# Owner's Manual—

# MOON Evolution Series 750 D

32-bit Digital-to-Analog Converter / CD Transport





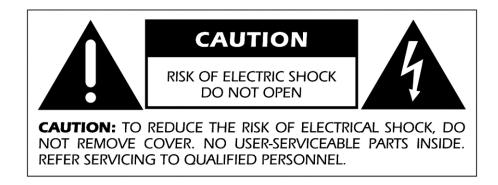




# **Important Safety Instructions**

- 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 any heat sources such as radiators, heat registers, stoves or another apparatus that produces 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 for replacement of 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.
- 11. Only use attachments and accessories specified by the manufacturer.
- 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.
- 13. Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14. 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 or plug 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.
- 15. 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.



# Important Safety Instructions (cont'd)



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 left) indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community

# Please read all instructions and precautions carefully and completely before operating your Simaudio MOON 750D Digital-to-Analog Converter/Transport.

- 1. **ALWAYS** disconnect your entire system from the AC mains before connecting or disconnecting any cables, or when cleaning any component.
- 2. The MOON 750D must be terminated with a three-conductor AC mains power cord w which includes a protective earthing connection. To prevent shock hazard, all three connections must ALWAYS be used. Connect the MOON 750D 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. AC extension cords are **NOT** recommended for use with this product.
- 4. **NEVER** use flammable or combustible chemicals for cleaning audio components.
- 5. **NEVER** operate the MOON 750D 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.
- NEVER wet the inside of the MOON 750D with any liquid. If a liquid substance does enter your MOON 750D, immediately disconnect it from the AC mains and take it to your MOON dealer for a complete checkup.
- 7. **NEVER** expose the MOON 750D to dripping or splashing of liquids and no objects filled with liquids, such as vases, shall be placed on top.
- 8. **NEVER** block air flow through ventilation slots or heatsinks.
- 9. **NEVER** bypass any fuse.
- 10. **NEVER** replace any fuse with a value or type other than those specified
- 11. **NEVER** attempt to repair the MOON 750D. If a problem occurs contact your MOON dealer.
- 12. **NEVER** expose the MOON 750D to extremely high or low temperatures.
- 13. **NEVER** operate the MOON 750D in an explosive atmosphere.
- 14. **ALWAYS** keep electrical equipment out of reach of children.
- 15. **ALWAYS** unplug sensitive electronic equipment during lightning storms.

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#### MOON 750D Digital-to-Analog Converter / CD Transport

# Congratulations!

Thank you for selecting the **MOON 750D** Reference Digital-to-Analog Converter / CD Transport as a part of your hi-fi reproduction system. This product has been designed to offer state-of-the-art high-end performance in an elegant package, while retaining all the sonic hallmarks on which Simaudio has made its reputation. We have spared no effort to ensure that it is amongst the finest digital audio products available. We have been building high-performance audio equipment for over 25 years, and the know-how gained through our cumulative experience is an important reason why **MOON** digital products are so musically satisfying.

The performance of your **750D** will continue to improve during the first 400 hours of listening. This is the result of a "break-in" period required for the numerous high quality electronic parts used throughout this DAC / CD Transport.

Before setting up your new **MOON 750D**, we encourage you to please read this manual thoroughly to properly acquaint yourself with its features. We hope you enjoy listening to the **MOON 750D** DAC / CD Transport as much as the pride we have taken in creating this fine audio product. We understand the power and emotion of music and build our products with the goal of faithfully capturing these elusive qualities.

The information contained in this manual is subject to change without notice. The most current version of this manual is available on our official website at http://www.simaudio.com/manuals.htm

# **Unpacking**

The **MOON 750D** DAC / CD Transport should be removed from its box with care. The following accessories should be included inside the box with your Digital-to-Analog Converter / CD Transport:

- ✓ AC power cable
- ✓ 'FRM-2' Full Function remote control with three 'AAA' batteries (USA and Canada only)
- ✓ 'SimLink' cable with 1/8" mini plug terminations on each end
- ✓ Four (4) pointed screw-on cones (for the DAC / CD Transport's legs)
- ✓ This owner's manual
- ✓ Warranty and product registration information (USA and Canada only)

As soon as the DAC / CD Transport is safely removed from its box and placed down, perform a thorough physical inspection and report any physical damage to your dealer <u>immediately</u>. We suggest that you keep all of the original packaging, storing it in a safe, dry place in the event that you're required to transport this product. The customized packaging is specially designed to protect the **MOON 750D** DAC / CD Transport from potential damage that may occur during shipping.

Serial No.:		

#### MOON 750 D Digital-to-Analog Converter / CD Transport

# **Introduction**

Your **MOON 750D** DAC / CD Transport incorporates many innovative significant design features to achieve its "world class" level of performance. This is an abbreviated list of the more important features:

ESS Technology SABRE<sup>32</sup> Reference DAC/Digital Filter (ES9018S) working in 32-bit Hyperstream™ to achieve unprecedented jitter immunity and low-level linearity via a patented Time Domain Jitter Eliminator.

Digital Audio Signal Processing using M-AJiC32 (MOON Asynchronous Jitter Control in 32-bit mode)

Proprietary CD drive system mounted on our **M-Quattro** gel-based 4-point floating suspension for vibration damping, allowing ambient and spatial cues in your recordings to come to life like never before

Full unsolicited RS-232 bidirectional feedback.

Four (4) digital inputs (AES/EBU, S/PDIF, TosLink and USB) allowing for a connection to virtually any digital source

Two (2) digital outputs - AES/EBU and S/PDIF

Separate digital and analog power supplies, each with their own toroidal transformer

A virtually jitter-free digital clocking system.

Power supply voltage regulation includes  $i^2DCf$  (Independent Inductive DC Filtering); 1 inductor for each and every chip (i.e. OpAmp, DAC, Digital Filter, etc.) in the audio circuit's signal path – **24 stages in all**.

Optional external power supply available in the near future.

**Four-layer pure copper circuit PCB tracings**; The advantages include better ground and power supply circuit layouts resulting in a much shorter signal path and dramatically improved signal-to-noise ratio.

**Extremely rigid chassis construction** to minimize the effects of external vibrations.

Accurate matching of the very finest quality electronic components in a symmetrical circuit design.

Designed to be **powered up at all times** for optimal performance.

Low operating temperature for a longer than normal life expectancy.

# **Installation & Placement**

The **MOON 750D** Reference DAC / CD Transport is very heavy. It requires reasonable ventilation to maintain an optimum and consistent operating temperature. Consequently, it should be placed in a location with empty space around it for proper heat dissipation. As well, it should be placed on a solid level surface. You should avoid placing it near a heat source or inside a closed cabinet that is not well ventilated as this could compromise the DAC / CD Transport's performance and reliability.

Once you've decided on a location for the **750D**, you should install the four (4) pointed screw-on cones into the threaded holes located on the bottom of the four (4) the corner posts of the DAC / CD Transport chassis. *These cones can potentially scratch some surface, therefore it's advisable to follow these instructions:* Place your **750D** on a soft surface (i.e. carpet) and carefully turn it so that it rests on its side. Screw one cone onto each of the four posts. Carefully move the chassis to it's predetermined location.

In the event that the surface you have chosen isn't perfectly level, each of the four (4) cones on your **750D** are height adjustable; carefully using your fingers, you can either raise each leg by turning the cone underneath clockwise, or lower each leg by turning it counterclockwise.

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### Front Panel Controls



Figure 1: MOON 750D Front panel

The front panel will look similar to Figure 1 (above). The large digital display window indicates the track number of the compact disc currently playing (or the total number of tracks in stop mode) and corresponding time information.

The "Standby" button disengages the transport mechanism from the rest of the 750D's circuitry and turns off the digital display. However, when in "Standby" mode, all digital and analog audio circuitry remains powered up to help maintain optimal performance. The blue pilot LED centrally located above the display window will no longer be illuminated when the player is in "Standby" mode.

The "Program" button allows you to program a selection of tracks in the order that you wish to listen them. After loading a compact disc into the 750D, select the first track you wish to listen to, using the w or » buttons and then press "Program". To program a second track, select it the same way you did for the first one and press "Program" again. Repeat this operation as many times as you want to program tracks to a maximum of 30 tracks. Once you've completed programming your track selection(s), the digital display window will show the number of tracks that have been programmed and their total time. To begin playing your programmed selections, simply press the ▶ button. Pressing ■ will only suspend the playing of the programmed selection. Pressing ■ a second time will clear your program selection from the **750D's** memory. As well, opening the top drawer at any time will also clear your program. After you begin creating your program list, the LED immediately to the left of the "Program" button will illuminate and remain on until you clear your program from memory.

The "Display" button allows you to adjust the brightness of the large digital display window. It also provides you with the option of turning off the display. There are three (3) different levels of brightness; The default is medium. Pressing the "Display" button once will increase the brightness level to highest setting. Pressing the button a second time will decrease the brightness to the lowest setting. Pressing the "Display" button a third time returns the display to its default setting of medium.

Pressing the "Repeat" button once results in the entire disc being played again once it has reached the end of the final track. Pressing "Repeat" a second time will result in the track currently playing being repeated again once it has ended. To cancel this mode, simply press the "Repeat" button a third time or open the CD drawer. There are two (2) LED's located to the left of the "Repeat" button; The top one will illuminate when the current track is being repeated and both will illuminate when the entire disc is being repeated. If you have created a program of selected tracks, pressing "Repeat" once will result in your entire program repeating itself once it has completed its cycle; Pressing "Repeat" a second time will result in the current track from your program being played again once it has ended; Pressing "Repeat" a third time will terminate the "Repeat" mode.

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# Front Panel Controls (continued)

The "Input" button is used to select an external digital source by sequentially scrolling through four (4) digital inputs: D1 uses an XLR connector for an AES/EBU digital signal; D2 uses an RCA connector for a S/PDIF digital signal; D3 uses a TosLink connector for an optical digital signal and D4 uses a USB type B connector for use with a computer equipped with a USB port and music player software such as iTunes or Winamp. Note: you cannot connect a USB flash drive to the "D4" input.. The display window will show "D1", "D2", "D3" or "D4", depending on the input selected, followed by four dashes "----" which indicate that the **750D** is in the process of locking onto the external digital signal – this may take several seconds. Once the 750D successfully locks onto the digital signal, the four dashes will be replaced by the sampling rate of this digital signal. When the signal cannot be locked onto, "----" remains in the display window. The MOON 750D is capable of processing an external digital input signal at one of the following six (6) different sampling rates: 44.1kHz, 48.0 kHz, 88.2kHz, 96 kHz, 176.2kHz and 192kHz.

The "Random" button, when pressed, will play each of the tracks on a compact disc in a completely random order, as opposed to the sequential order as they appear on the disc. If you have already created a program of selected tracks, it will play these programmed tracks in a random order. The LED located immediately to the left of the "Random" button will illuminate when you've engaged the random mode.

The "Time" button allows you to scroll through the four (4) different display modes for time related information. Each time you press the "Time" button, the system scrolls to the next time information mode. By default, the 750D will display the elapsed time of the track currently playing. The scrolling order is as follows:

- 1. Elapsed time of the current track
- 2. Remaining time of the current track
- 3. Elapsed time of the entire compact disc (or programmed tracks)
- 4. Remaining time of the entire compact disc (or programmed tracks)

If you want to turn the display off, press and hold the "Display" button for 3 seconds. When the display is turned off, it will still come back on for a short period of time whenever you press any of the buttons located on the front panel or the remote control, using the brightness level that was previously established; the display will automatically turn off again once you are done. To turn the display back on, simply press and hold the "Display" button for 3 seconds. The sonic performance of the MOON 750D DAC / CD Transport may improve slightly when the display is turned off.

To load a compact disc into the **750D**, press ▲ to open the drawer. While the drawer is opening, the word "OPENING" will appear in the display window, followed by "OPEN" when the drawer is fully open. Place the CD in the drawer with the label side facing up. To close the drawer, press ▲ again; "CLOSING" will appear in the display window followed by "LOADING" once the drawer is closed. "LOADING" indicates that the 750D is reading the CD's table of contents. Once the CD is successfully read, the total number of tracks and total playing time will appear in the display window. As a result of various copy protection schemes, some CDs will take longer to read than others. When you load an incompatible CD (i.e. data only, SACD, DVD-A or DVD-Video), the word 'BAD DISC' will appear in the display window and the drawer will automatically open to eject this CD. Finally, in the event that you inadvertently leave the drawer open, it will automatically close after approximately three (3) minutes.

Press ▶ to begin playing a compact disc. Pressing ▶ while a track is already playing will result in the current track immediately playing again, starting from the beginning. Press in to search backward or in to search forward through the compact disc's tracks. When you've located the track number, press ▶ to begin playing that track. In the event that you initiate a forward or backward track change while a disc is already playing, it will automatically start playing the track you select; you need not press ▶.

Press II to pause the compact disc currently playing. The disc will continue spinning and the laser will be suspended in its current position. Press II a second time or ▶ to resume playing the disc. Press ■ to stop the compact disc from playing. The laser will return to the start position of the disc.

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# **Rear Panel Connections**



Figure 2: MOON 750D Rear panel

The rear panel will look similar to Figure 2 (above). On the left side are two pairs of analog audio outputs, labeled "Right" and "Left", each with a single-ended RCA and balanced XLR connector. Don't hesitate to use good quality interconnect cable when making the connection between the **MOON 750D** and your preamplifier or integrated amplifier. We strongly recommend that you use the balanced XLR connectors on your **750D** to maximize its level of performance.

The middle section contains two rows of connectors for digital audio. The top row has four (4) digital inputs labeled "D1" (AES/EBU), "D2" (S/PDIF), "D3" (TosLink) and "D4" (USB). The bottom row has two (2) digital outputs – one each AES/EBU and S/PDIF. When using either of the S/PDIF digital connections, you should always use a  $75\Omega$  digital audio cable terminated with RCA connectors. If you decide to use the AES/EBU digital output, use a dedicated AES/EBU  $110\Omega$  digital audio cable terminated with XLR connectors.

The right side of the rear panel has various connectors for external communications. The **MOON 750D** is equipped with full-function bi-directional RS-232 port control and status for custom integration or automation. Immediately to the right of the RS-232 port are two (2) "SimLink" connectors labeled "in" and "out" on 1/8" mini jacks. Please refer to the next section entitled SimLink for more details.

Your **MOON 750D** DAC / CD Transport has a 1/8" mini jack input for use with aftermarket infrared remote control receivers. The "IR in" connector is located immediately to the right of the "SimLink" connectors.

Directly below these communications interfaces, there are a pair of 4-pin XLR connectors labeled "External Power Supply" "Input 1" and "Input 2". These are reserved for future use when an external power supply will be made available for the **MOON 750D.** 

Finally on the right side is the "AC Power" section with a main power switch ("0"=off, "1"=on) and IEC receptacle for the included AC power cord. Alternatively, you may use a dedicated high-performance AC power cord designed for DAC / CD Transports.

All rear panel connectors have been chosen because they provide the best possible connections for your unit. A poor contact will degrade the signal substantially, and plugs and sockets should all look clean and free of dirt and corrosion. The easiest way to clean them is to remove the cables from their sockets and push them back in again. This procedure requires that your DAC / CD Transport and the rest of your components be completely turned off. Not heeding this warning may result in serious damage to your equipment. Special contact cleaning fluids and enhancers should not be used, as they deposit a difficult to remove residue which degrades the performance of your components.

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## SimLink™

The SimLink™ provides communication features between various **MOON** components. For example, if you were to connect the **750D** DAC / CD Transport to the **700i** Integrated Amplifier via the SimLink™, pressing the ▶ (play) button on the **750D** would make the integrated amplifier automatically switch to it's designated input for the DAC / CD Transport (Please refer to the **700i** owner's manual for more information if applicable). If you were to adjust the brightness level of the large digital display window using the "Display" button on the **750D**, the brightness level of the **700i** display will automatically adjust to the same brightness level as that of the **750D**. Conversely, since the SimLink™ is a true bi-directional connection, adjusting the **700i** brightness level will automatically adjust the brightness level of the **750D**.

A third feature of SimLink™ involves the "Standby" function. By pressing down and holding the "Standby" button for 2 seconds on the **750D**, all other **MOON** components connected via the SimLink will go into "Standby" mode along with the **750D**. The same logic applies when switching from "Standby" to active mode.

The connection rules for the SimLink™ are very basic. You must always connect the supplied cable between one component's "SimLink™ Out" jack and another component's "SimLink™ In" jack. If you inadvertently connect the cable between either two "SimLink™ In" or two "SimLink™ Out" jacks, the SimLink™ communication feature will not function. Also, there is no master component in a SimLink™ chain; no one particular component operates as the main communications controller.

In the event that you are using your **MOON 750D** with an older MOON product such as a P-7, P-8 or i-7, you will need to update the software of the older product to allow for complete SimLink™ functionality. Contact your retailer for further details.

# Operating the 750D

We recommend that you leave your **MOON 750D** DAC / CD Transport powered up at all times to maintain optimal performance. In the event that you plan to be away from your home for a few days, powering off the DAC / CD Transport may not be a bad idea. Once fully "broken-in", please keep in mind that your **750D** will require several hours of playing time before it reaches its peak performance after you've powered it up again.

#### Turning on your MOON 750D for the first time

Prior to turning this DAC / CD Transport on for the first time, make sure that every cable is properly connected to avoid any problems. Then turn on your DAC / CD Transport in the following manner:

- 1) Flick the main rocker switch labeled "POWER" to the '1' (on) position on the rear panel.
- 2) Press the push button labeled "Standby" on the **750D**, the blue LED will confirm operation and the digital display will show 'no disc'. You are now ready to load a compact disc and begin listening to music.

#### On and Off Sequence

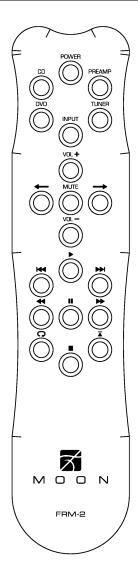
To avoid having any annoying noises (i.e. "thumps" and "pops") emanate from your speakers when powering your **750D** on or off, you should

- 1) Always power up your **750D** DAC / CD Transport before powering up your preamplifier and/or integrated amplifier.
- Always power down your 750D after powering down your preamplifier and/or integrated amplifier.

# **Balanced Operation**

When using an unbalanced interconnect, the audio signal runs through both the center wire and the shield/ground wire. Any noise picked up by this interconnect (ie. nearby magnetic fields such as an AC power cord) will be reproduced by both the preamplifier and amplifier, then heard through the loudspeakers. Conversely, a balanced interconnect has three separate conductors; one for the ground and two for the actual signal. These two signals are identical except that one is 180 degrees out of phase with the other. For example, when one conductor is carrying a signal of +4 Volts, the other will be carrying a signal of -4 Volts. When these two inverted signals on a balanced line are output from the MOON 750D, any noise picked up by the interconnect will be eliminated since a differential circuit amplifies only the difference between these two signals: Noise on a balanced interconnect will be equal on both conductors and therefore not be processed.

# **Remote Control Operation**



The **MOON 750D** DAC / CD Transport uses the 'FRM-2' full function, all aluminum remote control (figure 3). It operates on the Philips RC-5 communication protocol and can be used with other Simaudio MOON components.

The 'FRM-2' remote uses three AAA batteries (included). To install them, use the supplied Allen key to remove the three screws located on the back plate; insert the batteries in the correct direction and then screw the back plate back into place.

To operate the **750D** with this remote control, you must first press the button labeled 'CD' on the top left corner.

The lower section of the 'FRM-2' has nine (9) buttons, eight (8) of which operate the **750D**. All of these functions are available on either the top panel or front panel of the DAC / CD Transport. Please refer to these aforementioned sections for a more detailed description of each of these buttons:

- Play the compact disc loaded into the player
- Skip to the previous track on the disc
- Skip to the next track on the disc
- ≪ Scan backwards through the current track of the disc
- II Pauses the player
- ➤ Scan forward through the current track of the disc
- S Repeat the entire disc (1x) or the current track (2x)
- Stop playing the current track

Finally, you can scroll through the various inputs using this remote control by simply pressing the "INPUT button. The default input is the internal disc drive, followed by "D1", "D2", "D3" and "D4".

Figure 3: FRM-2 Remote Control

# **Specifications**

Configuration	Fully balanced, dual-mono
Digital Power Supply Transformer	25VA
Analog Power Supply Transformer	10VA
Digital Power Supply Capacitance	17,600μF
Analog Power Supply Capacitance	8,800µF
Transport Mechanism	Proprietary Design
Digital Filter / Digital-to-Analog Converters	ESS ES9018S Sabre <sup>32</sup> 32-bit Hyperstream™
Frequency Response (audible)	20Hz - 20kHz +0/-0.1dB (with internal CD transport)
Frequency Response (full range)	2Hz - 100kHz +0/-3dB (with external digital source)
THD @1kHz, 0dBFS (A-weighted)	< 0.0003%
Intermodulation Distortion	< 0.0002%
Dynamic Range	> 120dB
Signal-to-noise Ratio	> 120dB @ full output
Slew Rate	50V/µs
Channel Separation	> 116dB
Low Level Linearity	< ±0.25dB at -90dBFS
Intrinsic Jitter	1 picosecond RMS
Analog Outputs – Balanced	1 pair XLR
Max. Analog Output @ 0dBFS - XLR	2.0 Volts
Analog Output Impedance - XLR	100Ω
Analog Outputs – Single Ended	1 pair RCA
Analog Output Impedance - RCA	$100\Omega$
Max. Analog Output @ 0dBFS - RCA	2.0 Volts
Digital Inputs (4)	AES/EBU (XLR), S/PDIF (RCA), TosLink, USB Type-B
Digital Outputs (2)	S/PDIF (RCA), AES/EBU (XLR)
Digital Input/ Output Impedance - S/PDIF	75Ω (0.5 Volts p-p)
Digital Input/ Output Impedance - AES/EBU	110Ω (3.7 Volts p-p)
Remote Control	
Display Type	
Power Consumption @ idle	
AC Power Requirements	
Shipping Weight	
Dimensions (W x H x D, inches)	18.75 x 4.0 x 16.81
Balanced Pin Assignment: Pin 1	Ground
Pin 2	
Pin 3	Negative
	<del>-</del>

NOTE: In the event that you require the RS-232 codes for your MOON 750D, please contact Simaudio Ltd. directly by either email (service@simaudio.com) or by toll-free telephone (877-980-2400).



Fuse Replacement: For the 120V version use a 0.2A slow blow (5 x 20mm size). For the 230V version use a 0.1A slow blow (5 x 20mm size).

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