

## Colorimetry Research CR-100 Colorimeter CalMAN Setup Guide

The CR-100 is a rugged, sensitive, fast colorimeter that is powered directly from the connected USB port.

### Required CalMAN Version

- Version 5.4.0 or later

### Meter USB Driver

- Available at <http://www.colorimetryresearch.com/downloads/#firmware>

### USB Driver Installation

The CRI meter USB driver should be installed before the meter is connected to a computer USB port for the first time.

#### Windows 7

1. Install the CRI meter USB driver, available for download from the Colorimetry Research site, <http://www.colorimetryresearch.com/downloads/#firmware>.

#### Windows 8

The Colorimetry Research USB driver is unsigned, requiring the following procedure for Windows 8:

1. While holding down the Shift key, go to Settings\Power\Restart
2. On shutdown, you will be presented a list of options. Select Troubleshoot.
3. On the Troubleshoot menu, select Advanced Options.
4. On the Advanced Options menu, select Startup Settings.
5. Click Restart - computer will reboot. This will bring you to Startup Settings.
6. Select #7 (Disable driver signature enforcement).

When Windows restarts, Driver Signature Enforcement is disabled.

7. Install the CRI meter USB driver.

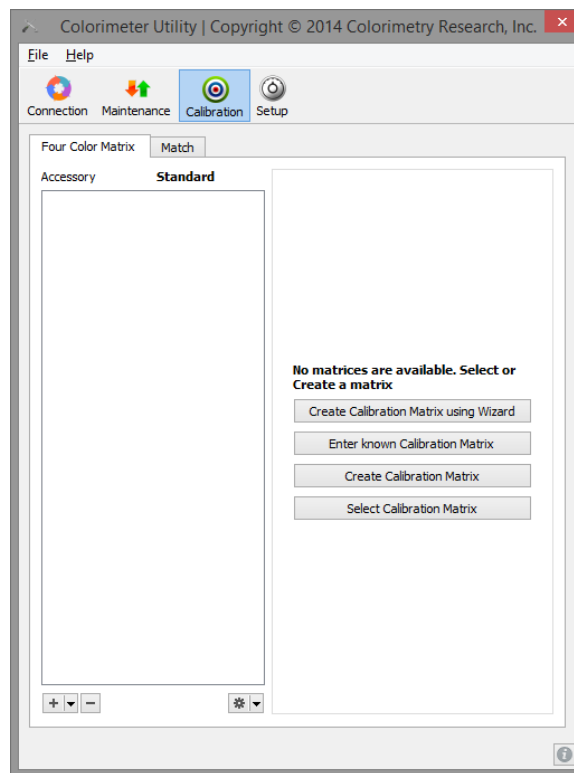
After a normal reboot, Driver Signature Enforcement will re-enable. All drivers installed while it was disabled will continue to function properly.

To check the USB driver installation:

1. Connect the CRI meter to a USB port on the computer.
2. Open Device Manager from the Control Panel (or click the Start button and type “device manager”).
3. On the Device Manager window, check that, under “Ports (COM & LPT),” there is a listing for “Colorimetry Research, Inc. Meter (COMx).”

## Calibration Matrices

CalMAN is able to access any meter calibration matrices in the CRI meter's internal user memory. As supplied from the factory, there are calibration matrices in the factory memory, but none in the user memory (Figure 1). Before using the meter with CalMAN, you need to copy any of the calibration matrices that you wish to use from the factory memory to the user memory. You need to check this by running the "Colorimeter Utility," supplied by CRI.



**Figure 1: The Calibration tab on the Colorimeter Utility software shows any calibration matrices that are loaded in the meter's user memory.**

To copy calibration matrices from the meter's factory memory to the user memory:

1. In the Colorimeter Utility software, on the Calibration tab, click the Select Calibration Matrix button, to the lower right (Figure 1).

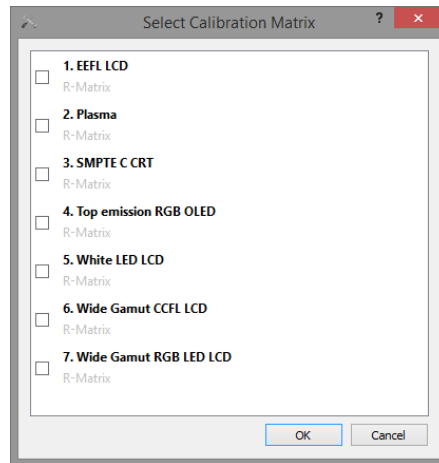


Figure 2: Select any or all of the calibration matrices that you may wish to use with the CRI meter.

2. On the Select Calibration Matrix dialog that opens (Figure 2), select any or all of the calibration matrices that you may wish to use with the CRI meter.
3. Click OK.
4. The Calibration tab should now show the calibration matrices that you selected (Figure 3).

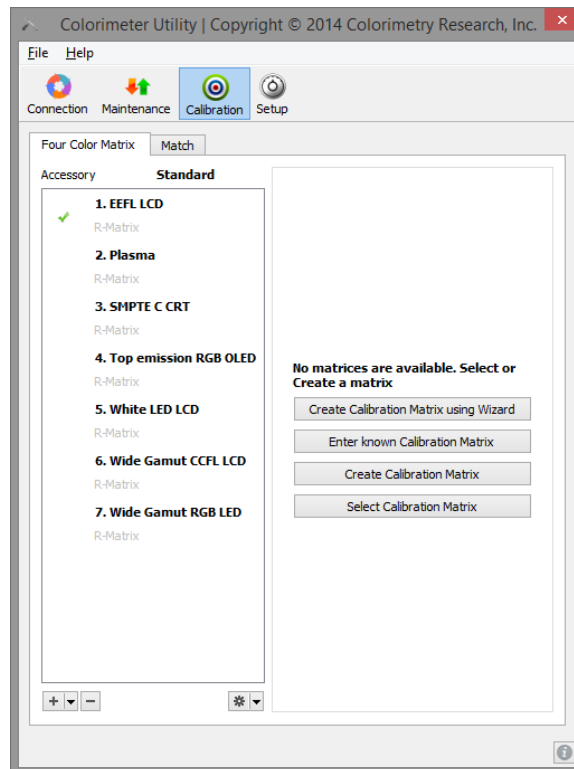


Figure 3: The Calibration tab on the Colorimeter Utility software shows the calibration matrices that you loaded to the meter's user memory.

### CalMAN Meter Connection Procedure

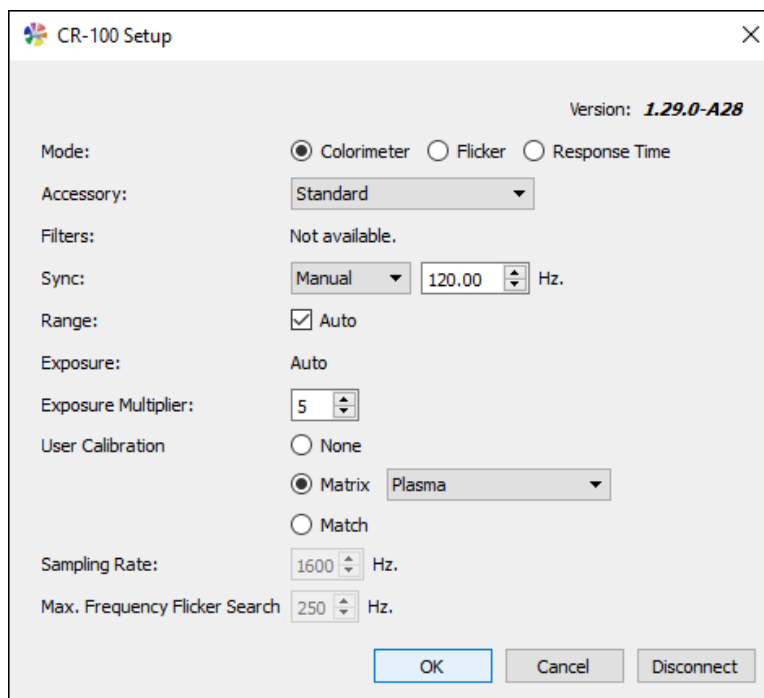
1. On the Meter Settings tab, click *Find Meter*.
2. On the *Find Meters* popup dialog:
  - a. Leave Com Port set to *auto*, or, select the com port that was assigned to the meter (shown in Device Manager, under *Ports (com & LPT)*).
  - b. Check the box for “Colorimetry Research Inc Meters (USB).”
  - c. Click *Search*.

The screenshot shows the 'Meter Settings' dialog box. At the top, it is titled 'Meter Settings'. Below the title, there is a section labeled 'Meter' containing a dropdown menu with the value 'Colorimetry Research CR-100 - 01000006' and a 'Find Meter' button. Below this is 'Meter Mode (Target Display Type)' with a dropdown set to 'Plasma' and 'Sync Mode' set to 'Off'. A section titled 'METER NOTES' contains the text: 'If you are getting readings that are inconsistent try enabling meter Sync modes.' Below that is 'Meter Information' with a 'Disconnect' button. The 'Meter Exposure Modes' section includes 'Standard Exposure Mode' set to 'User Mode', 'Low Light Handler' checked as 'Enabled', 'Low Light Mode' set to 'Auto - 60 Samples (std deviation avg)', and 'Low Light Trigger' set to '1 cd/m²'. The 'Profiles and Offsets' section has 'Meter Profile' set to 'None' and a 'New/Edit' button.

3. On the Meter Settings tab (above):
  - a. Select the Meter Mode for your target display type.
  - b. Select the *Sync Mode* that produces the most consistent measurements on the target display (check with Read Continuous on 100% White).
    - i. **Off**: The default sync mode for the CRI meter. This is the fastest mode of meter operation, but may not provide consistent measurements on some display types.

- ii. **On:** Takes one sync measurement to synchronize the meter with the display refresh rate, then performs all of the series or continuous data measurements. This is only slightly slower, but may not provide optimum sync with displays that have different refresh rates at lower luminance levels.
  - iii. **Auto:** Takes a sync measurement prior to each data measurement. This is slower yet, but provides optimum sync with all display types, at all luminance levels.
- c. If you wish to use the extended exposure settings available in the CRI measurement application (shown below), make your settings in the CRI app. Then, on the CalMAN Meter Settings tab (above), select “User Mode” for the CalMAN exposure mode.

Your main use of this capability might be to take have the CR-100 take multiple readings and average them (setting the Exposure Multiplier) before sending the results to CalMAN, as this is much faster than having CalMAN take multiple averaged readings. This might be done to improve the continuous reading stability on displays such as plasma.



The image shows a screenshot of the 'CR-100 Setup' dialog box. The window title is 'CR-100 Setup' and the version is '1.29.0-A28'. The settings are as follows:

- Mode:  Colorimeter  Flicker  Response Time
- Accessory: Standard (dropdown)
- Filters: Not available.
- Sync: Manual (dropdown) 120.00 Hz (spinners)
- Range:  Auto
- Exposure: Auto
- Exposure Multiplier: 5 (spinners)
- User Calibration:  None  Matrix Plasma (dropdown)  Match
- Sampling Rate: 1600 Hz (spinners)
- Max. Frequency Flicker Search: 250 Hz (spinners)

Buttons at the bottom: OK, Cancel, Disconnect.