



LCD Monitor

Palette Master Element How to Use Guide

Proprietary Calibration Software

Palette Master Element software simplifies calibration and reliably produces accurate color results.

Palette Master Element can be used to fine tune the color engine in SW series monitors and fully supports certain X-Rite / Calibrite / Datacolor colorimeters.

NOTE:

- Illustrations for reference only. Vary by purchased model.
- To find out the fully supported colorimeters, visit [BenQ website](#) for the latest information.

I. Launching Palette Master Element

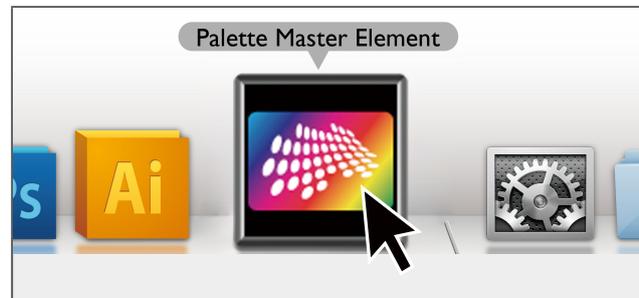
For Windows

Double-click on the icon



For Mac

Double-click on the icon in the Dock

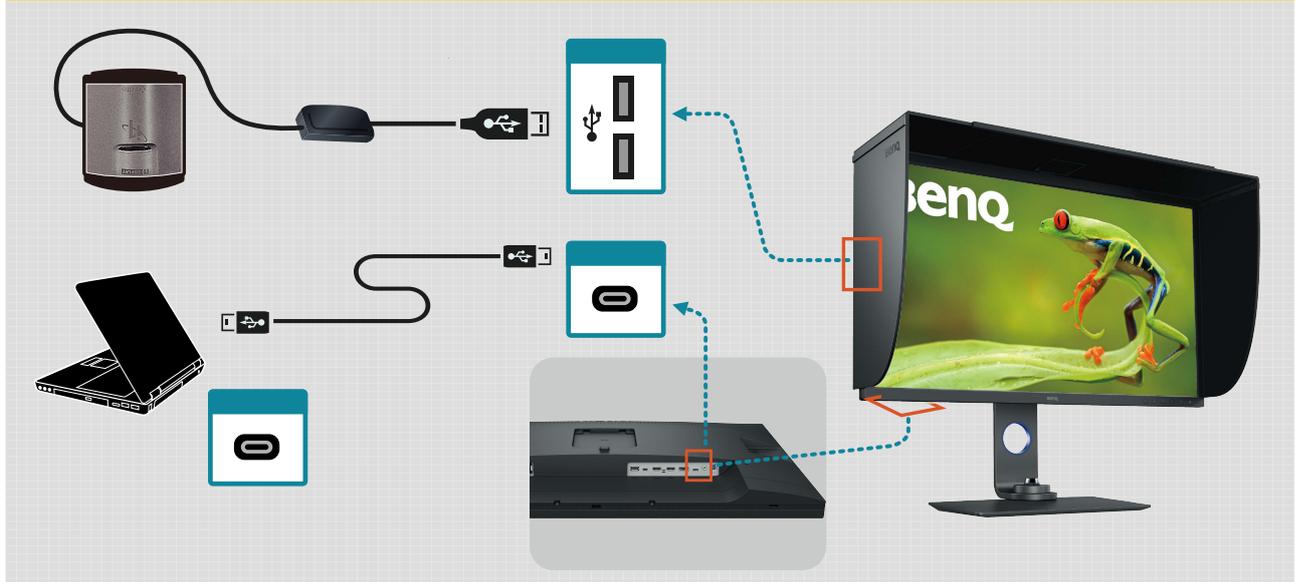


Attention

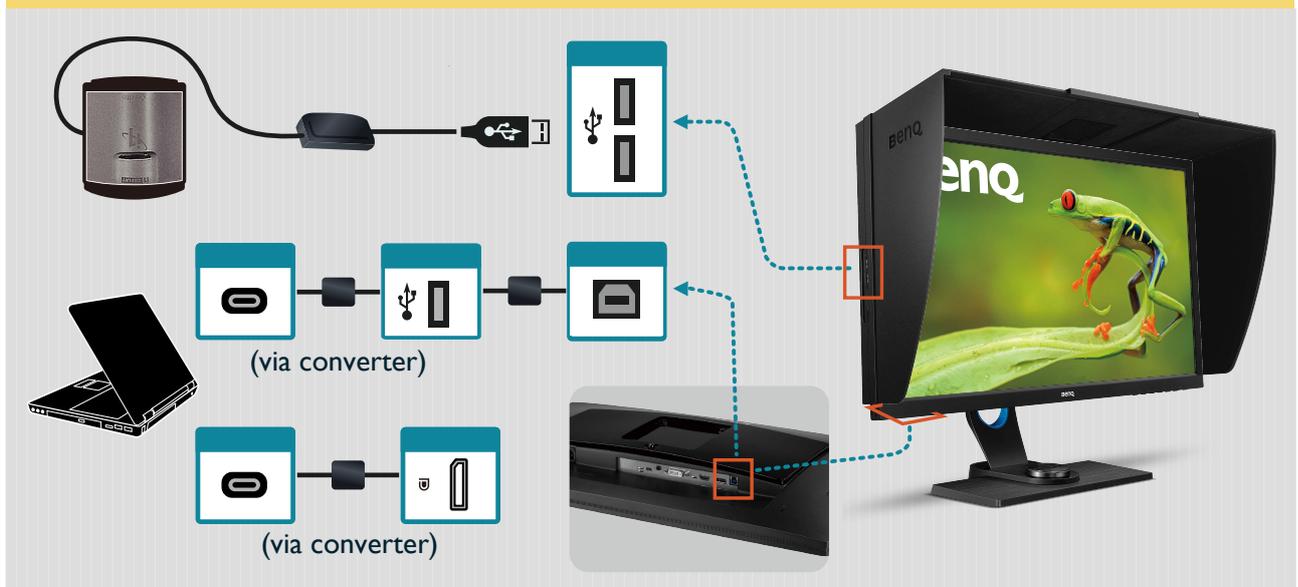
- ▶ Check to see that the USB cable is connected to both the monitor and the computer.
- ▶ Check to see that colorimeter is connected to the monitor's USB port.
- ▶ You are recommended to use the original USB-C™ cable that came with the monitor. If a separately purchased USB-C™ cable is used, make sure the cable is certified by USB-IF and is full-featured, with power delivery and video / audio / data transfer functions.
- ▶ Converters/adapters are not recommended to connect your source device to the monitor, as the compatibility of the converters/adapters in the market cannot be guaranteed.
- ▶ Before monitor calibration, turn on both the monitor and the computer to warm up for 30 minutes.
- ▶ Disable the power management functions of the computer and the monitor. Make sure that both will not in power save mode and the screen saver will not be activated during adjustment or measurement.

Connection via USB-C™ ports

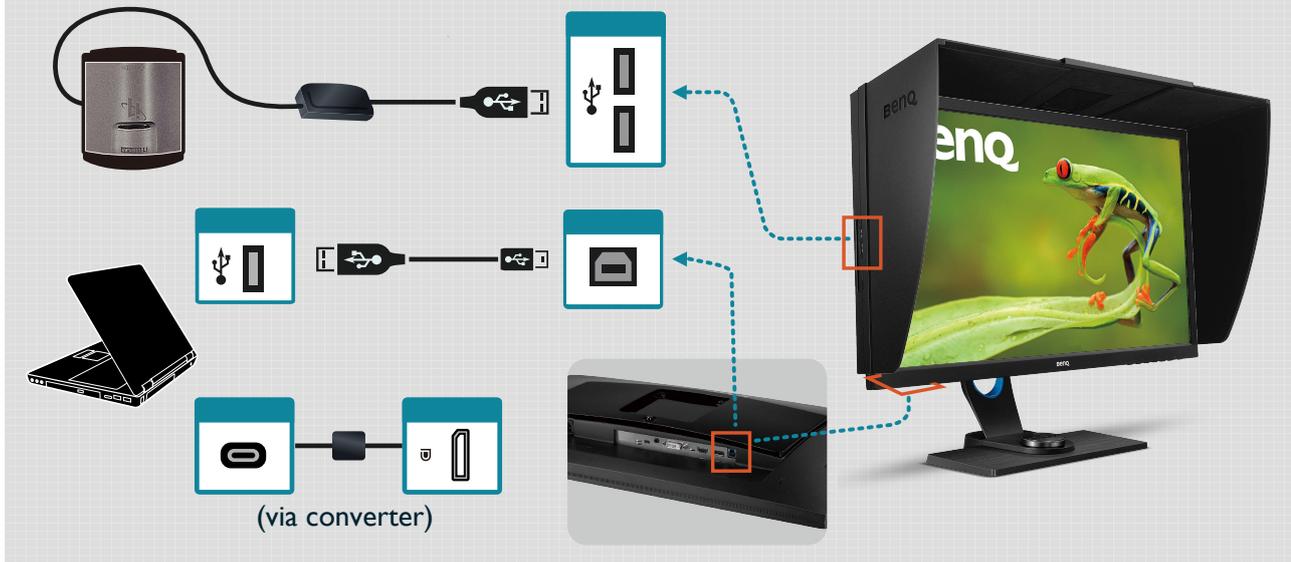
USB-C™ ports on both PC/laptop and monitor



USB-C™ ports on PC/laptop only

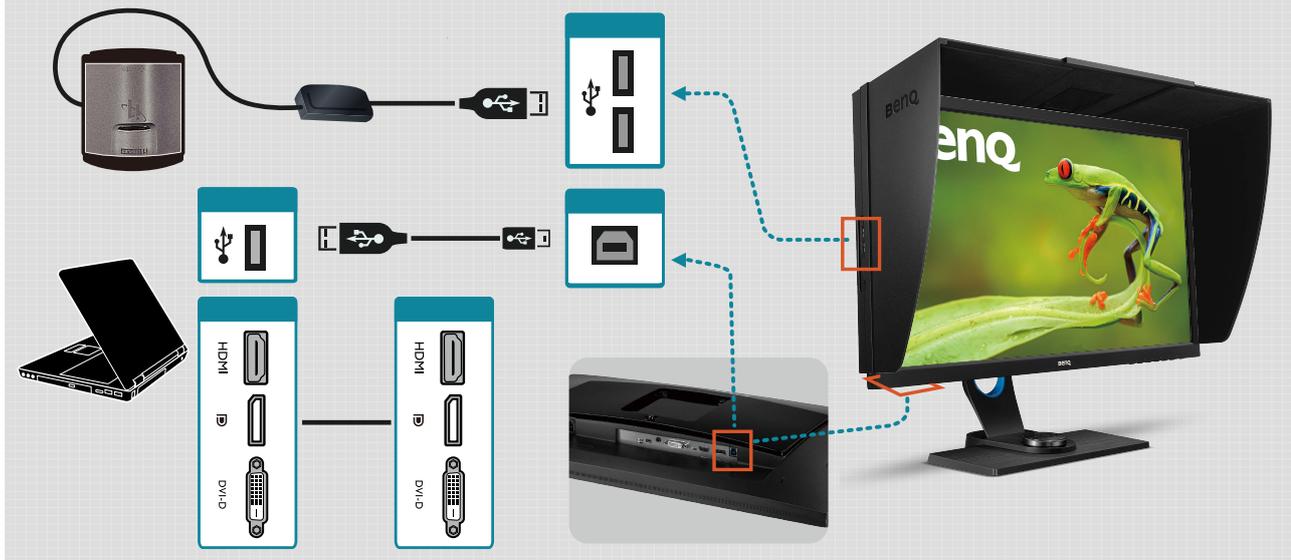


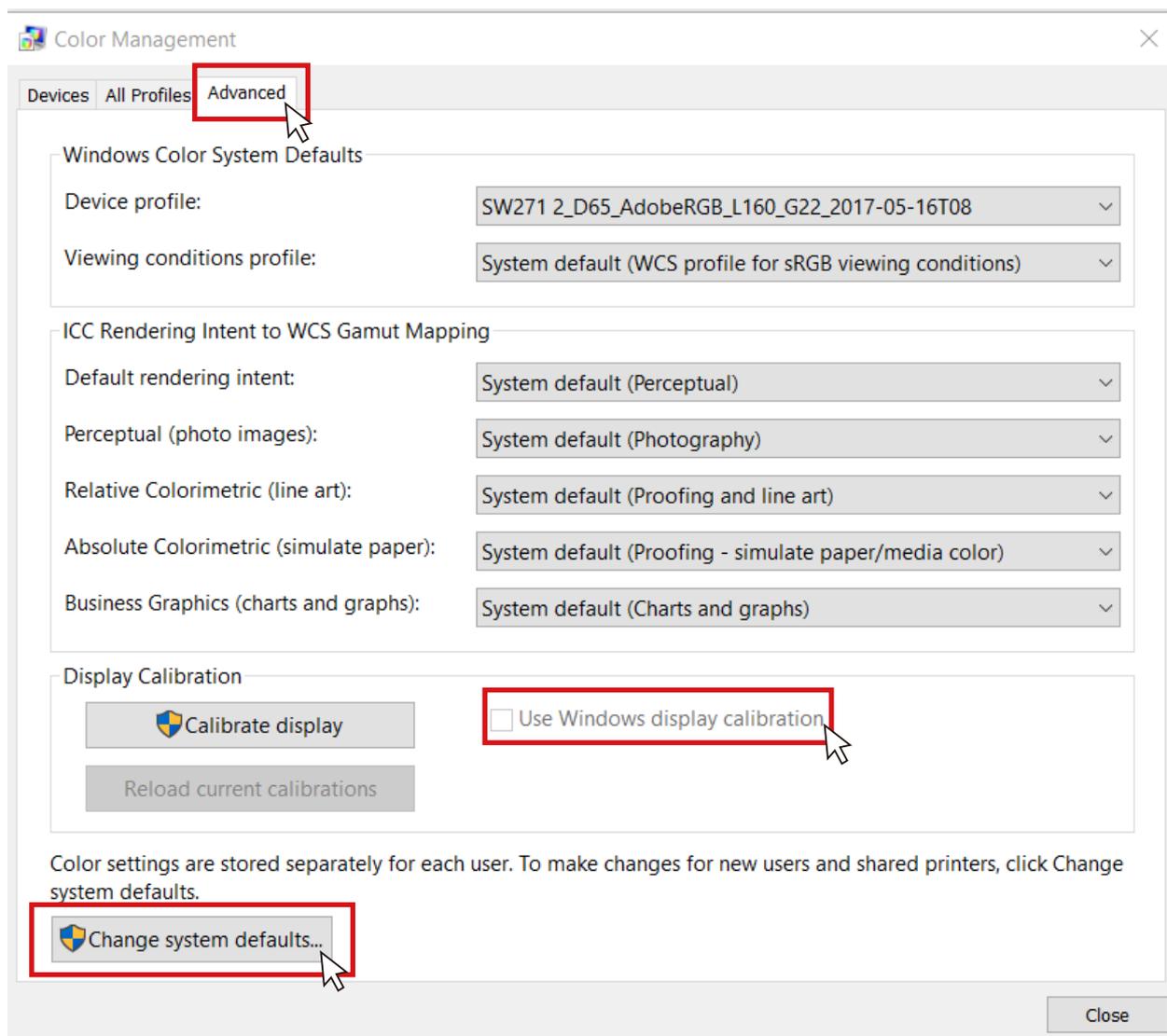
One USB-C™ port on PC/laptop



Connection via non-USB-C™ ports

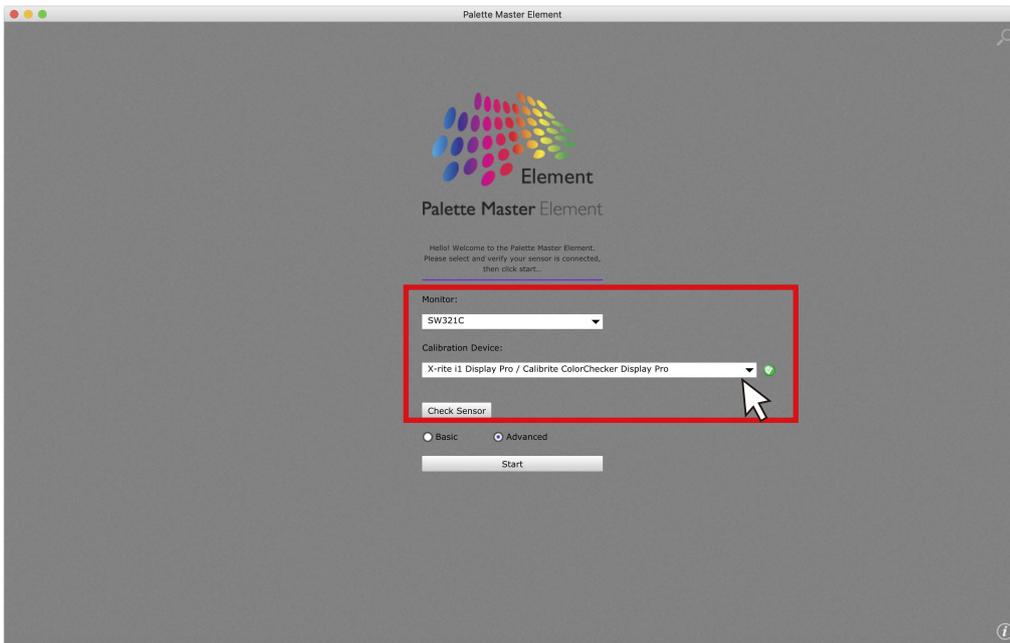
No USB-C™ ports on both PC/laptop and monitor



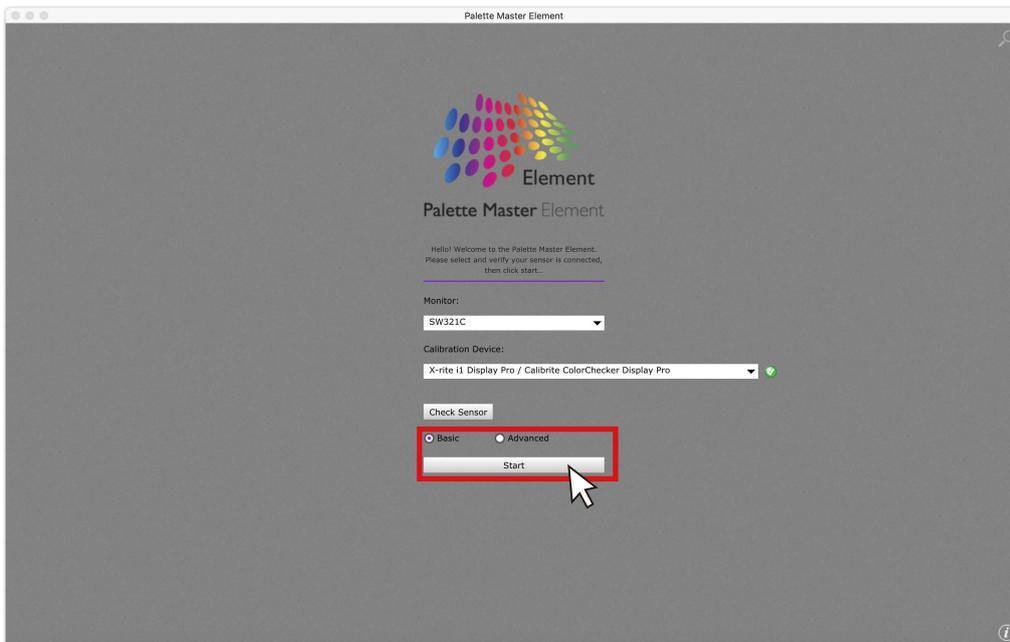


- ▶ If your OS is Windows 10, Windows 8, or Windows 7, and the Windows Display Calibration function is enabled, please follow the steps below to disable this setting.
 1. Select **Control Panel, Color Management, and Advanced**.
 2. Click **Change system defaults** and select the **Advanced** tab of the displayed dialog box.
 3. Uncheck **Use Windows display calibration** check box.
- ▶ When multiple monitors are connected, each monitor should display an independent screen. For details on changing the settings, see the user manual of the graphics card.
- ▶ If you wish to maximize compatibility with other software (e.g., Photoshop), choose **V2** in **Profile Version**.

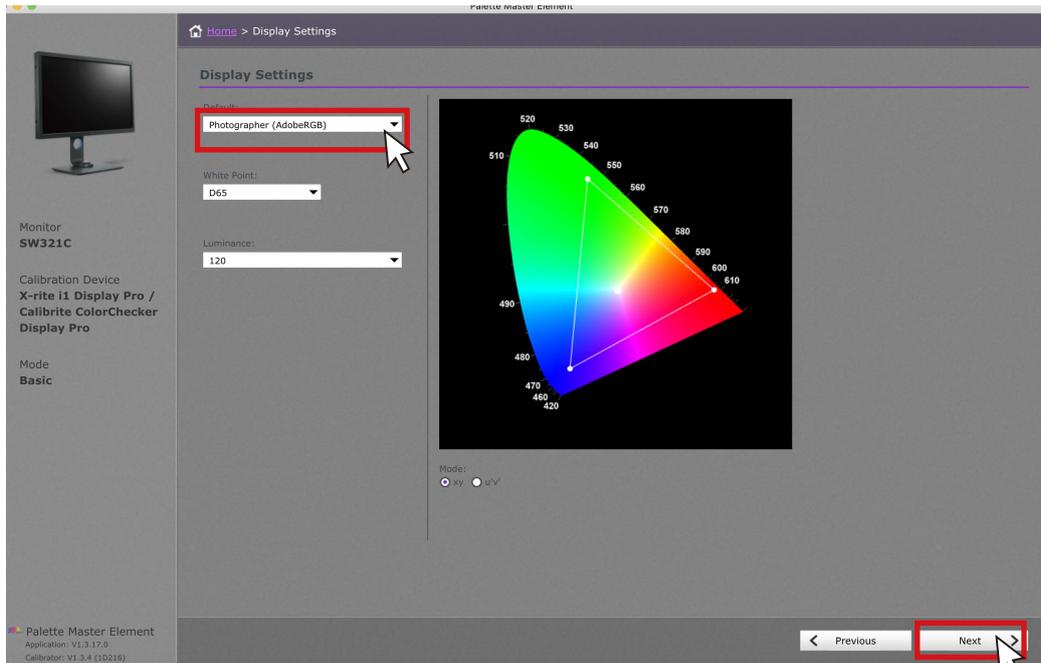
II. In Basic Mode



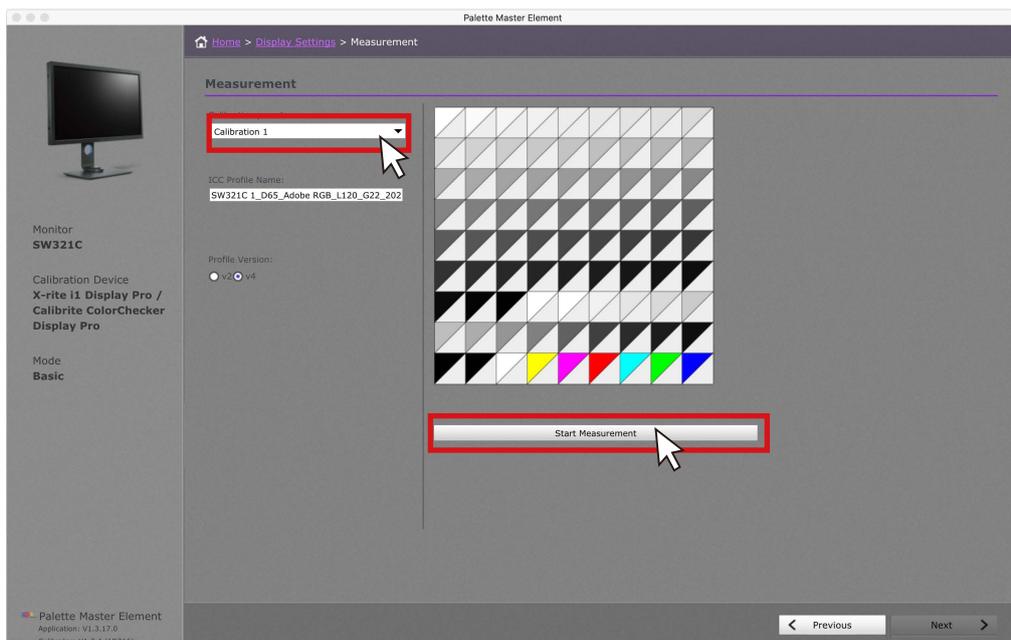
- ▶ Plug the colorimeter to a USB port and select the model name, then click **Check Sensor** to make connection.



- ▶ Select **Basic**.
- ▶ Click **Start** to enter the Basic mode.



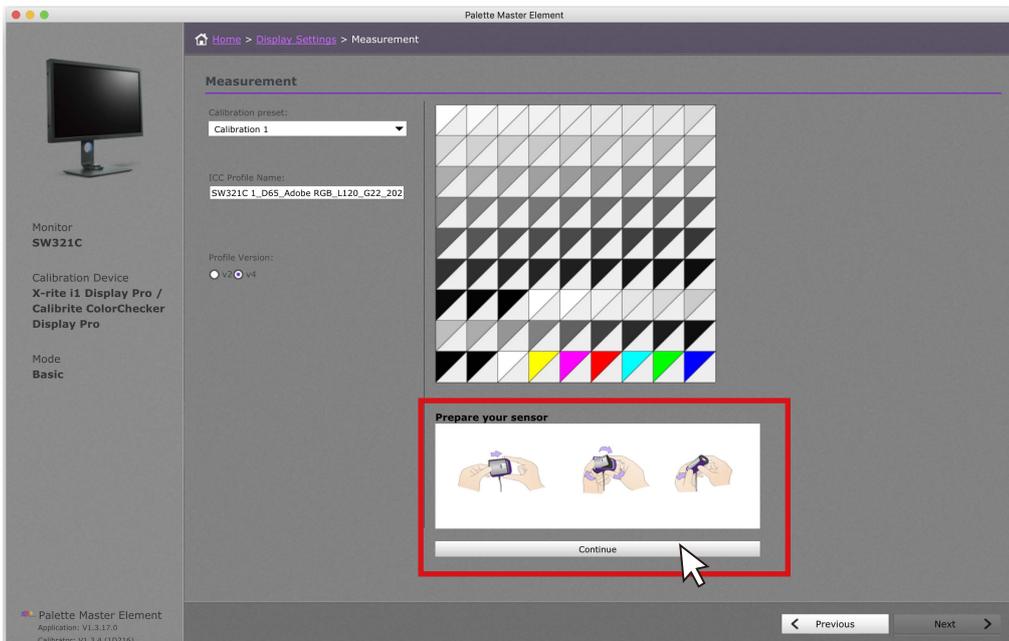
- ▶ Select the desired **Default** profile, **White Point** and **Luminance**. You can choose the **Photographer (Adobe RGB)**, **Web Design (sRGB)**, **Graphics (Adobe RGB)**, **Cinema (DCI-P3)**, **Designer (Display P3)**, or **Video Editing (Rec.709)** profile according to your demand (see Profiles and Scenarios on page 21 for details). After setting, click **Next**.



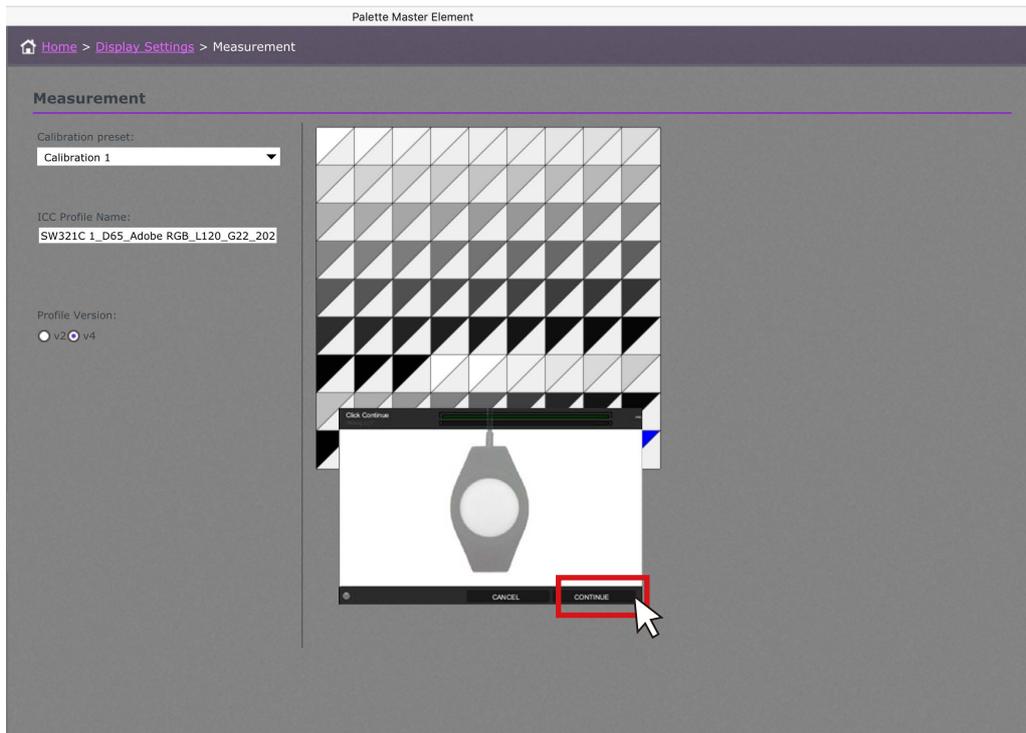
- ▶ Select **Calibration 1**, **Calibration 2**, or **Calibration 3** to save the calibration result into the monitor, then click **Start Measurement** to calibrate the monitor. This will take around 7 minutes.



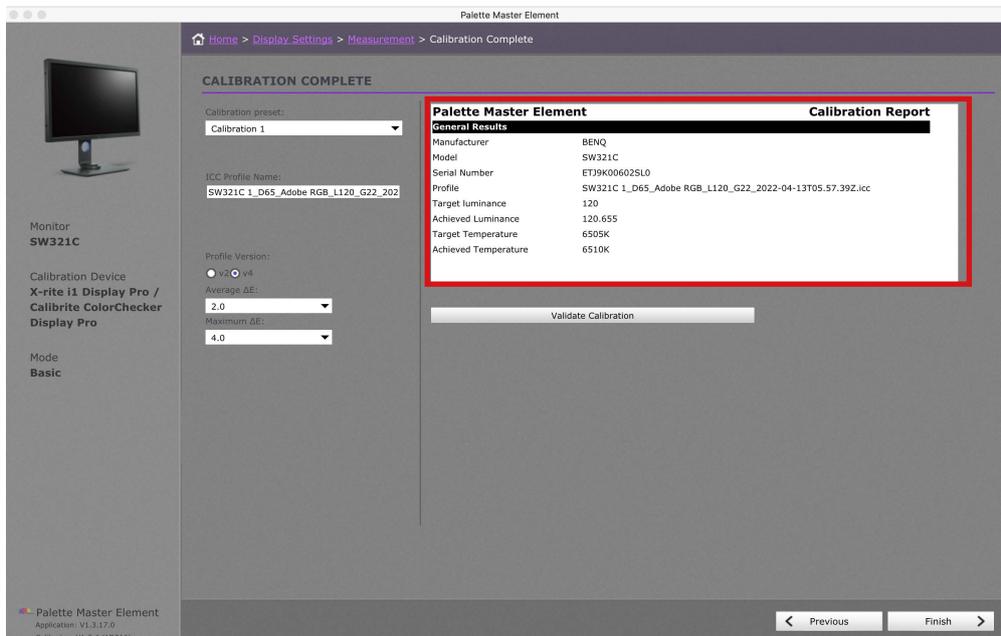
- Before calibrating, tilt the monitor up to ensure that the colorimeter snaps onto the monitor.



- Follow the instructions to open the sensor for calibration, then click **Continue**.
- NOTE:** The illustration is for i1 Display Pro. Instructions vary by device.



- ▶ Put the colorimeter on the screen and match the colorimeter image to get the best calibration result, then click **Continue** to start calibration.



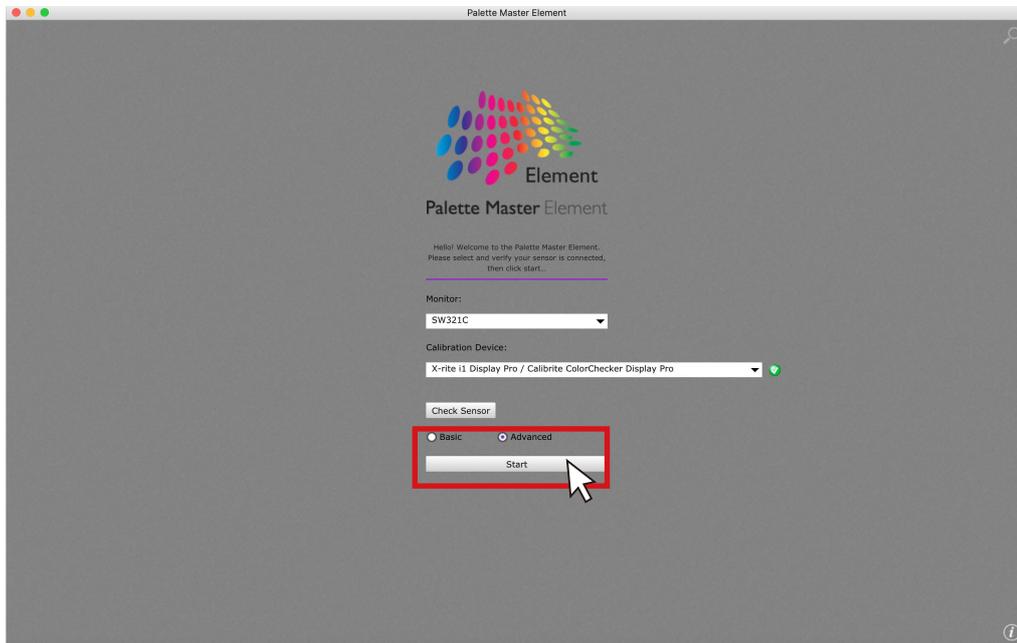
- ▶ Once calibration finishes, you can see a brief calibration report of luminance, color temperature, and Delta E.

NOTE: The ICC profile after calibration can be accessed from the following:

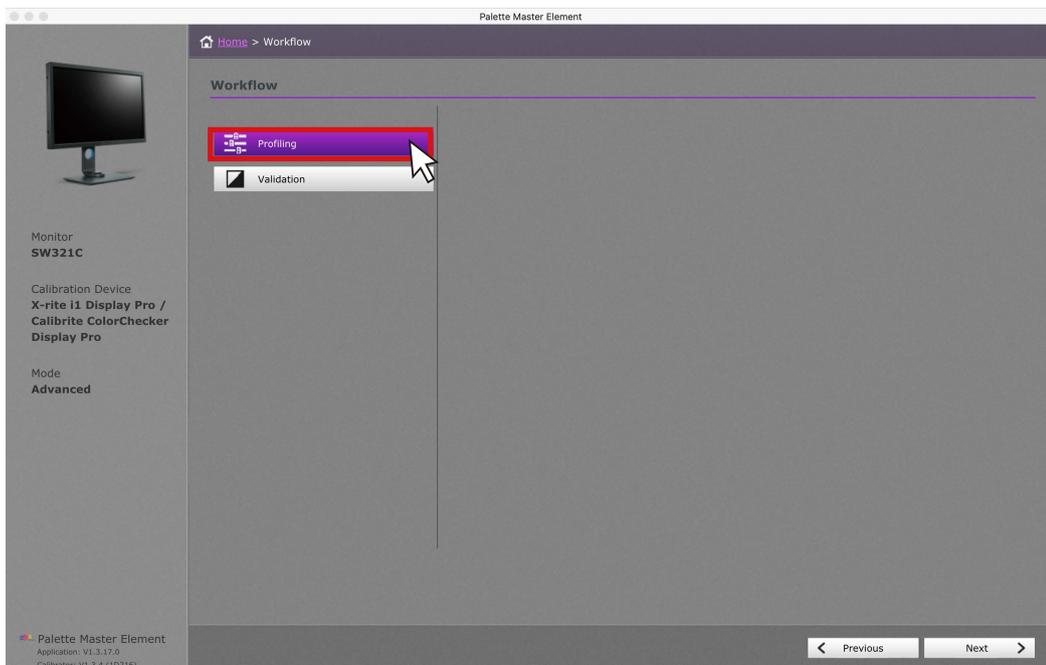
Win: C:\Windows\System32\spool\drivers\colors

Mac: /Users/[User Name]/Library/ColorSync/Profiles

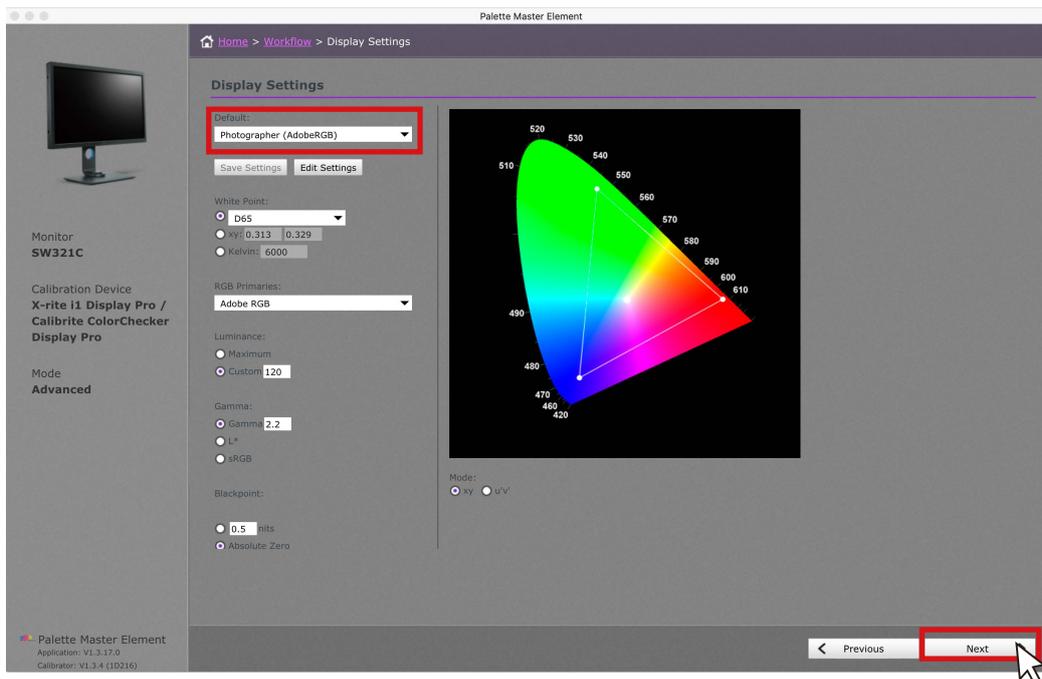
III. In Advanced Mode



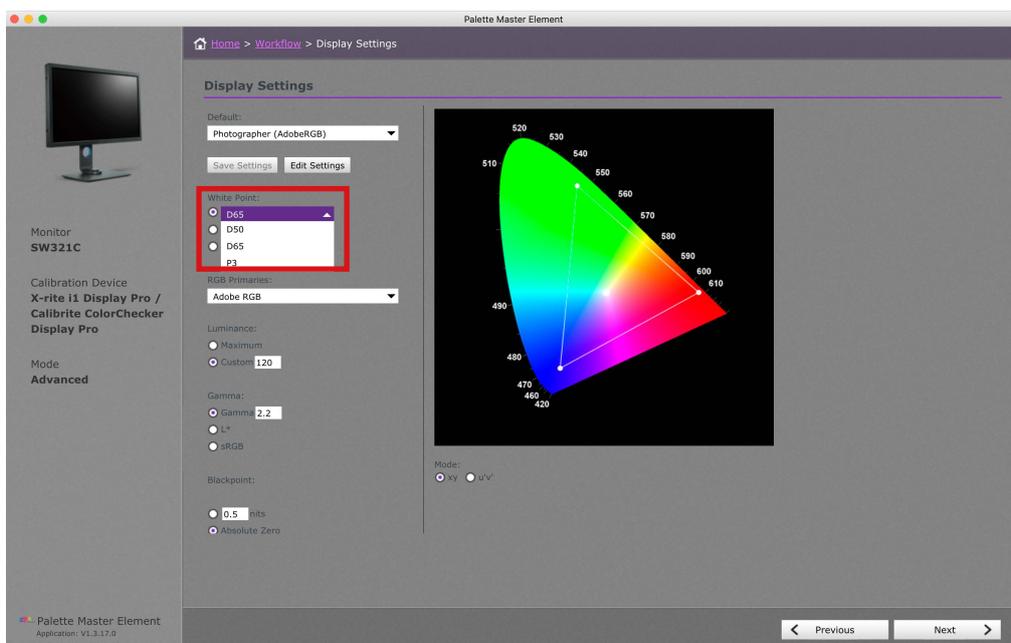
- ▶ Select **Advanced**.
- ▶ Click **Start** to enter the Advanced mode.



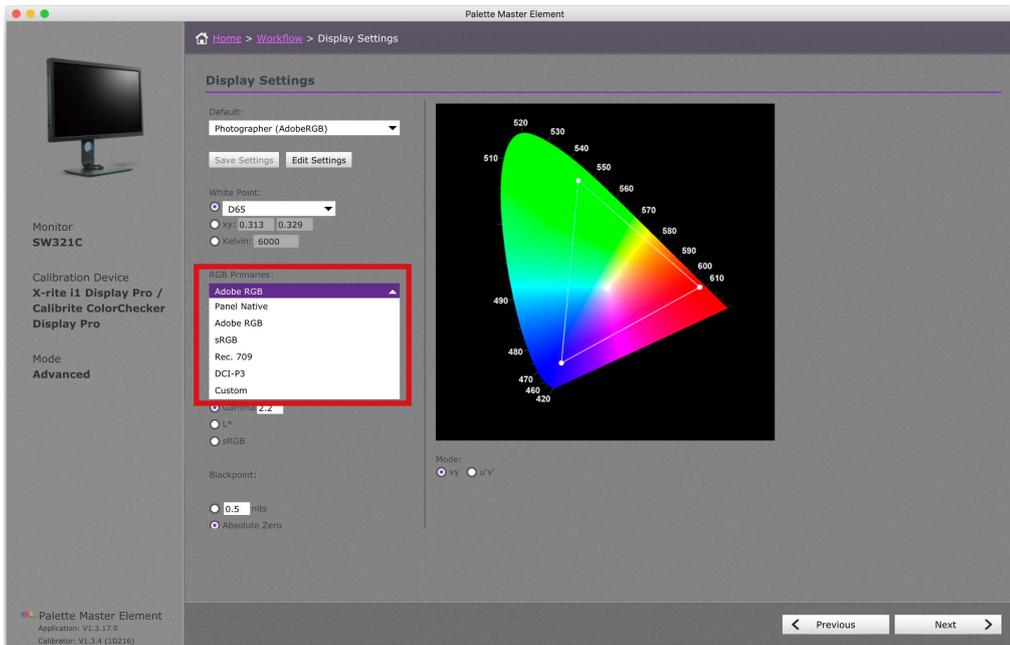
- ▶ Click **Profiling** and **Next**.



- ▶ You can choose the **Photographer (Adobe RGB)**, **Web Design (sRGB)**, **Graphics (Adobe RGB)**, **Cinema (DCI-P3)**, **Designer (Display P3)**, or **Video Editing (Rec.709)** profile according to your demand (see Profiles and Scenarios on page 21 for details). After setting, click **Next**.

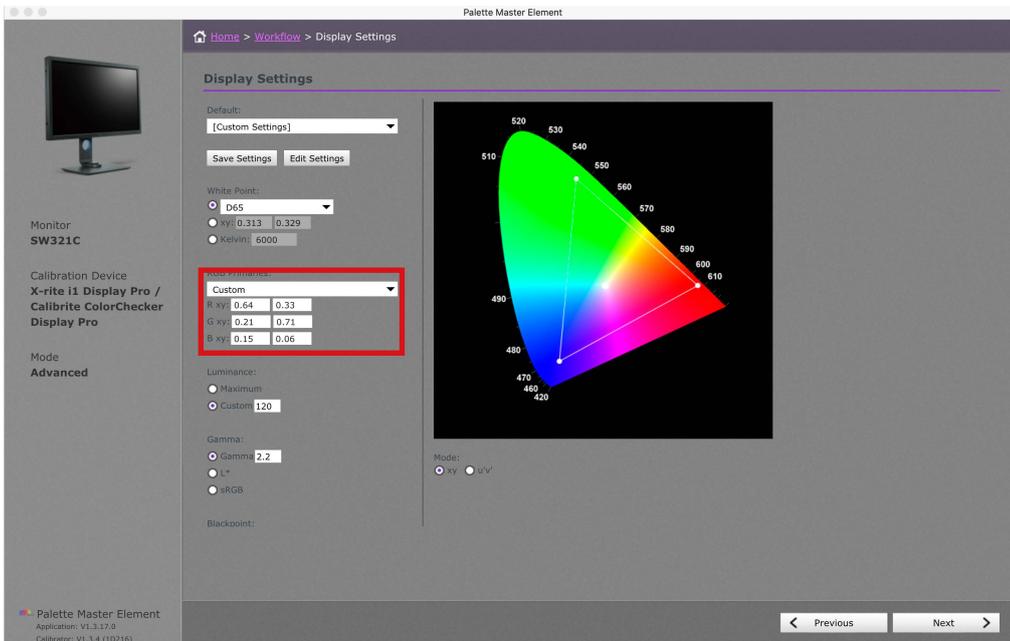


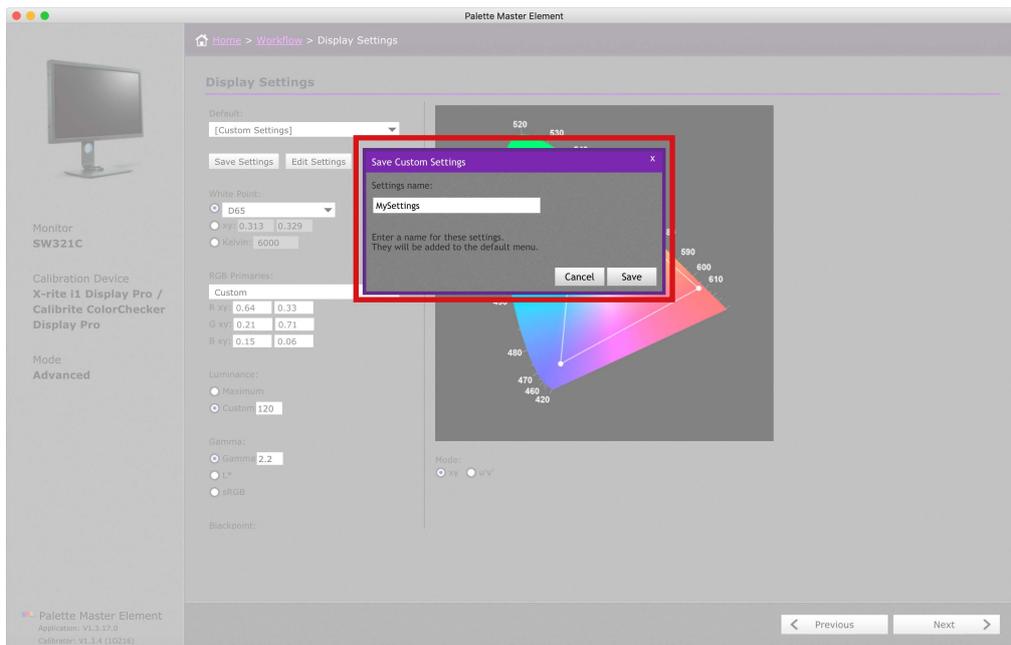
- ▶ You can adjust **White Point**, **RGB Primaries**, **Luminance**, **Gamma**, and **Blackpoint** as desired.



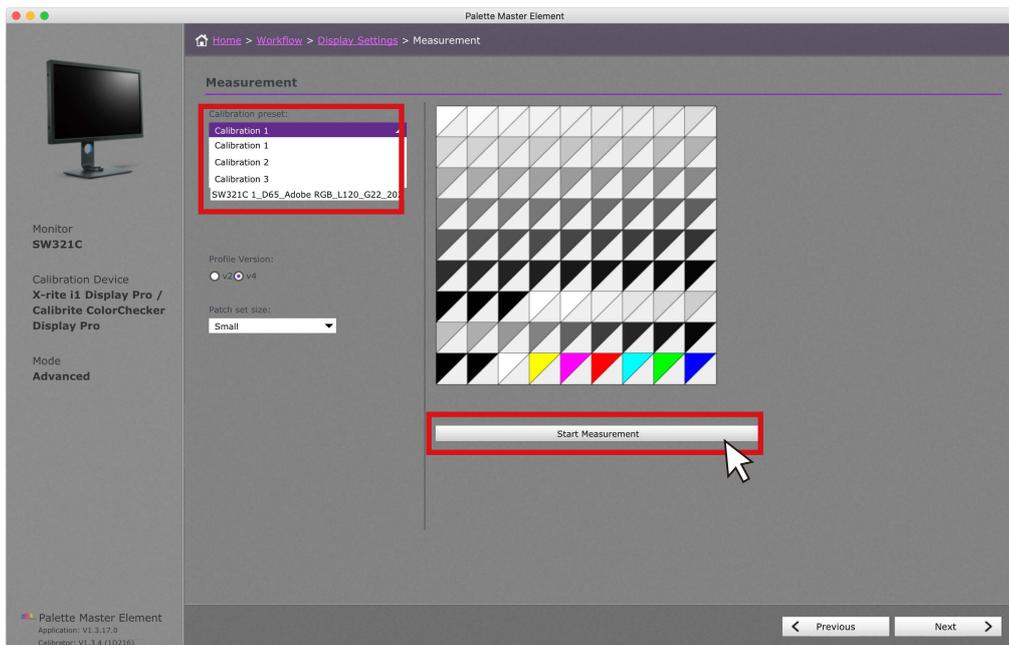
Note:

- Use RGB primaries to change the desired color gamut. Apart from the default standard gamut, you can choose panel native to reach this panel's maximum gamut, or select **Custom** to create a custom gamut.
- If the **Photographer** profile is selected, usually the maximum contrast ratio is required, set **Blackpoint** to **Absolute Zero**. If you need smooth gray scale without extreme black, especially for printing, set **Blackpoint** by nits.



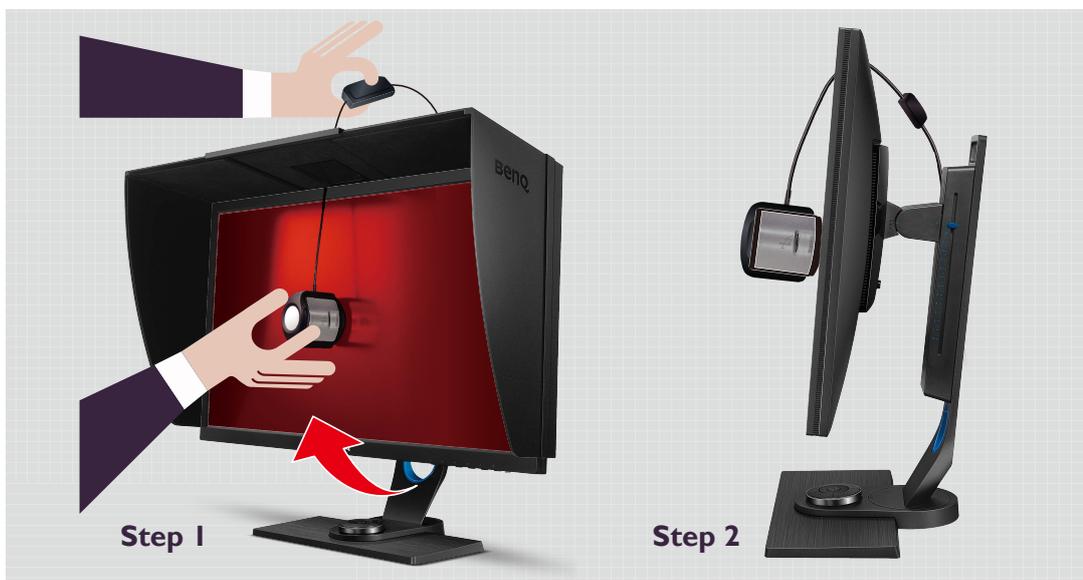


- ▶ After customization, you can save the profile setting by customized naming. If you want to delete or change the profile names, you can do so by finding the profile files on
Win: C:\ProgramData\rd\strings\benq_params
Mac: /Users/Shared/RD/strings/benq_params

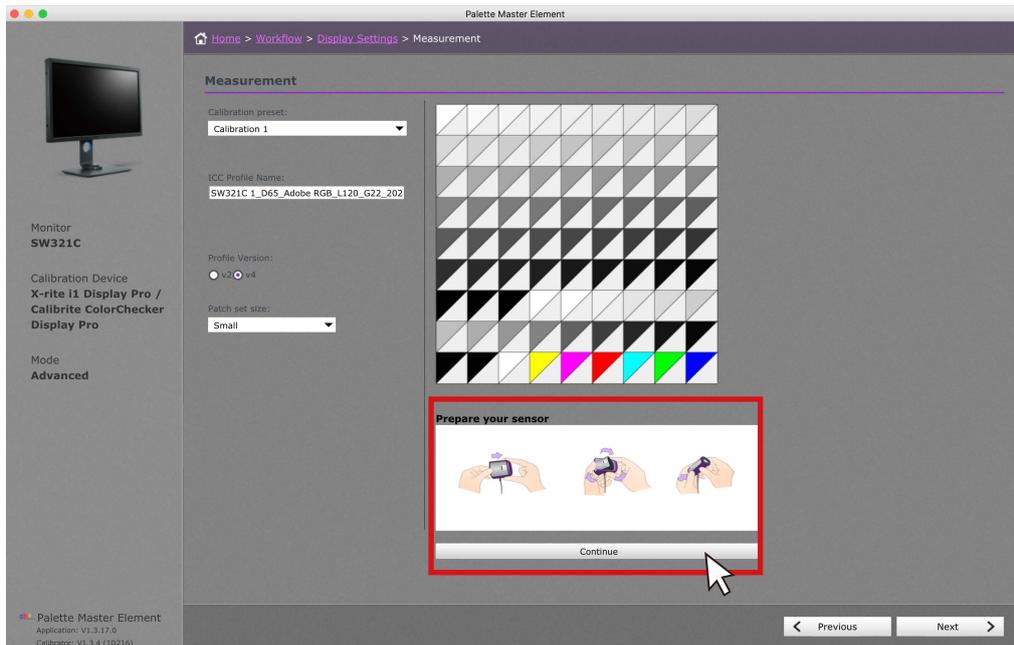


- ▶ Select **Calibration 1**, **Calibration 2**, or **Calibration 3** to save the calibration result into the monitor. If you want to get more precise result, change the patch size to **Medium** or **Large**. Yet it will take more time to calibrate. After all settings finish, click **Start Measurement** to calibrate the monitor. Before calibrating, tilt the monitor up to ensure that the colorimeter snaps onto the monitor.

Note: If you wish to maximize compatibility with other software (e.g., Photoshop), choose **V2** in **Profile Version**.

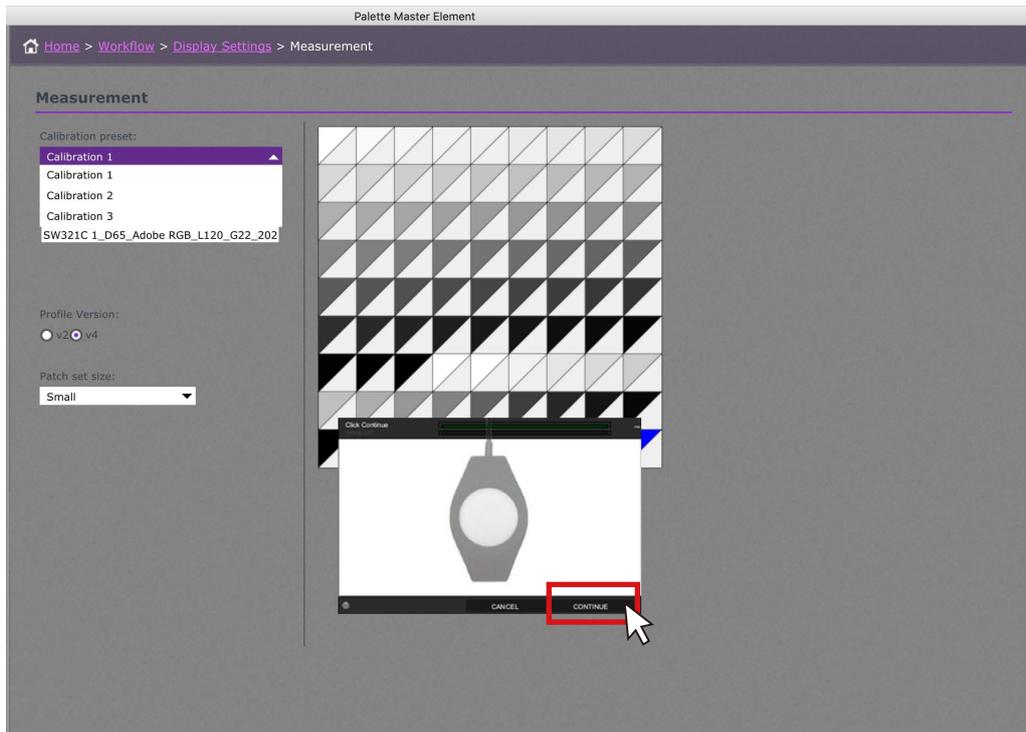


- ▶ Before calibrating, tilt the monitor up to ensure that the colorimeter snaps onto the monitor.

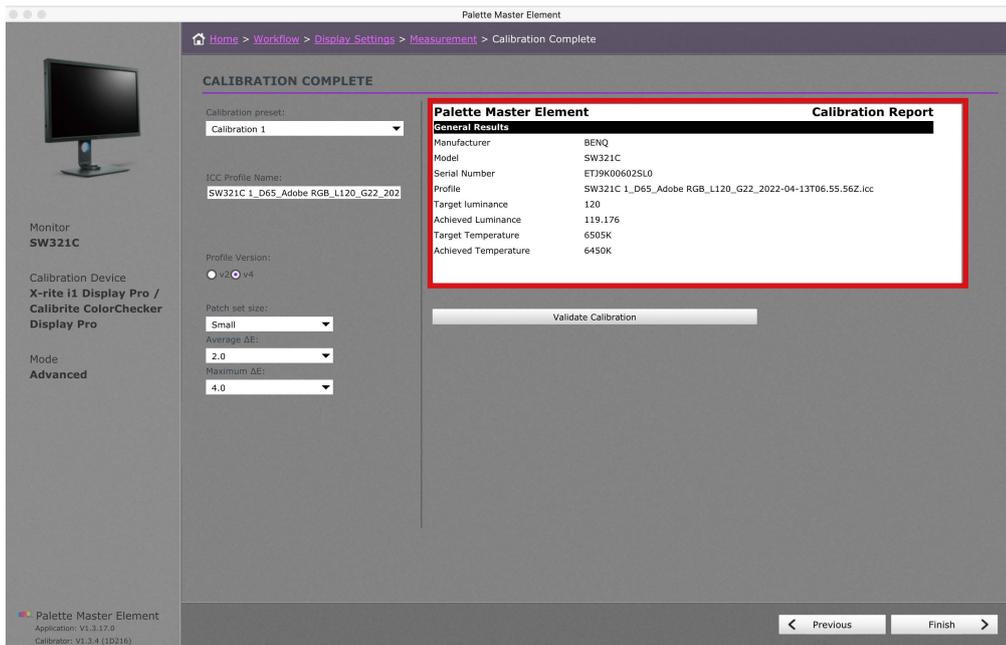


▶ Follow the instructions to open the sensor for calibration, then click **Continue**.

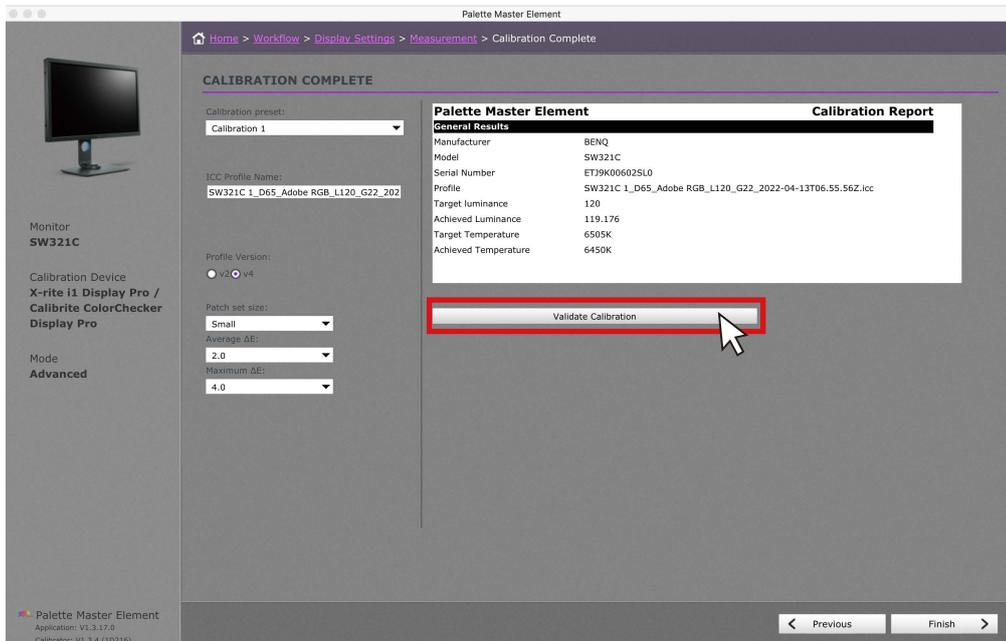
NOTE: The illustration is for i1 Display Pro. Instructions vary by device.



▶ Put the colorimeter on the screen and match the colorimeter image to get the best calibration result, then click **Continue** to start calibration.



- ▶ Once calibration finishes, you can see the brief calibration report of luminance and color temperature.



- ▶ You can setup the desired Delta E value range then click **Validate Calibration** for further validation.

Palette Master Element

Home > Workflow > Display Settings > Measurement > Calibration Complete

CALIBRATION COMPLETE

Calibration preset: Calibration 1

ICC Profile Name: SW321C_1_D65_Adobe_RGB_L120_G22_202

Profile Version: V4

Patch set size: Small

Average ΔE: 2.0

Maximum ΔE: 4.0

Monitor: SW321C

Calibration Device: X-rite i1 Display Pro / Calibrite ColorChecker Display Pro

Mode: Advanced

Palette Master Element
Application: V1.3.1.7.0
Calibrator: V1.3.4 (1D216)

Palette Master Element Validation Report

Report summary: **Passed** 2022-04-13 15:19:23

Manufacturer: BENQ
Model: SW321C
Serial Number: ETJ9K00602SL0
Profile: SW321C_1_D65_Adobe_RGB_L120_G22_202-04-13T06.55.56Z.icc
Target: 6500K
Achieved Temperature: 0.16 mts
Blackpoint: X-rite i1 Display Pro / Calibrite ColorChecker Display Pro
Calibration Device: V4
Profile Version: 1
Calibration preset: Matrix
Patch set size: Small
Average ΔE: 2.0
Maximum ΔE: 4.0

Test	Measured	Status
Average ΔE	0.95	Passed
Maximum ΔE	1.87	Passed

Color	Index	RGB	L*a*b*	L*a*b*	xyY	ΔE
0	255 255 255	100.00 0.00 0.00	100.00 0.04 0.12	0.3150 0.3292 117.80	0.13	
1	241 241 241	95.04 0.00 0.00	96.03 0.03 -0.43	0.3120 0.3262 106.11	0.49	
2	228 228 228	91.21 0.00 0.00	91.42 0.59 -0.70	0.3122 0.3273 93.56	1.10	
3	216 216 216	86.73 0.00 0.00	87.57 0.39 -0.39	0.3125 0.3280 83.85	0.88	
4	203 203 203	82.17 0.00 0.00	82.91 0.65 -0.47	0.3127 0.3276 73.03	1.17	
5	190 190 190	77.63 0.00 0.00	78.40 0.54 -0.13	0.3150 0.3285 63.49	0.80	
6	171 171 171	70.60 0.00 0.00	71.39 0.09 -0.36	0.3121 0.3281 50.37	0.71	
7	149 149 149	62.70 0.00 0.00	63.11 0.56 -0.58	0.3123 0.3270 37.36	1.05	
8	128 128 128	54.12 0.00 0.00	55.90 0.78 -0.51	0.3150 0.3288 27.01	1.50	
9	96 96 96	40.90 0.00 0.00	41.84 0.35 -0.45	0.3121 0.3270 14.60	1.08	
10	64 64 64	26.55 0.00 0.00	27.67 1.16 -0.07	0.3163 0.3288 6.29	1.87	
11	42 42 42	16.27 0.00 0.00	17.28 0.20 -0.12	0.3129 0.3279 2.78	0.75	
12	255 0 0	81.42 89.96 75.15	61.38 89.19 73.30	0.0368 0.3301 35.23	0.58	
13	0 255 0	83.30 -137.97 90.83	83.21 -128.00 91.47	0.2105 0.7112 74.22	1.71	
14	0 0 255	32.98 80.31 -109.38	33.48 79.22 -108.49	0.1503 0.0615 9.21	0.46	

Export Report

Validate Calibration

Previous Finish

- ▶ After validation, you can know if the calibration result meets the desired Delta E range. If needed, you can export the report into HTML format.

NOTE: The ICC profile after calibration can be accessed from the following:

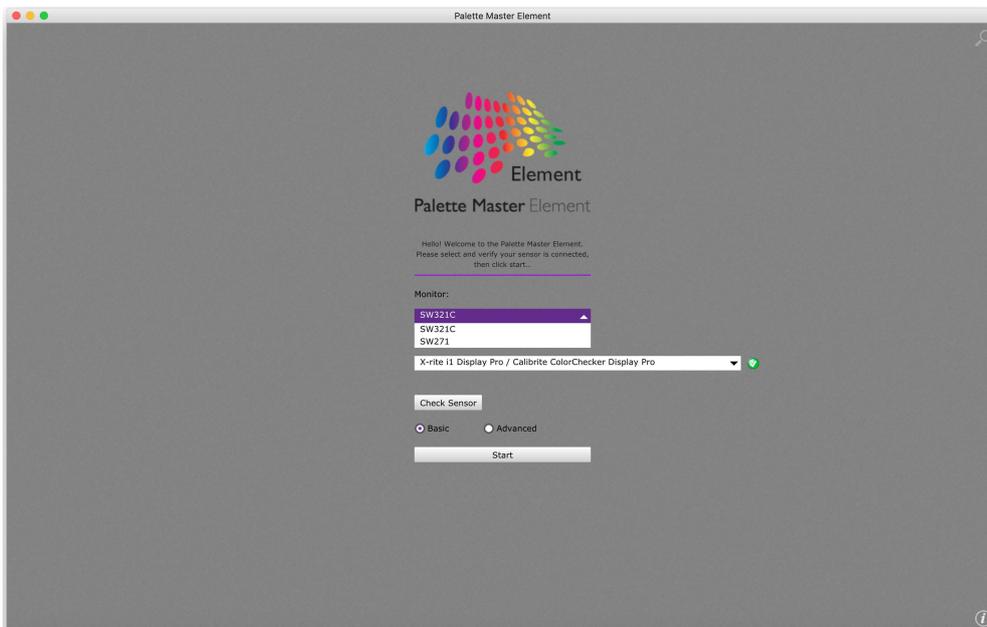
Win: C:\Windows\System32\spool\drivers\colors

Mac: /Users/[User Name]/Library/ColorSync/Profiles

IV. Calibrating two monitors in a row

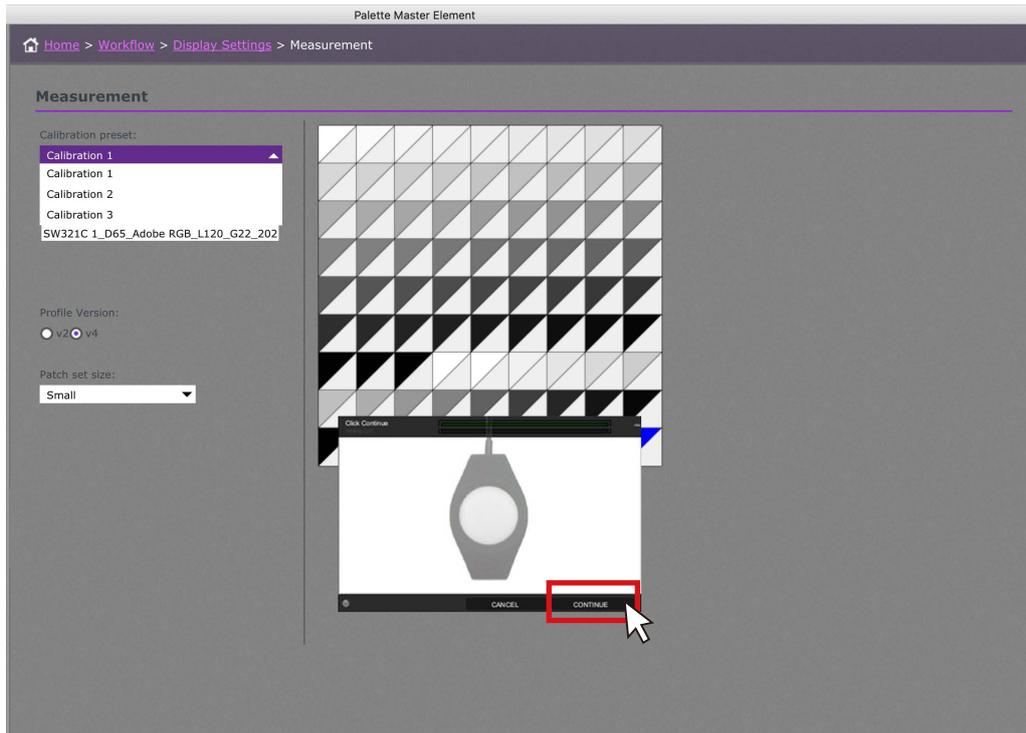


- ▶ Connect two monitors to a computer properly. Different cables are required depending on the types of I/O ports available on your monitors and computer. Refer to Connection via USB-C™ ports on page 3 and Connection via non-USB-C™ ports on page 4.
- ▶ Power on the computer and the monitors.
- ▶ Set to extend your screen from the operating system of your computer.

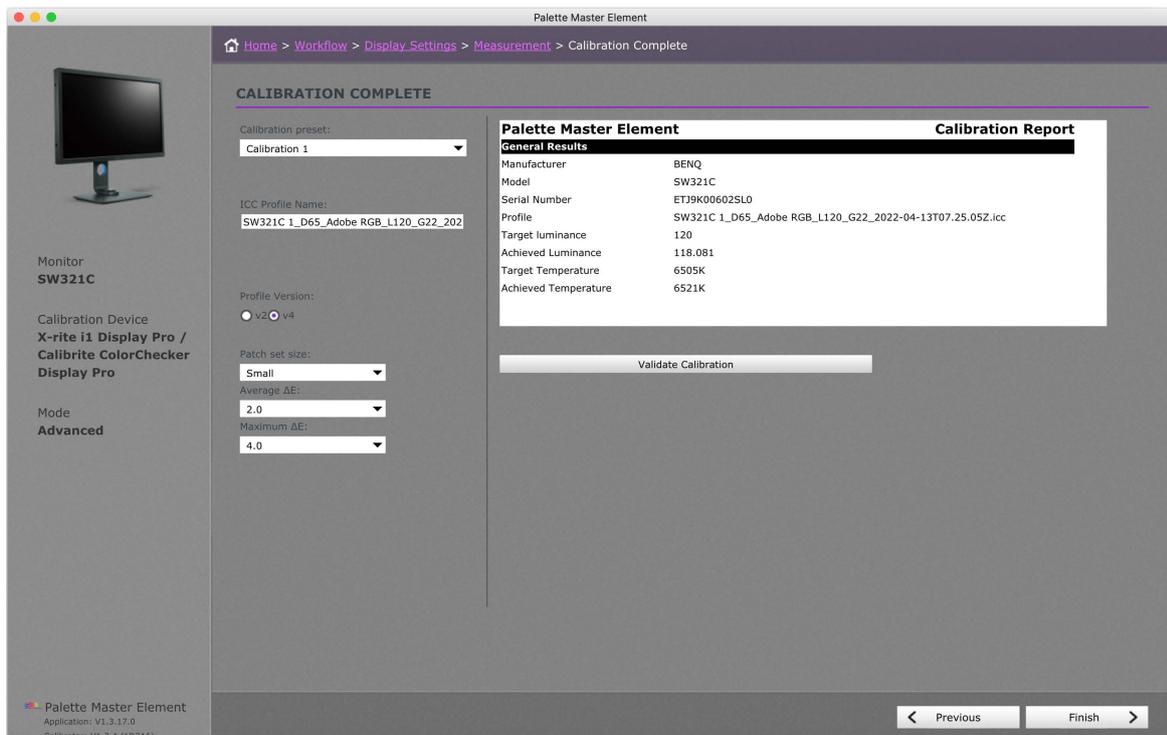


- ▶ Launch Palette Master Element. The software detects the connected monitors and selects one for calibration first. Confirm the model name and attach the colorimeter to it.

NOTE: If you prefer to start with the other monitor, change from the model list. A suffix is added to the model name if monitors of the same model name are connected.



- ▶ Adjust the calibration settings as needed.
- ▶ Prepare the colorimeter as instructed. Put the colorimeter on the screen and match the colorimeter image to the best calibration result, then click **Continue** to start calibration.



- ▶ You can setup the desired Delta E value range then click **Validate Calibration** for further validation.

Palette Master Element

Home > Workflow > Display Settings > Measurement > Calibration Complete

CALIBRATION COMPLETE

Calibration preset: Calibration 1

ICC Profile Name: SW321C_1_D65_Adobe RGB_L120_G22_202

Profile Version: v2 v4

Patch set size: Small

Average ΔE: 2.0

Maximum ΔE: 4.0

Monitor: SW321C

Calibration Device: X-rite i1 Display Pro / Calibrite ColorChecker Display Pro

Mode: Advanced

Palette Master Element Validation Report

Report summary: Passed 2022-04-13 15:40:23

Manufacturer: BENQ
Model: SW321C
Serial Number: ETJ9K006025L0
Profile: SW321C_1_D65_Adobe RGB_L120_G22_2022-04-13T07.25.05Z.icc
Target: 6500K
Achieved Temperature: 6521K
Blackpoint: 0.16 nits
Calibration Device: X-rite i1 Display Pro / Calibrite ColorChecker Display Pro
Profile Version: V4
Calibration preset: 1
Profile Type: Matrix
Patch set size: Small
Average ΔE: 2.0
Maximum ΔE: 4.0

Test	Measured	Status
Average ΔE	1.23	Passed
Maximum ΔE	2.01	Passed

Color	Index	RGB	L*a*b*	L*	a*	b*	Measured	ΔE
0	255	255 255 255	100.00 0.00 0.00	100.00	0.24	0.34	0.3136 0.3294 116.99	0.49
1	241	241 241 241	95.64 0.00 0.00	96.01	0.75	-0.47	0.3129 0.3277 105.35	1.21
2	228	228 228 228	91.21 0.00 0.00	91.48	1.15	-0.73	0.3130 0.3268 93.08	1.81
3	216	216 216 216	86.73 0.00 0.00	87.52	1.13	-0.23	0.3139 0.3278 83.15	1.73
4	203	203 203 203	82.17 0.00 0.00	82.83	0.74	-0.45	0.3129 0.3275 72.37	1.26
5	190	190 190 190	77.53 0.00 0.00	78.30	0.72	-0.54	0.3127 0.3273 62.86	1.30
6	171	171 171 171	70.60 0.00 0.00	71.38	1.01	-0.69	0.3129 0.3266 50.01	1.71
7	149	149 149 149	62.70 0.00 0.00	62.99	0.57	-0.46	0.3127 0.3273 36.94	0.99
8	128	128 128 128	54.11 0.00 0.00	54.91	0.76	-0.42	0.3132 0.3270 26.72	1.40
9	96	96 96 96	40.80 0.00 0.00	41.76	0.41	-0.32	0.3127 0.3274 14.45	1.03
10	64	64 64 64	26.54 0.00 0.00	27.65	1.28	0.04	0.3172 0.3271 6.23	2.01
11	42	42 42 42	16.26 0.00 0.00	17.29	0.24	-0.01	0.3137 0.3285 2.76	0.77
12	255	0 0	61.42 89.56 75.15	61.53	89.07	73.48	0.6372 0.3300 35.12	0.50
13	0	255 0	83.30 -137.97 90.83	83.12	-128.00	91.36	0.2104 0.7113 73.42	1.70
14	0	0 255	32.98 80.31 -109.38	33.46	78.88	-106.53	0.1503 0.0615 9.12	0.50

Export Report

Validate Calibration

Palette Master Element
Application: V1.3.17.0
Calibrator: V1.3.4 (1D216)

Previous Finish

- ▶ After validation, click **Finish** to close the Palette Master Element.
- ▶ Launch Palette Master Element again, the software selects the second monitor that is not calibrated.
- ▶ Move the colorimeter from the first to the second monitor without unplugging and plugging the cables.
- ▶ Follow the on-screen instructions to aim the colorimeter to the colorimeter image and proceed with calibration of the second monitor.

V. Profiles and Scenarios

Profile	Default picture mode	Scenario
Photographer	Adobe RGB	For professional photo editing.
Web Design	sRGB	For web designer.
Graphics	Adobe RGB	For soft proofing to match the colors on the screen and on the prints.
Cinema	DCI-P3	For video post production.
Designer	Display P3	For Mac OS / iOS UI design.
Video Editing	Rec. 709	For HDTV video editing.

NOTE: Available options vary by model.

VI. System Requirements and Supported Colorimeters

OS system	Visit BenQ website for the latest information.
Monitor	Visit BenQ website for the latest information.
Hardware	<ul style="list-style-type: none"> • At least 2 USB ports • Intel® Core 2 Duo or AMD Athlon™ 64 X2 or better CPU • 2GB of available disk space • The graphic card must support at least 16.7 million display colors. • Minimum resolution 1024 x 768
Supported colorimeters	Visit BenQ website for the latest information.

NOTE:

- (*) : When you color calibrate with Palette Master Element, HDR needs to remain off. In MacOS 10.15.4, HDR turns on by default whenever an HDR-capable display is connected and detected. This results in a screen which cannot display the dark areas as dark enough and the whole screen in low contrast. To turn off HDR on MacOS, choose Apple menu > **System Preference** > **Display**, then uncheck **High Dynamic Range**.
- For more Q&A information, go to [Support.BenQ.com](#) > **Palette Master Element** > **Q&A**.

BenQ.com

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