SAMSUNG QLED TV

This guide is a Work-In-Progress

Currently Supported Model(s): Q9, Q900, Q8 (2018)

Other models will be supported in future CalMAN updates.

2018

Quick Reference Guide

Introduction

This guide is designed as a reference to the Samsung HDR and SDR custom workflows in CalMAN 2018 R3. Those workflows will walk you though the process step-by-step, pre-configures most needed CalMAN Settings, and should be the primary resource during calibration.

CalMAN can automatically calibrate a 2018 Samsung QLED TV's two-point white balance controls, 10-point grayscale controls, and CMS color gamut controls, in HDR10 and HDTV SDR modes. This assures the most accurate rendering of both HDR and SDR picture content.

CalMAN Required Version

- CalMAN 2018 v5.9.1 or newer

CalMAN Required Workflows

CalMAN 2018 includes two custom workflows specifically designed for the 2018 AutoCal process. These will walk you through each step of the calibration

- Samsung TV SDR Workflow
- Samsung TV HDR Workflow

Required Hardware

- Samsung Q9 (2018) QLED TV
  - Support for other 2018 models is in progress, and will be released in future CalMAN updates.
- HDR and Dolby Vision Compatible Pattern Generator
  - VideoForge PRO
  - Murideo Six-G
- HDR Compatible Meter
  - SpectraCal C6 or C6 HDR2000 are both suitable for this purpose
- Serial Connection (See Serial Connection Information page for more details)
  - RS232 to USB adapter
  - 3.5mm (Headphone-Style) Jack (EX-Link) to DB9 Female Serial Cable

Serial Connection Information

Samsung Control Setup

To connect the CalMAN calibration computer to a Samsung QLED TV:

1. Connect an ExLink adapter (3.5mm headphone jack to DB9 serial cable) between the 3.5mm jack on the side of the Samsung OneConnect box labeled “External Sync” and an RS232 port on your PC or to a USB to serial converter.
2. If you are using a USB to serial converter, in Windows Device Manager, under “Ports (COM & LPT),” look for a “USB Serial Port (COMx)” listing.
3. Note the listed COM port (COMx) of the serial converter.

3.5mm Headphone Jack to DB9 Female Serial Cable

https://www.amazon.com/dp/B004T9BBJC/ref=cm_sw_r_cp_api_1rB5ybQ1Y 6AP0

USB to RS232 Serial Converter

For connecting to a Samsung TV with a computer that does not have an RS232 port, we recommend the FTDI USB to RS232 converter. Extensive testing has determined that this FTDI converter, which includes a data buffer, is the most reliable adapter to use for CalMAN device control.

Sources

https://shop.clickandbuild.com/cnb/shop/ftdichip?op=catalogue-productsnull&prodCategoryID=293&title=RS232+Cables

http://www.alliedelec.com/ftdi-us232r-10-bulk/70069416/

https://www.amazon.com/s/ref=nb_sb_noss_1?url=searchalias%3Daps&field-keywords=us232r-10

USB Driver download for FTDI converter

http://www.ftdichip.com/Products/Cables/USBRS232.htm

Or, CalMAN Device Driver Pack

http://www.spectracal.com/download.php?id=3

Hardware Connection

To prepare to calibrate your Samsung QLED TV, From the Hardware Connect workflow page:

1. Connect your meter.
    1.1. Connect your meter to a computer control port.
    1.2. Click the Find Meter button to connect your meter to CalMAN.
    1.3.Select the Target Display Type (LCD (LED Quantum Dot) - Samsung 2018)
2. Connect your reference test pattern source.
    1. Connect your pattern source to the TV's HDMI port.
    2. Click the Find Source button to connect your source to CalMAN.
    3. Select the pattern Window Size. We recommend using Constant APL 10 size for SDR BT.709 calibration, and Window 10% for HDR calibration.
    4. We recommend a 2 second Pattern Delay
3. Connect the Samsung QLED Television.
    1. Connect to your Samsung QLED TV using the RS-232 serial cable connected to the "EX-LINK" port on the TV's "One Connect Box". See previous page for needed USB adapter and serial cable.
    2. Click the Find QLED TV device button and choose the correct Samsung model in the dialog box that appears. Make sure to select the correct COM port that is being used and click connect

SDR Calibration

CalMAN Settings

Meter Target Display Type

- Select “LCD (LED Quantum Dot) - Samsung 2018”

Pattern Generator Settings

- Pattern Delay - 2 Seconds
- Pattern Size - Full 100%

Picture Modes

Using Direct Display Controls inside of CalMAN, you can choose from a variety of picture modes to calibrate in the SDR color space.

Available SDR Picture Modes:

- Movie
- CAL-DAY
- CAL-NIGHT

Multiple picture modes may be calibrated to account for changes in ambient lighting.

After selecting your picture mode, use the “Full DDC Reset” option in CalMAN to reset the mode to its factory defaults.

HDR Calibration

CalMAN Settings

Meter Target Display Type

- Select “LCD (LED Quantum Dot) - Samsung 2018”

Pattern Generator Settings

- Pattern Delay - 2 Seconds
- Pattern Size - Full 100%
- HDR10 Signal - Enabled

Picture Modes

In HDR10 mode, the TV allows one picture mode to be calibrated

Available HDR Picture Mode:

- Movie HDR

After selecting your picture mode, use the “Full DDC Reset” option in CalMAN to reset the mode to its factory defaults.

HDR Multi-CMS

For their 2018 QLED TV's, Samsung has added a new calibration feature called Multi-CMS. It is implemented as three separate 6-axis CMS controls. You will perform the CMS AutoCal three times, at 50%, 75% and 100% Saturation points.

You will select the saturation point you are currently calibrating by selecting the same percentage on the upper right of the Multi-CMS page, then again on the AutoCal popup dialog box.

We recommend the order as 50% -> 75% -> 100%. After you have run the AutoCal for each saturation point, you will then move on to the verification steps (ColorChecker, P3 Sweeps)

Note: Workflow page illustrates where settings need to match.

About/Contact

About Portrait Displays

Portrait Displays, Inc., since 1993, is a leading application software provider (ASP) for PC, smartphone, and tablet displays. The Portrait Displays team now includes **SpectraCal**, the world's leading provider of video display calibration software. The combined companies offer value-added, feature-rich solutions to both OEM display manufacturers and end users seeking improved accuracy and manageability of their displays.

Portrait Displays, an Intel Capital Portfolio company, is a private corporation with headquarters in Pleasanton, California, USA with representatives in Europe, Taiwan, China, Japan, and Korea.

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