Welcome to ZeeVee.

ZeeVee products convert your video and audio source to a digital cable channel and broadcast it over coax to all your HDTVs. This guide walks you through basic and more enhanced setup for ZeeVee’s HDBridge 2920 modulator.

For support, repairs, and warranty service contact the distributor where you purchased the product. For additional questions call +1(877) 4-ZEEVEE (1.877.493.3833).

What’s in the Box
Here’s what you can expect to find when you open the package:

Available Separately
- HD-SDI Cable
- Power Cord and Adaptors

Important Safety Instructions. Save These Instructions.

1. WARNING: When using electronic products, basic precautions should always be followed, including:
   1) Keep these instructions.
   2) Heed all warnings.
   3) Follow all instructions.
   4) Do not use this apparatus near water.
   5) Clean only with dry cloth.
   6) Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
   7) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
   8) 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 your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
   9) Power cord must be accessible to allow for the removal of power from the unit.
   10) Protect the power cord from being walked on or pinched, particularly at plugs, conveniences receptacles, and the point where they exit from the apparatus.
   11) Unplug the apparatus during lightning storms or when unused for long periods of time.
   12) Only use attachments/accessories specified by the manufacturer.
   13) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
   14) WARNING: To reduce the risk of fire or electric shock do not remove the cover (or back). There are no user serviceable parts inside. DO NOT REMOVE THE COVER (OR BACK). NO USER SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

FCC Statement
FCC Compliance and Advisory Statement: This hardware 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. This equipment generates, uses, and can radiate radio frequency energy and, if not installed or used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) reorient or relocate the receiving antenna; 2) increase the separation between the equipment and the receiver; 3) connect the equipment to an outlet on a circuit different from that to which the receiver is connected; 4) consult the dealer or an experienced radio/TV technician for help. Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment. The lightning flash with arrowhead symbol, 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 product. The exclamation point within an equilateral triangle is intended to alert the user to the presence of important instructions.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS
Front and Back Panels

1. HD2920 - Name and description of unit
2. Color Display - Configuration and system status
3. 5-Way Control - Navigate options on front panel display
4. Coax Output - Up to 2 frequency-agile DVB-T or DVB-C RF CATV output channels for up to 2 video sources. Output power can be set between +45 to +25 dBmV using the Maestro web interface or the front panel.
5. Audio/Video Inputs - Digital Audio/Video: HD-SDI with pass-through Analog Audio: 3.8mm Audio
6. Alert Media - This function not implemented yet
7. Delay Matched Audio Out - For matching audio to external audio system (first port only, requires analog audio as input)
8. Event Detection - This function not implemented yet
9. 10/100 LAN Port - Two symmetrical Ethernet ports for configuration and remote management
10. AC Power Input - 100-240VAC / 50-60Hz
11. SD Memory Card Slot - This function not implemented

Basic Installation

Factory default settings allow HD2920 units to broadcast up to 2 HD-SDI sources on RF channels 21 and 22 for reception at connected HDTVs. We recommend using the most updated version of firmware. You can find the latest version on the Support section of our website.

Beginning setup
1. Apply power.
2. Connect an HD-SDI video source to the HD-SDI input port, using an HD-SDI cable (which is sold separately).
3. Optional - Connect the Analog Audio if the digital audio is not present on HD-SDI or if you want to implement the delay matched audio feature.

Tuning your channel at the HDTV (Auto Scan)
1. Connect the Coaxial Output of the HD2920 to your RF network. If the RF power for your network is too high, you will observe video breakup.
2. Set the RF Input on the TVs to DVB-T (default) or DVB-C with the Symbol Rate 6750 Ks/sec.
3. Enter the RF number to tune directly to the channel. For default channel lineup information, refer to the Default Channel Lineup table.
4. Run the Auto Scan through the menu system of your HDTV to find the channels.
Front Panel Configuration

You can set the RF broadcast channels using the front panel controls. In many cases, your ZeetVee modulator will require only these configurations.

Setting the RF broadcast channels or power
1. Unlock the panel by pressing/holding together the left and right arrow buttons (►◄) until “Setup” lights up.
2. Press “OK” to enter the Configuration screen.
3. Press “OK” to select “RF Setup”.
4. Use the arrow buttons (△▼) to go to each item you want to configure (such as RF Number or RF Power), then press “OK” to edit the highlighted field. Use the up and down (△▼) arrow buttons to scroll through the options for that field.
5. Once you’ve made changes, press “OK” to accept. You can then select the next item for configuration.
6. When finished making changes, use the arrow buttons to scroll down and select “Apply,” then click “OK” to save your changes. Note: The front panel locks automatically after a few seconds. To make more changes, press/hold the left and right arrow buttons again to re-enter the setup screen.

To update firmware:
• If unit is connected to the internet and can communicate with our servers, select “Update Firmware” from the Setup screen and press “OK”.

To reset IP address:
• When using DHCP, select “Reset IP Address” to force a release/renew of your IP address, and press “OK”.

To restore factory defaults or revert firmware:
1. Power down the unit.
2. Hold the left and right arrows down and reaply power. You will be prompted with options: PRESS “UP” to reset config, “DOWN” to revert FW, “OK” to boot normally.

IMPORTANT NOTES
• ZV channels can be set directly adjacent to any other well-formed channel and will not cause interference. No channel spacing is required.
• DVB-T defaults to using specific channels and frequency bands on the CCIR table. You can change those settings from CCIR to None and enter a frequency directly using Maestro. For instance, instead of entering RF channel 21, you could enter a frequency such as “474 MHz.”

RF Channel | Band (MHz) | RF Channel | Band (MHz) | RF Channel | Band (MHz)
--- | --- | --- | --- | --- | ---
21 | 470-478 | 41 | 630-638 | 61 | 700-708
22 | 478-486 | 42 | 638-646 | 62 | 708-716
23 | 486-494 | 43 | 646-654 | 63 | 716-724
24 | 494-502 | 44 | 654-662 | 64 | 724-732
25 | 502-510 | 45 | 662-670 | 65 | 732-740
26 | 510-518 | 46 | 670-678 | 66 | 740-748
27 | 518-526 | 47 | 678-686 | 67 | 748-756
28 | 526-534 | 48 | 686-694 | 68 | 756-764
29 | 534-542 | 49 | 694-702 | 69 | 764-772
30 | 542-550 | 50 | 702-710 | 70 | 772-780
31 | 550-558 | 51 | 710-718 | 71 | 780-788
32 | 558-566 | 52 | 718-726 | 72 | 788-796
33 | 566-574 | 53 | 726-734 | 73 | 796-804
34 | 574-582 | 54 | 734-742 | 74 | 804-812
35 | 582-590 | 55 | 742-750 | 75 | 812-820
36 | 590-598 | 56 | 750-758 | 76 | 820-828
37 | 598-606 | 57 | 758-766 | 77 | 828-836
38 | 606-614 | 58 | 766-774 | 78 | 836-844
39 | 614-622 | 59 | 774-782 | 79 | 844-852
40 | 622-630 | 60 | 782-790 | 80 | 852-860

CCIR Table vs Frequency Map

<table>
<thead>
<tr>
<th>RF Channel</th>
<th>Band (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>470-478</td>
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<tr>
<td>2</td>
<td>478-486</td>
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<tr>
<td>3</td>
<td>486-494</td>
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<td>4</td>
<td>494-502</td>
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<td>5</td>
<td>502-510</td>
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<td>6</td>
<td>510-518</td>
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<td>7</td>
<td>518-526</td>
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<td>526-534</td>
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<td>9</td>
<td>534-542</td>
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<td>550-558</td>
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<td>12</td>
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<td>13</td>
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<td>574-582</td>
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<td>606-614</td>
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<tr>
<td>19</td>
<td>614-622</td>
</tr>
<tr>
<td>20</td>
<td>622-630</td>
</tr>
</tbody>
</table>

Shows audio/video being encoded
Green — Both audio and video are detected
Yellow — Video, but no audio detected
Red — No video detected
Maestro Configuration

Maestro is a configuration tool that you use optionally to customize your system beyond what is allowed in the front panel. For example, using Maestro you can assign a channel number (logical channel) independent of the RF number and label the channels.

Connecting with Maestro
1. Connect your computer directly to the ZeeVee modulator using a standard Ethernet cable (not a cross-over cable) or connect the unit and your computer to any LAN that has a DHCP server.
2. An IP address appears at the top of the front panel display.
3. Using any web browser (Chrome or Firefox preferred), enter the IP address to launch Maestro.
4. You will be directed to a login page. Your user name is always “admin.” The default password is “admin” but you can change the password. Login is case-sensitive.
5. After you log in, the Maestro Status tab appears. Here you can see the general status.

Configuring RF numbers and logical channels
1. Click on the Channel Plan tab.
2. Click in the RF # field and enter the RF number as you choose from the CCIR Table (on page 7). Make sure you’ve reviewed the CCIR Table Important Notes before completing this task.
3. Click in the LCN field and enter a logical channel number. The LCN is what the TV displays. Note that you can choose a logical channel number that is different from the RF#. For instance, if your RF# is 21, you can choose 3 as your LCN.
4. Click Apply to save changes. Your unit stores configurations so they are not lost on power-down.
5. Run Auto Scan at TV (see Tuning your channel at the HDTV, page 5) when you have saved configuration changes.

Labeling channels with channel and content information
1. In the Channel Plan tab, click in the Name field and enter the channel short name (up to 7 characters).
2. Click in the Long Name field and enter the long or more descriptive channel name (up to 63 characters). The TV displays these names and descriptions when the channel is changed or info guide information is requested.
3. Click Apply to save changes.

Using the Maestro tabs

THE RF TAB
Allows you to change the RF power output.

THE DEVICE TAB
Allows you to change the device password, update firmware as well as configure Emergency Alerts System (EAS). You can find detailed information on EAS in the Support section of the website.

THE NETWORK TAB
Allows you to assign a static IP address.

THE SUPPORT TAB
Provides technical support contact information and allows you to send logs for troubleshooting.

THE ADMIN TAB
Allows for creating user accounts which limit access to specific parts of Maestro including ZvShow, STB and EAS access.

THE AV SOURCE TAB
Allows you to specify audio and video sources as well as other configuration options for the sources.

THE PRINTER TAB
Allows you to print logs for troubleshooting.

THE APP TAB
Provides access to the ZeeVee application store.

THE SD CARD TAB
Allows you to insert an SD card to store configuration data.

THE SIMPLIFIED TAB
Displays a simplified version of Maestro with a limited set of configuration options.

THE PRINT TAB
Allows you to print a report of your configuration settings.

THE VIEW ALL TAB
Allows you to view all units managed on your network.

THE GROUP ACTION BAR
Allows you to select and configure multiple units.

THE DASHBOARD
Displays a summary of your system configuration.

THE HELP TAB
Provides links to additional resources and support.

THE LOGS TAB
Allows you to view and download logs for troubleshooting.

THE COMMISSIONING TAB
Provides commissioning information for your system.

THE STATUS TAB
Displays the status of your system including RF and system health.

THE DIAGNOSTICS TAB
Provides diagnostic information for troubleshooting.

THE MAESTRO TAB
Provides access to the Maestro configuration tool.

THE MAESTRO STATUS TAB
Displays the status of your Maestro system including connection status and firmware version.

THE MAESTRO HISTORY TAB
Displays a history of configuration changes.

THE MAESTRO HELP TAB
Provides links to additional resources and support.

THE MAESTRO REPORTS TAB
Provides access to reports generated by Maestro.

THE MAESTRO upgrade TAB
Allows you to update your Maestro firmware.

THE MAESTRO LOGS TAB
Allows you to view and download logs for troubleshooting.

THE MAESTRO COMMISSIONING TAB
Provides commissioning information for your system.

THE MAESTRO DIAGNOSTICS TAB
Provides diagnostic information for troubleshooting.

THE MAESTRO SUPPORT TAB
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If you are feeding the audio directly from the source into a distributed (whole house) audio system and not through the ZeeVee unit, it will arrive to the speakers before the video arrives to the HDTV. This happens because the video is being synchronized to the audio through the ZvSync tuner (such as the ZvSync) and connect it to your audio system. The audio should have a similar amount of delay since it has gone through the encoding and decoding process just as the video did. To work around the issue, you can try one of the following:

- If both the audio and video are being sent through the unit to the TV, be sure your firmware is fully updated, later versions of ZeeVee equipment may help. If unable to connect, try one of the following:
  - Lower the power on the unit, then verify that the modulator is not conflicting with any other channel by connecting the unit and scanning to different channels. Some digital tuners do not support HD content, remove video source and try the scan with only the idle screen.
  - If the video input is encrypted (HDCP), the idle screen will not be displayed. If the video input is not encrypted, then verify the source is outputting a supported resolution. If the video input is encrypted (HDCP), the idle screen may not be able to display.
  - Scan the video input and see if it is completely vacant.
  - If the video input is not completely vacant, it is possible that the video signal is not being synchronized by the ZvSync tuner. In this case, the video signal may need to be re-synchronized to the audio signal.

EXCLUSIVE REMEDY FOR ZEEVEE EQUIPMENT
If at the option of the ZeeVee, ZeeVee may elect to replace the ZeeVee Equipment free of charge or to repair the ZeeVee Equipment for a period of five years from the date of purchase.

WHAT THESE WARRANTIES EXCLUDE
- Any ZeeVee Equipment that has been opened or tampered with.
- Any ZeeVee Equipment that has been altered or modified in any way.
- Any ZeeVee Equipment that has been manufactured, approved, or authorized by ZeeVee.
- Any ZeeVee Equipment that has been altered or missing send a e-mail to warranty@zeevee.com. Please include your order number, a phone number, a description of the problem you have encountered, and if possible, a screenshot or video of the issue. We will then provide you with a Return Authorization (RMA) number. Your units will be held through the ZeeVee repair process, for which you will be responsible for any products received without an RMA number.

To get out-of-warranty service for your ZeeVee Equipment, please contact ZeeVee customer care at 1.877.493.3833 or warranty@zeevee.com for information on the availability and any costs for repair or replacement of your ZeeVee Equipment. If the ZeeVee Equipment is ZeeVee authorized, installing modifications, “hacks,” or allowing service access “back doors” will void these limited warranties. In the case of a paid repair: at the option of ZeeVee, ZeeVee Equipment will be repaired or replaced with a new, repaired or refurbished ZeeVee Equipment at ZeeVee’s discretion. ZeeVee’s replacement warranty is limited to the original end user purchaser and to no other purchaser.

LIMITATION OF LIABILITY
In no event will ZeeVee be liable for any amount greater than the retail price of the ZeeVee Equipment. ZeeVee will not be liable for any incidental or consequential damages including but not limited to profits or income lost by you or expenses incurred by you in connection with the installation, use, or inability to use the ZeeVee Equipment. ZeeVee does not warrant any ZeeVee Equipment to any person receiving the ZeeVee Equipment as a gift from the original end user purchaser or any person receiving the ZeeVee Equipment.

To get service for your ZeeVee Equipment, please contact ZeeVee customer care at 1.877.493.3833 or warranty@zeevee.com with any questions.
DECLARATION OF CONFORMITY

Manufacturer's Name: ZeeVee, Inc.
1 Monarch Drive, Suite 200
Littleton, Massachusetts
01460 USA

declares that the product
Product Name: HDbridge 2000 Series
Regulatory Product Number:
HD82312
HD82380
HD82640
HD82540
HD82620
HD82520
HD82840
HD82920
(all product options on all variants)

conforms to the following Product Specifications:

(Audio, Video and similar electronic apparatus)
(Audio, Video and similar electronic apparatus)

EMC:
RF Emissions per FCC Part 15 / Canada CS-03 / European EN55022 : Class A
EN55024: European Union (RF Immunity/Susceptibility)
EN61000-4-2: Electrostatic Discharge
EN61000-4-3: Radio Frequency Interference
EN61000-4-4: Electrical Fast Transients
EN61000-4-5: Surge
EN61000-4-6: Conducted Radio Frequency Interference
EN61000-4-8: Magnetics
EN61000-4-11: Dips and Intermuts
The listed products herewith comply with the requirements of the EMC Directive 2004/108/EC and the Low Voltage Directive 2—6/95/EC and carry the CE-Marking accordingly.

All listed products meet the RoHS guidelines for electronic components, and hardware. This complies with the requirements of the (RoHS 2) DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 governing the use of the substances: Lead, Mercury, Hexavalent Chromium, Cadmium, Polybromated Biphenyls, Polybromated Diphenyl Ether, Pentabromodiphenyl Ether, Octabromodiphenyl Ether, Decabromodiphenyl Ether.

Stephen Metzger
Vice President of Engineering
Direct all specific inquiries to the ZeeVee, Inc. Engineering Department
December 2014

Contact ZeeVee

For support, repairs, and warranty service contact the distributor where you purchased the product. For additional questions call +1(877) 4-ZEEVEE (1.877.493.3833) or e-mail support@zeevee.com.

Representatives are available from 9:00 AM to 6:00 PM, Monday through Friday (Eastern Time).

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