for the authorized amount.

EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to hardware products manufactured by or for PALAB that can be identified by the "PALAB" trademark, trade name, or logo affixed to them. The Limited Warranty does not apply to any non-PALAB hardware products or any accessories, even if packaged or sold with PALAB hardware. Non-PALAB manufacturers,
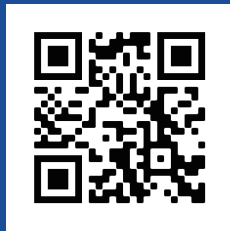
suppliers, may provide their own warranties. Other accessories distributed by PALAB under the PALAB brand name are not covered under this Limited Warranty. This warranty does not apply: (a) to damage caused by accident, abuse, misuse, misapplication, liquid contact, fire, earthquake, non-PALAB products, or other external causes; (b) to damage caused by service performed by anyone who is not a NASP; (c) to a product or a part that has been modified without the written permission of PALAB; (d) to consumable parts, such as batteries, or protective coatings designed to diminish over time unless failure has occurred due to a defect in materials or workmanship; (e) to cosmetic damage, including but not limited to scratches, dents, and broken plastic on ports; (f) to defects caused by normal wear and tear or otherwise due to the normal aging of the product; or (g) if any PALAB serial number has been removed or defaced. Important: Do not open the hardware product. Opening the hardware product may cause damage that is not covered by this warranty. Only PALAB or a NASP should perform service on this hardware product.

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