HDfury Integral 4K60 & AVTOPcontroller CalMAN Setup Guide

When the HDfury Integral 4K60 is placed in the HDMI signal path between a non-HDR test pattern source and an HDR display, the test pattern source is made to look like an HDR10 source to the display.

CalMAN simplifies control of both the non-HDR test pattern source and the Integral 4K60 by providing two modes of operation. CalMAN provides the required Integral 4K60 metadata to manually cut and paste into the user interface for the Integral 4K60, which may need additional steps like manually interrupting the signal. Or, when the Integral 4K60 is supplemented with AVTOPcontroller software (http://hdr.avtop.com), CalMAN automatically controls the Integral 4K60 through the AVTOPcontroller interface.

This setup guide assists you in setting up and using the HDfury Integral 4K60 and a non-HDR test pattern source with CalMAN to test and calibrate UHD displays in their HDR10 mode.

Supported CalMAN Workflows:

- All workflows that support an external hardware pattern generator.

Integral 4K60 Firmware Required Version:

- Current version (can be found at http://www.hdfury.com)

Integral 4K60 Control Connection:

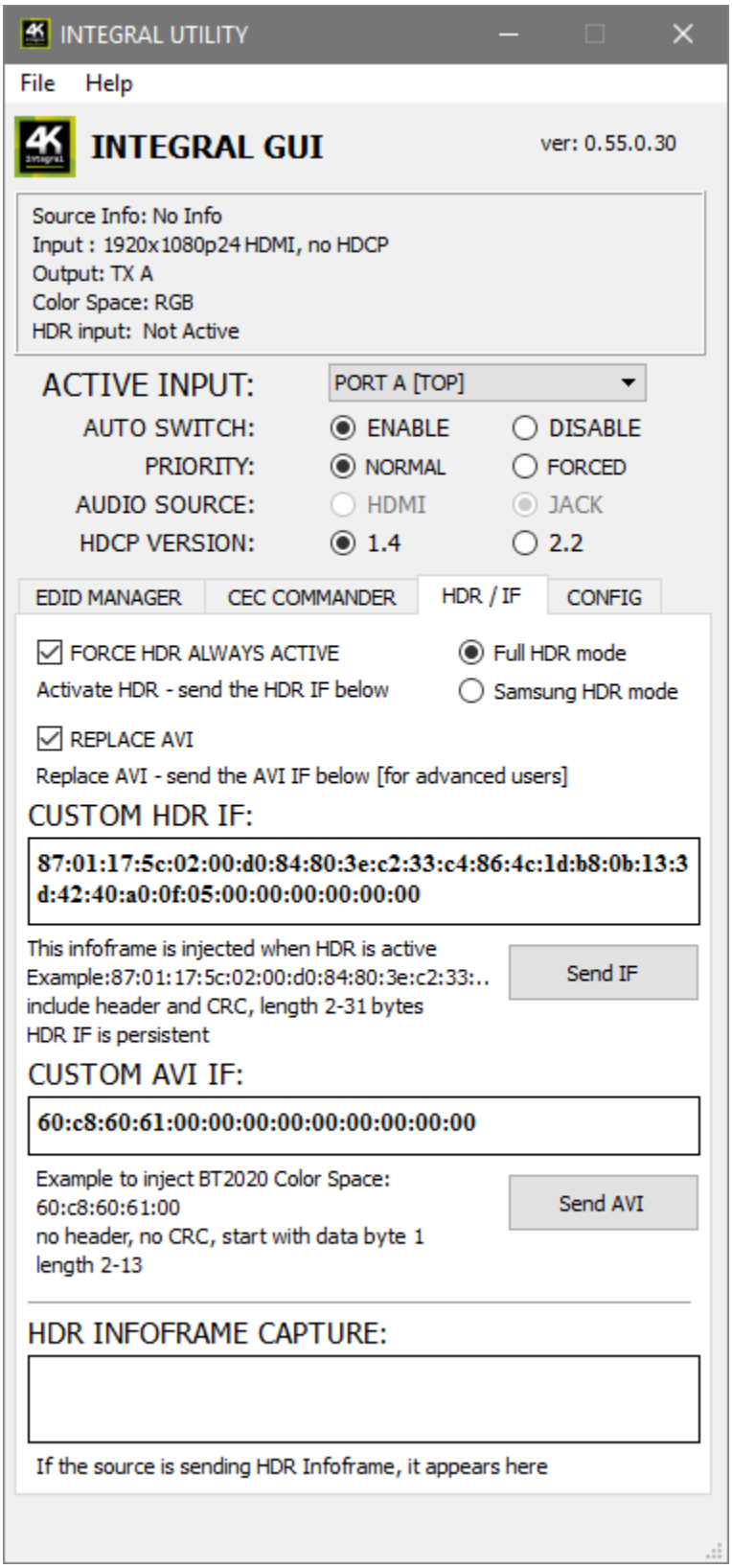
- USB

AVTOPcontroller Required Version (if used):

- Version 1.08 or newer

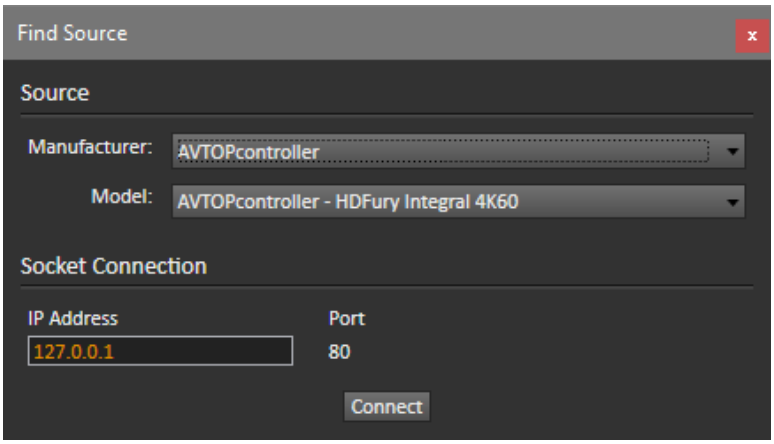
Connect and Configure the Integral 4K60

1. Connect your test pattern source to one of the HDMI inputs of the Integral 4K60.
2. Connect the HDMI output of the Integral 4K60 to the HDR display under test.
3. Install the USB driver for the Integral 4K60 on a Windows PC (can be your CalMAN calibration computer), from the following location: https://www.hdfury.com/tools/Silabs_Driver_v4.zip
4. Install the Integral USB GUI on the Windows PC, from the following location: https://www.hdfury.com/shop/splitters/integral-4K60-444-600mhz/
5. Connect the Integral 4K60, via USB, to the Windows PC.
6. Open the Integral USB GUI software (see below).
7. Under the “HDR / IF” tab:
   - Check the “FORCE HDR ALWAYS ACTIVE” option box.
   - Select the “Full HDR mode” radio button.
   - Check the “REPLACE AVI” option box.
8. Close the Integral USB GUI software.
9. On the Integral 4K60 unit, set the Audio Settings slide switch to the [Audio Replaced] position.

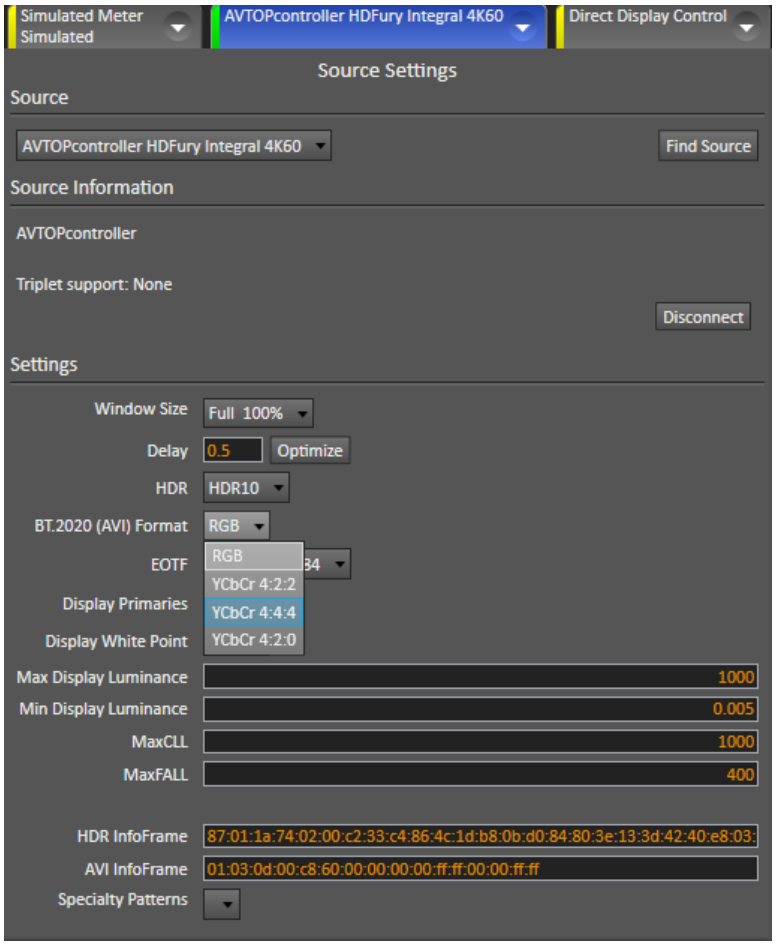

INTEGRAL UTILITY
File
Help
INTEGRAL GUI
ver: 0.55.0.30
Source Info: No Info
Input : 1920x1080p24 HDMI, no HDCP
Output: TX A
Color Space: RGB
HDR input: Not Active
ACTIVE INPUT:
PORT A [TOP]
AUTO SWITCH:
ENABLE
DISABLE
PRIORITY:
NORMAL
FORCED
AUDIO SOURCE:
HDMI
JACK
HDCP VERSION:
1.4
2.2
EDID MANAGER
CEC COMMANDER
HDR / IF
CONFIG
FORCE HDR ALWAYS ACTIVE
Activate HDR - send the HDR IF below
Full HDR mode
Samsung HDR mode
REPLACE AVI
Replace AVI - send the AVI IF below [for advanced users]
CUSTOM HDR IF:
87:01:17:5c:02:00:d0:84:80:3e:c2:33:c4:86:4c:1d:b8:0b:13:3d:42:40:a0:0f:05:00:00:00:00:00:00
This infoframe is injected when HDR is active
Example:87:01:17:5c:02:00:d0:84:80:3e:c2:33:..
include header and CRC, length 2-31 bytes
HDR IF is persistent
Send IF
CUSTOM AVI IF:
60:c8:60:61:00:00:00:00:00:00:00:00:00
Example to inject BT2020 Color Space:
60:c8:60:61:00
no header, no CRC, start with data byte 1
length 2-13
Send AVI
HDR INFOFRAME CAPTURE:
If the source is sending HDR Infoframe, it appears here

Test and/or Calibrate a UHD display in HDR10 mode, without AVTOPcontroller software

1. Open the CalMAN software.
2. On the CalMAN Source tab, click the Find Source button.
3. On the Find Source dialog (see below), under Manufacturer, select “AVTOPcontroller” (even if AVTOPcontroller software is not installed on the PC with Integral 4K60).
4. Click *Connect*.



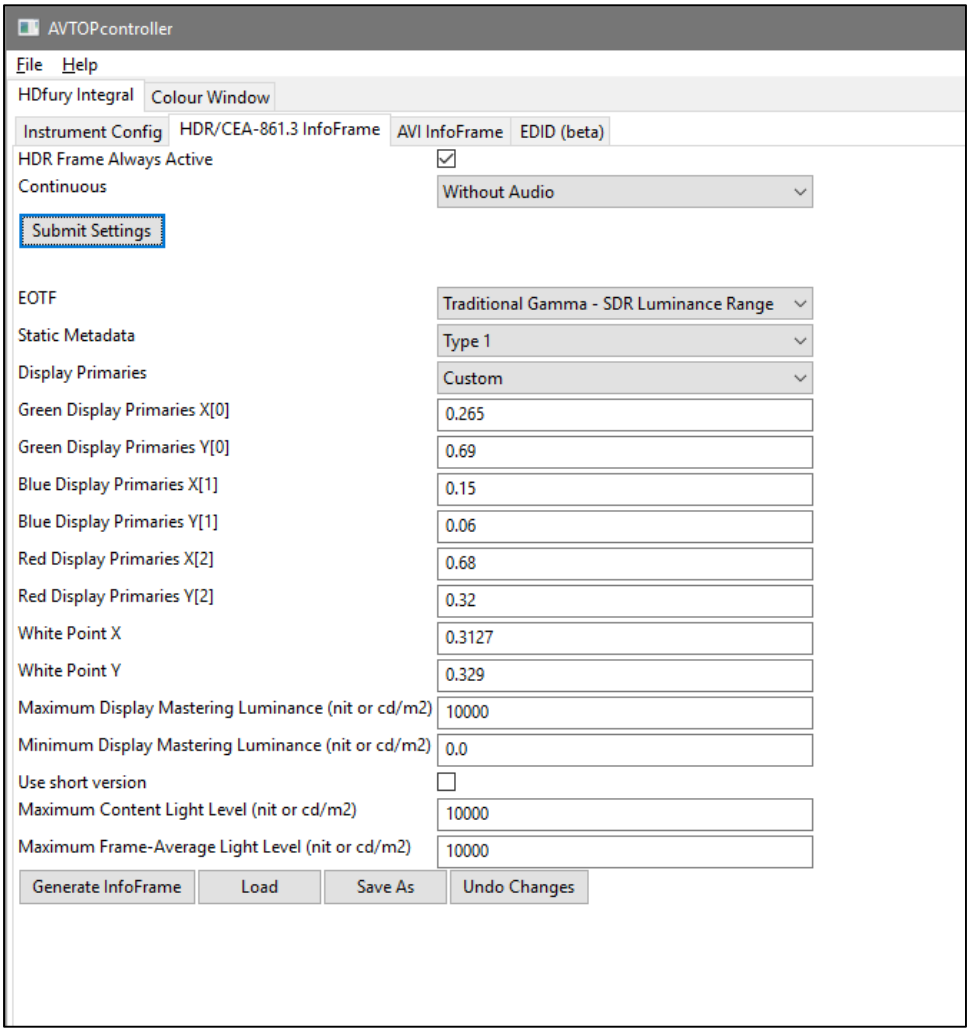
5. On the CalMAN Source Settings tab (see below), in the *HDR* drop down box, select “HDR10.”
6. In the *BT.2020 (AVI) Format* drop down box, select select the color format that the pattern generator is sending (RGB, YCbCr 4:2:2, YCbCr 4:4:4, or YCbCr 4:2:0) so that CalMAN can generate the correct AVI InfoFrame.



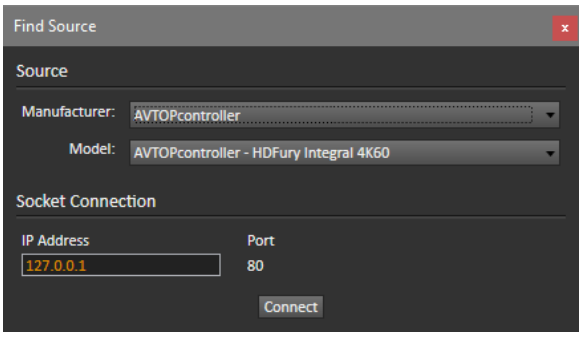
7. On the CalMAN Source Settings tab (above), select and copy the data in the HDR InfoFrame text box.
8. Open the Integral USB GUI software (page 2).
9. In the Integral USB GUI, under the “HDR / IF” tab, paste the HDR data into the “CUSTOM HDR IF:” box.
10. On the CalMAN Source Settings tab, select and copy the data in the AVI InfoFrame text box.
11. In the Integral USB GUI, under the “HDR / IF” tab, paste the AVI data into the “CUSTOM AVI IF:” box.
12. Connect CalMAN to your test pattern source in the normal manner.
13. Open the CalMAN “HDR10 Calibration” workflow and advance through the workflow to test and/or calibrate the HDR10 display.

Test and/or Calibrate a UHD display in HDR10 mode, with AVTOPcontroller software

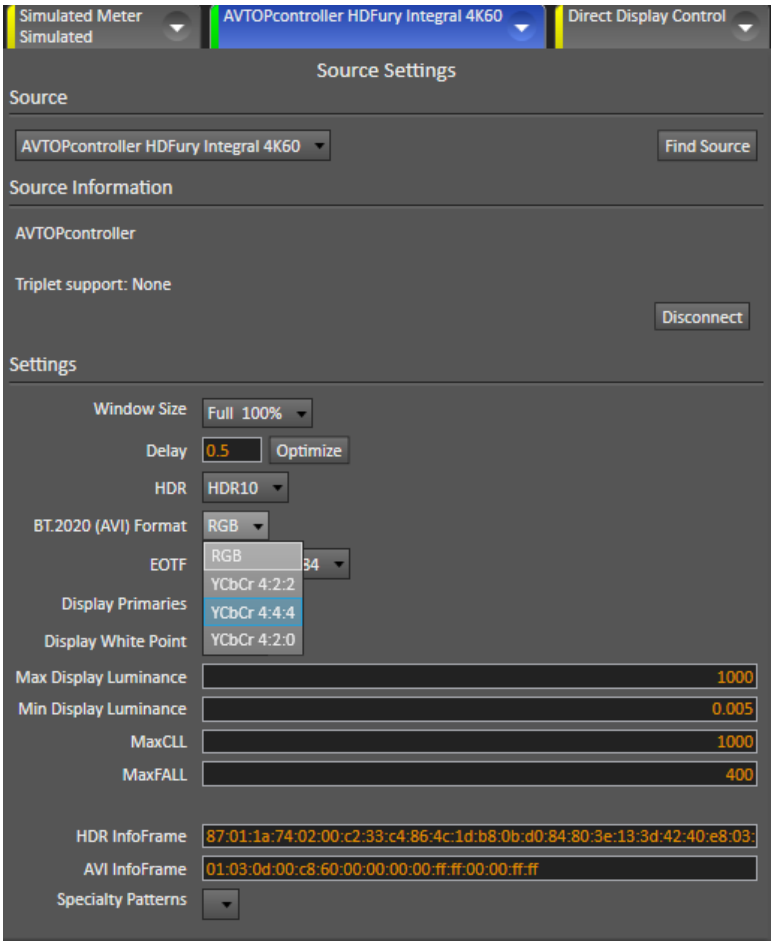
1. Run the AVTOPcontroller software.
2. In the AVTOPcontroller software, on the HDR tab (see below), check the box for “HDR Frame Always Active.”
3. Click the “Submit Settings” button.



4. Open the CalMAN software.
5. On the CalMAN Source tab, click the Find Source button.
6. On the Find Source dialog (see below), under Manufacturer, select “AVTOPcontroller.”
7. Click *Connect*.



8. On the CalMAN Source Settings tab (see below), in the *HDR* drop down box, select "HDR10."
9. In the *BT.2020 (AVI) Format* drop down box, select select the color format that the pattern generator is sending (RGB, YCbCr 4:2:2, YCbCr 4:4:4, or YCbCr 4:2:0) so that CalMAN can generate the correct AVI InfoFrame.



14. Connect CalMAN to your test pattern source in the normal manner.
15. Open the CalMAN "HDR10 Calibration" workflow and advance through the workflow to test and/or calibrate the HDR10 display.