STEREO 50

All-in-One Vacuum Tube Amplifier

STEREO 50
All-in-One Vacuum tube Amplifier
Features

- High-quality wireless Bluetooth(aptX) with NFC for pairing. No tedious setup is required, the most convenient wireless connection with excellent sound.

- Pure vacuum tube 25W + 25W* amplifier. For lush, open and fluid sound reproduction.

- Pure vacuum tube headphone Turbo® 7,000 mW output power; able to drive even the most difficult of headphones.

- Independent scientific research shows pure tube amplifiers reduce listener stress and improve the sense of well-being when listening to music**.

- Native Octa-DSD512(24MHz), PCM768kHz, 2xDXD, the most advanced digital audio formats available are supported together with all other DSD, PCM and DXD formats available.

- Minimum phase, minimum ringing digital filter is employed for PCM up to 192KHz. Pure analogue, no-ringing filtering is used for DXD/2xDXD as well as DSD. This removes a key factor in listener fatigue and the perception of digital sound as "aggressive" caused by the high-frequency ringing and distortion inherent to all standard digital filters and most digital playback systems.

- High-resolution audio USB, Coaxial, Optical digital inputs. Instantly upgrade the sound quality from any available digital music sources.

- 3D Holographic Sound Systems® for Headphones and Speakers. Delivers a wide open and spatially correct sound stage for speakers and headphones, reduces listening stress from "in head localisation" with headphones.

- XBass® for the best bass and dynamically corrects the Bass response to match the human hearing.

- Ultra-wide gain range MM/MC phono pre-amplifier, able to match all phono cartridges.

- Precision studio-grade tone controls, accurate, repeatable adjustment with unparalleled transparency.

- Analogue volume control with remote control, retain all the low-level music information in high-resolution audio.

* Measured using a music signal into the matching speaker at the onset of clipping

** Ackerman, J; doctoral thesis; 2000; Frankfurt Hochschule für Musik und Darstellende Kunst
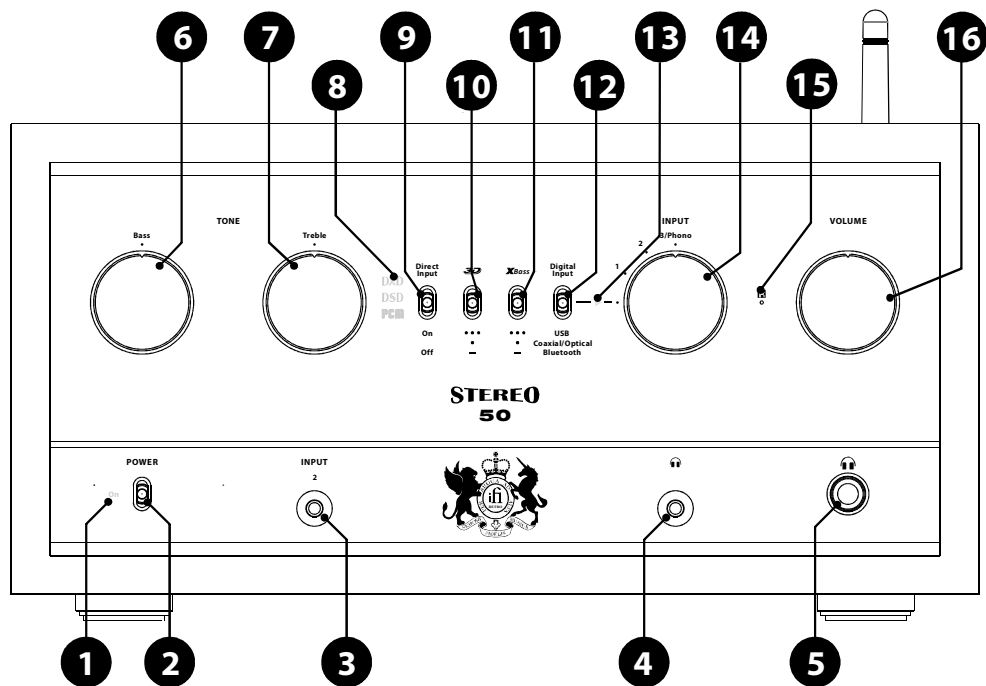
1. Power LED
ON/OFF.

2. Power Switch
45 seconds warm-up time.

3. Analogue Input-3.5mm
Shared with INPUT 2 at rear.

4. Headphone Output-3.5mm(Normal)
For high sensitivity Headphones and
In-Ear-Monitors (IEMs).

5. Headphone Output-6.3mm(Turbo)
For normal sensitivity Headphones.

6. Tone Control - Bass
See Phono Settings card
for additional Phono EQ details.

7. Tone Control - Treble
See Phono Settings card
for additional Phono EQ details.

8. Format Indicators
DXD,DSD,PCM. See LED Status
card for details.

9. Direct Input
ON to bypass the Tone Controls.

10. 3D Holographic Sound System
●●● For narrow (<1.5m apart) speaker
placement.
● For Normal Use (Recommended).
- OFF

11. XBass System
●●● Maximum Bass correction
(Recommended when the RETRO
LS3.5 is used with speaker stands).
● Moderate Bass correction
(Recommended for RETRO LS3.5 under
normal setup).
- OFF

12. Digital Audio Input Selector
For USB, Coaxial/Optical, Bluetooth inputs.
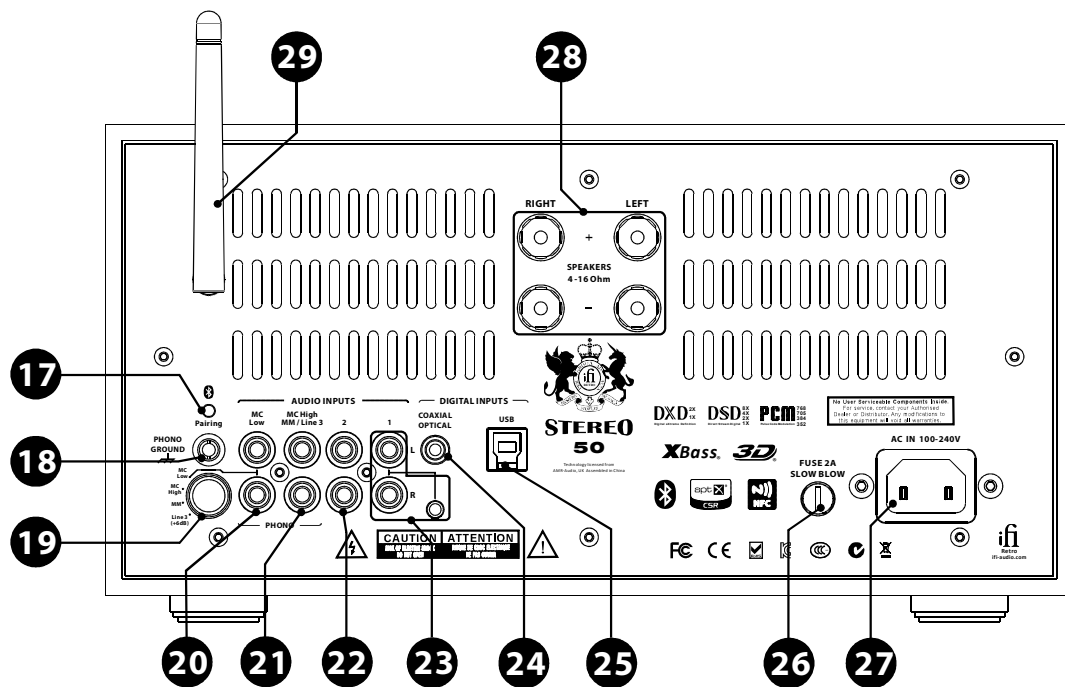
13. Status Indicator
See LED Status card for details.

14. Input Selector
Digital Input
Input1
Input2
Input3/Phono

15. Remote Control Receiver

16. Volume Control
Also controlled by the remote control.

29 28

RIGHT   LEFT
+
SPEAKERS
4-16 Ohm
-

17

AUDIO INPUTS   DIGITAL INPUTS
MC   MC High   COAXIAL
Low   MM/Line 3   2   1   OPTICAL   USB

18   PHONO
      GROUND
      MC
      Low   L

      MC
      High
19   MM
      Line 3
      (+6dB)   R

                PHONO

20 21 22 23 24 25

STEREO
50
Technology licensed from
AMR Audio, U.K. Assembled in China

DXD DSD PCM

XBass 3D

CAUTION ATTENTION

FC CE

FUSE 2A
SLOW BLOW

AC IN 100-240V

ifi
Retro
ifi-audio.com

26 27

17. Bluetooth Pairing Switch
For pairing new Bluetooth devices.

18. Phono Ground
Connect the Ground wire from
the turntable.

19. Line 3 Mode Selection
See Phono Settings card for details.

20. MC Low Input
For connecting an MC cartridge.

21. MC High/MM/Line 3
For connecting a High-Output MC cartridge,
MM cartridge or Line-Level equipment.

22. Input 2
Shared with front 3.5mm input.

23. Input 1
Shared with the 3.5mm input.

24. Digital Audio Input
Coaxial/Optical (auto-switching).

25. USB Input
MAC OSX (10.6 or later) has built-in
native support for the Retro Stereo 50 DAC.

MS Windows (XP or later), please download
and install the driver software before
connecting the Retro Stereo 50 DAC to the
computer(www.ifi-audio.com).

26. Fuse
2A slow-blow fuse.

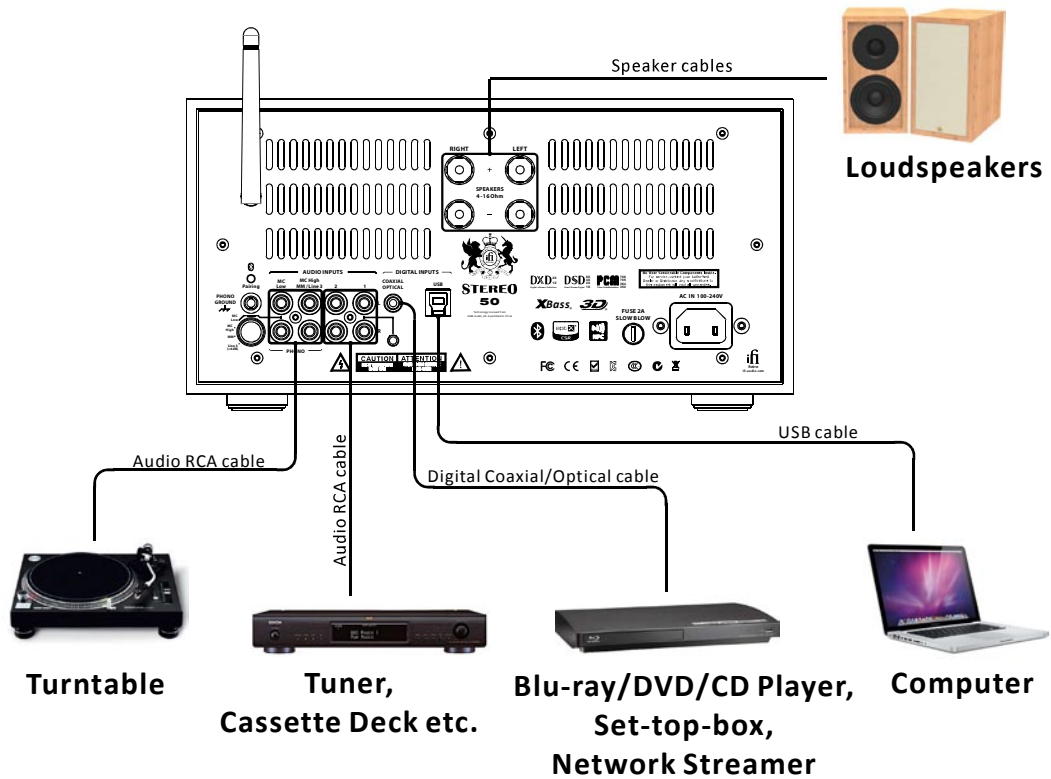## 27. Mains Power Input
100-240V AC.

28. Speaker Outputs
Compatible with 4-16 Ohm Speakers.

29. Bluetooth Antenna
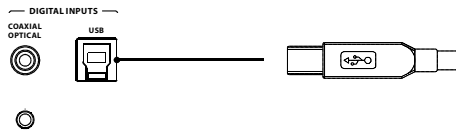Please set to an upright position for the
best reception.

System Connection Diagram

Smart Devices

Wireless Bluetooth

In-Ear-Monitors

Over-the-Ear Headphones

Speaker cables

Loudspeakers

Audio RCA cable

Audio RCA cable

Digital Coaxial/Optical cable

USB cable

Turntable

Tuner, Cassette Deck etc.

Blu-ray/DVD/CD Player, Set-top-box, Network Streamer

Computer

Computer

Connection method: USB cable

Step 1:

Connect the USB cable from the computer to the iFi RETRO Stereo 50's USB input.

Step 2:
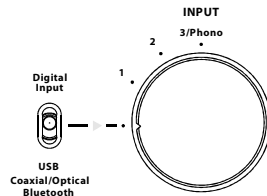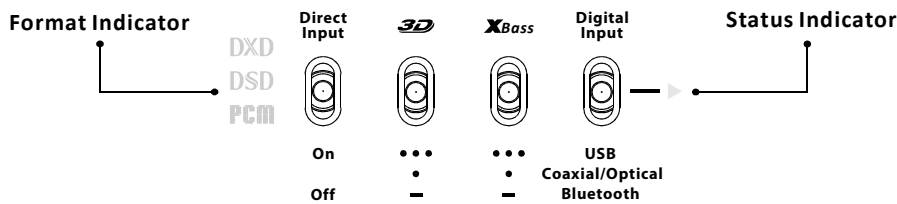

Select "**Digital Input**" and "**USB**" from the "**INPUT**" selector.

LED Status

The LED indicates the sampling rate of the incoming digital signal

| Input	Status Indicator	Format Indicator	Description
USB Digital Audio	Green	PCM	44/48kHz
	Yellow	PCM	88/96kHz
	Cyan	PCM	176/192kHz
	Magenta	DXD	352/384kHz
	White	DXD	705/768kHz
	Green	DSD	DSD64(2.8/3.1MHz)
	Yellow	DSD	DSD128(5.6/6.2MHz)
	Magenta	DSD	DSD256(11.2/12.4MHz)
	White	DSD	DSD512(22.6/24.6MHz)
	None	-	No music playing

Tip:
- The iFi Retro Stereo 50's DAC's design is based on the award winning iFi micro iDSD. It uses Minimum Phase (44.1kHz-192kHz) and Bit-Perfect (352kHz or above) filter for the best sound.

- For connection to Apple devices, the Apple USB Camera Adapter is required. For connection to Android devices, an OTG cable and appropriate OS support are required. For more information, please refer to www.ifi-audio.com.

- MAC OSX (10.6 or later) has built-in native support for the iFi Retro.
  MS Windows (XP or later), please download and install the driver software BEFORE connecting the iFi Retro to the computer (www.ifi-audio.com).

- For the best sound quality, always set the volume control on the computer and the playback software to 100%.

Blu-Ray/DVD/CD Player, Set-Top Box, Network Streamer

Connection method: Digital Audio (SPDIF) connection with either coaxial cable or optical cable

Step 1:
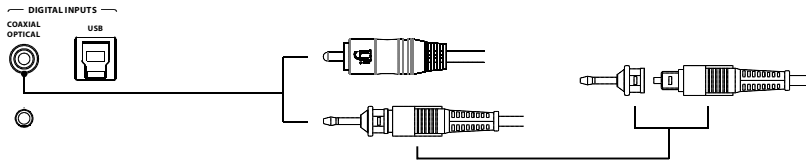
If the source component has a coaxial digital output, connect the coaxial cable from the source component to the iFi RETRO Stereo 50's intelligent digital audio input.

If the source component has an optical digital output, use the enclosed adapter to connect the coaxial cable from the source component to the iFi RETRO Stereo 50's intelligent digital audio input.
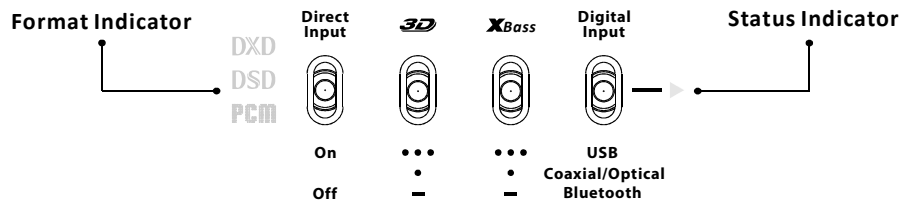
Step 2:
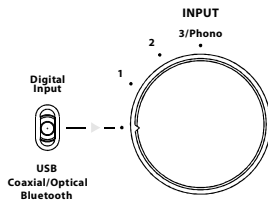
Select "**Digital Input**" and "**Coaxial/Optical**" from the "**INPUT**" selector.

LED Status

The LED indicates the sampling rate of the incoming digital signal

| Input	Status Indicator	Format Indicator	Description
SPDIF	Green	PCM	44/48kHz
	Yellow	PCM	88/96kHz
	Cyan	PCM	176/192kHz
	None	-	No music playing

Tip:

- The intelligent Coax/Optical Digital Input will switch between the appropriate coaxial or optical digital signals.

- A Toslink Mini-Plug to Toslink adaptor is included for connecting a normal Toslink optical cable.

- If the music source has both coaxial and optical outputs available, the coaxial connection will usually provide a better quality sound.

Mobile Smart devices (iOS/Android)

Connection method: Bluetooth wireless

Previously paired devices

Step 1:
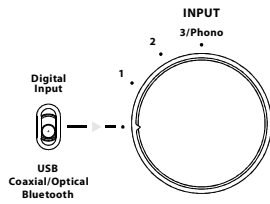
Select "**Digital Input**" and "**Bluetooth**" from the "**INPUT**" selector.

Step 2:

Turn on the Bluetooth on the smart device and look for:
"**iFi HQ(aptX) Audio**" and select press "**Connect**" within 20sec.

Unpaired devices

Step 1:

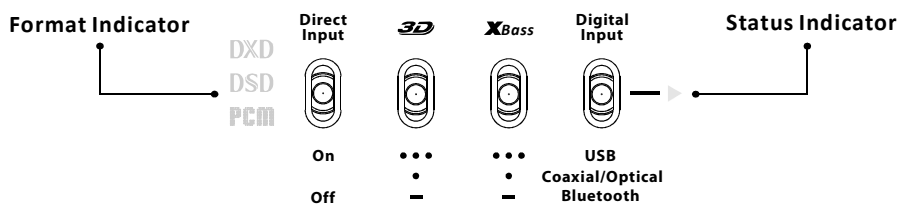Select "**Digital Input**" and "**Bluetooth**" from the "**INPUT**" selector.

Step 2:

Press and hold the pairing button for one second.

Step 3:

Turn on the Bluetooth on the smart device and look for:
"**iFi HQ(aptX) Audio**" and select press "**Connect**".

The LED indicates the Bluetooth Status

Input	Status Indicator	Format Indicator	Description
Bluetooth	Flashing Blue	PCM	Not Connected
	Blue	PCM	Connected
	Blue/Red	PCM	Pairing

Tip:
- aptX® is the latest development in wireless audio and it enables CD-like quality over a Bluetooth connection. Most upmarket Android smartphones from reputable manufacturers (e.g. Sony, Samsung, LG etc.) already have aptX supported built-in. Also aptX is available on many notebook computers (e.g. Apple Macbook Air, MacBook Pro, Samsung notebook etc.)

- The Power on sequence of the Bluetooth system is:
   ON ➡ Auto Connect (20sec) ➡ Auto Pairing (5min) ➡ Sleep

- Whenever Bluetooth is selected, the RETRO Stereo 50 will spend 20 seconds "searching" for the last connected device. If it cannot find a previously connected device, it will go into Auto-pairing mode for 5 minutes before falling back to Sleep mode.

- Under Sleep Mode, a previously **paired** device can be connected to the iFi RETRO Stereo 50 by selecting "Connect" on the smart device.

- Under Sleep Mode, for a previously **unpaired** device, one needs to put the iFi RETRO Stereo 50 into pairing mode by pressing the "Pairing" button.

- iFi RETRO Stereo 50 can store up to 8 paired devices.

- Smart devices (phone/pad) can also be connected to the iFi RETRO Stereo 50 using the USB input. For iOS devices, a Lightning to USB Camera Adapter is required. For Android devices, an OTG cable is required. The remaining process is the same as for a computer connected via USB.

- Smart devices will require special audio playback softwave[#] to offer DSD and High-Resolution audio.

\# Currently, Hibiki and Onkyo HF player are available in the iTunes store for iOS devices(iPhone/iPad). For Android, USB Audio Player Pro will work with compatible devices.

Analogue audio source components
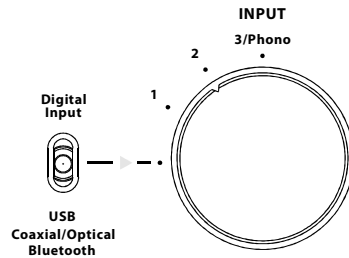
Connection method: RCA interconnect cables

Step 1:
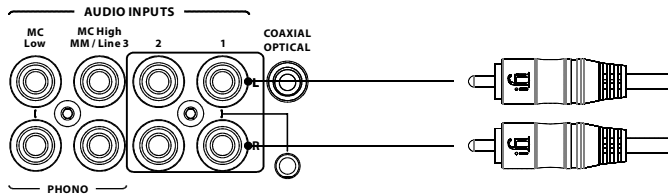
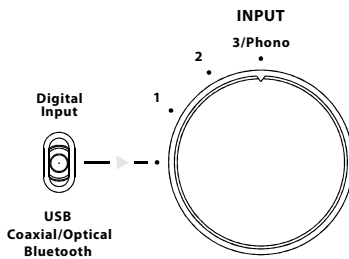Connect the audio RCA cables from the source component to the iFi RETRO Stereo 50's RCA audio input.

Step 2:

Select the respective "**1**" or "**2**" from the "**INPUT**" selector.

Tip:
- Input 3 is normally setup for connecting to a turntable. However, one can use the mode switch at the back of the unit to configure this input to become a line input with 6dB of gain.

- The extra 6dB gain (fixed) is useful when you are connecting some vintage equipment (e.g.radio, cassette deck) where the output is the classic standard of 0.7Vrms rather than the modern standard of 2Vrms.
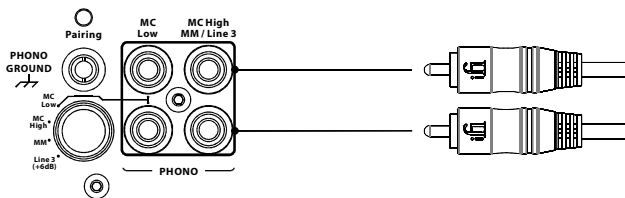
Turntable

Connection method: RCA interconnect cables

Step 1:

Identify the input and set the mode switch on the iFi RETRO Stereo 50 for the cartridge used.

| Cartridge rated output	Mode Switch	Gain(dB)	RCA connection	Diagram
<0.75mV	MC Low	62	MC Low	
0.75-3mV	MC High	50	MC High MM/Line 3	
>3mV	MM	38	MC High MM/Line 3	
Line	Line3 (+6dB)	6	MC High MM/Line 3	

Step 2:

Connect the audio RCA cables from the turntable to the iFi RETRO Stereo 50's Phono audio input connection as illustrated in Step 1 above.
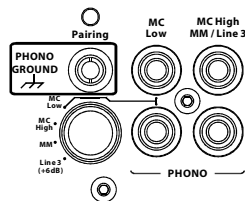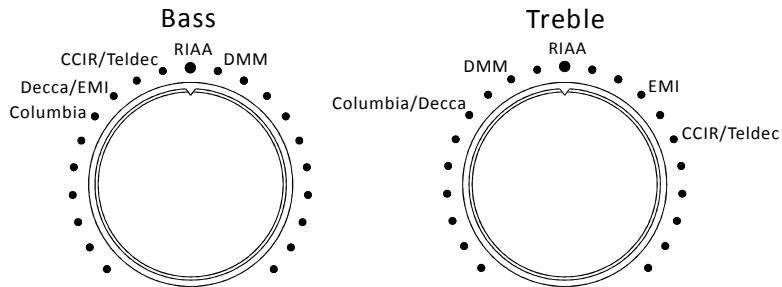

Connect the Ground wire from the turntable to the iFi RETRO Stereo 50's "**PHONO GROUND**".

Step 3:

Select the "**3/Phono**" from the "**INPUT**" selector.
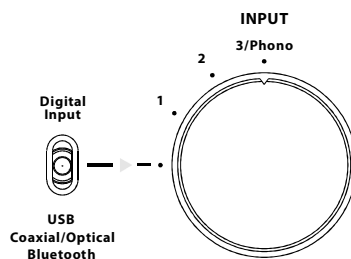
- The default Phono EQ curve is the RIAA.

- If the precision Tone Control (10-click each side)is enabled, it can convert the default RIAA EQ to various other EQ curves as follows:

Bass

Treble

Note: "- click" equals turn the dial to the left
"+ click" equals turn the dial to the right

| EQ	Bass	Treble
RIAA	Centre	Centre
CCIR/Teldec	-1 clicks	+5 clicks
Columbia	-4 clicks	-4 clicks
Decca	-3 clicks	-4 clicks
DMM	+1 clicks	-2 clicks
EMI	-3 clicks	+3 clicks

- When the mode switch is selected as Line (+6dB) input, no RIAA EQ is applied.

Stereophonic Microgroove LP Records

Display Name	Comments
RIAA	Modern stereo LP playback curve
CCIR 56	Europe pre appx. 1962, Eastern Europe & Asia pre appx. 1975 eg. Amiga, Eterna,Deutsche Grammophon and Melodiya
Columbia	Columbia LP stereo
DECCA (FFSS)	Decca & London, Deutsche Grammophon, Archiv, Polygram, NAB, Philips, and Argo
RIAA (DMM)*	Corrects for the hard, metallic sound from DMM
EMI	Angel Records, Manhattan Records, Narada, labels under Caroline Distribution, Mute, IRS, Liberty and Stateside (there may be others too)

 * The RIAA 'Direct Metal Mastering' Curve is not a standard EQ Curve. This unqiue AMR 'Curve' was developed specifically to correct for the commonly found bright' and 'metallic' edge of DMM recordings.

Tone Controls

TONE

Bass   Treble

Direct Input

DXD
DSD
PCM

On

Off
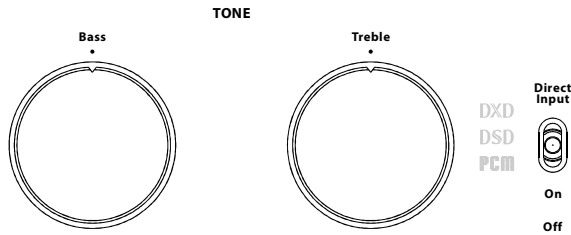
The iFi RETRO Stereo 50 incorporates a +/- 8dB precision studio-grade tone control. The tone control system can be bypassed by the Direct switch:

Tip:
* This tone control system has been engineered with utter transparency; one should not hear a significant difference with the Direct switch On or Off if the tone control themselves are at their neutral position.

* This tone control system can be used to recreate a number of additional EQ curves for vinyl record playback, please refer to the: Turntable section for more details.

    On = Direct On, tone control system bypassed.
    Off = Direct Off, tone control system is enabled.

XBass System®

XBass

●●● Maximum Bass correction (Recommended when the LS3.5 is used with speaker stands).
  ● Moderate Bass correction (Recommended for LS3.5 under normal setup).
  - OFF

Tip:
* Sonically-damaging DSP is NOT used for either XBass nor 3D HolographicSound® systems. It uses the highest-quality discrete components and so the integrity of the original recording is retained. Hence all the clarity and resolution of the original music is retained.

* For use with the iFi Retro LS3.5, it is recommended to set the XBass to the following configurations:
    1. If the iFi Retro LS3.5 loudspeakers are placed on speaker stands in free space, use the "●●●" setting.
    2. If the iFi Retro LS3.5 loudspeakers are placed on a console or in an open shelf, use the "●" setting.

* The iFi Retro LS3.5 speakers are designed with the XBass function of the Retro Stereo 50 as part of the overall frequency response, hence it is recommended to at least use the "●" setting for the maximum sound quality.

3D HolographicSound System®

3D

●●● For narrow (<1.5m apart) speaker placement.
  ● For Normal Use (Recommended).
  - OFF

Tip:

- The 3D HolographicSound® system for Speakers and Headphones corrects a fundamental flaw[#] in the stereophonic recording process, which distorts the presentation of space and instruments with the recording space. Both speakers and headphones are affected, however in different and one may say opposite ways.

- The RETRO Stereo 50 implements the required corrections for both Headphones and Speakers in the form of iFi 's 3D HolographicSound® matrix analogue signal processing, specially and separately optimised for speakers and headphones. This feature is of benefit to all speakers by improving the focus and clarity of the sound stage and to headphones by reducing or eliminating "in head" localisation.

- The changeover is automatic, with speakers playing, 3D HolographicSound® for speakers is selected; with headphones playing (headphones plugged in), 3D HolographicSound® for headphones is selected.

- The 3D HolographicSound® system can also be used to expand the sound field to improve the sense of width, height and depth for greater listening pleasure or to compensate for sub-optimal speaker placement.

- 3D HolographicSound® system for Speakers

  - Direct - use for recordings made with similar corrections as 3D HolographicSound® (rare)
  ● 3D Correction only - for typical speaker situations (e.g. HiFi speakers in a normal listening room)
  ●●● 3D Correction and 3D expansion - for narrow speaker situations (e.g. desktop speakers beside the computer monitor)

- 3D HolographicSound® system for Headphones

  - Direct - use for recordings made with similar corrections as 3D HolographicSound® (rare) or Headphones with built-in correction
  ● 3D Correction only - for normal Headphone listening with most recordings
  ●●● 3D Correction and 3D expansion - for recordings or headphones with too narrow rendering of space

- Please note that the above settings are guidelines, feel free to try and find the optimal settings that suit your environment, recordings and Speakers/Headphones.

- For use with the RETRO LS3.5, it is recommended to set the 3D HolographicSound® System to the following configurations:
  1. If the distance between the speakers is less than 1.5m, use the "●●●" setting.
  2. If the distance between the speakers is more than 1.5m, use the "●" setting.

At the dawn of stereo recording in the 1930s, a fundamental problem was documented by the 'father' of stereo sound recording – Alan Dower Blumlein. Due to the shape and size of the human head, stereo separation is greater at high frequencies than it is at low frequencies due to the crosstalk between the two ears at low frequencies.

A similar problem was found in the late 1950's by Ben Bauer for headphone playback of stereophonic recordings, however here the problem was the excessive separation of low frequencies by the two separate "on/in ear" transducers producing a sound field stuck in the listener's head. With hindsight it is clear this is the exact flip-side of the problem documented by Blumlein.

Despite this problem being 'known' for 80 Years (or over 50 Years for headphone listening), very few recordings and no playback system compensate for this issue and little research has been conducted on how to correct this.

The 3D HolographicSound® System corrects the above issue by applying the correction separately for Speakers and Headphones (which need different and opposing corrections) and hence it is recommended to at least use the "●" setting for the most accurate sound stage reproduction.

Loudspeaker Outputs

Connection method: Loudspeaker cables

Step 1:
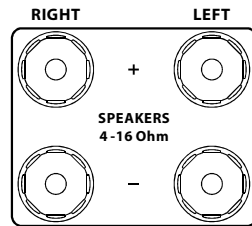
Connect the left LS3.5 loudspeaker to the LEFT SPEAKER output on the iFi RETRO Stereo 50 and vice versa.

Tip:
- Normally is it preferably to decouple the loudspeakers from the shelf/desk they are placed on.

- It is recommended to place the speakers at ear-height, with around the same distance between them as the distance to the user.

- iFi has included the following for proper decoupling:
  1. anti-slip mat
  2. silicon rubber feet

- Please select your preferred decoupling item. The silicon rubber feet are usually used when the LS3.5 is positioned on its side, so the silicon will raise the LS3.5 to the same height as the Stereo 50 Amplifier for a more coherent look and feel.

- Depending on the positioning of the 2 loudspeakers, please experiment with XBass and 3D HolographicSound for the best sound. Please refer to the "XBass" and "3DHolographicSound" sections for more details.

- The loudspeaker grille is acoustically transparent, attached by magnetic force and is replaceable.

- The included loudspeaker cables are made of very high quality silver-plated OFHC copper with Teflon insulation for the best sound.

Headphone Outputs

The iFi RETRO Stereo 50 has two headphone outputs (Normal and Turbo) to suit different headphones:

- 3.5mm socket (normal drive): connect normal sensitivity headphones and In Ear Monitors (IEMs) here.

- 6.3mm socket (Turbo drive): connect low sensitivity headphones here.

Tip:
- When a headphone is plugged in, the iFi RETRO Stereo 50 will automatically mute the speaker output.

- As the 3D HolographicSound® system is different for Speaker or Headphone playback, when a headphone is plugged in, the iFi RETRO Stereo 50 will automatically select 3D HolographicSound® for headphones.

Specifications

Retro Stereo-50
Stereo Tube Amplifier, with DAC and Phono Stage

Wireless Input

Bluetooth (aptX):	1

Digital Input

USB (DSD512/768kHz/2xDXD):	1
Coaxial (192kHz):	1
Optical (192kHz):	1

Analogue Input

Phono(MM/MC Low/MC High/Line 3):	1
Line 1:	1
Line 2:	1
3.5mm (share with Line 2):	1

Outputs

Loudspeaker Output:	1
3.5mm Headphone Output:	1
6.3mm Headphone Output:	1

Audio Section

Power output (Music):	> 25W* (majority Class A)
Total Harmonic Distortion(THD):	< 0.2% (@ 2.83V/1W)
Output bandwidth:	10Hz ~ 60KHz
Frequency Response:	10Hz ~ 80KHz
Signal-to-Noise Ratio:	> Amplifier 101dB (@ max output)
	> Phono MM: 90dB(A)
	> Phono MC: 80dB(A)
DAC Dynamic Range:	> 113dB(A)
Tone Control:	Bass(100Hz) +/-8dB
	Treble(10KHz) +/-8dB
Analogue Signal Processing (ASP):	Xbass, 3D Holograohic
Phono Gain:	38, 50, 62dB
RIAA Accuracy:	<0.5dB**
Tubes:	2 x ECF82; 4 x EL84X

Digital Section

PCM:	768/705.6/384/352.8/192/176.4/96/88.2/48/44.1kHz
DSD 512/256/128/64:	24.6/22.6/12.4/11.2/6.2/5.6/3.1/2.8MHz
DXD:	768/705.6/384/352.8kHz
Filters:	Minimum Phase (PCM 192/176.4/96/88.2/48/44.1kHz)
	Bit Perfect (DXD/PCM 768/705.6/384/352.8)
	Analogue (DSD)
	PCM 192/176.4/96/88.2/48/44kHz

General

Power Supply:	AC 100V-240V
Power consumption:	100W
	~0.1W (Standard mode)
Dimensions (W x H x D):	268 x 146 x 226mm
Weight:	5.8kg