



THENAUDIO

GUIDE-4 User Manual

HDMI 2.1 4x1 Switch





Introduction

Thenaudio is proud to introduce GUIDE-4, a smart four-port AV switch with up to 48Gbps / FRL6 switching capability and CEC control support for extra convenience.

The GUIDE-4 is engineered in a completely new way to support various audio, video, and encryption standards. In a typical AV product, the incoming signal is first decoded and then re-encoded inside an increasingly complex IC. Thenaudio decided to look for other ways to be completely transparent to the contents of the input signal using the fastest data rates of 48Gbps FRL6 while still allowing the much-needed CEC control support. Each input port of GUIDE-4 is equipped with a unique way to process the information exchange between the connected source and the TV in runtime while the audio and video signal is flowing untouched with perfect pass-through quality.

GUIDE-4 supports any HDMI video signaling all the way to the latest standards found from the 2.1 specification. GUIDE-4 can support 4k120 10/12bit HDR, 8k60, and any other format up to 48Gbps while including features such as VRR for the best gaming experience. For audio support, there are no limitations, and all standardized audio formats such as all flavors of Dolby Atmos / DTS:X / PCM 7.1 are supported including all standard sample rates like 48kHz to 192kHz.

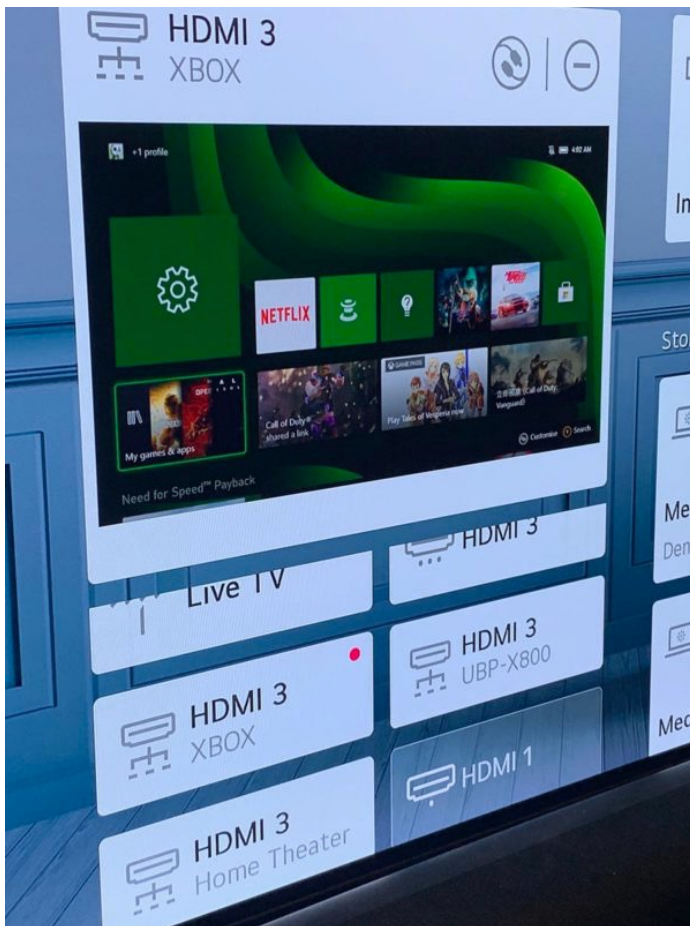


CEC SWITCHING CONTROL:

GUIDE-4 supports CEC control; CEC control is a desired feature to use in modern AV set-ups since most TVs sold in the past several years offer CEC control simply by using the TV remote controller. TV menus are often engineered to natively support this feature, yet many switches have never added the capability due to the additional complexities to support these commands while making the CEC network reflect the correct parameters.

An example of GUIDE-4 using three connected devices, Xbox Series X, Blu-Ray player and AppleTV is shown below. Each source is connected to one of the GUIDE-4 inputs and the output is connected to the HDMI 3 of an LG TV. The LG TV will scan the CEC network and display each capable source under HDMI 3 as this is the input where GUIDE-4 is connected. By using the LG TV remote, it is simple to switch between the inputs. The actual switching happens automatically inside GUIDE-4.

CEC channel switching example



Another way to start watching the desired source is to press the menu button on the remote controller for the respective input source. For example, pressing the AppleTV remote controller menu button will issue a string of specific CEC commands which GUIDE-4 will process accordingly to make the channel change.



AUTO-SWITCHING CONTROL:

There are other ways to perform channel switching with GUIDE-4. In case CEC control is not available, it is possible to use a simple “+5 switching”. There is a rudimentary way that HDMI sources use when informing their presence when connected to a sink device. They do it by showing a fixed voltage level that can be detected by the connecting device. Whenever such voltage is detected GUIDE-4 will switch to this channel if the relevant feature is enabled using the DIP switches on the side of GUIDE-4.

IR SWITCHING CONTROL:

In case GUIDE-4 is installed within a system that has system controllers then it is possible to use IR control for channel selection. The IR hex codes are available in the download section.

For use cases without an IR system controller, there are special additional IR commands that GUIDE-4 can respond to. This means it is possible to use an already existing remote controller, say, from an AVR to do the switching. Such support is generally ongoing and will be added depending on the number of requests for specific models.

MANUAL SWITCHING CONTROL:

Finally, there is also a manual push-button that cycles through the inputs in case no automation is desired.

INDICATOR LED LIGHTS:

The four LED lights are active input indicators. TOP LED indicates that the input port 1) is selected and is passed through to the TV. BOTTOM LED indicates that the input port 4) is selected and passed through to the TV.



DIP SWITCH CONTROL:

DIP switches are used to modify the default operation as described below.

- DIP 1: CEC Switching
 - UP: CEC control is enabled. (default)
 - DN: CEC control is disabled. GUIDE-4 will not respond to CEC control
- DIP 2: +5 Source switching
 - UP: Disabled. GUIDE-4 will not respond to source +5 signals. (default)
 - DN: Enabled.
- DIP 3: FRL limit control
 - UP: Allow any signals (default)
 - DN: Allow max FRL-5 40Gbps signals
 - What Does the FRL Limit do in practice?
 - The maximum signal frequency in HDMI 2.1 is FRL-6 which corresponds to 48Gbps. This bandwidth is large, and many cables cannot support such high bandwidth. In some cases, the source signal format can be sent using FRL-5. In this case, it is possible to relax the cable requirement by using FRL-5 instead of FRL-6. GUIDE-4 can inform the source specifically to limit the format to FRL-5 if the DIP switch #3 is in down-position.
- DIP4: MultiPCM
 - UP: Use capabilities from the connected display (default)
 - DN: Add 7.1 PCM 48kHz-192kHz 24bit support
 - What does the MultiPCM do in Practice?
 - When it comes to TV Multichannel PCM support there are two types of generic issues:
 1. The TV does not advertise any 5.1 or 7.1 PCM support even though the TV is in fact capable to pass those formats through via eARC port?
 2. The 5.1 or 7.1 PCM support is advertised but at a maximum sample rate of 48kHz.
 - Both issues are unfortunate as in the first case no MultiPCM will be sent by the source device. In the second case it will be downmixed or otherwise limited to standard audio, blocking all HD audio signals that run at 96kHz and over.
 - GUIDE-4 implements a real time modification to the TV capabilities which will unlock the source device to send full spec 7.1 PCM supporting up to 192kHz 24bit.



TROUBLESHOOTING:

1. Ensure all HDMI cables are capable of the HDMI bandwidth you are trying to send. 48Gbps HDMI 2.1 cables are recommended.
2. If using CEC, ensure that all devices have CEC control enabled.
3. Some TV models require a CEC reset to reload the changed CEC network parameters. Examples include:

Manufacturer	CEC Settings Control
LG	Simplink
Samsung	Anynet+
Sony	Bravia Sync
Panasonic	VIERA Link
Philips	EasyLink
Snap	Aquos Link
Hitachi	HDMI-CEC

4. Check the Input Indicator LED lights to ensure that the desired input is selected.
5. Check the DIP Switch controls to ensure that the desired function mode is selected.



Thank you for choosing Then Audio!
Please contact us with any questions, we are
happily at your service!



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