

# UHD722 HDMI PROCESSOR USER GUIDE



## Important safety instructions

- Read the instructions.
- Keep these instructions.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with a dry cloth.
- Install only in accordance with the manufacturer's instructions.
- Refer all servicing to approved service personnel.

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

This apparatus has been designed with Class 1 construction and must be connected to a mains socket outlet with a protective earthing connection (the third grounding pin).

This apparatus uses a single-pole power switch. As a result it is not isolated from AC mains power when switched off at the rear panel. The apparatus may be isolated from mains power either by unplugging the power connector from the rear of the unit, or by unplugging the connector at the opposing end of the power cord or cable from its supply outlet. As a result, either or both of these connectors should remain accessible.

### Safety warnings

	<b>WARNING!</b> <b>RISK OF ELECTRIC SHOCK – DO NOT OPEN</b>	
<b>ATTENTION!</b> <b>NE PAS OUVRIR – RISQUE DE DÉCHARGE ÉLECTRIQUE</b>		

**Caution:** to reduce the risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.



The lightning flash with 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.

## Climate

The equipment has been designed for use in moderate climates and in domestic situations.



Only use at an altitude not exceeding 2000m.

## Safety warnings

- Do not expose the unit to dripping or splashing.
- Do not place any object filled with liquid, such as a vase, on the unit.
- Do not place naked flame sources, such as lighted candles, on the unit.

## To avoid overheating

- Do not position the product in direct sunlight.
- Do not position the product near heat sources, such as a radiator.
- Do not position the product on a soft surface such as a carpet.
- Leave at least 10cm around the product to ensure sufficient ventilation.

## To avoid interference

- Do not position the unit near strong electrical or magnetic radiation, such as near a power amplifier.

## Radio interference

**FCC Warning:** This equipment generates and can radiate radio frequency energy and if not installed and used correctly in accordance with our instructions may cause interference to radio communications or radio and television reception. It has been type-tested and complies with the limits set out in Subpart J, Part 15 of FCC rules for a Class B computing device. These limits are intended to provide reasonable protection against such interference in home installations.



EEC: This product has been designed and type-tested to comply with the limits set out in EN55032:2015 and EN55024:2010 + A1:2015.

## Copyright and acknowledgements

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MHR: This product incorporates patented copyright protection technology and intellectual property of Meridian Audio Ltd. This technology is provided for the express purpose of securely containing copyright audio within the Meridian System only. Reverse engineering or circumvention of this protection is strictly prohibited.

The UHD722 incorporates High-Definition Multimedia Interface (HDMI™) technology. HDMI, the HDMI Logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.



### Product registration

Register your UHD722 HDMI Processor at:

[www.meridian-audio.com](http://www.meridian-audio.com)

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## Introduction

The Meridian UHD722 HDMI Processor is the perfect link between your Meridian system and the latest HDMI-equipped video sources. The UHD722 supports UHD (Ultra High Definition), HD (High Definition) and SD (Standard Definition) video.

The UHD722 seamlessly integrates up to seven HDMI sources into your Meridian system. The UHD722 splits the HDMI datastream from the selected source into separate audio and video signals. The video signal can be sent to one or two display devices while the audio is sent out of the unit free from the risk of subsequent sonic degradation caused by the presence of digital video signals.

The UHD722 supports CEC (Consumer Electronics Control) and ARC (Audio Return Channel). CEC allows you to control volume, source selection, and standby on the UHD722 from other CEC-equipped devices. ARC allows you to return digital audio over the same HDMI cable used to connect to your display device, such as a television, sending the audio to a digital surround controller.

### Audio processing

The UHD722 features our performance enhancement technologies, including digital audio upsampling and downsampling, FIFO buffering, resolution enhancement, and lipsync control.

The UHD722 extracts up to eight channels of high-resolution audio from the HDMI datastream, supplying them to separate audio-only outputs, thus minimising signal degradation caused by harmonic interference from high frequency video signals.

Clock variations, known as jitter, are one of the main causes of unpleasant “glare” in digital audio systems. The Meridian UHD722 solves this problem with our proprietary jitter reduction technique using a FIFO (first-in first-out) buffer that allows an independent output clock to deliver clock performance that does not rely upon on the incoming signal quality. This ensures that the audio extracted from the HDMI stream is of the highest quality.

The MMHR and SmartLink outputs can be set to deliver either standard (44.1/48 kHz) or high resolution (88.2/96 kHz) sample rate digital audio, with resolution enhancement of up to 24-bit. When set to standard rates, the output is either 44.1 or 48 kHz irrespective of the input rate. When set to high rates, the output is always either 88.2 or 96 kHz, irrespective of the input rate. Standard sample rates are upsampled using Meridian’s powerful apodising technology.

The processor also includes a configurable audio delay of up to 85ms to allow lipsyncing, allowing you to ensure that sound is always in perfect synchronisation with the picture.

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### **System integration**

The UHD722 can easily be integrated with a Meridian audio/video system. The HDMI input will switch in unison with source selection on the system controller, by either direct connection or using the supplied Comms adapter with legacy systems.

# Specifications

## HDMI

- Seven HDMI inputs.
- Two HDMI outputs:
  - HDMI Out 1 supports HDMI 2.0, HDCP 2.2, and ARC.
  - HDMI Out 2 supports HDMI 1.4.

## Audio outputs

- Meridian SpeakerLink output (RJ45).
- 8-channel MMHR digital audio out (RJ45).
- 8-channel SmartLink coax digital audio out (4x phono).

## Control signals

- DB9M Sub RS232 serial connector.
- Meridian SpeakerLink output can be used for Meridian Comms.

## Signal processing

The UHD722 uses Meridian's proprietary DSP software to provide the following powerful features:

- DSP upsampling and apodising filters.
- FIFO reclocking.
- Lipsync delay.

## Indicators

- Illuminated capacitive touch key for Standby/On.
- Illuminated capacitive touch keys for source selection.

## Physical

- Slimline (1U) aluminium case.
- Dimensions: 420mm x 41mm x 285mm (16.54" x 1.61" x 11.22") (W x H x D without feet or connectors).
- Weight: 2kg (4.41lb).
- Supplied as the unit on its own or with a rack-mounting kit.

## Power

- Universal power supply 100-250V AC, 50-60Hz.
- 10W max.

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# Unpacking

The UHD722 HDMI Processor is supplied with:

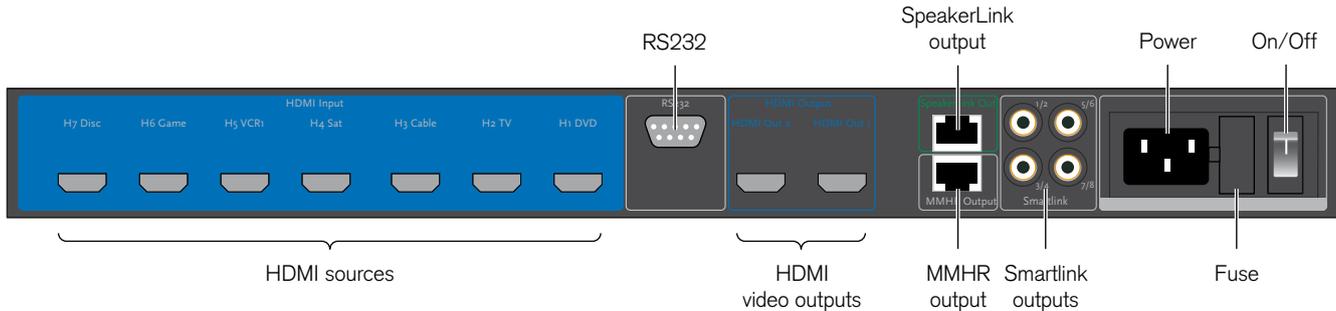
- A power cord.
- Four self-adhesive feet.
- A Meridian Comms Adapter.
- Quick Start Guide.
- Rack-mounting kit (rack-mounted option only).

Please contact your retailer if the power cord has the wrong plug for your territory.

The feet can be fixed to the base of the product, which is printed with circles as a guide. The feet will not be needed if you are mounting the unit using the rack kit.

## Back panel

The following diagram gives details of the back panel connections:



## HDMI connections

### Use this connection

H1 (DVD), H2 (TV),  
H3 (Cable), H4 (Satellite),  
H5 (VCR1), H6 (Game),  
H7 (Disc)

HDMI Out 1, HDMI Out 2

### To connect to this

Up to seven HDMI sources.

Up to two HDMI displays. By default, they do not carry audio information, but can be configured to do so. HDMI Out 1 supports UHD and ARC.

## Audio connections

### Use this connection

MMHR Output (RJ45)

SpeakerLink Output

SmartLink 1/2, 3/4, 5/6,  
7/8.

### To connect to this

An MMHR-capable Meridian Surround Controller.

A Meridian Surround Controller or Meridian DSP Loudspeakers. It can also be used to connect Meridian Comms to other Meridian products.

**Note:** This is the only audio output which supports ARC.

A Meridian Surround Controller with a SmartLink multichannel input on RCA sockets.

## Control connections

### Use this connection

RS232 DB-9M Sub connector

### To connect to this

A PC, to enable the UHD722 to be controlled remotely via serial commands, configured using the Meridian Configuration Program, and updated with firmware updates.

## ARC input

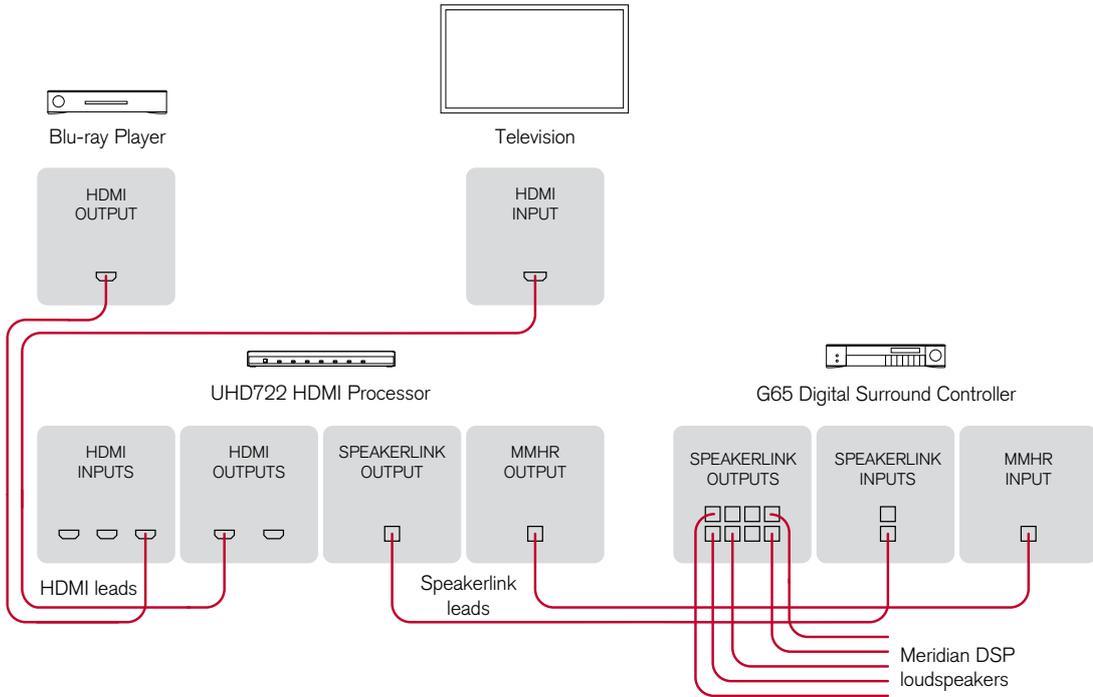
The HDMI Out 1 connection can also provide an ARC input; for example, to return audio from a CEC-enabled television.

The ARC input is only available on the SpeakerLink output. This audio output is a direct audio signal from HDMI Out 1 and therefore bypasses the UHD722 digital signal processing.

When the ARC input is selected only the Standby LED is illuminated on the front panel.

# Applications

## Audio-visual system



This is an audio-visual system with a Blu-ray player, and a surround system based on five Meridian DSP loudspeakers controlled by a Meridian G65 Digital Surround Controller. If the television supports CEC the G65 can receive the television sound via the HDMI connection using ARC.

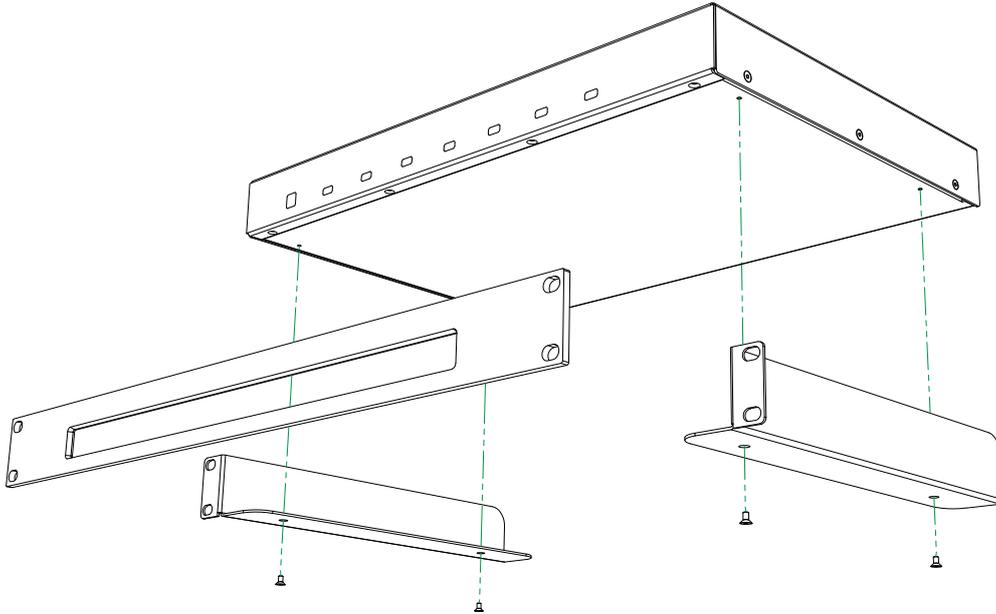
- Connect the HDMI output from the Blu-ray player to the DVD input on the UHD722, using an HDMI cable.
- Connect HDMI Out 1 from the UHD722 to the HDMI input on the television, using an HDMI cable.
- Connect the MMHR output from the UHD722 to the MMHR input of the G65 Surround Controller, using a SpeakerLink cable, to provide the multichannel audio to the G65.
- Connect the SpeakerLink output from the UHD722 to the SpeakerLink input of the G65 Surround Controller, using a SpeakerLink cable, to provide the Meridian Comms connection between the products.
- Connect the DSP loudspeakers to the appropriate outputs from the G65 Digital Surround Controller, using SpeakerLink cables.
- Configure the G65 to use the SpeakerLink input for the TV source, as ARC is not supported over MMHR.

This application will work with the default configuration of the UHD722.

## Installing the UHD722

Using the default factory settings, the UHD722 is optimised for a Meridian system environment. It allows up to seven HDMI sources to connect to a Meridian system while supplying HDMI video (and optionally audio) to a display.

For use on a flat surface, fit the four self-adhesive feet to the product. For the rack-mounted option, the rack-mounting kit can be fitted as shown:



## To connect the UHD722 to your display(s)

- Connect an HDMI cable between the HDMI Out 1 on the UHD722 and the HDMI input on your primary display.
- Optionally connect the HDMI Out 2 on the UHD722 to a second display device.

## To connect the audio output

If the UHD722 is being used with a Surround Controller which features an MMHR input on an RJ45-type socket:

- Use a network-type cable to connect from the **MMHR** output on the UHD722 to the MMHR input on the Surround Controller. A Meridian SpeakerLink lead is ideal.

If the UHD722 is being used with a Surround Controller with a SmartLink multichannel input on three RCA sockets:

- Use three digital interconnect cables to connect as follows:

Socket 1/2: Main L/R

Socket 3/4: C/LFE

Socket 5/6: SURR

If the UHD722 is being used with a product with neither of these:

- Configure the UHD722 to use a single co-axial digital connection to a conventional digital audio input; see *Audio*, page 13.

## To connect the UHD722 to your Meridian system

If you have other Meridian equipment in the system, and an unused SpeakerLink input is available:

- Use a network-type cable to connect the **SpeakerLink Out** socket on the UHD722 to the available SpeakerLink input.

If there are no SpeakerLink inputs available on the other products:

- Use the Meridian Comms Adapter supplied with the UHD722.

Connect to the adapter using a network-type cable plugged into the **SpeakerLink Out** socket on the UHD722.

The adapter provides a DIN connection so that a Meridian 5C cable can be used to connect to an appropriate Comms socket on another Meridian product.

## To connect sources

- Connect each of your HDMI sources to the appropriate HDMI input.

By default the sources are assigned to inputs as shown on the back panel labels, but you can reconfigure this using the Meridian Configuration Program.

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If the source is a Meridian HDMI source:

- Use the UHD722 to switch the video, and connect the SmartLink audio output from the source to the corresponding input on the Meridian Surround Controller.

If the source is a non-Meridian HDMI source the audio will be taken from the HDMI input.

- Connect the MMHR output from the UHD722 to the Meridian Surround Controller with a single SpeakerLink, Cat 5, or Cat 6 Screened Twisted Pair (STP) RJ45-terminated cable.

If your Meridian Surround Controller does not support MMHR:

- Connect the SmartLink outputs from the UHD722 to a suitable digital input on your Meridian Surround Controller or DSP Loudspeakers.

Be sure to observe the channel allocation correctly. Each socket carries two channels and you should connect the appropriate number of sockets for the maximum number of audio channels to be used.

### **Setting up non-Meridian sources**

Non-Meridian sources sending audio via HDMI should in most cases be configured to decode the audio to PCM in the source component to take advantage of the resolution enhancement features of the UHD722.

For best results configure your source components to get the highest possible quality audio from your UHD722. The UHD722 contains sophisticated DSP-based FIFO buffering, reclocking and up/down-sampling, so best results will be obtained by configuring your sources so that the UHD722 carries out these processes when required, and not the source.

Here are some points to bear in mind when setting up non-Meridian sources feeding the UHD722:

- Make sure that the HDMI source is turned on, and that its HDMI output is providing audio as well as video.
- Configure the source to output PCM.
- Pay special attention to the way that the source handles different content. Check the configuration to ensure that multichannel material is not downmixed.
- The UHD722 accepts a maximum input sample rate of 192kHz.
- If possible, set the output sample rate of your source to match the sample rate of the content being played.

### **How sources and displays behave**

The HDMI interconnection system uses handshaking to establish a dialogue between a source and a display. Typically the display signals its capabilities to the source, and the source

then generates the highest quality signal it can to meet those capabilities. This is why, when you first activate a system, there may be a succession of blank and blue screens while the two components work out how to communicate with each other at the highest level of quality common to both.

When the UHD722 is added to the system, it reads the display capabilities and passes them to the source, but at the same time adds a description of its own enhanced audio capabilities. Essentially, the UHD722 tells a source what audio it is capable of handling (or is configured to handle), but it is left up to the source how it satisfies those capabilities. For example, if you configure the UHD722 for 2-channel audio but also specify that it can handle bitstreams, you will need to configure the source as to whether it should send a 2-channel PCM track on the disc or a 5.1 DTS bitstream, if both are possible.

The UHD722 also has a “receiver” mode, which it will enter automatically if the display device is switched off or disconnected. This allows music to play or continue to play without a display. It may take a few seconds while the units handshake to establish this mode. It may also take a few seconds to re-establish communications if the display is reactivated, because of the HDMI handshaking procedure.

For more information see *Operational notes*, page 17.

## System defaults

By default, the unit is set to work with Meridian Surround Controllers and DSP Loudspeakers, and to enhance up to 6-channel PCM inputs. If they have not been decoded in the player or source (decoding in the source is the preferred configuration), Dolby Digital and DTS bitstreams are passed through untouched. If you are using the UHD722 with other equipment that does not support Meridian’s MHR, then you will need to run the Meridian Configuration Program to disable MHR.

To reconfigure the UHD722 from its standard defaults use the Meridian Configuration Program; see *Configuring the UHD722*, page 12.

## Controlling the UHD722

The UHD722 can be controlled via Meridian Comms, from the front panel and via RS232 serial commands.

The touch sensitive keys on the front panel allow you to select an active input. An input that has been disabled will not be selectable.

RS232 can be used to control the UHD722 in conjunction with a home automation system. The unit responds to standard Meridian commands to select named sources, enter Standby and other functions. An RS232 command table is available on request.

# Configuring the UHD722

You can configure the UHD722 using the Meridian Configuration Program, a Windows application that is used to set up Meridian components and systems. For details on how to use it, see its built-in help files. You can also download its User Guide from the Support section of the Meridian Web Site at:

<http://www.meridian-audio.com/>

The Meridian Configuration Program is installed by the Common Installer which can also be downloaded from the Support section of the web site.

## Connections

Connect your computer to the UHD722 via RS232 and run the Meridian Configuration Program.

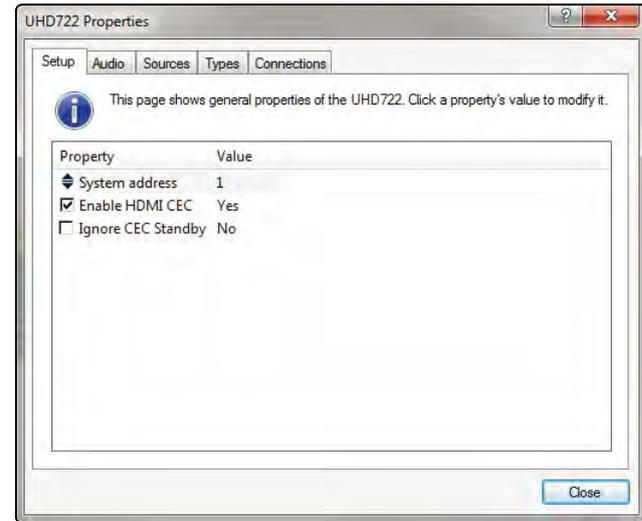
The UHD722 is set up in the same way as any other Meridian component.

**Note:** the UHD722 can act as a Controller. However you will only use it as such in a non-Meridian system. If you select the UHD722 as the controller in a Meridian system, the available inputs on a Meridian processor you add subsequently will be limited to those defined for the UHD722.

To configure the capabilities of the UHD722, display the **Properties** dialog for the product.

## Setup

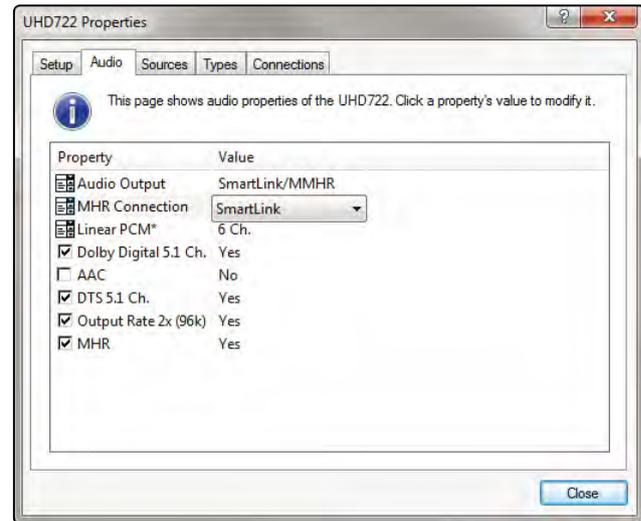
Allows you to configure general properties of the UHD722:



Property	Description
System address	If an installation has more than one UHD722 connected together with Meridian Comms, each one needs a different System Address to enable them to have independent source selection and volume controls.
Enable HDMI CEC	Set to <b>Yes</b> to enable CEC (Consumer Electronics Control) on the UHD722. CEC can allow control of one CEC-equipped device from another.  With CEC enabled the 722 will respond to Volume, Source Selection, and Standby commands from CEC enabled devices and send the appropriate messages out on Meridian Comms.  <b>Note:</b> Support for ARC is only provided if CEC is enabled.
Ignore CEC Standby	Set to <b>Yes</b> to prevent the 722 and Meridian system going into standby when a CEC standby command is received.  Note that the CEC commands sent from different devices vary.

## Audio

Allows you to define the audio behaviour of the UHD722:



The properties are described in the following table:

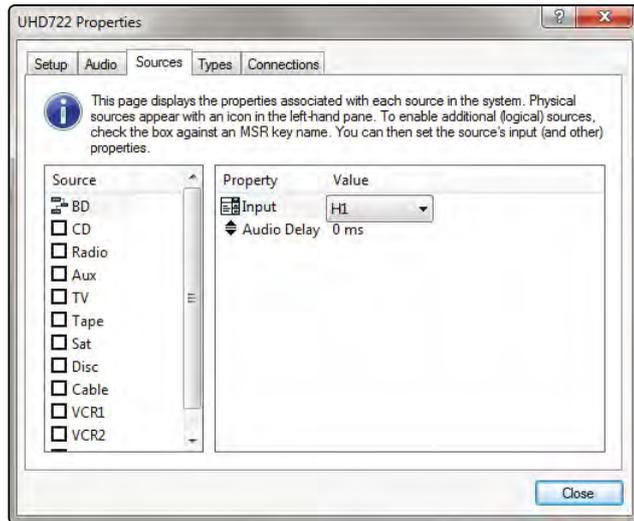
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Property	Description
Audio Output	Selects the output port used to interface with the system, using the pop-up menu in the <b>Value</b> column. This will either be <b>SmartLink/MMHR</b> (normally, to use the phono or RJ45 outputs) or, exceptionally, <b>Video HDMI</b> , which retains the audio on the HDMI output along with the video.
MHR Connection	Select <b>SmartLink</b> to feed a Meridian Surround Controller such as the G61R, G68 or 861. Select <b>None</b> to feed Meridian DSP Loudspeakers directly.
Linear PCM	Determines the number of output channels. The options are <b>8 Ch</b> , <b>6 Ch</b> , and <b>2 Ch</b> . This will generally be determined by the capabilities of your system. The UHD722 advertises how many channels it wants to receive. For example, if 6 are chosen here and 8 are available from the source, then the UHD722 will instruct the player to output the 6-channel version.  You only need to connect the number of channels specified here to the UHD722. So, for example, if you have a 2-channel system and select <b>2 Ch</b> here, you only need to connect the “1/2” SmartLink output from the UHD722 to the system.

Property	Description
Dolby Digital 5.1 Ch, AAC, DTS 5.1 Ch	Informs the source about the decoding capability of the products fed by the UHD722.  Set all three to <b>Yes</b> for Meridian Surround Controllers such as the G61R and G68. Set <b>AAC</b> to <b>No</b> for the 861. Set all three to <b>No</b> if you are driving Meridian DSP Loudspeakers direct from the UHD722.
Output Rate	Determines the capability of the product fed by the UHD722 and whether the unit outputs high sample rates (88.2kHz or 96kHz) or standard rates (44.1kHz or 48kHz).  If set to <b>Yes</b> the unit will always output high sample rates, by upsampling standard sample rates or downsampling super-high sample rates (176.4kHz or 192kHz).  If set to <b>No</b> all outputs are at standard rates, with higher-rate sources downsampled accordingly. Use this option for early DSP loudspeakers, D600s, and the 565.
MHR	Determines whether MHR is active or not. Setting this to <b>Yes</b> allows the UHD722 to protect copyrighted audio or to enhance the quality of others.

## Sources

Displays the physical input associated with each logical source and allows them to be assigned:



Each physical source is shown as an icon – in this example there is only one, the BD player, so there is only one icon. However you can assign more than one “logical” source to a physical input.

For each source you can set:

### Property

Input

### Description

The physical input assigned to this source. Provides a pop-up menu of the available inputs, including **ARC** for the ARC input.

ARC requires **Enable HDMI CEC** to be selected on the **Setup** panel.

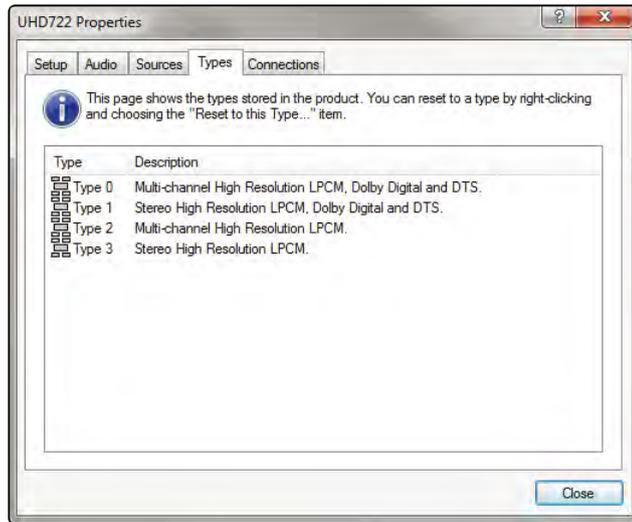
Audio Delay

Applies a lipsync delay of up to 85ms. **Audio Delay** is not available for the ARC input.

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### Types

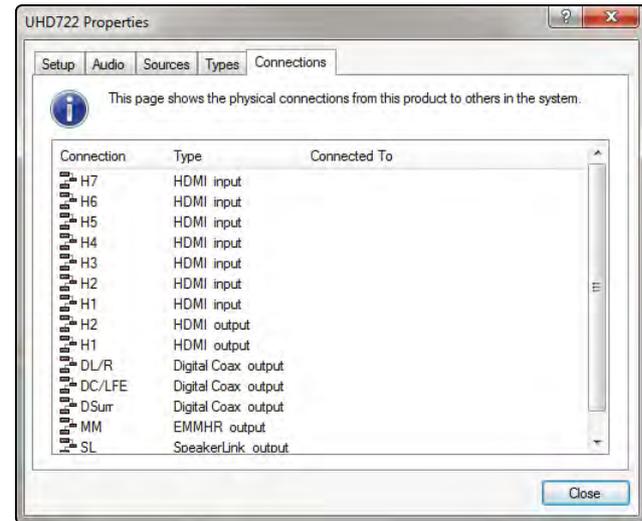
Shows the Meridian Types stored in the product:



You can reset the UHD722 to a Type by selecting the desired Type from the list and right-clicking on it, then choosing **Reset to this Type** from the resulting pop-up menu.

### Connections

Displays the inputs and outputs available on the device and what they are connected to.



You can filter the results shown here by right-clicking on an item (any item) in the list and checking the items you want to display, or unchecking them to hide them.

Complete the configuration process by storing the settings to the UHD722. Finally, click the **Close** button to finish working with the UHD722 properties and continue to set up the system as required.

## Operational notes

- Some source/display combinations may not return cleanly from “receiver” mode, due to the way in which they handle handshaking. If you do not get the expected result (eg no audio is heard) even after several seconds have elapsed, it may help to switch to another input and then back again. This is not a fault in the UHD722; it is a function of how the source and display communicate with each other.
- Handshaking between a display and a source can take some time and you may, for example, see a series of alternating blank and blue screens. This is not a fault.

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