



madVR Envy

JVC Laser Projector Setup Guide

NZ7/NZ8/NZ9

RS2100/RS3100/RS4100

www.madvrenvy.com

Rev. 1.08

1.0 Introduction

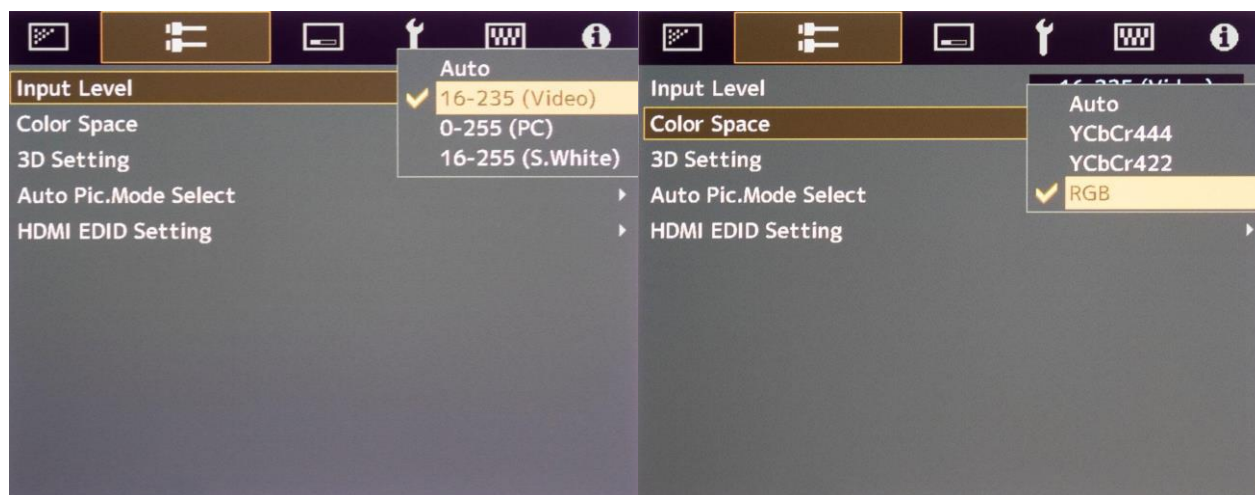
Welcome to the madVR Envy Setup Guide for the JVC NZ7, NZ8, and NZ9 (RS2100, RS3100, and RS4100) series of laser projectors. This guide shows how to configure your projector for SDR (Standard Dynamic Range) and HDR (High Dynamic Range) content, to get the best results from your Envy. This guide covers topics specific to using the JVC with the Envy. For general JVC setup information, please refer to the [JVC Owner's Manual](#).

2.0 Projector Settings

These first sections will deal with configuring the proper settings on the Projector itself. After this, we will address the settings in the Envy.

2.0.1 Input Level and Color Space

First, we want to set the Input Level and Color Space for the projector. Having a defined setting most of the time is desirable, as there are cases when the projector will use an incorrect setting if on “auto”, resulting in an inaccurate image. Set the Input level to “16-235 (Video)” and then set Color Space to “RGB”.

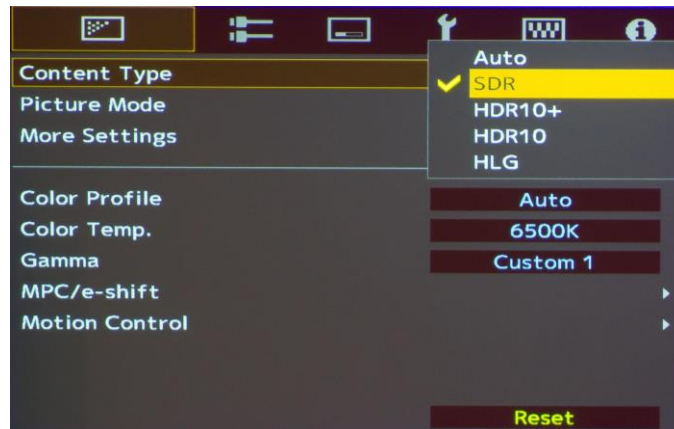


Note: Most video sources use 16-235, and 0-255 is mainly used with output from a computer. It is important to avoid a mismatch between the Source and the Display, so that black and white levels are correct.

2.0.2 Using the Same Picture Mode for SDR and HDR

If you wish to use the same light output for SDR and HDR content (e.g., the same laser level and lens aperture for both modes), you can use one picture mode simply by following the instructions in this section. This is common in setups with larger screens, when maximum brightness is desired regardless of SDR vs HDR content.

First, from the JVC main menu, set the Content Type to SDR, and **not Auto**, as shown here:



Lastly, we need to configure various other settings in this menu. We recommend setting Picture Mode to **“Natural”**, Color Profile to **Auto**, Color Temperature to **6500K**, and a Gamma to **2.4**. Other settings in this Picture Mode can be set to your preference (Laser Level, Dynamic Control, Aperture, etc.), like shown below:



2.0.3 Using Different Pictures Modes for SDR and HDR

If you wish to use different light output for SDR and HDR content (e.g., lower brightness for SDR and higher brightness for HDR), follow the instructions in this section. This is useful when the user feels that their HDR setup is too bright for viewing SDR content. With this setup, the JVC automatically selects the correct Picture Mode for both SDR and HDR signals.

2.0.3.1 HDR Picture Mode Configuration

Let's begin by setting up the Picture Mode to be used for HDR content. Set Content Type to **HDR10** and Picture Mode to User 4.

For the NZ7/RS2100, the Color Profile should be **BT.2020 (Normal)**. For the NZ8/NZ9/RS3100/RS4100, use either **BT.2020 (Normal)**, which uses no Cinema Filter, or **BT.2020 (Wide)**, which uses the Cinema Filter, depending on your preference. Since the Wide mode reduces brightness by 25-30%, many users choose **BT.2020 (Normal)** because they prefer a brighter image and the difference in gamut coverage can be indiscernible in most scenes. The Color Temp. should be set to **6500K**.





Next, select the Tone Mapping menu line in the **User 4** Picture Mode. This brings up a sub-menu with several options. Select **Custom 1**. Then go to the Correction Value menu line, and in the sub-menu, select **Import**.

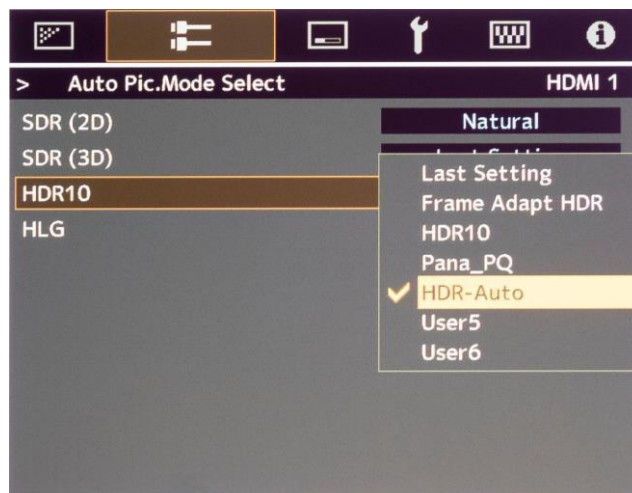


The default Gamma value when selecting “Import” is 2.2. You therefore need to select 2.2 in the Env’s Transfer Function settings. We cover this in section 4.0.1.2.

To avoid confusion later about the purpose of this Picture Mode, we recommend assigning a custom name, such as “HDR-Auto”.



So that this picture mode is automatically selected for HDR content, select the “Auto Pic.Mode Select” option from the **Input Signal Menu**, as pictured below. Under **HDR10**, select **User 4** (or “HDR-Auto”, or whatever you named it above). The JVC will then automatically select this Picture Mode whenever it receives an incoming HDR signal.

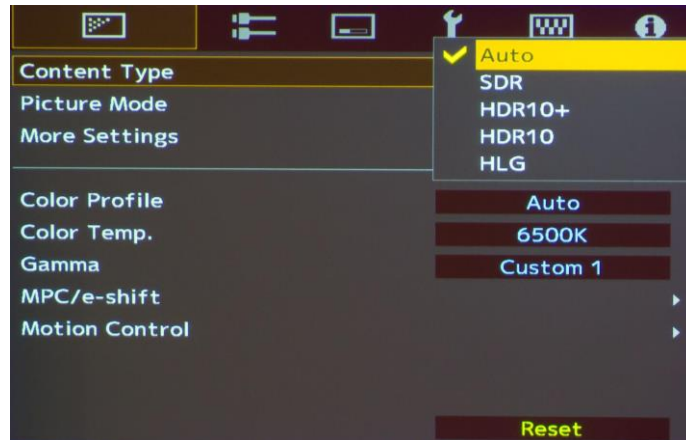


Important: When using the automatic selection of SDR vs HDR modes, you must set the HDR Flag option in the Envy menu to On (see section 4.0.1.2).

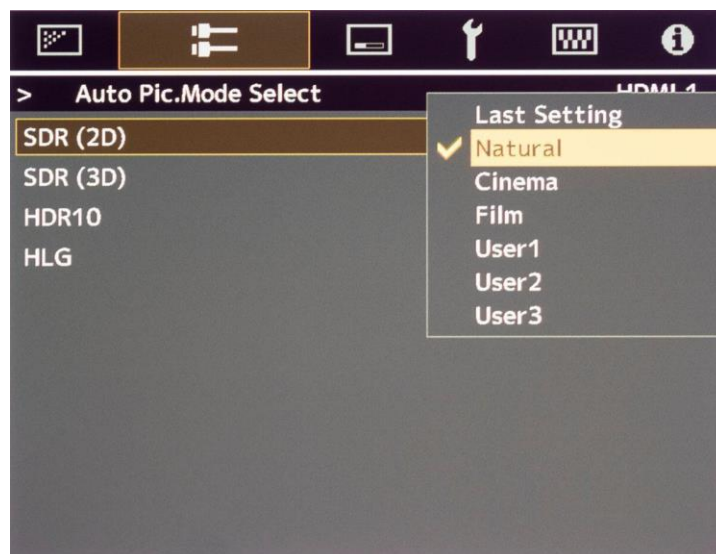
2.0.3.2 SDR Picture Mode Configuration

Next, we now need to set up the Picture Mode to be used for SDR content. To do this, follow the steps outlined in Section 2.0.2. However, there are two changes that need to be made.

First, instead of setting the Content Type to SDR like described in Section 2.0.2, change the Content Type to **Auto**, as shown below.



Next, use the “Auto Pic.Mode Select” menu available within the JVC Input Signal Menu (second menu option from the Left). Select SDR(2D) and then select “Natural” (or whichever Picture Mode you set up in Section 2.0.2 for SDR).



3.0 Other Projector Settings

There are a few other settings that need to be made in the Projector, in addition to the settings covered in section 2.0. For these settings, go to the Installation Menu (third option from the Left).

3.0.1 Anamorphic Mode

Always set the Anamorphic option to Off. If you have an anamorphic lens, this option should still be set to Off. Instead, set the Anamorphic lens option in the Envy Screen Configuration menu so it uses its AI-based anamorphic stretch instead of the JVC anamorphic stretch.

3.0.2 Aspect

At the bottom of the Installation Menu, set Aspect to “Auto”. The output from the Envoy will be set in its Display Configuration Menu (see below), and the Auto setting will allow the Projector to use the correct resolution automatically.



4.0 Envoy Settings

This section covers important settings within the Envoy menus.

Important: Before making these changes, you must select "Base Configuration" instead of "Active Configuration" from the bottom of the Envoy menu, as can be seen in the screenshot below. This will make these settings the new defaults (otherwise your changes will only be temporary).

4.0.1 Envoy Display Calibration Menu

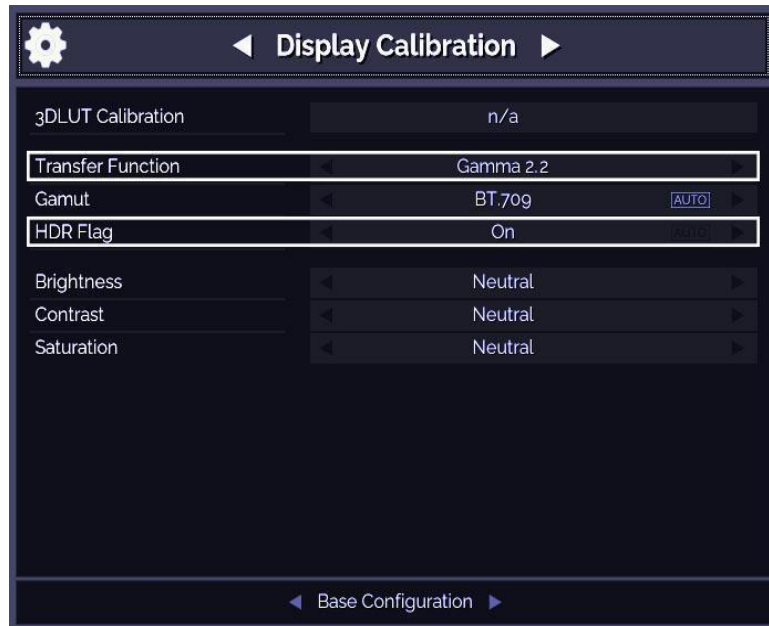
4.0.1.1 Transfer Function

If you are not using a 3D LUT, you must set the Transfer Function in this Envoy menu to match the Gamma value you set in the JVC.

- If you used the Automatic Picture Mode Selection discussed in section 2.0.3.1, you must use a Gamma of 2.2. This is shown in the Graphic below.
- If you used the Manual Picture Mode Selection covered in section 2.0.3.2, you must use a Gamma of 2.4, or whatever Gamma is selected in that Picture Mode, as in the example shown in section 2.0.3.2.

4.0.1.2 HDR Flag

- If you only used the “Same Picture Mode for SDR and HDR” option, as covered in Section 2.0.2, and did not follow Section 2.0.3, the HDR Flag option must remain set to Off (the default setting).
- If you used the “Different Pictures Modes for SDR and HDR” option, as covered in section 2.0.3, you *must* set the **HDR Flag** in the Envy menu to On and *must* also set the Transfer Function in the Envy to **Gamma 2.2**, as pictured below.



4.0.2 Envy Display Configuration Menu

4.0.2.1 Levels

Just as we set the Input Level in the Projector to Limited (16-235), we need to set the Envy to do the same, as shown below. In the Envy, this is called “Limited Range (TV).”

4.0.2.2 Peak Luminance

Peak Luminance is a measure (in “nits” or foot lamberts) of the brightest image your display achieves for a specific system configuration. This depends on several factors, including your display’s lumens, lens position, iris position, Laser Level, calibration settings, throw distance, and your screen size and gain.

The Envy uses the peak luminance measure to render all scenes according to director's intent, including very bright and very dark scenes. Therefore, it is important to specify an accurate Peak Luminance setting.

The best way to determine your peak luminance is manually put the JVC into the Picture Mode used for HDR and then display a 100% IRE White pattern. Then measure it using third-party calibration software or a handheld LUX meter. The Envy has this pattern built-in, and it can be displayed using the Envy menu system.

If measuring with calibration software, enter the “cd/m2” measurement. If using a LUX meter, convert the LUX reading to nits by multiplying it by the Screen Gain and then dividing by Pi (3.14).

After determining your peak luminance, enter it in the area shown below.



5.0 Quick Sanity Check

After completing the setup of the Envy with your JVC projector, we recommend reviewing the following as a final “sanity check” to help ensure everything is set up optimally:

- Play any 4K HDR movie (except Gemini Man or Billy Lynn). Check the Envy Incoming Signal Menu (press OK on the Envy remote when no Envy menu is active) and make sure that the “Framerate” shows 23.976. If instead it shows 59.94, and you are using an Apple TV or Kaleidescape, then your source device(s) are not set up for proper playback – check the Envy Apple TV and Kaleidescape Setup Guides on the madVR Envy website for more information. Or if you are using a different source device, check its settings and make sure the source device outputs in a “native” or “direct” mode.
- While playing the 4K HDR movie, check the Envy Incoming Signal Information to make sure the “Transfer Function” shows “HDR”. If not, Envy is not receiving HDR from the source player. This could be caused by a “rogue” device in the HDMI chain, or if using an AVR like the Denon/Marantz, make sure it is set to use “Enhanced” HDMI, so that it outputs the full 18 Gbps bandwidth and is not restricted to 9 Gbps.
- While on the Envy Incoming Signal menu, press the right arrow once to access the Outgoing Signal Information. If you are not using the Envy Extreme’s MotionAI feature, make sure that the “Framerate” shown here matches the “Framerate” from the Incoming Signal Information menu (in this example, both should show 23.976Hz). If you are using MotionAI, then it is normal for the Outgoing Signal Framerate to be 48Hz, 60Hz, or 120Hz depending on your MotionAI settings, even for a 23.976Hz incoming signal.
- When playing HDR content, make sure the **Transfer Function** in the Outgoing Signal Information shows **SDR**, even though the content is HDR, if using the “Same Picture Mode for SDR and HDR section” as covered in section 2.0.2. Otherwise, if using the “Different Pictures Modes for SDR and HDR” option as covered in 2.0.3, the Transfer Function in the Outgoing Signal Information must show **HDR(PQ)**. If it does not, make sure the HDR Flag is set to On per section 2.0.3.1. Note that when playing SDR content, the Transfer Function in the Outgoing Signal Information should always show SDR, regardless.
- If the colors look undersaturated or oversaturated, check the Envy Outgoing Signal Information and verify that the Outgoing “Colorimetry” matches the color space you expect for the current content being played (e.g., “BT.2020” or “BT.709”), and check the JVC Picture Mode menu to confirm the projector is using the corresponding correct color space (revisit steps 2 and 3 in the Projector Settings section).