

Just Add Power



HDMITM
HIGH DEFINITION MULTIMEDIA INTERFACE

2G+ CEC CONTROL

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What is CEC?

CEC is the set of control commands sent over the HDMI cable. CEC stands for Consumer Electronic Control.

CEC in Distribution

In a distributed environment, the control system is handling all of the orders being passed to different components. There is no need for a Blu-Ray player to talk to a TV or AVR. In fact, having this occur would most likely cause more problems than it fixes.

CEC with Just Add Power

In a Just Add Power system, CEC commands are not passed from one CEC-capable device to another. Just Add Power 2G+ devices have a separate CEC board built-in that create commands to be sent to specific devices when told to by the control system similar to the way RS232 commands are sent.

CEC or RS232?

CEC and RS232 commands are subject to the whims of the manufacturer of the receiving device. RS232 as a standard has been around for longer than CEC so it often has a more robust command set. Just Add Power has the ability to send either RS232 or CEC commands, so the decision on which protocol to use should be based on the command set of the receiving device and the needs of the installation.

CEC Control

Once the CEC board has been loaded with the CEC firmware, there are several commands that may be entered into the console of the Just Add Power device to send CEC commands.

Pre-Programmed Commands

Command	Function
<code>cec_tv_on.sh</code>	Turns television on
<code>cec_tv_off.sh</code>	Turns television off
<code>cec_audio_on.sh</code>	Disables mute function
<code>cec_audio_off.sh</code>	Enables mute function
<code>cec_watch_me.sh</code>	Changes HDMI input to the connected device
<code>CEC_SEND_BYTES</code>	Sends a specific set of CEC hex values. See below for more detail.

CEC_SEND_BYTES

The “Send Bytes” command has the ability to send multiple hex commands that can be modified to communicate with the attached device. With a list of the correct CEC commands, `CEC_SEND_BYTES` can be used to perform any function possible with CEC.

The general format of the command is:

```
CEC_SEND_BYTES aa bb cc dd
```

Where aa, bb, cc, and dd are 2 hex values (from 0-f). Multiple commands can be strung together to perform more than 1 operation at once.

Shell Commands

All of the `.sh` (SHELL) commands perform the same function as the `CEC_SEND_BYTES` command, but with set hex values being sent every time. The SHELL commands are modeled after what we have found to be the most common codes among devices. If they do not work, then it is likely that the attached device does not respond to the pre-programmed hex codes being used in the SHELL commands. In that case, it will be necessary to discover the proper hex codes and use the `CEC_SEND_BYTES` command instead.

SHELL Command	CEC_SEND_BYTES Equivalent
<code>cec_tv_on.sh</code>	<code>CEC_SEND_BYTES e0 04</code>
<code>cec_tv_off.sh</code>	<code>CEC_SEND_BYTES e0 36</code>
<code>cec_audio_on.sh</code>	<code>CEC_SEND_BYTES e0 72 00</code>
<code>cec_audio_off.sh</code>	<code>CEC_SEND_BYTES e0 72 01</code>
<code>cec_watch_me.sh</code>	<code>CEC_SEND_BYTES ef 82 10 00</code>

CEC-o-Matic

There is an excellent bank of commands made available by Kwikwai that can be used to discover viable CEC commands. Go to www.cec-o-matic.com to begin.