


# MOON 681

network player / DAC

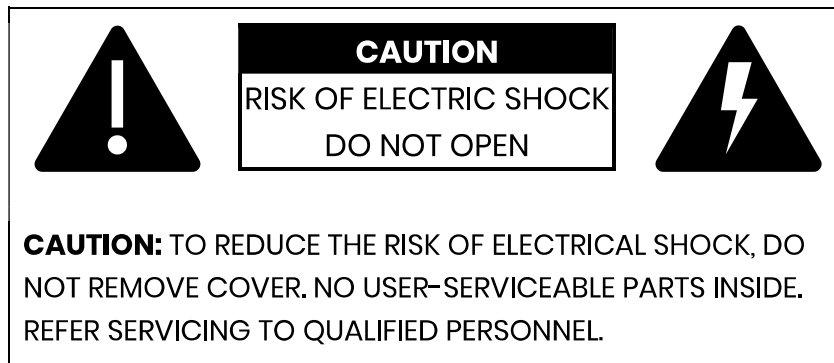
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## Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near heat sources such as radiators, heat registers, stoves or another apparatus that generate heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for safety. If the provided plug does not fit into the outlet, consult an electrician to replace the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. Unplug mains cord during transportation.
11. Only use attachments and accessories specified by the manufacturer.
12. The apparatus is heavy and requires two people to lift it. Exercise caution when maneuvering.
13. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over. 
14. Unplug this apparatus during lightning storms or when unused for long periods of time.
15. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as when the power cord has been damaged; liquid has been spilled or objects have fallen into the apparatus; or the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
16. No naked flame sources, such as candles, should be placed on the apparatus.

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**



The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Marking by the "CE" symbol (shown right) indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community.



**Waste from Electrical and Electronic Equipment (WEEE):** This equipment must be sent to a separate collection facility for the recovery and recycling of electrical and electronic waste wherever dedicated facilities exist. WEEE regulations aim to contribute to sustainable production and consumption, addressing environmental and other issues caused by the growing number of discarded electronics. The symbol for the separate collection of electrical and electronic equipment indicates that this product should not be discarded as unsorted waste.

FCC: This device is equipped with the MiND Music Streamer module. This device contains **Transmitter Module FCC ID: 2AJYB-S810**. 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.

The **Spotify Software** is subject to third party licenses found here: [spotify.com/connect/third-party-licenses](https://spotify.com/connect/third-party-licenses).

Apple, AirPlay, iPad, iPhone, and Siri are trademarks of Apple Inc., registered in the U.S. and other countries. Use of the **Works with Apple** badge means that an accessory has been designed to work specifically with the technology identified in the badge and has been certified by the developer to meet Apple performance standards.

MQA technology requires less network bandwidth to stream high-quality audio files. This product implements the technology under license from MQA Limited. For more information about MQA, please visit: [mqa.co.uk](https://mqa.co.uk).

1. **ALWAYS** disconnect your entire system from the AC mains before connecting or disconnecting any cables, or when cleaning any component. To completely disconnect this apparatus from the AC mains, use the rocker switch on the rear panel or disconnect the power supply cable from the AC receptacle.
2. The unit must be terminated with a three-conductor AC mains power cord, which includes an earth ground connection. To prevent shock hazard, all three connections must **ALWAYS** be used. Connect the unit only to an AC source of the proper voltage; both the shipping box and rear panel serial number label will indicate the correct voltage. Use of any other voltage will likely damage the unit and void the warranty.
3. **ALWAYS** connect the unit only to an AC source of the appropriate voltage. Both the shipping box and rear panel serial number label indicate the correct voltage. Incorrect voltage could damage the unit and void the warranty.
4. AC extension cords are **NOT** recommended for use with this product. The mains plug of the power supply cord shall remain readily accessible.
5. **NEVER** use flammable or combustible chemicals for cleaning audio components.
6. **NEVER** operate the unit with any covers removed. There are no user-serviceable parts inside. An open unit, especially if it is still connected to an AC source, presents a potentially lethal shock hazard. Refer all questions to authorized service personnel only.
7. **NEVER** wet the inside of the unit with any liquid. If a liquid substance does enter your unit, immediately disconnect it from the AC mains and take it to your MOON Partner for a complete check-up.
8. **NEVER** spill or pour liquids directly onto the unit.
9. **NEVER** block air flow through ventilation slots or heatsinks.
10. **NEVER** bypass any fuse.
11. **NEVER** replace a fuse with a value or type other than those specified.
12. **NEVER** attempt to repair the unit. If a problem occurs, contact a MOON Partner.
13. **NEVER** expose the unit to extremely high or low temperatures.
14. **NEVER** operate the unit in an explosive atmosphere.
15. **ALWAYS** keep electrical equipment out of reach of children.
16. **ALWAYS** unplug sensitive electronic equipment during lightning storms.
17. **WARNING:** Do not expose batteries or battery pack to excessive heat such as sunshine, or fire or the like.

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## Explore new frontiers

The landmark North Collection represents a culmination of years of research and development in the fields of audio, electronics, materials, and manufacturing processes. Its exciting new look is surpassed only by improvements in its performance made possible by the passionate team of Simaudio engineers and technicians dedicated to delivering an uncompromised music listening experience. With the purchase of this MOON product, you join an elite group of music lovers around the world who expect the absolute best performance and build quality from products in any class.

Get ready for the performance of a lifetime.

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## Before getting started

Carefully remove the unit from its packaging. Visually inspect it and in the case of damage, report it to your MOON Retailer immediately.

The packaging materials were designed to protect this product while in transit. Store these materials in a dry location for the duration of the warranty period.

The information contained in this Manual is subject to change without notice. The most recent version is available at [simaudio.com/guides-downloads](http://simaudio.com/guides-downloads).

### **The MOON 681 includes:**

- Quick Start Guides (2)
- MOON BRM-1 Remote Control
- Power Cable
- Wi-Fi Antennas (2)
- Ethernet Cable
- USB Cable
- Warranty Registration Card (Canada & USA only)

*Note the serial number of your MOON 681 for future reference.*

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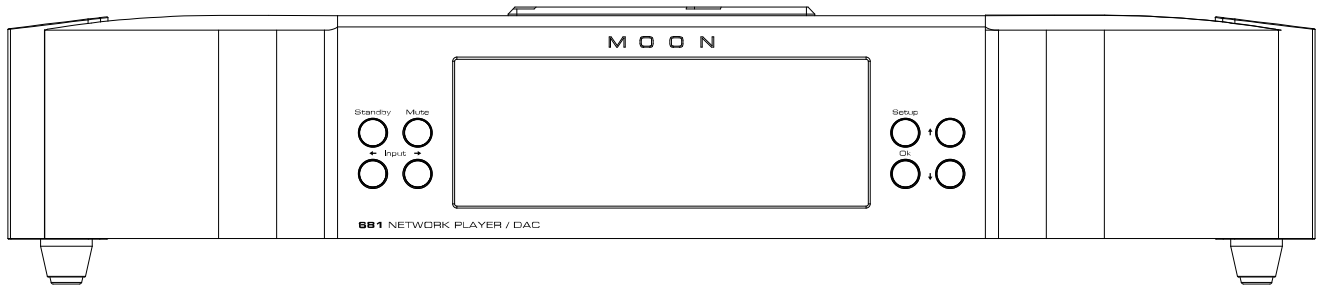
## Install your MOON 681

Consider the location and environment of the device carefully. Set it upon an open, stable, and flat surface. The device requires sufficient space above and around it to adequately disperse the heat it generates. Maintain a minimum gap of 5 cm (2") around the sides and 10 cm (4") above of the unit to enable airflow. When stacking multiple units, install MOON Bridges (sold separately) between them.

The performance of this device will continue to improve during the first 300 hours of listening.

## Get to know your MOON 681

### Front Panel



#### Standby

*toggles the device between active and inactive modes when the device is powered on*

#### Mute

*cuts and restores the audio signal to all outputs*

Adjusting the volume also restores muted audio.

#### Input

*scrolls ← and → through available inputs*

The **display** provides useful feedback about the state of the device.

- It identifies the active input and volume of the device and the sample rate of the DAC. On the MiND input, it can identify the stream.
- It also serves as the visual interface for the configuration menu.

#### Setup

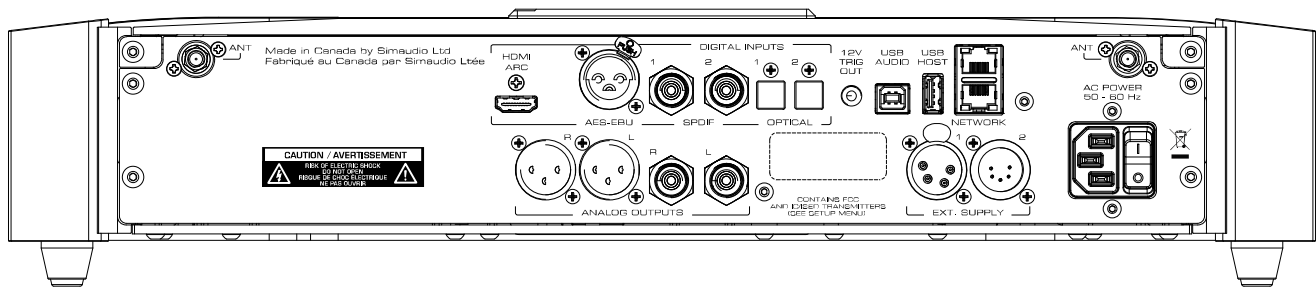
*accesses the extensive configuration menu to personalize the device*

To navigate the menu...

- Use the ↑ and ↓ buttons to scroll through the options.
- Use OK to confirm a selection or Setup to cancel it.



## Rear Panel



## Audio Connections

### ANALOG OUTPUTS

*configurable*

#### Output Types

- **VARIABLE:** for use as a preamplifier connecting to power amplifiers, subwoofers, and active loudspeakers
- **FIXED:** for use as a source component connecting to integrated amplifiers and headphone amplifiers

For more information, see [Connectivity](#).

### DIGITAL INPUTS

#### AES-EBU

*balanced (XLR) connection for two-channel digital PCM source devices*

#### SPDIF

*coaxial (RCA) connections for two-channel digital PCM source devices*

#### OPTICAL

*optical (TOSLINK) connections for two-channel digital PCM source devices*

#### USB AUDIO

*USB (type-B) connection for two-channel computer source devices with audio encoded as PCM, MQA, or DSD*

Note: Windows requires a driver available at [simaudio.com](http://simaudio.com) for full compatibility. It is not necessary for macOS.

#### HDMI ARC

*HDMI (2.0b) connection for PCM audio input from an ARC-enabled TV*

## Functional

### 12V TRIG OUT

*mini-jack (TS) connection for coupling a compatible power amplifier to synchronize Standby behaviours*

### USB HOST

*USB (type-A) connection for playback of files on a temporary hard drive using the MiND Controller*

Compatibility is not guaranteed with every brand and model of USB drive, nor with every file system. For the best performance and navigation experience, use a DLNA server on a UPnP device to share the files over a network.

### NETWORK

*network (RJ-45) connections for Ethernet cables*

- for connecting the device to a network router
- for extending the network to an additional device (eg, NAS device or TV)
- for MOONLink functionality with compatible MOON products

### ANT

*Wi-Fi antenna terminals for wireless network connectivity*

The Ethernet and Wi-Fi connections do not bridge.

### EXT. SUPPLY

*for connecting bespoke external MOON power supply*

### AC connector & power switch

*for connecting power cable and toggling the device on I and off O*

With the power switch on, the unit may be toggled into and out of Standby using the button on the front panel, a remote control, the MiND Controller, or by MOONLink. The unit may require up to a minute to connect to the network. For best performance, the device should remain powered up and may be toggled into Standby when not in use. It should be powered down during extended absences by disconnecting the power cable.

*Always power on the DAC before all other devices, and power it off after all other devices.*

## Personalize your MOON 681

### Setup Menu

The device features an extensive menu for configuring and customizing many of its functions.

#### Navigating the Menu

- The Setup button enters the menu and returns to previous screens.
- The **↑** and **↓** buttons scroll through options.
- The OK button selects the emphasized option.

#### Editing Text

The **↑** and **↓** buttons reveal uppercase letters, lowercase letters, digits, and symbols.

The Input **←** and **→** buttons move the cursor left and right.

When the complete text is correctly displayed and the cursor remains on the last character, the OK button registers the text.

*Note: Do not advance the cursor beyond the last desired character.*

### Connectivity

#### Analog Outputs

##### Output Type

The analog outputs may be configured with Variable-volume output for use as a preamplifier or with Fixed-volume output for use with a device with its own volume control (like an integrated amplifier). When set to Fixed, volume commands are relayed to the next MOONLink device in the signal chain.

**Caution:** *The fixed volume level is extremely high!*

*Before setting the analog output of this device to Fixed, lower the volume of the preamp or integrated amp to which it is connected.*

#### Setup

- Inputs
- Analog Outputs
- Network
- Multiroom
- Bluetooth Audio
- Remote Control
- MOONLink
- Display
- Standby Settings
- Firmware
- Information
- Reset

#### Variable Settings

##### Gain

- 0 dB (2.0 V)
- 5 dB (3.5 V)
- 10 dB (6.5 V)

( $V_{RMS}$  at 0 dBFS and maximum volume)

##### Volume Settings

The highest volume setting of the preamp is 80.

- Startup Volume sets a default initial volume level.
- Maximum Volume sets an upper threshold to prevent accidents.

## Inputs

Each input may be personalized.

- Label is the name of the input as it appears on the display. Select a predefined label or manually enter a custom label.
- Enable makes an input available to select. It may be disabled to reduce the number of unused inputs to scroll through.
- HDMI ARC (Audio Return Channel) is an HDMI audio input for use with a TV.  
*CEC (Consumer Electronic Control) enables multiple devices to share commands—such as Standby and volume—from a single remote control.*

### CEC Settings

- Audio Only enables audio but disables CEC commands.
- Audio + CEC Volume enables audio and CEC volume control but disables other CEC commands.
- Complete enables audio and all CEC commands.

## Multiroom

The MiND Controller mobile app includes a feature to join multiple MiND 2 Zones together to play audio as a cohesive system. In addition to streaming audio via the MiND 2, this device may also share audio from any of its inputs with the other multiroom devices.

- Original mode maintains the original signal through this device while sharing a digitized audio signal with other multiroom devices on the network.
- Synchronized mode forces all the multiroom devices to share one synchronized digital audio signal.

## Bluetooth Audio

Devices may connect to this device to transmit their audio via Bluetooth and play through this device. Before connecting for the first time, the two devices must be paired to each other.

- Pair makes the device visible to nearby devices in pairing mode for up to 30 seconds.
- Disconnect an audio source when it should no longer transmit through this device.

## Network

Upon powering on the device, it automatically attempts to connect to a wired or wireless network. An Ethernet (wired) connection has priority over a Wi-Fi (wireless) connection. The Wi-Fi antennas are deactivated when an active Ethernet connection is detected. Affix the supplied antennas to the rear panel when a wireless connection is necessary.

- MiND Name identifies this device as a playback Zone in the MiND Controller app on a mobile device.  
*The default MiND name is MOON 681, although it may be changed to make it easier to identify.*
- Wi-Fi Configuration is possible with the Setup menu, which also permits manual configuration of specific advanced network parameters.
- Information displays useful details about the network connection of this device.

## Automatic Wi-Fi Configuration

1. From the Setup menu, select Network, Configuration, Wi-Fi Parameters, and Automatic.
2. Select the appropriate SSID (Wi-Fi name) from the list of networks.  
If the desired SSID does not appear, return to Wi-Fi Parameters, and select Manual to enter the SSID.
3. Enter the security key and leave the cursor on the final (flashing) character.

## Advanced Parameters

A static IP address may be entered, along with the subnet mask, gateway address, and a DNS server.

*This method is for advanced users only.*

## Functionality

### Remote Control

This unit may link with up to two BRM-1 remote control units at a time.

Pair the BRM-1 with the 681 only when the 681 connects directly to a power amp or to any device without MOONLink. When installing the 681 with an integrated amplifier or preamplifier using MOONLink, pair the BRM-1 with the other device instead and not with the 681.

- Link Remote searches for a nearby MOON BRM-1 remote control, displaying its unique ID on both devices and permitting them to be associated.
- Unlink Remote displays associated BRM-1 units permitting them to be disassociated from this device.
- Information displays useful details about the associated BRM-1 units.

Refer to the Quick Start Guide included with the BRM-1 for more information.

### MOONLink

MOONLink technology makes MOON products more intelligent.

A single button press can trigger automated behaviours and simultaneously operate multiple devices over a network in a symbiotic MOONLink Group. MOONLink simultaneously toggles Standby and can adjust display brightness for all devices in the Group, while enabling volume control and automatic input selection of specific devices in the Group.

- MOONLink Group permits the customization of a Group.
  - Name identifies a device within the Group.
  - Group ID assigns a Group number to a Device.  
*Assigning the same ID to other devices joins them together as a Group.*
  - Status lists information about the device.
  - Reset the name and ID to their default values to remove a device from a Group.
  - Firmware verifies the firmware of the device and updates it when necessary.
- Available Devices lists devices on the network that could be added to a Group.

A MOONLink Group should include no more than one preamplifier.

Holding the Standby button on the front panel for two seconds automatically toggles Standby mode on all the devices in the MOONLink Group.

## Display

### Display On

The display may be disabled so that only user interaction temporarily activates the display.

### Brightness

The display brightness is variable and may be customized.

- Brightness Level is a value from 0% to 100%.
- Adaptive Brightness uses sensors to automatically adjust the Brightness Level to ambient lighting in the environment.
- MOONLink Brightness Sync duplicates the brightness adjustments of this device on other devices in the MOONLink Group.

### Background Image

This device displays either a pre-defined background Image or a Blank background.

### Screen Saver

Two screen saver styles are available, which may also be disabled.

- Mode determines what triggers the screen saver.
  - One mode activates the screensaver after 20 minutes of silence.
  - One mode activates the screensaver after 20 minutes of inactivity.
- Style sets the screen saver to display either a blank screen or a floating MOON logo.

## Standby Settings

- Full Power keeps most of the electronics powered up while in Standby.
- Low Power powers down most of the electronics while in Standby.
- Auto-Standby engages Low Power Standby after 20 minutes of inactivity.

## Firmware

Certain hardware components in this device require firmware to function.

- Versions displays the various firmware versions currently installed.
- Update begins the procedure of verifying and, if necessary, updating the firmware with on-screen guide prompts.

## Information

Device information, including its serial number and some certifications, are displayed for referencing.

## Reset

The Reset procedure reverses all customizations (including input, volume, and network configurations) to factory default settings. It does not revert the firmware to an earlier version.

**Caution:** *The default Analog Output Type is Fixed. Stop the audio source and shut off the amplifier before resetting the device.*

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## Enjoy your MOON 681

### MiND Controller

State-of-the-art MiND (MOON intelligent Network Device) technology brings together digital music libraries, which continue to increase in size and number, in a sophisticated and intuitive app, adding greater possibilities for the future of music playback. The MOON MiND Controller provides users one clever app to consolidate their music libraries and to control a MOON audio system.

The MiND Controller enables users to stream music from several online services and local network servers, update MOON products automatically, and synchronize playback across devices in multiple Zones simultaneously. The app even makes it easy to mix files from different services into a single coherent playlist. In addition to typical streaming functions, the MiND Controller can toggle Standby, switch inputs, and even control the volume of MOON products anywhere in the home. Only the MiND Controller merges all these features in one straightforward app.

For more information about MOON and MiND, please visit [simaudio.com](http://simaudio.com).



### Roon Ready

This is a Roon Ready product. Roon enables users to select and play files through the MiND and to control the volume of this device or compatible MOON preamp using Roon software instead of the MiND Controller.

For more information about Roon, please visit [roonlabs.com](http://roonlabs.com).



### TIDAL Connect

TIDAL Connect enables users to select and play files through the MiND using the native TIDAL app instead of the MiND Controller.

For more information about TIDAL Connect, please visit [tidal.com/connect](http://tidal.com/connect).



### Spotify Connect

Use your phone, tablet, or computer as a remote control for Spotify.

Go to [spotify.com/connect](http://spotify.com/connect) to learn how.



### AirPlay

AirPlay is an Apple technology to control audio systems and speakers anywhere on your network with the tap of an iPhone or iPad, or by asking Siri.

This device supports AirPlay, which requires iOS 11.4 or later. AirPlay enables compatible Apple devices to stream audio to the network player, to pause, play, and skip forward or backward, and to control the volume of the preamp from within a wide range of apps like Apple Music and YouTube Music.



## Technical

### Digital Audio

The MOON 681 converts up to 32-bit PCM and MQA, as well as DSD.

|               | Sample Rate | Optical | SPDIF AES-EBU | USB | MiND 2 | Bluetooth | HDMI |
|---------------|-------------|---------|---------------|-----|--------|-----------|------|
| PCM & MQA     | 44.1 kHz    | ♫       | ♫             | ♫   | ♫      | ♫         | ♫    |
|               | 48.0 kHz    | ♫       | ♫             | ♫   | ♫      | ♫         | ♫    |
|               | 88.2 kHz    | ♫       | ♫             | ♫   | ♫      |           | ♫    |
|               | 96.0 kHz    | ♫       | ♫             | ♫   | ♫      |           | ♫    |
|               | 176.4 kHz   |         | ♫             | ♫   | ♫      |           | ♫    |
|               | 192.0 kHz   |         | ♫             | ♫   | ♫      |           | ♫    |
|               | 352.8 kHz   |         |               | ♫   | ♫      |           |      |
|               | 384.0 kHz   |         |               | ♫   | ♫      |           |      |
| <b>DSD64</b>  | 2.8224 MHz  |         |               | ♫   | ♫      |           |      |
| <b>DSD128</b> | 5.6448 MHz  |         |               | ♫   | ♫      |           |      |
| <b>DSD256</b> | 11.2896 MHz |         |               | ♫   | ♫      |           |      |

### USB host

|                              |                                 |
|------------------------------|---------------------------------|
| <b>interface</b>             | MiND Controller (Library > USB) |
| <b>supported file system</b> | FAT                             |
|                              | NTFS                            |
|                              | EXT2/3/4                        |
| <b>maximum capacity</b>      | determined by file system       |
|                              | NTFS: 256 TB                    |
| <b>maximum file bitrate</b>  | 200 Mb/s                        |
| <b>spin rate</b>             | 5400 RPM / 7200 RPM             |
| <b>HDD size</b>              | 2.5"                            |
|                              | 3.5" (with 12 V power supply)   |

## Specifications

|  |   |
|--|---|
| <b>Maximum Gain (Line Level)</b>                   | 10 dB   |
| <b>Output Impedance</b>                            | 50 Ω  |
| <b>Crosstalk</b>                                   | -125 dB   |
| <b>Frequency Response</b>                          | 2 Hz – 200 kHz (+0 dB / -3 dB)                        |
| <b>Signal-to-Noise Ratio (Analog Preamplifier)</b> | 125 dB  |
| <b>Dynamic Range (Digital Input, Fixed Output)</b> | 125 dB  |
| <b>Total Harmonic Distortion</b>                   | 0.0003%   |
| <b>Intermodulation Distortion</b>                  | 0.0002%   |
| <b>Power Consumption (Idle)</b>                    | 15 W  |
| <b>Power Consumption (Full Power Standby)</b>      | 12 W  |
| <b>Power Consumption (Low Power Standby)</b>       | 5 W   |
| <b>Shipping Weight</b>                             | 40 kg / 18 lbs  |
| <b>Dimensions (L x H x D)</b>                      | 48.1 cm x 42.7 cm x 10.2 cm / 18.95" x 16.80" x 4.03" |