iBasso Audio In Pursuit of Perfection

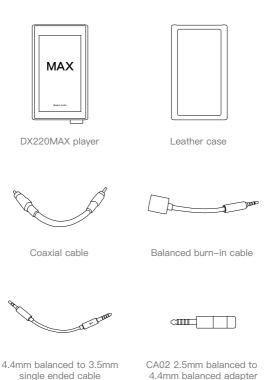




Contents

Package Components	2-6
Main Features	7-8
Specifications	9-10
Names of Parts & Functions	11-15
Charge	16-17
Android Basic Features Introduction	18-30 18-20 ons 21-23
System Settings	24–29 30
iBasso Mango Music Player Application	31-63
Playback Screen (home screen)	31-33 34-42 43-63
Mango OS	64-67
System Switching	64 65 66
ΜΩΔ	67

Package Components



4.4mm balanced adapter



AC adapter (18V)

USB-C cable



Screen protector



Quick start guide



Warranty card

USB-C cable:

Connect the Type-C cable to a computer for charging, data transfer, and USB-DAC function. The USB-C cable can also be used with a USB charger to charge the battery of the digital section.

4.4mm balanced to 3.5mm single ended cable:

To output a 3.5mm single ended line from the 4.4mm balanced line out port. Be aware of that this cable has direction. It cannot be used for the output from a 3.5mm port to a 4.4mm input.

CA02 2.5mm balanced to 4.4mm balanced adapter:

To convert a 2.5mm balanced plug to a 4.4mm balanced plug. The furnished burn-in cable is 2.5mm. Therefore, please use this CA02 with the 2.5mm balanced burn-in cable when you want to burn-in the DX220Max.

AC adapter (18V):

Use this AC adapter to charge the battery of the analog section.

Coaxial cable:

Connect the coaxial cable to an external DAC, to allow the DX220Max working as a digital transport.

Balanced burn-in cable:

Plug the burn-in cable with the CA02 into the BAL output socket, and keep playing music to burn-in the DX220Max. The burn-in process helps the DX220Max's sound reach its full potential by forming the capacitors and stabilizing the electronic components used.

Leather case:

Use the leather case to protect the DX220Max's chassis from scratches.

Screen protector:

Use the screen protector to protect the DX220Max's screen from scratches.

Warranty card:

The warranty will be requested at the time of warranty repair. Please retain the warranty card.

Quick start guide:

This reviews the basic functions of the DX220Max.

Tips for burn-in

The use of the burn-in cable is very straightforward. The burn-in cable is used to form the capacitors and to condition the rest of the circuitry. The method for burn-in is to use normal resolution music, as higher resolution causes more heat due to the higher demand on the system. Also, use a normal listening volume, as the higher volume will have a higher power consumption therefore more heat will be generated. While burning in the Max, both the balanced and the single ended components are being affected and burned in

The burn-in time can be from 100 to 200 hours and the burn-in doesn't have to be continual. You can power off the player and continue the burn-in process after a few days. It is also not mandatory to use the burn-in cable, we supply it as a convenience for when you are not listening to the Max and you would like to get your dap conditioned as soon as possible. You can also just listen to the player and enjoy the music as your player goes through this process while playing through IEMs or headphones.

Main Features

- The digital and analog sections of the DX220MAX are powered separately, with each having an independent charging system. The digital and analog hardware and signal communications, adopt optocouplers and I2C isolators to completely isolate the digital to analog sections from any interference.
- The AMP section is powered by a true +/- 8.4V battery pack. No voltage boost is used, which ensures the highest purity and current output.
- An optimized super class A discrete amp circuit, based on the AMP8 module, which eliminates the switching distortion of transistors, while providing the sound signature of a class A amplifier, that also significantly reduces heat generation, is used.
- The MAX has versatile outputs that incorporate a 4.4mm balanced line out, 4.4mm balanced phone out, and a 3.5mm single ended phone out. The voltage output of the 3.5mm single ended is up to 4.4V RMS, and the balanced phone out is up to 8.8V RMS.
- Kemet polymer tantalum, Toshin UTSJ, Panasonic, Nichicon Audio Electronic, Amtrans PET film capacitors are used in the MAX.
- A custom 4-wiper potentiometer that has less than +/-2dB channel tolerance has been selected.
- Dual SABRE ES9028PRO DAC Chips are incorporated.
- Bit for Bit playback with support up to 32bit/384kHz.
- Support of Native DSD up to 512x.
- 5.0" IPS full screen (1080*1920), with On Cell capacitive touch panel.

- Corning glass on the tront screen and rear panel.
- Support of QC3.0, PD2.0, & MTK PE Plus quick charge for digital section.
- XMOS USB receiver with Thesycon USB audio driver, making this an easy to use USB DAC.
- A Total of 5pcs of Femtosecond league oscillators, with 2 of them being Accusilicon ultra low phase noise Femtosecond oscillators.
- 8-core CPU.
- Mini optical output and mini coaxial output.
- 4GB LPDDR3.
- 128G internal memory.
- 5G WiFi and Bluetooth 5.0.
- Support SDXC and SDHC Micro SD cards.
- Three settings of gain control.
- Audio Formats Supported: MQA, APE, FLAC, WAV, WMA, AAC, ALAC, AIFF, OGG, MP3, DFF, DSF and DXD.
- Support for M3U playlists.
- 4400mAh 3.8V Li-Polymer battery for the digital section, and 4pcs 900mAh Li-polymer battery form the +/-8.4V battery pack for the analog section.

Specifications

4.4mm Headphone Out:

Output Level: 8.8VRMS (-108dB, 0.0004%, no load)

8.7VRMS (-107dB, 0.00045% @300ohm)

Frequency Response: 10Hz--40KHZ (-0.2dB)

S/N: 125dB

Dynamic Range: -125dB

THD+N: -114dB (0.0002%) (3VRMS, DAC132, no load)

-113.5dB (0.00021%) (3VRMS, @300ohm)

-101.5dB (0.00084%) (3VRMS, @32ohm)

Crosstalk: -119dB

3.5mm Headphone Out:

Output Level: 4.4VRMS (-105.5dB, 0.00053%, no load)

4.35VRMS (-104dB, 0.00063% @300ohm)

Frequency Response: 10Hz--40KHZ (-0.2dB)

S/N: 122dB

Dynamic Range: -122dB

THD+N: -114dB (0.0002%) (2.5VRMS, no load, DAC140)

-112dB (0.00025%) (2.5VRMS, @300ohm)

-97dB (0.0014%) (2.5VRMS, @32ohm)

Crosstalk: -118dB

4.4mm Line Out:

Output Level: 4.4VRMS (-112dB, 0.00025%, no load)

Frequency Response: 10Hz--40KHZ (-0.2dB)

S/N: 125dB

Dynamic Range: -125.8dB

THD+N: -115.4dB (0.00017%) (2.6VRMS, DAC141)

Crosstalk: -115dB

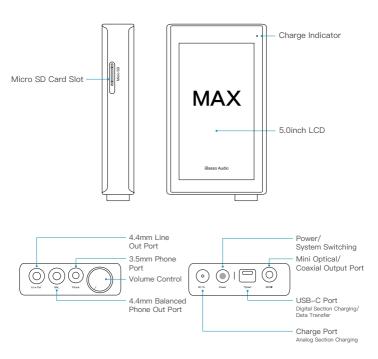
Charging time:

Digital Section Charging: 2 hours
Analog Section Charging: 2.5 hours

Average Play Time: 14 hours

(The play time varies with different resolutions and headphone/IEM loads.)

Names of Parts & Functions



Power/System Switching

Short- Press-Power the LCD screen on and off.

Long - Press-To display the pop up window with three options that are Power off, Reboot, and To Mango.

USB-C Port

Connect the MAX to a computer or a USB charger to charge the MAX's digital section.

Connect the MAX to a computer to allow the MAX to work as a card readeror an external storage.

Connect the MAX to an OTG storage device to play music files stored in this OTG storage device.

Connect the MAX to a PC or a Mac computer to work as a USB DAC.

Volume Control

Turn clockwise to increase the volume, turn counterclockwise to decrease the volume.

Mini Optical/Coaxial Output Port:

Use a mini optical cable or the furnished coaxial cable to play music stored in the MAX on an external device with a coaxialor optical input port. Mini optical/coaxial output has the highest output priority which would close the phone out or line out when optical/coaxial cable plugged in. The output of his port is up to 24bit/192kHz or DoP DSD64.

4.4mm Line Out Port:

Use a 4.4 interconnect cable to play music stored in the MAX on an external amplifier with a balanced line in port.

Use the furnished 4.4 to 3.5 interconnect cable to play music stored in the MAX on an external amplifier with a 3.5mm single ended line in port.

3.5mm Phone Out Port

Plug in the 3.5mm single-ended monitor and output sound through the phone port.

4.4mm Balanced Phone Out Port:

Plug in the 4.4mm (2.5mm with adapter) balanced earphone and output sound through the balanced phone port.

Micro SD Card Slot

Insert a Micro SD card into the DX220Max to access its stored files.

Basic Operation:

Power on/off:

- 1. Press and hold the power button to power on.
- 2. After the DX220Max is powered on, a long press of the Power button to display the pop up window, press Power Off button to power off the DX220Max.

Power on/off the screen:

Single press the power button to power on/off the screen after the DX220Max was powered on.

Reset:

When the DX220Max stop unexpectedly duringoperation and the keys are no longer responsive, press and hold the power button for 10 seconds to reset the DX220Max.

Charging:

DX220Max supports three quick charge protocols, QC3.0, PD2.0, and MTK PE Plus. Charging can be done with a standard 5V USB charger or with quick charger that is compliant the stated 3 protocols. A full charge takes about 2.5 hours with the afore mentioned quick charge types.

Connecting to a computer to work as a USB DAC:

The DX220Max can work as a USB DAC for Windows PC, Mac computer, and Linux computer.

It is driver free on Mac computer and Linux computer. For Windows PC, one can download the driver from iBasso. com and install it following the steps, before using the USB DAC function.

The DX220Max supports up to 32bit/384kHz PCM, and native DSD up to 512x when be used as a USB-DAC.

The following is the instruction:

- 1. Power on the DX220Max.
- 2. Press the DAC on button on Settings/DAC.
- 3. The "USB DAC" screen will be shown on the DX220Max.
- 4. Connect the DX220Max to a computer via the furnished type-C Cable.
- Select "iBasso Audio HiFi device" as the audio output device.
 Then one can play music on the computer and listen it via the DX220Max.

Charge

Charging the Analog Section:



With the furnished AC adapter (18V), the analog section can be fully charged in about 2 hours. The battery indicator and status of the analog section is displayed in the upper left corner, the first from the left is the battery indicator, the second one is the battery status. The indicator will display the lightning symbol when charging, and it will show a red exclamation mark when the battery is empty. When the battery of the analog section is empty, the amp function cannot be used. At this time, the digital section would not be affected. But there will be no sound when using the 3.5mm phone out, 4.4mm blaanced phone out, or 4.4mm line out.

Charging the Digital Section:



The digital section of the Max can be charged via the USB–C port. The USB charge supports PD2.0, QC3.0, MTK PE + quick charging protocols, and the charging time is about 2.5 hours. The status bar of the digital section is located at the upper right. The third from the right is the battery indicator, and the second from the right is the battery status. When charging, the battery icon will display a lightning icon. When the battery is 0%, the MAX will be powered off.

Android Basic Features Introduction

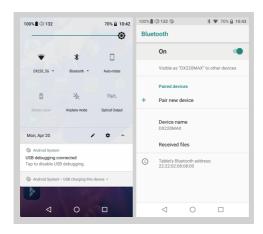


WiFi Connection:



- ① On the Android desktop, from the top, swipe down the screen to display the notification bar.
- ② Press the Wireless local area network(WLAN) to turn on the WiFi function. The first time you enter the WLAN, you need to choose the hot spot you will be using and enter the password. From this point forward your password for this hotspot will be remembered and you simply press the WLAN icon to connect to the WiFi internet.

Bluetooth Connection:



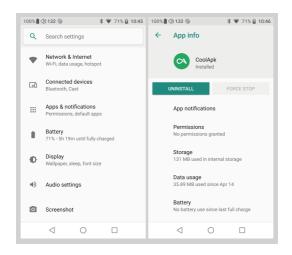
- ① On the Android desktop, swipe down from the top of the screen to display the notification bar.
- ② Press the Bluetooth icon to turn on the Bluetooth function. The DX220Max will automatically search for the nearby Bluetooth device. At the same time, the DX220Max will be visible to the nearby devices. Choose the device that you would like to pair with. After the device has been paired, you can use the DX220Max in the Bluetooth mode.

APP Installation:



- ① APKPure and CoolAPK are pre-installed on the DX220Max. They are similar to Play Store.
- 2 Launch one of them.
- 3 Search for the APP that you would like to install.
- (4) Download the APP and install it.

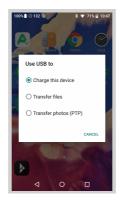
App, to Uninstall:



- 1) Press the internet browser on the desktop.
- (2) Enter the website address of the APP.
- ③ Find the download icon on the website and start the download.
- Return to the desktop and open the download manager.
- ⑤ Press the on downloaded app and install it.

USB Connections:

- ① Connect the DX220Max to a computer using the furnished type-C cable.
- ② Swipe down the screen from the topto display the notification bar.
- ③ Press the USB connection icon to choose the type of USB use.



Charging:

This only charges the DX220Max.

File Transfers:

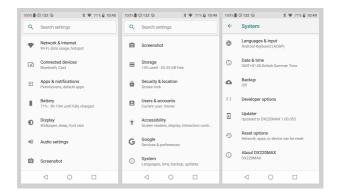
Transfer files to Windows or Mac (MTP).

Photo Transfer (PTP):

transfer photos or files if MTP is not supported.

System Settings:

Press Settings icon on the DX220Max desktop to go into system settings.



Audio Settings:

Press Settings Icon, then press Audio Settings.



1) DAC Volume:

Set the output of the DAC. We recommend setting the value between 132~150 to get the best result.

2 Automute:

When Automute is on, it eliminates the noise when the music starts or when you switch songs. However, it may cause the music to be muted for 0.5 seconds on the beginning of the music.

3 Optical Output:

When Optical Output is on, digital output is allowed on the SPDIF port. Keep the Optical Output off when the optical output is not applicable.

④ Gain: One of the three gains can be selected.

(5) Digital Filter: A total of seven filters are available for user setting.

⑥ Volume Limitation: This sets the volume to a maximum preset point.

Volume Control Wheel: Volume control wheel enabled after the screen is off.

Firmware Update:

- 1: Press Settings Icon, System, Updater.
- 2: Select Online Update or Local Update.





Online Update:

- 1 Make sure the DX220Max is connected to WiFi.
- ② After online update is select, press Check Update.
- ③ Press Download, the DX220Max will start downloading the available update package.
- After the download complete, press Update Now to start the firmware update.

Firmware Version:



- ① Press Settings icon, System, About DX220Max.
- ② Scroll down the page, the Build number is the firmware version.

Power Off, Reboot, And System Switching:



- 1 Long press the power button for 3 seconds.
- 2 There is a pop up window with three options.
- ③ When To Mango is selected, system will be switched to Mango OS.
- To return to the Android System, go into the Advanced menu of Mango.

iBasso Mango Music Player Application

iBasso Audio Mango music player is composed of the Playback screen (home screen), Music screen and Settings.

When on the playback screen, one can swipe left and right on the Album artwork area ③ to switch a song: Press the icon on the top left corner ① to go into Music Screen.

Press the icon on the top right corner ② to go into Settings. No matter which sub screens of the Music Screen you are bro wsing, press the thumbnail icon on the bottom left to return to the playback screen.



Playback Screen (home screen):



Now Playing Screen:

Swipe down from the track number icon ① to display the now playing screen. One can swipe a song to the left to display the Delete button. Press Delete to delete it from this playlist.





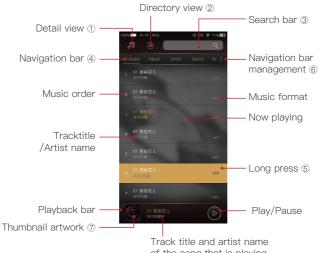
Music Info Screen:

Press the Music info icon ②, the album artwork will show the music info. Press the music info icon again, it will return to album artwork.





Music Screen:



of the song that is playing.

Detail View:

Press the detail view icon to browse the scanned library.

Directory View:

Press the directory view icon to browse in file structure.

Search bar:

Press the search bar to go into the search page to search the desired music or album.

Navigation Bar:

One can swipe it left or right to choose: All Music view, Album view, Artist view, Genre view, Now Playing view, or Playlist view.

Long Press:

Long pressing a song will pop up a window with more options.

Navigation Bar Management:

To customize the navigation bar and music screen.

Thumbnail artwork:

Press to return to the playback screen.

Long Press Pop-up:



Further Options:

Long Press of a song will pop up a window with further options that allows to play this song, add this song to a playlist, or delete this song.

Album View:

Thumbnail view



Artwork view



Artist View:

Thumbnail view



Artwork view



Playlist View:





New Playlist:

Press the New Playlist to create a playlist. On the pop-up window, one can name the playlist and add playlist description.

Further Options:

A Long press of the playlist will popup a window with further options, which allows renaming the playlist, exporting the playlist, or deletion of the playlist.

The playlist can be found on the internal storage of the iBasso /mango player folder, after the playlist has been exported.

Navigation Bar Management Screen:

Press the icon located on the right side of the navigation bar to go into the navigation bar management and music sorting screen.



Navigation Bar Management:

One can customize the navigation bar. When selected, the icon is highlighted. Press the icon again to unselect. The selected icon will be shown on the navigation bar. Otherwise, it will not be shown.

All Music View Sorting:

One can sort the all music view by title, album, artist, added time, or folder.

Album View Settings:

One can choose between the thumbnail view and artwork view.

Artist View Settings:

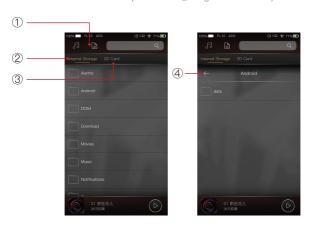
One can choose between the thumbnail view and artwork view

Now Playing View Sorting:

One can sort the Now Playing by title, album, artist, added time, or folder.

Directory View:

Press the Directory View icon 1 to go into directory view.



Press the Directory View icon 1 to go into directory view. One can browse the music files under internal storage and SD card via folder structure.

Press Internal Storage② to see music files under internal storage. Press SD Card③ to see music files under SD card. Press the return button④ will move back one page at a time.

Search Screen:

Input the keywords to search a track, an album, or an artist.



Settings Screen:

Press the Settings icon to go into settings screen.



Gapless:

One can enable the gapless to eliminate the gap between two tracks

Gain:

There are three gain settings. The low gain has the lowest noise floor, it is good for ultra sensitive IEMs.

Play Mode:

One can choose the desired play mode here.

L/R Balance:

Press to go into the L/R balance setting page.

Digital Filter:

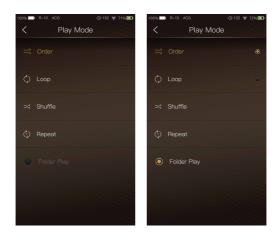
There are seven filters, press the number to quickly choose a filter.

Advanced:

To access to more system settings.

Play Mode:

One can choose the desired play mode among Order, Loop, Shuffle, and Repeat.



Folder Play:

To enable the folder play function, tick the box on the left, then select either the order play mode or loop play mode. After a full media scan, or rescan the library, you can go to Directory and select a song under a folder. After this folder is played, the DX220Max will play the next folder.

Equalizer:

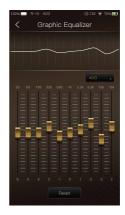
The DX220Max has two types of Equalizer, Graphic EQ and Parametric EQ. $\label{eq:condition}$



Graphic Equalizer:

Press the button of the Graphic Equalizer to enable the Graphic Equalizer.





Pre-set EQ:

There are 5 kinds of pre-set EQ and a custom option. One can quickly set the equalizer as desired by selecting them

How to Adjust The EQ Settings:

Press on the response curve, the 10 band slide bars will show up. One can adjust the EQ settings by positioning the bars up or down.

Parametric Equalizer:

Press the button of the Parametric Equalizer to enable the it.



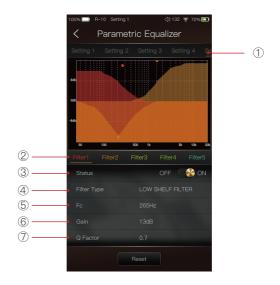
Parametric Equalizer:

Press the button of the Parametric Equalizer to enable the it.

How to Go Into The Parametric EQ Setting Screen:

Press the response curve to go into the parametric EQ setting screen.

Parametric Equalizer Setting Screen:



Settings on the Selection Bar:
 One can swipe left and right to select a setting.

2 Filter Navigation Bar:

There are maximum of 6 filters allowed for each setting. One can swipe left and right to select a filter, then customize it.

③ Status:

Status of each filter. One can turn on or turn off the selected filter.

4 Filter Type:

There are eight kinds of filters. Select one of the filters.

⑤ Frequency:

This is the central frequency. Input a value between 33Hz to 16,000Hz.

6 Gain:

This is the gain for each central frequency. Input a value between –20dB to 20dB.

7 Q Factor:

This is the quality factor. Input a value between 0.3 to 20.

Parametric Equalizer Setting Instruction:

Central Frequency (Fc):

The central frequency of each filter setting.

Gain:

The gain for the central frequency.

Quality Factor:

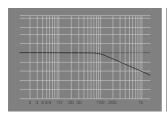
The range of effect of the filter.

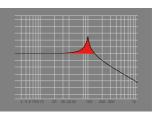
As shown on the pictures below, the larger value of the Q factor, the smaller the effect compared the central frequency. The smaller value of the Q factor, the larger the effect in relation to the central frequency.

The following are the curves of the filters (Fc=100Hz, gain=4dB)

1 Low Pass Filter

The frequency higher than the central frequency will be affected. Gain setting is ineffective with low pass filter.



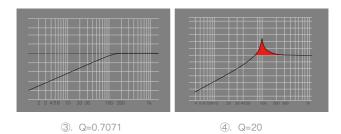


①. Q=0.7071

(2). Q=20

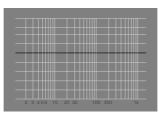
2. High Pass Filter

The frequency smaller than the central frequency will be affected. Gain setting is ineffective with high pass filter.



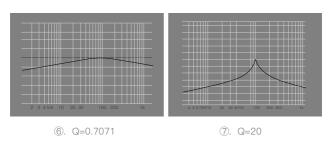
3. All Pass Filte

There is no effect beside the central frequency. Gain setting is ineffective with all pass filter.



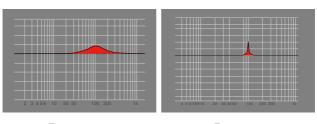
4. Band Filter

There is no a large effect on the central frequency. The frequency beside the central frequency has similar effect. Gain setting is ineffective with band filter.



5. Peak Filter

There is a large effect on the central frequency. The frequency beside the central frequency has similar effect.

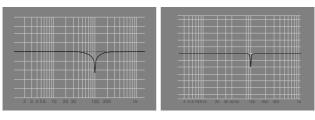


(8). Q=0.7071

(9). Q=20

6. Notch Filter

The central frequency has obvious reduction. The frequency beside the central frequency has similar effect. Gain setting is ineffective with notch filter.

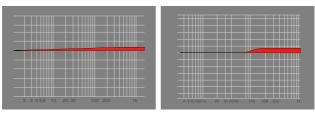


①. Q=0.7071

①. Q=20

7. High Shelf Filter

There is a wide effect on the frequency that is higher than the central frequency.

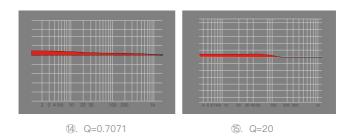


12. Q=0.7071

(3). Q=20

8. Low Shelf Filter

There is a wide effect on the frequency that is lower than the central frequency.



L/R Balance:

Slide clockwise to decrease the volume in right channel. Slide in counterclockwise to decrease the volume in left channel.





Digital Filter:



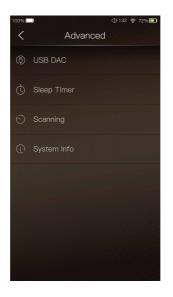


Digital Filter:

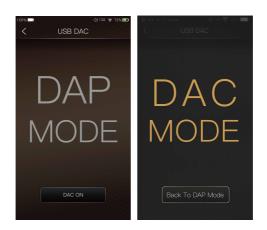
There are seven digital filters available. Press a digital filter to unfold the figure.

Advanced

To access more system settings.



USB DAC:



The DX220Max can work as a USB DAC for Windows PC, Mac computer, and Linux computer. It is driver free on a Mac computer and Linux computer. For Windows PC, one can download the driver from iBasso.com and install it following the steps included with the download, before using the USB DAC function. The DX220Max supports up to 32bit/384kHz PCM, and native DSD up to 512x when be used as a USB-DAC.

The following are the instructions for USB DAC use:

- 1) Power on the DX220Max.
- (2) Press the DAC On button on Settings/USB DAC.
- ③ The "USB DAC" screen will be shown on the DX220Max.
- Connect the DX220Max to a computer via the furnished type-C Cable.
- ⑤ Select "iBasso Audio HiFi device" as the audio output device. Then one can play music on the computer and listen it via the DX220Max, which will use the DX220Max day and amplifier. Or you can use the line out of the DX220Max into any amp of choice.

Sleep Timer:



Set the count down sleep timer to power off the DX220Max. The left hand side is the value of hours. The right hand is the value of minutes. The DX220Max will be powered off after the counter has completed. If there are any operat ions in the meanwhile, the DX220Max will start the counter again after the last operation.

Scanning:



Select the scan locations and the press start to perform a complete media scanning. One can use this feature to rebuild the music library.

System Info:



One can see the firmware version on this screen. Also, one can see the space available of the internal memory and SD card.

Mango OS

To reboot to Mango OS from Android, first of all, long press the power button for 3 seconds to pop up a window with three options. When "To Mango" is selected, the system will switch to the Mango OS.



The Mango OS User interface is composed of three parts: Music playback screen (homepage), my music, and settings. On the Music playback screen, press the icon① to go to My Music, press the icon② to go to Settings.



* The Mango OS operation is similar to the iBasso Mango APP, please refer to the iBasso Mango APP instruction for any questions.

To return to the Android System, go into the Advanced menu, press "To Android", then press "Yes".





MQA

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