Palette Master Ultimate

User Manual

Calibration software

V 2.01

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Copyright

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The screenshots and illustrations in this document are for reference only and may differ from the actual design.

This document aims to provide the most updated and accurate information to customers, and thus all contents may be modified from time to time without prior notice. Please visit the website for the latest version of this document.

Servicing

Should you have any queries about the software after reading the document, visit the local website from Support.BenQ.com for more support and local customer service.

Support.BenQ.com

Note

In this document, the steps needed to reach a menu are shown in condensed form, for example: **System** > **Information**.

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2024/09/30

Introduction

The **Palette Master Ultimate** software simplifies calibration and reliably produces accurate color results.

Palette Master Ultimate can be used to fine tune the color engine in compatible BenQ monitors and fully supports certain X-Rite / Calibrite / Datacolor calibrators.

Features

- Performs hardware or software calibration quickly and reliably.
- Communicates the monitor and the computer automatically and syncs ICC profile when a calibration mode is selected for the monitor.
- Previews a photo before and after calibration in time.
- Provides friendly and flexible UI design for calibration target customization.
- (SW series only) Allows color adjustment of a calibration mode to meet your preference.
- Provides cloud storage to back up and access all your calibration targets (or ICC profiles) easily.

> **Note**
>
> Images and menu options in this document are for reference only and may look different according to different BenQ displays or the operating system of your device. The user interface may subject to change without prior notice.

System requirements

Item	Description
OS systems	Visit www.BenQ.com > **Palette Master Ultimate** > **Specifications** for the latest information.
Compatible monitors	
Supported calibrators	**Note** Different procedures are required before you get ready for monitor calibration. See Getting ready before you start on page 11 for details.
Cables for monitor connection	• DP cable and USB upstream cable (recommended) • HDMI cable and USB upstream cable (SW series only) • Thunderbolt 3 (USB-C) cable

Setup

The software works only with compatible BenQ monitors and calibrators. It scans and detects the connected monitor and calibrator when the software is launched. Make sure the devices are properly connected to the computer.

Available functions and options vary by model or monitor series. For instance, software calibration is available for PD series, while hardware calibration is available for SW series.

Monitor	Available functions		Description
SW series	Advanced	Color Calibration	Complete hardware calibration. (See p.22)
		Advance Color Adjust	Fine-tune of a calibration mode. (See p.33)
		Validation	Monitor validation against an existing calibration standard. (See p.37)
	Basic	Color Calibration	Quick hardware calibration. (See p.42)
		Validation	Monitor validation against an existing calibration standard. (See p.37)
PD series	Color Calibration		Software calibration. (See p.47)
	Validation		Monitor validation against an existing calibration standard. (See p.57)

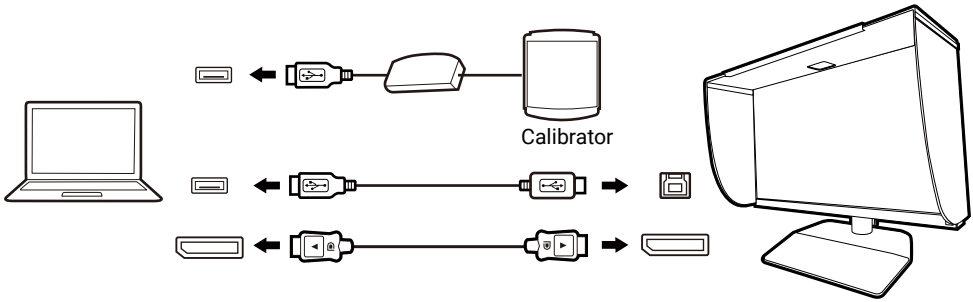
Connections

Connecting with one monitor

Connect your computer with the computer and a compatible calibrator properly. Available connectors may vary by monitor.

> **Note**
>
> • Install shading hood (if supplied with your monitor) to obtain the best calibration results.
>
> • Connect the calibrator to your computer to ensure enough power supply.

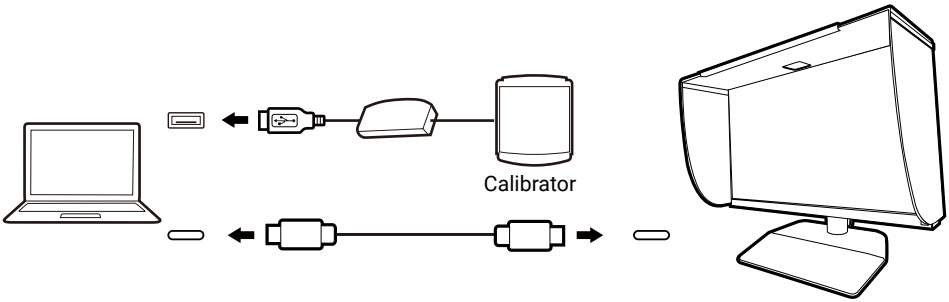
Connection via DP ports (recommended)



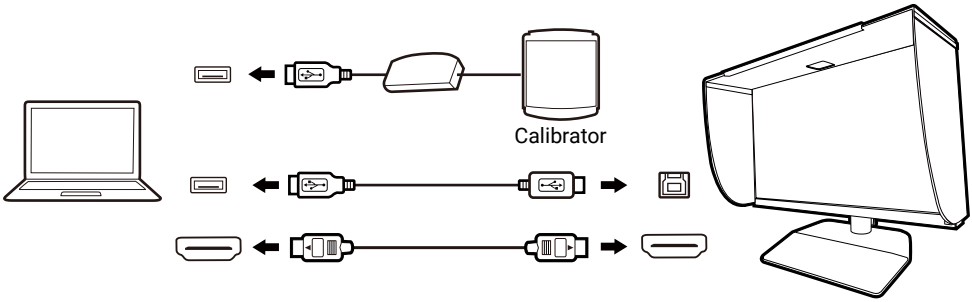
> **Note**
>
> Make sure a USB cable is connected properly so ICCsync can work properly.

Connection via USB-C ports

> **Note**
>
> 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.



Connection via HDMI ports (SW series only)

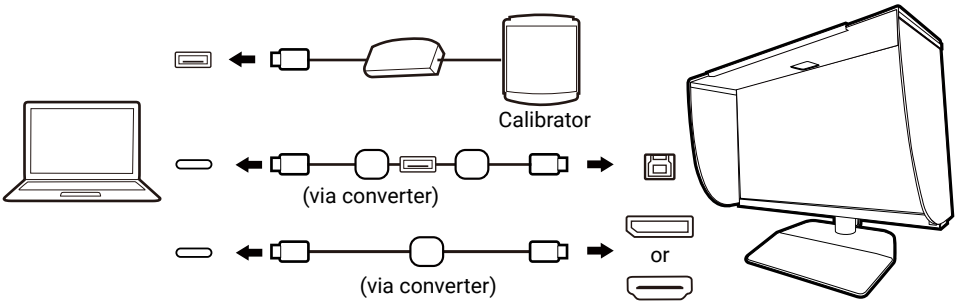


Note

Make sure a USB cable is connected properly so ICCsync can work properly.

Connection via converters

Different cables are required depending on the types of I/O ports available on your monitors and computer. You may need converters to make connections properly.

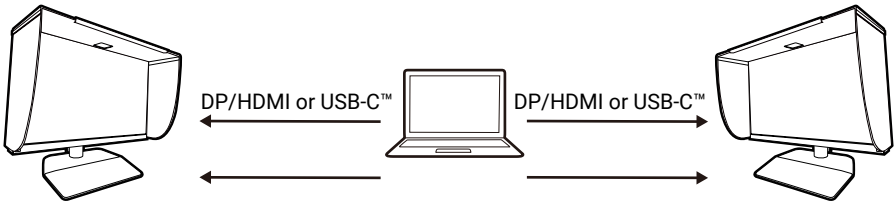


Note

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.

Connecting with more than one monitor

The software supports color calibration of one monitor at a time, yet connection with up to 8 monitors is possible.



If multiple monitors are connected, you have to choose one for calibration. See Selecting another connected monitor on page 16 for more information.

If your computer comes with an Apple M1 processor and two or more of the connected monitors are of the same model, you will need to bind the monitors so they can be identify properly. See Setting to bind your monitors on page 15 for more information.

> **Note**
>
> - 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.
> - For a computer with Apple M1 processor, the number of connected monitors is limited. For other processors, you can connect up to 8 monitors. Refer to the specifications of your computer for details.

Getting ready before you start

To ensure the best calibration quality, follow the instructions before calibration. Different procedures are required by operating system.

On Windows

1. Make sure the connection of computer, monitor, calibrator, and network is complete.
2. Power on and warm up the computer and the monitor for 30 ~ 60 minutes.
3. Make sure the monitor firmware has been upgraded to the latest version (if available). An original factory firmware may be restricted by a regional energy regulations and thus reduces display settings. You are recommended to upgrade the monitor firmware.
4. On your monitor, go to **RGB PC Range** and select **Full (0~255)**.
5. On your computer, make sure the RGB range setting is **Full (0~255)** in GPU configuration.

6. Disable energy saving function and sleep mode from your computer and monitor respectively.
7. Adjust the following settings from your Windows computer.
   - Disable the screensaver and **Night Shift**/**Night light**.
   - Disable **Automatically adjust brightness** or **Change brightness automatically when lighting changes**.
   - Disable HDR mode.
   - Disable mirror displays mode.

On Mac

1. Make sure the connection of computer, monitor, calibrator, and network is complete.
2. Power on and warm up the computer and the monitor for 30 ~ 60 minutes.
3. Make sure the monitor firmware has been upgraded to the latest version (if available). An original factory firmware may be restricted by a regional energy regulations and thus reduces display settings. You are recommended to upgrade the monitor firmware.
4. On your monitor, go to **RGB PC Range** and select **Full (0~255)**.
5. Adjust the following settings from your Mac computer.
   - Disable energy saving function and sleep mode from your computer and monitor respectively.
   - Disable the screensaver and **Night Shift**/**Night light**.
   - Disable **Automatically adjust brightness** or **Change brightness automatically when lighting changes**.
   - Disable HDR mode.
   - Disable mirror displays mode.
   - Disable **True Tone** function.
   - Set **Display Contrast** to **Normal** and disable all options from **Accessibility** > **Display**.
   - Disable **Color Filters**.

Downloading and launching Palette Master Ultimate

1. Visit the local website from www.BenQ.com > **Palette Master Ultimate** to download the software.
2. Click the file just downloaded and follow the on-screen instructions to complete the installation. Check **Launch Palette Master Ultimate** in the last step before you finish the installation. Now the software is ready for use.
3. When the software is launched, it scans and identifies the connected monitor(s). If multiple supported monitors are connected, you may be requested to bind the monitors first. Follow the on-screen instructions. See Setting to bind your monitors on page 15 for more information.
4. Go to **Account**. Log in the software with your Gmail, WeChat, or Apple account to access all software functions. Available services may vary by region. If you sign in as a visitor, you will start a software trial of 30 days.
5. Wait until the software main page displays. The software checks for an update when it is launched. See Updating the software on page 14.
6. The software works with the compatible and connected monitors and calibrators only. You must select one monitor and one calibrator from the list to proceed. Select one function and proceed with the **START** button. See Software main page on page 17.

Note

- The software interface follows the operating system language setting and cannot be changed from the software.
- A monitor's OSD menu is locked when Palette Master Ultimate is displayed on the screen.
- Install or update the calibrator's driver (if available) before calibration.

Tips

The software can be accessed from the  icon in the system tray, or from the computer's **Start** menu > **Palette Master Ultimate**.

Updating the software

The software is set to check for an update automatically when it is launched. If an update is available, you will be guided to the **Software Update** page. Click **DOWNLOAD** to download the file.

If you prefer to check for update manually, disable **Auto Update**.

No.	Descriptions
1.	Shows the current software version.
2.	Shows the latest software check time.
3.	Shows if there is an update version available.
4.	Available options vary by software status. • **DOWNLOAD**: an update is available for download. • **INSTALL NOW**: an update version has been downloaded and is ready for installation. • **TRY AGAIN**: the network is disconnected while downloading an update. Click after network is re-connected to resume. • **CHECK FOR UPDATES**: **Auto Update** is disabled. Click to check for update manually.
5.	Determines whether to check for update automatically.

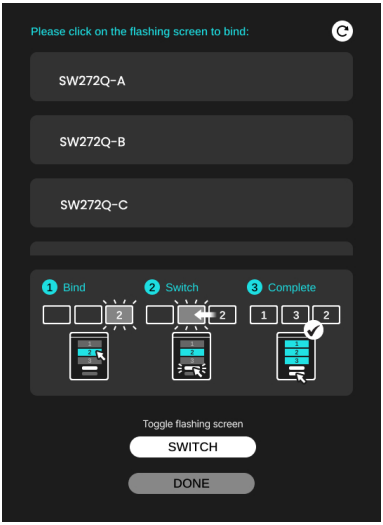
Setting to bind your monitors

> Not required for Mac products with Apple chips and OS versions later than (including) macOS 13.

Monitor binding is requested only when your computer comes with an non-Apple processor, the OS version is older than macOS 13, and two or more of the connected monitors are of the same model name. This process helps identify monitors correctly to ensure software compatibilities.

The binding page is displayed on the following conditions:

- I/O plug-unplug is performed
- the computer is powered off-on
- the software is launched (for the first time, or after it was closed by **EXIT** from the upper-right corner of the software or by **Quit** from the resident software menu)
- the monitor is connected manually from the icon in the system tray > **Connected devices** > **Check connected devices**.



The binding page shows only the monitors of the same model name. A suffix is added to the model name.

1. Make sure you have set **PROJECTION** or **Multiple displays** to be **Extend** from the computer.
2. One of the connected monitors is flashing. Select one name from the list for the flashing screen. Wait for the name to be highlighted and the binding is done.

3. Click the flashing **SWITCH** button from the binding page. Another screen is flashing then. Select a name for it.
4. Repeat the binding process until all names on the list are highlighted. That means all monitors of the same model name are bound. Click **DONE** to finish.
5. To release current binding and detect the connection again, click  . Start with step 1.

Selecting another connected monitor

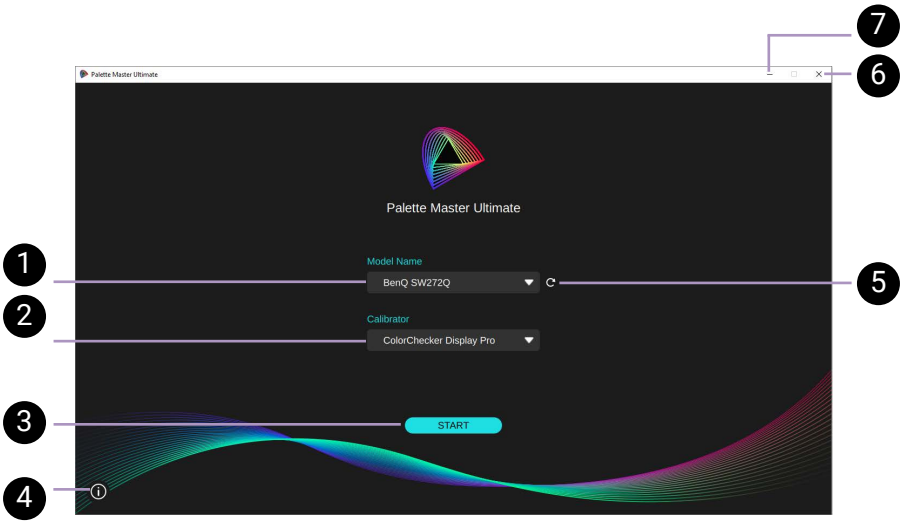
The software works with one monitor connected with USB or USB-C™ cable at a time. If you wish to calibrate another connected monitor, go to the software main page and select from the monitor drop-down list. The software main page is then displayed on the screen of the selected monitor.

Tips

- If the software main page is not displayed on the selected monitor after model switch, simply drag and drop the page to the selected model (when **PROJECTION** or **Multiple displays** is set to **Extend**).
- (Selected models only) If your monitor is connected properly but not available from the monitor drop-down list on the main page, right-click on the  icon in the system tray > **Connected devices** > **Check connected devices** to connect manually.

Overview

Software main page

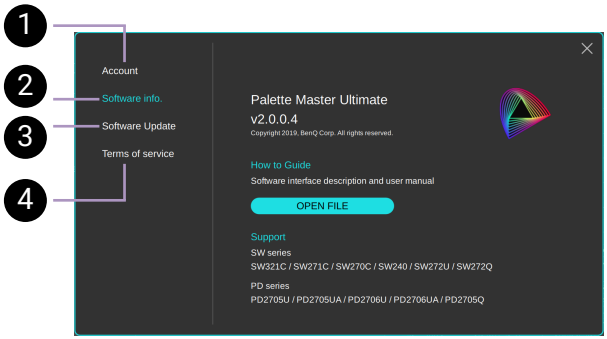


No.	Function	Descriptions
1.	Model list	Shows a list of compatible and connected monitors.
2.	Calibrator list	Shows a list of compatible and connected calibrators.
3.	**START**	Accesses to the available function of the connected monitor. This button is available only when compatible monitor and calibrator are connected and selected.
4.	Software information	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.
5.	Model update	Scans and updates the connection status. If the monitor connection has been changed or the computer just woke up from Sleep mode, press to update the connection.

No.	Function	Descriptions
6.	Close	Closes the software window.
7.	Minimize	Minimizes the software window.

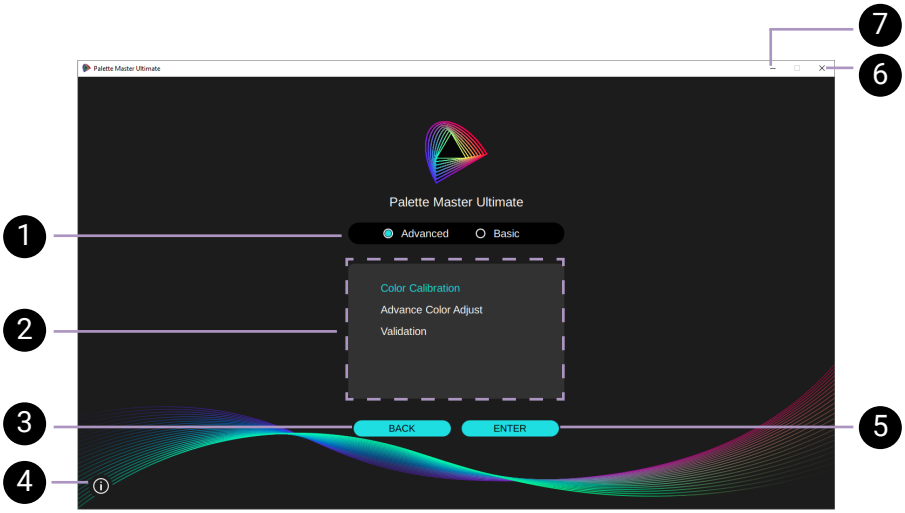
Software information page

Click ⓘ on the lower-left part of software main page to bring up software information page.



No.	Descriptions
1.	Accesses to account information, ICC profiles backup and download, and log ID. See Backing up ICC profiles to cloud storage on page 60 and Contacting customer service on page 61 for more information.
2.	Accesses to software information, user manual, and supported model list.
3.	Accesses to software version information and update. See Updating the software on page 14 for more information.
4.	Accesses to end-user license agreement.

Function page

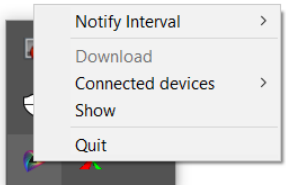


No.	Function	Descriptions
1.	Menu type	(Available to SW series) Switches to Advanced or Basic menu.
2.	Functions	Shows a list of available functions, which vary by monitor series or menu type.
3.	**BACK**	Goes to the previous step.
4.	Software information	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.
5.	**ENTER**	Accesses to the selected function.
6.	Close	Closes the software window.
7.	Minimize	Minimizes the software window.

Menu options of resident application

If you close the software window by clicking ✕ on the upper-right corner, the software works as a resident application in the system tray. This helps with communication between the monitor and the computer and perform ICCsync automatically.

Right-click on the icon in the system tray to bring up the menu.



Item	Descriptions
Notify Interval	Determines how often the software reminds you of monitor calibration.
Download	Accesses software update if available.
Connected devices	Allows you to connect devices manually.
Show	Brings the software page back.
Quit	Exits the software and closes the software window.

> **Note**
>
> Make sure a USB cable is connected properly as instructed in Connections on page 9 and PMU is running as resident application, so ICCsync can work properly.

Hardware calibration for SW series

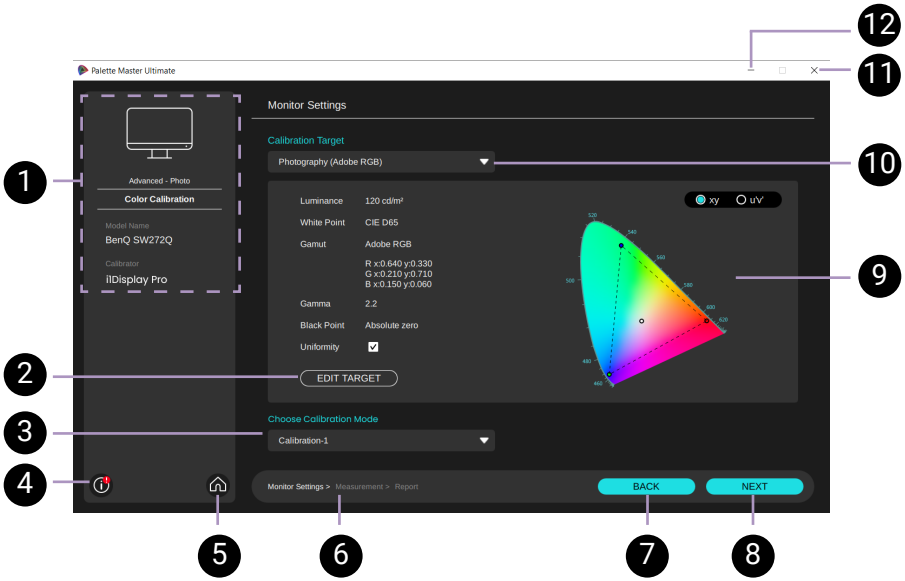
Depending on your preference, you can go to advanced or basic menus to calibrate your monitor.

Monitor	Available functions		Description
SW series	Advanced	Color Calibration	Complete hardware calibration. (See p.22)
		Advance Color Adjust	Fine-tune of a calibration mode. (See p.33)
		Validation	Monitor validation against an existing calibration standard. (See p.37)
	Basic	Color Calibration	Quick hardware calibration. (See p.42)
		Validation	Monitor validation against an existing calibration standard. (See p.37)

Calibrating a monitor (advanced Color Calibration)

1. Get ready by following the instructions in Getting ready before you start on page 11.
2. Select **Advanced** > **Color Calibration** and **ENTER** from the software main page.

Color Calibration page (Advanced)



No.	Descriptions
1.	Shows the selected software function and information of the connected devices.
2.	Accesses to customize a calibration target. See Setting a calibration target in Advanced menu on page 24 for more information.
3.	Decides which calibration mode to keep the calibration results.
4.	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.

No.	Descriptions
5.	Returns to the software main page.
6.	Shows the progress towards function completion.
7.	Returns to the previous step.
8.	Goes to the next step.
9.	Shows the details of the selected calibration target.
10.	Selects a calibration target preset.
11.	Exits the software without saving. The software works as a resident application in the system tray. See Menu options of resident application on page 20 for more information.
12.	Minimizes the software window.

Performing color calibration

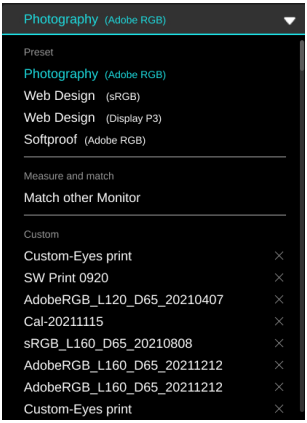
1. Select a color mode from **Calibration Target** to be your calibration target. See Setting a calibration target in Advanced menu on page 24 for more information.
2. Decide which calibration mode to save the calibration results for further use from **Choose Calibration Mode**. The calibration mode (**Calibration 1** / **Calibration 2** / **Calibration 3**) will carry the calibration results and is available as one of the color modes on compatible monitors.
3. Proceed with **NEXT**.
4. Read the on-screen instructions to make sure the devices are ready for calibration. You can keep the default settings of **ICC Version** and **ICC Profile Name**. Proceed with **NEXT**.
5. Follow the on-screen instructions to prepare the calibrator for calibration. Proceed with **NEXT**.
6. Aim the calibrator to the image on the screen. Tilt the monitor so the calibrator can attach to the screen surface and measure properly.
7. Click **START**. It takes a while to complete calibration. Once it is done, click **CHECK REPORT**. Continue with Viewing calibration results

applied on page 28 and Reading and saving the calibration report on page 30.

Note

- If you wish to maximize compatibility with other software (e.g., Photoshop), choose **V2** in **ICC Version**.
- If you prefer to name the ICC profile, see Naming an ICC profile on page 27 for more information.
- Make sure the calibrator lens is attached to the screen surface properly to obtain accurate measurement and results.
- Availability of **Uniformity** may vary by model.

Setting a calibration target in Advanced menu



Note

Available menu options vary by model and may not be displayed in the screenshots in this document.

Selecting from a preset target

You can choose a preset target from the list.

Scenario/Color mode	Color Gamut	White Point	Luminance	Gamma	Black Point
Photography (**Adobe RGB**)	Adobe RGB	D65	120	2.2	**Absolute zero**
Web Design (**sRGB**)	sRGB	D65	120	2.2	**Absolute zero**
Web Design (**Display P3**)	P3	D65	120	sRGB	**Absolute zero**
Softproof (**Adobe RGB**)	Adobe RGB	D50	160	L*	**Absolute zero**

Scenario/Color mode	Color Gamut	White Point	Luminance	Gamma	Black Point
Cinema (P3-D65)	P3	D65	120	sRGB	**Absolute zero**
Cinema (DCI-P3)	P3	DCI-P3	48	2.6	**Absolute zero**
Video Editing (Rec. 709)	Rec. 709	D65	80	2.4	**Absolute zero**

If the monitor has been calibrated before, the calibration results can be saved and become your calibration target. You have more options in the list then.

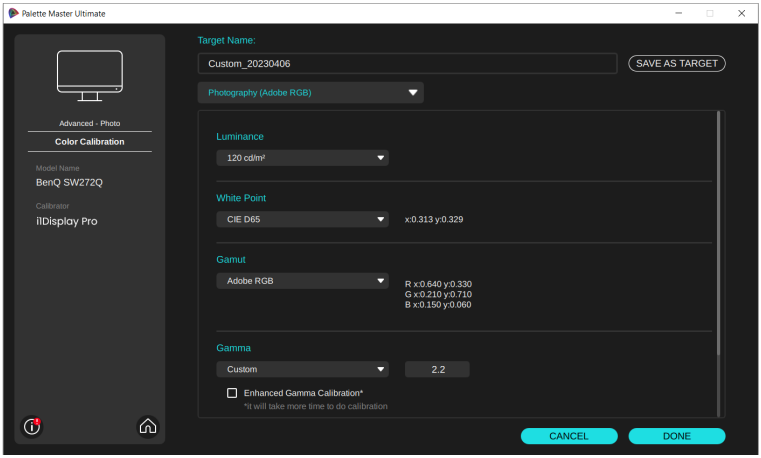
Select **Load Target from Monitor** to load parameters from **Calibration 1** / **Calibration 2** / **Calibration 3** from the connected monitor.

If a customized target is available, simply select it from the list.

Customizing a calibration target

If none of the preset mode is preferred, customize your own target.

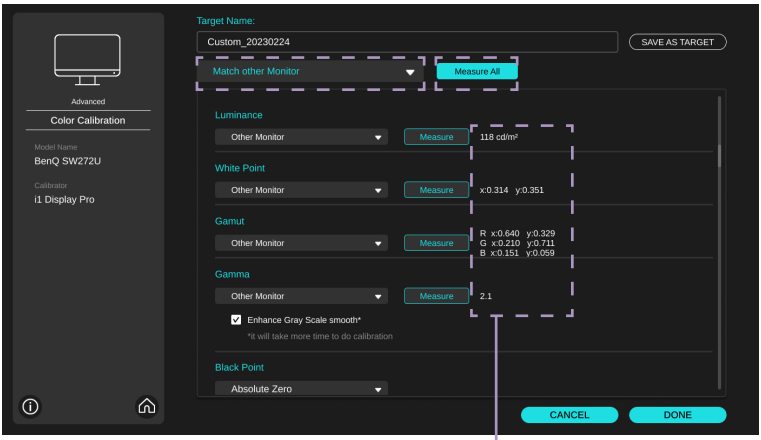
1. Go to **EDIT TARGET** for customization.
2. Name the target.
3. Modify the settings and save with **SAVE AS TARGET**. This is important, as only the customized and saved settings can be backed up to the cloud.
4. Proceed with **DONE**.
5. The software brings you back to the calibration setting menu. Continue with step 4 in Calibrating a monitor (advanced Color Calibration) on page 22.



Measuring color parameters from another display

Measure the screen of another monitor to obtain and leverage its display settings.

1. Go to **EDIT TARGET** for customization.
2. Select **Match other Monitor** from the list.
3. Name the target and save with **SAVE AS TARGET**.
4. Select **Measure All** or **Measure** and follow the on-screen instructions to measure the color parameters from another connected monitor.
5. The measured values are displayed after each item. You can measure an item individually again, or simply save the settings with **DONE**.
6. The software brings you back to the calibration setting menu. Continue with step 4 in Calibrating a monitor (advanced Color Calibration) on page 22.

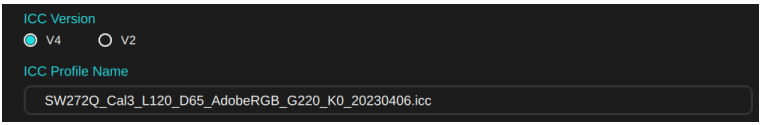


Note

- To enhance grayscale calibration, check **Enhanced Gamma Calibration** under **Gamma**. Note that it will take more time to complete calibration.
- **Enhanced Gamma Calibration** is not available to all the supported calibrators.
- If the measured monitor is not a BenQ SW series product, you should bear in mind that the color presentation may vary by monitor panel and cannot be identical. Consider working with **Advance Color Adjust** to fine tune the colors and minimize visual differences. See Fine-tuning a calibration mode (Advance Color Adjust) on page 33 for more information.

Naming an ICC profile

An ICC profile refers to a set of data that defines how colors are represented and displayed on devices. The default ICC profile on your computer may not best suit your monitor. An ICC profile is generated whenever a color calibration is performed. It goes with the calibration mode (**Calibration 1** / **Calibration 2** / **Calibration 3**) where the calibration results are saved to. That is, when a calibration mode is selected from the monitor's OSD menu, the corresponding ICC profile is applied to the computer automatically for better color matching representation.



The filename of an ICC profile carries the following information by default.

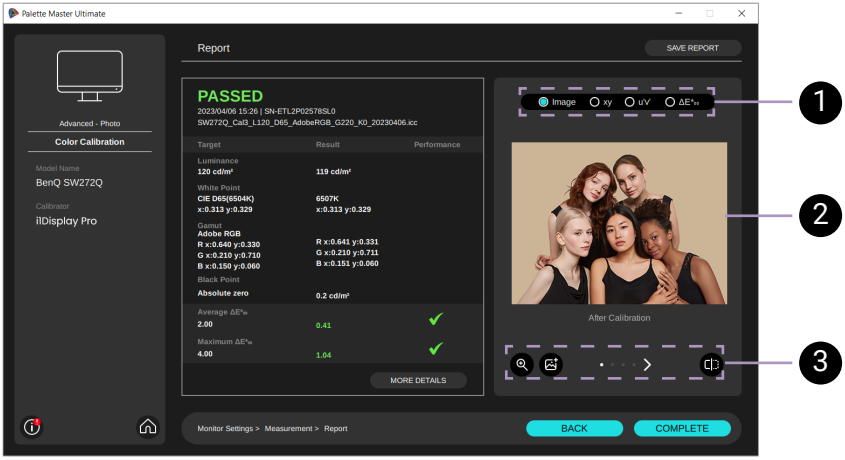
- Monitor model name
- Calibration mode
- Luminance
- White point
- Gamut
- Gamma
- Black point
- Calibration date

If you prefer to name the ICC profile, pay attention to the following:

- The filename extension is *.icc.
- Input limits vary by OS and ICC version.
  - (When **ICC Version** is **V4** on Windows) No illegible letters are allowed: \ / : * ? “ < > |
  - (When **ICC Version** is **V2**) Only English characters, numbers, and spaces are accepted
  - Only English characters, numbers, and spaces are accepted on Mac regardless of ICC version.
- The maximum filename length is 100 characters.
- If color calibration of the same calibration target is performed more than once on the same day, a suffix will be added after calibration date.

Viewing calibration results applied

You are provided with different ways to check the calibration results. By default, the results are applied to an image so you can check the visual difference easily. Change to other options as desired.

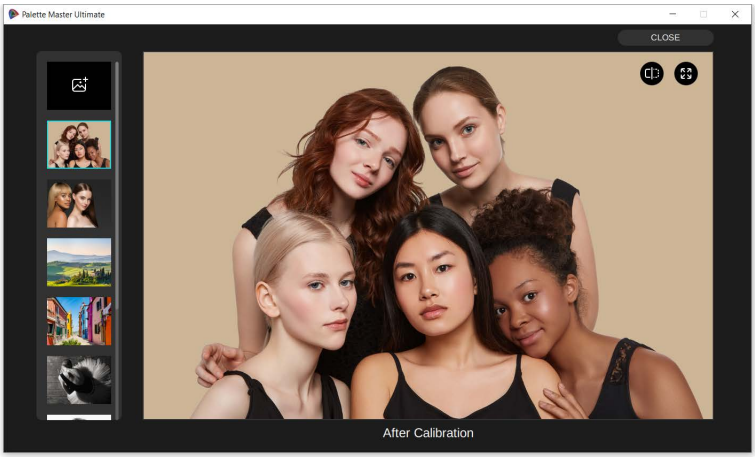


No.	Descriptions
1.	Options to see the calibrated results.
2.	Applied calibration results in the selected diagram format.
3.	Viewing options or diagram captions .

Viewing calibration results on an image

You can view an image applied with calibrated settings right after calibration.

- Click to compare the image before and after calibration.
- Click to zoom in the image to view details.
- Click / to view on different embedded images from the gallery.
- Click to add your images to the gallery. See Supported image formats for gallery on page 29 for more information.



Supported image formats for gallery

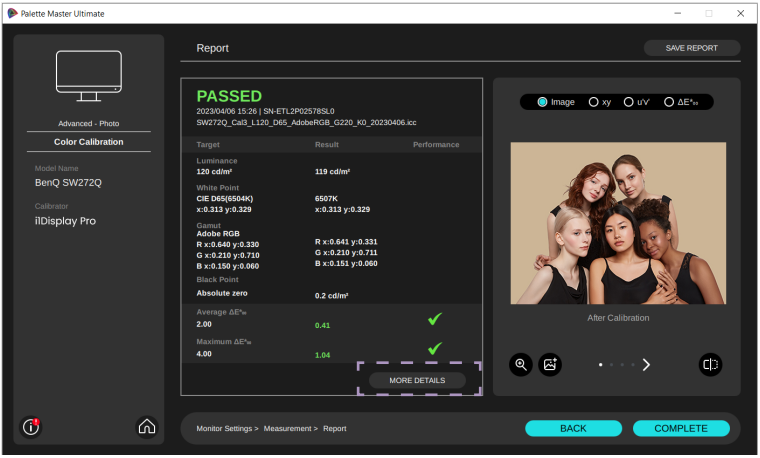
Check for supported image formats before uploading images to the gallery. You will be notified when uploading an incompatible image.

Item	Condition
Image format	*.jpg, *.png, *.tif
Aspect ratio	16:9 The image is center-aligned. An oversized image or an image of other aspect ratio will be cropped to fit into the gallery.
Number	You can add up to 5 images to the software gallery. If you try to upload more, an image uploaded previously will be replaced by the new one. If you exit the software, the gallery will be restored to the defaults. The images you uploaded will be erased.

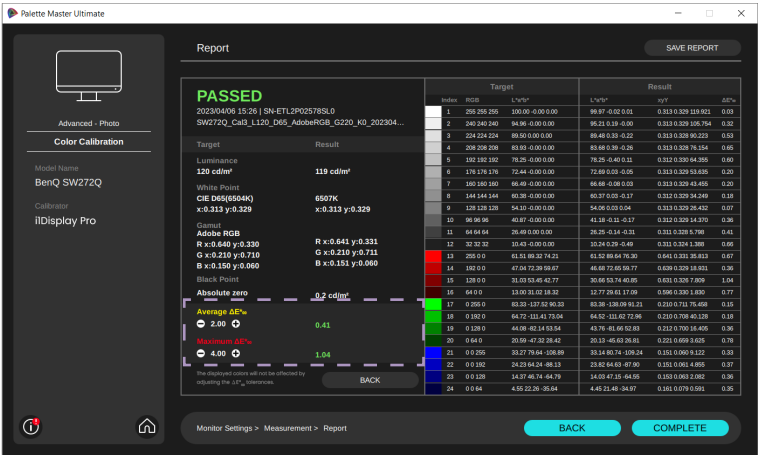
Reading and saving the calibration report

You are guided to a short calibration report after clicking **CHECK REPORT** at the end of monitor calibration.

1. Click **MORE DETAILS** for a detailed report.



2. You can adjust the average and maximum Delta E (ΔE) thresholds manually from a detailed report to see if your monitor can pass with the adjusted standard. This is for reference only and does not change any display settings, ICC profile, or calibration results.

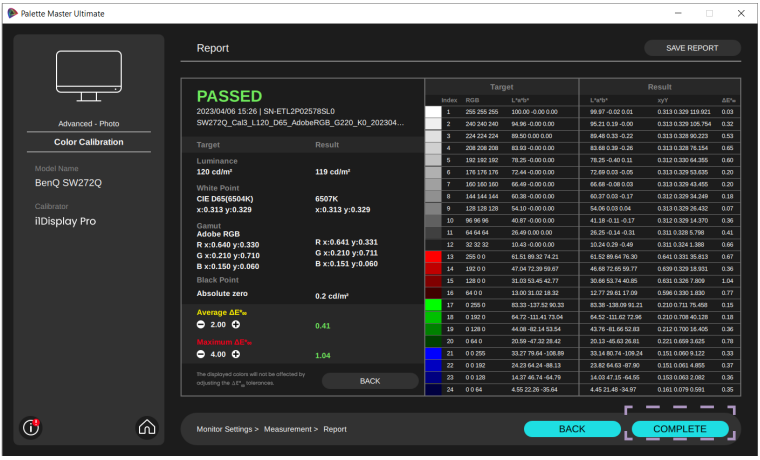


Refer to the following table for the meaning of different text colors. You might want to adjust your environment (for instance, check the monitor tilt angle so the calibrator can be attached to the monitor

screen properly) and perform calibration again.

Text color	Descriptions
White	The color patch falls within the set average Delta E (ΔE) value.
Yellow	The color patch exceeds the set average Delta E (ΔE) value.

3. Click **SAVE REPORT** to save both the short and detailed calibration report for reference in the future.
4. Click **COMPLETE** to complete monitor calibration and return to the main page. The calibration results are saved to the monitor. The ICC profile generated by the calibration will be applied whenever the calibration mode is selected for the monitor.
   Note that if you choose **BACK** instead, the calibrated results will not be saved or applied. The screen keeps using the color settings before calibration.



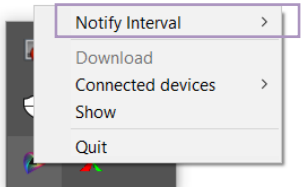
Note

If the monitor calibration fails, click **Please calibrate again** from the short report and make adjustments as instructed by the troubleshooting information. Click **RECALIBRATE** to perform color calibration again. If it fails again, see Contacting customer service on page 61 for assistance.

Calibrating the monitor periodically

Set a reminder to notify you of monitor calibration on a regular basis.

1. Right-click on the icon in the system tray.
2. Go to **Notify Interval** and select a preferred interval.

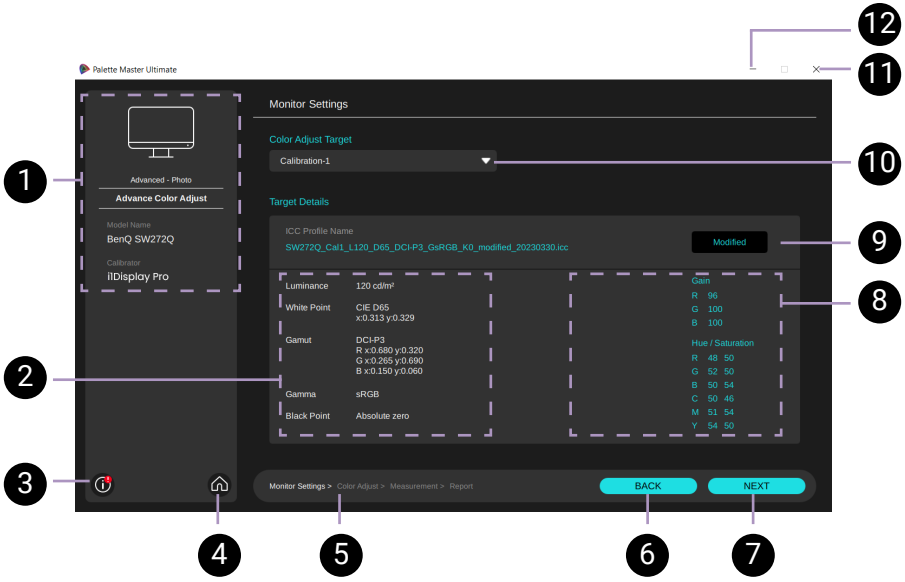


Fine-tuning a calibration mode (Advance Color Adjust)

You can select a calibration mode to fine tune the colors. This function is available only after the monitor has been calibrated as instructed in Calibrating a monitor (advanced Color Calibration) on page 22.

1. Get ready by following the instructions in Getting ready before you start on page 11.
2. Select **Advanced** > **Advance Color Adjust** and **ENTER** from the software main page.

Advance Color Adjust page



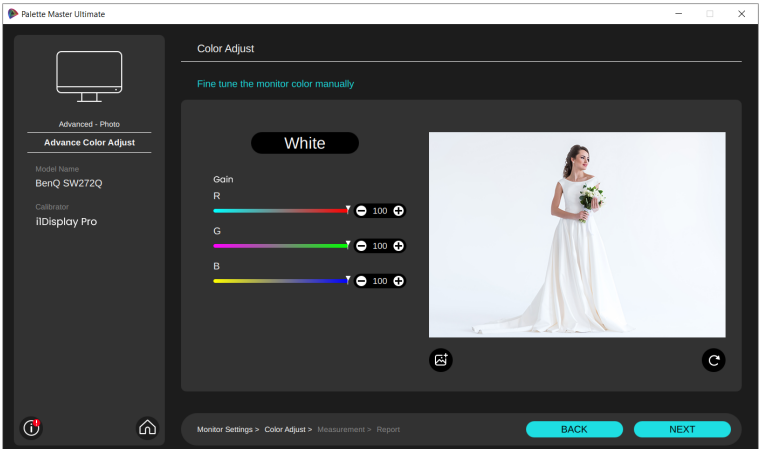
No.	Descriptions
1.	Shows the selected software function and information of the connected devices.
2.	Shows the target details.
3.	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.

No.	Descriptions
4.	Returns to the software main page.
5.	Shows the progress towards function completion.
6.	Returns to the previous step.
7.	Goes to the next step.
8.	Shows the modified values of the selected target (if available).
9.	Shows the ICC profile that goes with the selected target.
10.	Selects a calibration target preset.
11.	Exits the software without saving. The software works as a resident application in the system tray. See Menu options of resident application on page 20 for more information.
12.	Minimizes the software window.

Performing color calibration with a fine-tuned mode

1. Select a calibration mode from **Color Adjust Target** to be the standard. A calibration mode is available only with calibration results. It takes awhile to load the parameters. Proceed with **NEXT**.
2. Adjust the settings to fine tune 7 main colors in the following two pages. There is an expected range of change for each item based on the selected target. If the adjustment goes beyond the range, there will be obvious visual differences between the result and the selected target. You will be notified if the adjustment is beyond the range. Continue with the adjustment after reading the message.
3. The changes are applied immediately to the screen as well as the sample image for your preview.
   - Click  to choose another preferred image from your computer. If you exit the software, the image will be restored to the defaults.
   - Click  to remove the changes on this page.

   To keep the changes, proceed with **NEXT**.



4. Read the on-screen instructions to make sure the devices are ready for calibration. The default ICC profile name in **ICC Profile Name** comes with "Modify". Keep the default name or rename it as instructed by Naming an ICC profile on page 27. Proceed with **NEXT**.
5. Follow the on-screen instructions to prepare the calibrator for calibration. Proceed with **NEXT**.
6. Aim the calibrator to the image on the screen. Tilt the monitor so the calibrator can attach to the screen surface and measure properly.
7. Click **START**. It takes a while to complete calibration. Once it is done, click **CHECK REPORT**. See Reading and saving the report in Advance Color Adjust on page 35 for more information.
8. Click **COMPLETE** to complete monitor calibration and return to the main page.

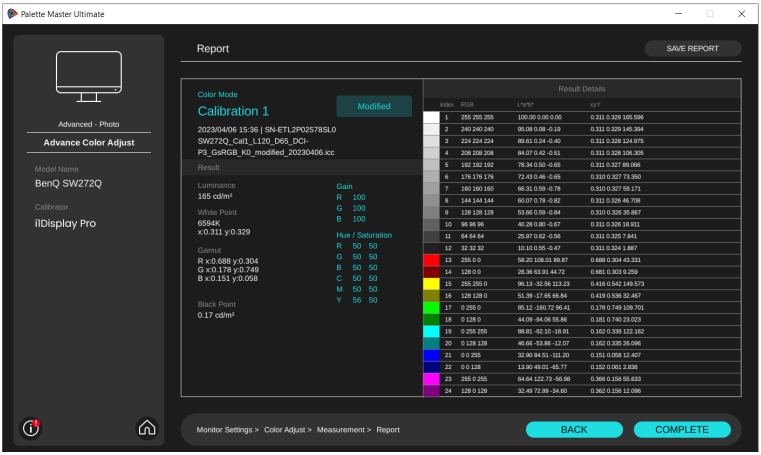
Note

If you leave **Advance Color Adjust** during color adjustment, the current settings are applied directly without updating the ICC profile and target. If you quit the software in the middle of color adjust, the current screen color is applied and may not be consistent with the calibration target.

Reading and saving the report in **Advance Color Adjust**

You are guided to a short report after clicking **CHECK REPORT** at the end of monitor measurement under **Advance Color Adjust**.

1. Click **MORE DETAILS** for a detailed report.



If a calibration mode has been modified from **Advance Color Adjust**, it will be marked as **Modified**. The original target details and the modified color values will be displayed. In **Advance Color Adjust**, a calibration mode (i.e., the results saved from monitor calibration) is modified to meet your preference visually yet it may be quite different with the original calibration results. Therefore, the report here shows only the measured results of each color patch. You will not find whether the monitor passes or fails against the selected calibration mode. Delta E (ΔE) thresholds are not available as well.

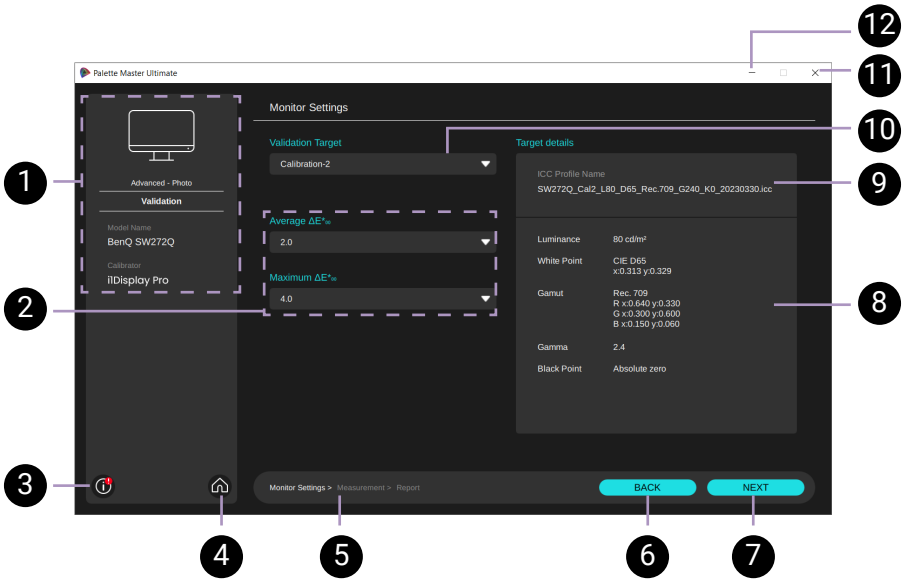
2. Click **SAVE REPORT** to save both the short and detailed calibration report for reference in the future.
3. Click **COMPLETE** to complete color adjustment and return to the main page. The results are saved to the monitor. The ICC profile generated by the calibration will be applied whenever the calibration mode is selected for the monitor.

Validating your monitor (Validation)

Validate the current monitor by comparing it against a standard, i.e., a set of reference values suitable for the calibration targets selected. The validation results show how far the monitor is from the calibration standard.

1. Get ready by following the instructions in Getting ready before you start on page 11.
2. Select **Advanced** > **Validation** and **ENTER** from the software main page.

Validation page



No.	Descriptions
1.	Shows the selected software function and information of the connected devices.
2.	Accesses to modify a validation threshold. The settings are not available for a target that has been modified from **Advance Color Adjust**.
3.	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.

No.	Descriptions
4.	Returns to the software main page.
5.	Shows the progress towards function completion.
6.	Returns to the previous step.
7.	Goes to the next step.
8.	Shows the details of the selected validation target.
9.	Shows the ICC profile that goes with the selected target.
10.	Selects a calibration mode as the validation target.
11.	Exits the software without saving. The software works as a resident application in the system tray. See Menu options of resident application on page 20 for more information.
12.	Minimizes the software window.

Performing validation

1. The calibration results have been saved to a calibration mode. Select a calibration mode from **Validation Target** to be the standard. Only modes with calibration results are available from the list.
2. Adjust Delta E (ΔE) thresholds manually by clicking ⊖ or ⊕ to adjust the thresholds. This step is not available if the calibration mode has been modified in **Advance Color Adjust**.
3. Read the on-screen instructions to make sure the devices are ready for validation. Proceed with **NEXT**.
4. Follow the on-screen instructions to prepare the calibrator for validation. Proceed with **NEXT**.
5. Aim the calibrator to the image on the screen. Tilt the monitor so the calibrator can attach to the screen surface and measure properly.
6. Click **START**. It takes a while to complete validation. Once it is done, click **CHECK REPORT**. Continue with Reading and saving the validation report on page 39.

Reading and saving the validation report

You are guided to a validation report after clicking **CHECK REPORT** at the end of monitor validation.

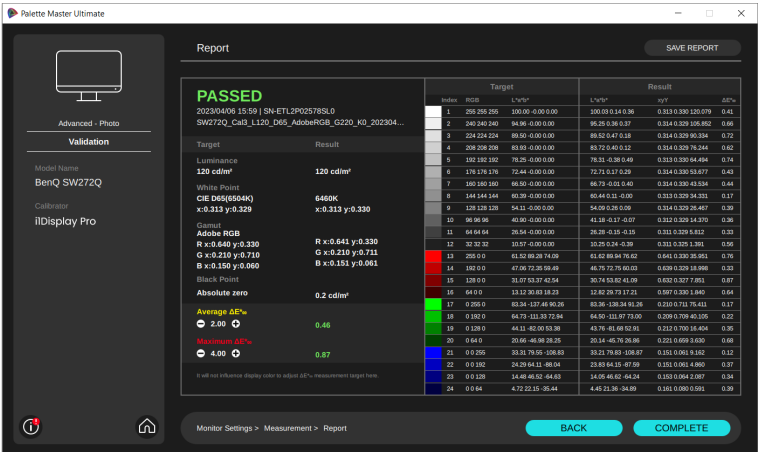
If the validation reports shows **FAILED**, you are recommended to calibrate the monitor again from **Color Calibration** from the main page.

1. Click **SAVE REPORT** to save both the short and detailed calibration report for reference in the future.
2. Click **COMPLETE** to complete monitor calibration and return to the main screen.

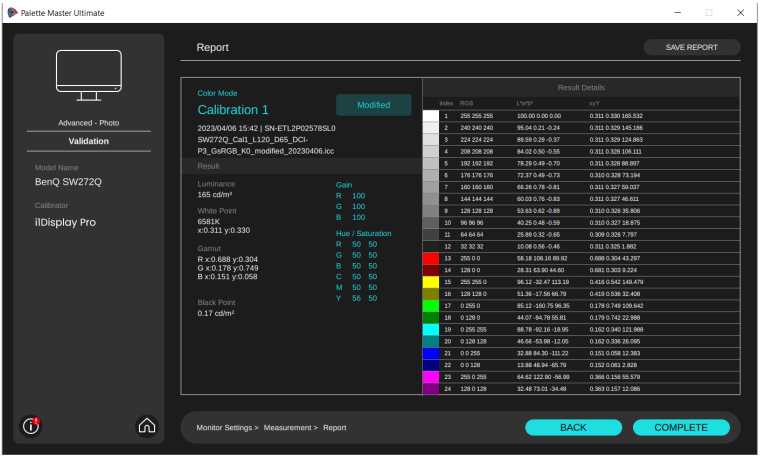
Note

Available information on the report varies if the selected validation target (i.e., a calibration mode) has been modified in **Advance Color Adjust**. You will not find whether the monitor passes or fails against the selected calibration mode. Delta E (ΔE) thresholds are not available as well.

Validation report of a target not being modified



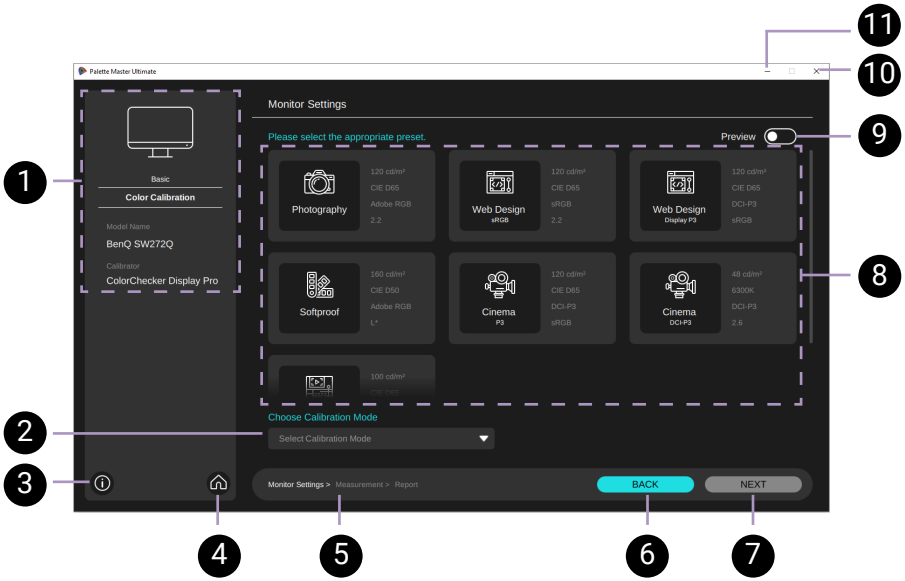
Validation report of a target being modified from **Advance Color Adjust**



Calibrating a monitor (basic **Color Calibration**)

1. Get ready by following the instructions in Getting ready before you start on page 11.
2. Select **Basic** > **Color Calibration** and **ENTER** from the software main page.

Color Calibration page (Basic)



No.	Descriptions
1.	Shows the selected software function and information of the connected devices.
2.	Decides which calibration mode to keep the calibration results.
3.	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.
4.	Returns to the software main page.
5.	Shows the progress towards function completion.

No.	Descriptions
6.	Returns to the previous step.
7.	Goes to the next step.
8.	Shows the available calibration target presets. Available presets and settings vary by model.
9.	Shows/hides the preview of the selected preset target. This option is not available if you choose to measure another monitor's parameters as the calibration target.
11.	Exits the software without saving. The software works as a resident application in the system tray. See Menu options of resident application on page 20 for more information.
12.	Minimizes the software window.

Performing color calibration

1. Select one of the presets to be your calibration target. See Setting a calibration target in Basic menu on page 43 for more information.
2. Decide which calibration mode to save the calibration results for further use from **Choose Calibration Mode**. The calibration mode (**Calibration 1** / **Calibration 2** / **Calibration 3**) will carry the calibration results and is available as one of the color modes on compatible monitors.
3. Proceed with **NEXT**.
4. Read the on-screen instructions to make sure the devices are ready for calibration. You can keep the default settings of **ICC Version** and **ICC Profile Name**. Proceed with **NEXT**.
5. Follow the on-screen instructions to prepare the calibrator for calibration. Proceed with **NEXT**.
6. Aim the calibrator to the image on the screen. Tilt the monitor so the calibrator can attach to the screen surface and measure properly.
7. Click **START**. It takes a while to complete calibration. Once it is done, click **CHECK REPORT**. Continue with Viewing calibration results applied on page 28 and Reading and saving the calibration report on page 30.

Note

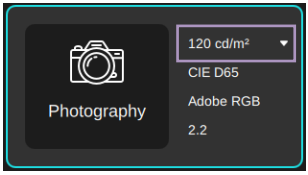
- If you wish to maximize compatibility with other software (e.g., Photoshop), choose **V2** in **ICC Version**.
- If you prefer to name the ICC profile, see Naming an ICC profile on page 27 for more information.
- Make sure the calibrator lens is attached to the screen surface properly to obtain accurate measurement and results.
- Availability of **Uniformity** may vary by model.

Setting a calibration target in Basic menu

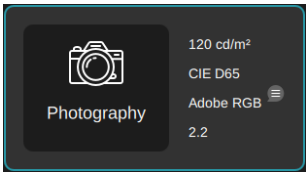
To speed up the calibration process, some basic settings are predefined for a calibration target, which is suitable for certain scenario. Available targets vary by model.

Scenario/Color mode	Color Gamut	White Point	Luminance (default)	Gamma	Black Point
Photography	Adobe RGB	D65	120	2.2	**Absolute zero**
Web Design (**sRGB**)	sRGB	D65	120	2.2	**Absolute zero**
Web Design (**Display P3**)	DCI-P3	D65	120	sRGB	**Absolute zero**
Softproof	Adobe RGB	D50	160	L*	**Relative 0.5**
Cinema (**P3**)	DCI-P3	D65	120	sRGB	**Absolute zero**
Cinema (**DCI-P3**)	DCI-P3	6300K	48	2.6	**Absolute zero**
Video Editing	Rec. 709	D65	100	2.4	**Absolute zero**

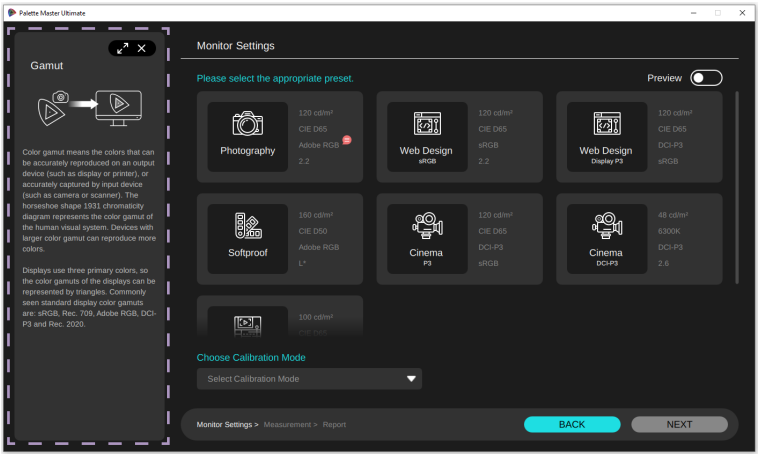
1. Select one from the preset targets that suits your need.
2. You can change brightness of a preset target. Click the arrow next to brightness to change if needed.



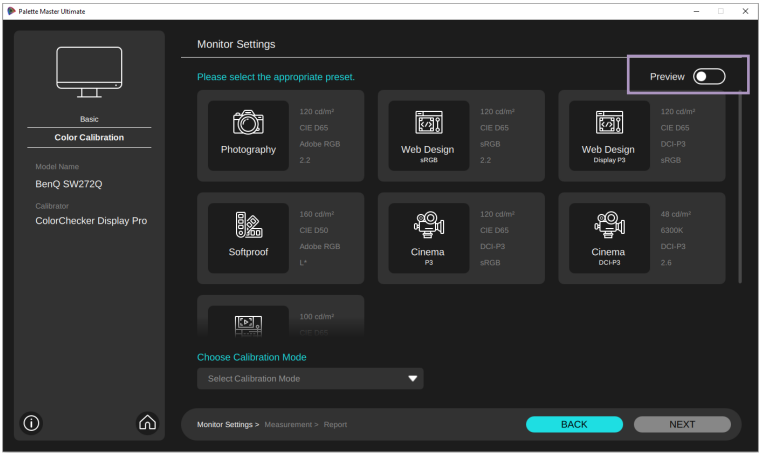
3. Hover over a setting. If a icon is displayed, click it to read more information on the setting item.



4. On the pop-up window, you can click  to move the window or click  to close it.



5. Before color calibration, you can preview the result of the selected target. Toggle the preview switch on the upper-right corner.

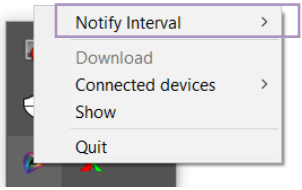


To proceed with validation, see Validating your monitor (Validation) on page 37 for details.

Calibrating the monitor periodically

Set a reminder to notify you of monitor calibration on a regular basis.

1. Right-click on the icon in the system tray.
2. Go to **Notify Interval** and select a preferred interval.

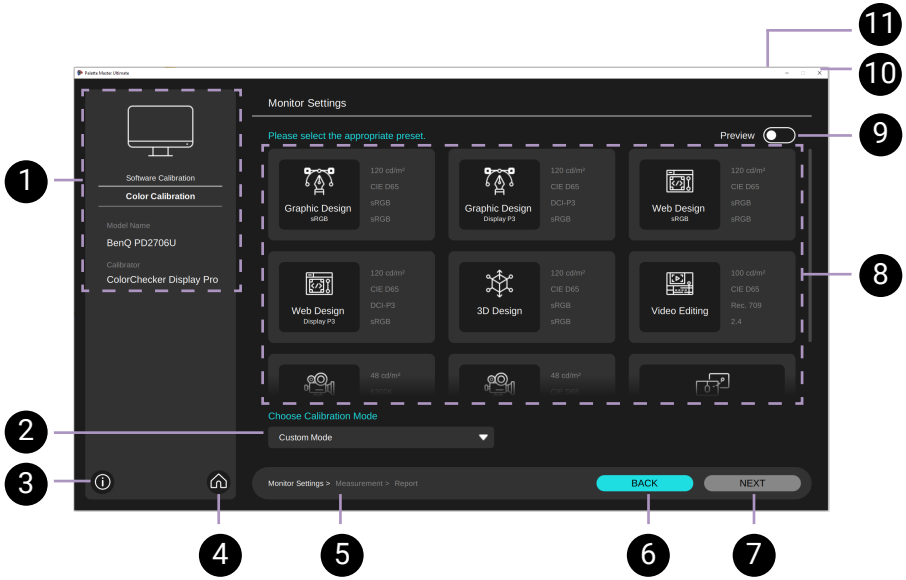


Software calibration for PD series

1. Get ready by following the instructions in Getting ready before you start on page 11.
2. Select **Color Calibration** and **ENTER** from the software main page.

Monitor	Available functions	Description
PD series	Color Calibration	Software calibration. (See p.47)
	Validation	Monitor validation against an existing calibration standard. (See p.57)

Color Calibration page



No.	Descriptions
1.	Shows the selected software function and information of the connected devices.
2.	Decides which calibration mode to keep the calibration results. This mode refers to the color mode on your monitor that saves your customized settings, usually it is **User** mode on PD series.
3.	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.

No.	Descriptions
4.	Returns to the software main page.
5.	Shows the progress towards function completion.
6.	Returns to the previous step.
7.	Goes to the next step.
8.	Shows the available calibration target presets. Available presets and settings vary by model.
9.	Shows/hides the preview of the selected preset target. This option is not available if you choose to measure another monitor's parameters as the calibration target.
11.	Exits the software without saving. The software works as a resident application in the system tray. See Menu options of resident application on page 20 for more information.
12.	Minimizes the software window.

Performing color calibration

1. Select one of the presets to be your calibration target. See Setting a calibration target for PD series on page 48 for more information.
2. Select **Custom Mode** from **Choose Calibration Mode** to save the calibration results for further use. The calibration mode (**Custom Mode**) will carry the calibration results and is available as one of the color modes on compatible monitors.
3. Proceed with **NEXT**.
4. Read the on-screen instructions to make sure the devices are ready for calibration. Proceed with **NEXT**.
5. Follow the on-screen instructions to prepare the calibrator for calibration. Proceed with **NEXT**.
6. Aim the calibrator to the image on the screen. Tilt the monitor so the calibrator can attach to the screen surface and measure properly.
7. Click **START**. It takes a while to complete calibration. Once it is done, click **CHECK REPORT**. Continue with Viewing calibration results on an image on page 52 and Reading and saving the calibration report on page 54.

Note

- If you prefer to name the ICC profile, see Naming an ICC profile on page 51 for more information.
- Make sure the calibrator lens is attached to the screen surface properly to obtain accurate measurement and results.
- To ensure calibration results, do not change color settings from the monitor's OSD menus after color calibration by **Palette Master Ultimate**.

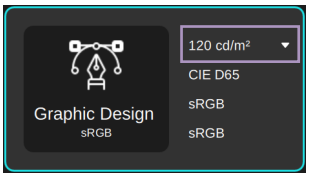
Setting a calibration target for PD series

To speed up the calibration process, some basic settings are predefined for a calibration target, which is suitable for certain scenario.

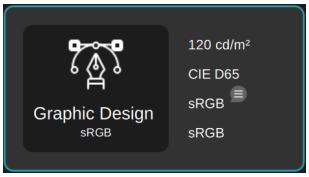
Available targets vary by model.

Scenario/Color mode	Color Gamut	White Point	Luminance (default)	Gamma
Graphic Design (sRGB)	sRGB	D65	120	sRGB
Graphic Design (Display P3)	P3	D65	120	sRGB
Web Design (sRGB)	sRGB	D65	120	sRGB
Web Design (Display P3)	P3	D50	160	sRGB
3D Design (P3)	sRGB	D65	120	sRGB
Video Editing (DCI-P3)	Rec. 709	D65	100	2.4
Cinema (DCI-P3)	P3	6300K	48	2.6
Cinema (P3-D65)	P3	D65	48	2.6
Match other Monitor	Available only after you have the measured color parameters from another display as instructed in Measuring color parameters from another display on page 50.			

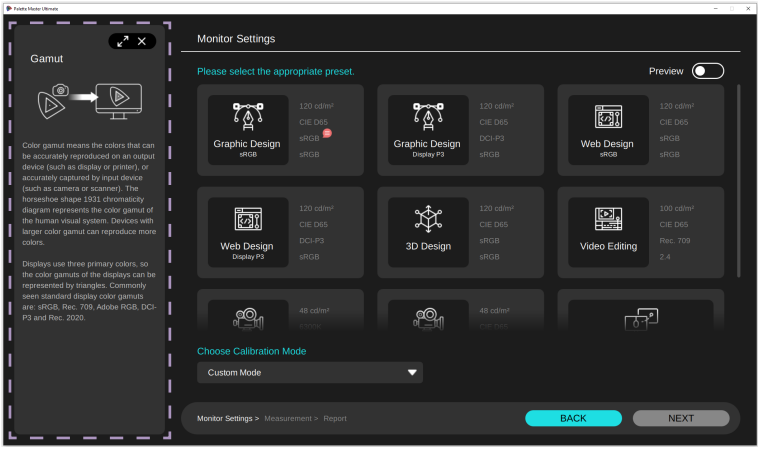
1. Select one from the preset targets that suits your need.
2. You can change brightness of a preset target. Click the arrow next to brightness to change if needed.



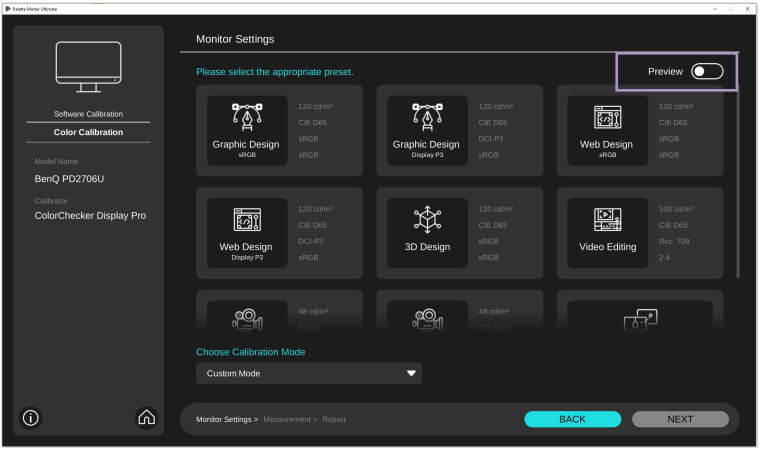
3. Hover over a setting. If a icon is displayed, click it to read more information on the setting item.



4. On the pop-up window, you can click to move the window or click to close it.



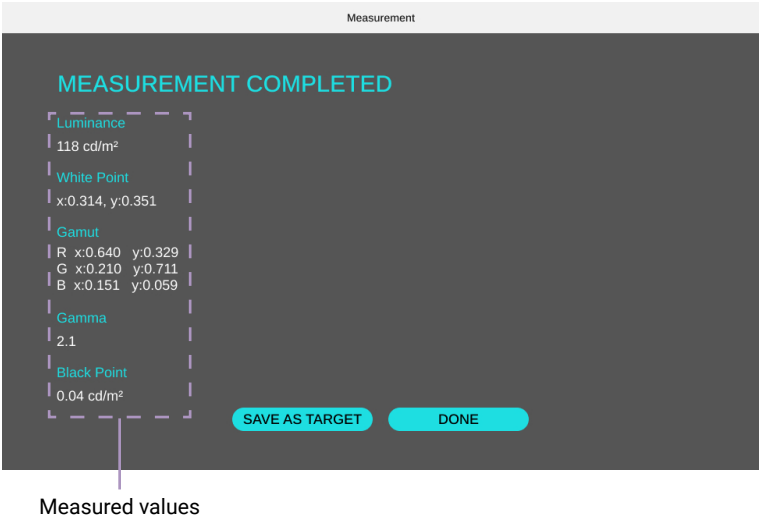
5. Before color calibration, you can preview the result of the selected target. Toggle the preview switch on the upper-right corner.



Measuring color parameters from another display

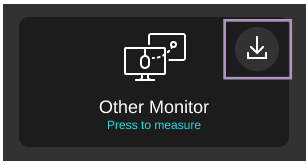
Measure the screen of another monitor to obtain and leverage its display settings.

1. After you have connected another compatible monitor, select **Measure and Match** from the list.
2. Follow the on-screen instructions to measure the color parameters from another connected monitor.
3. The measured values are displayed. Save the measure values as a target by selecting **SAVE AS TARGET**. You can simply proceed with **DONE** without saving.
4. The software brings you back to the calibration setting menu. Continue with step 4 in Calibrating a monitor (advanced Color Calibration) on page 22.



If you have measured and saved values from another monitor, you can access the values directly as a target.

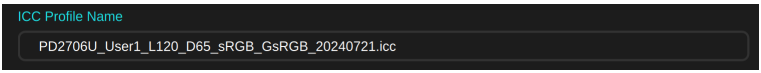
1. Click the download icon next to **Measure and Match**.



2. Access the saved values in *. pmt format from your files.

Naming an ICC profile

An ICC profile refers to a set of data that defines how colors are represented and displayed on devices. The default ICC profile on your computer may not best suit your monitor. An ICC profile is generated whenever a color calibration is performed. It goes with the calibration mode (**Custom Mode**) where the calibration results are saved to. That is, when a calibration mode is selected from the monitor's OSD menu, the corresponding ICC profile is applied to the computer automatically for better color matching representation.



The filename of an ICC profile carries the following information by default.

- Monitor model name
- Calibration mode
- Luminance
- Gamut
- Gamma
- Calibration date

If you have the color parameters from another monitor (as instructed in Measuring color parameters from another display on page 50), the filename of the ICC profile carries only the following information by default.

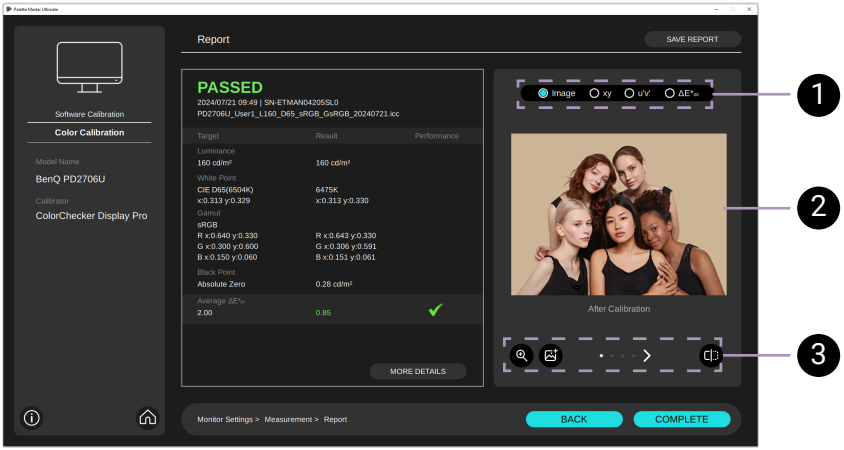
- Device type
- Calibration date

If you prefer to name the ICC profile, pay attention to the following:

- The filename extension is *.icc.
- Input limits vary by OS.
  - (On Windows) No illegible letters are allowed: \ / : * ? “ < > |
  - (On Mac) Only English characters, numbers, and spaces are accepted.
- The maximum filename length is 100 characters.
- If color calibration of the same calibration target is performed more than once on the same day, a suffix will be added after calibration date.

Viewing calibration results applied

You are provided with different ways to check the calibration results. By default, the results are applied to an image so you can check the visual difference easily. Change to other options as desired.

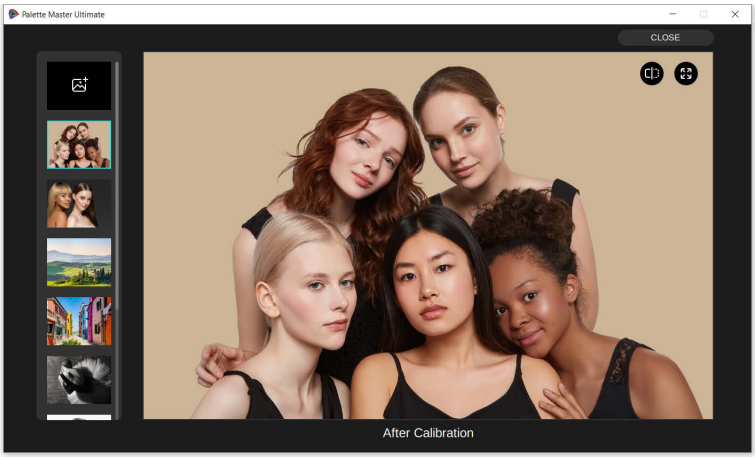


No.	Descriptions
1.	Options to see the calibrated results.
2.	Applied calibration results in the selected diagram format.
3.	Viewing options or diagram captions .

Viewing calibration results on an image

You can view an image applied with calibrated settings right after calibration.

- Click to compare the image before and after calibration.
- Click to zoom in the image to view details.
- Click / to view on different embedded images from the gallery.
- Click to add your images to the gallery. See Supported image formats for gallery on page 53 for more information.



Supported image formats for gallery

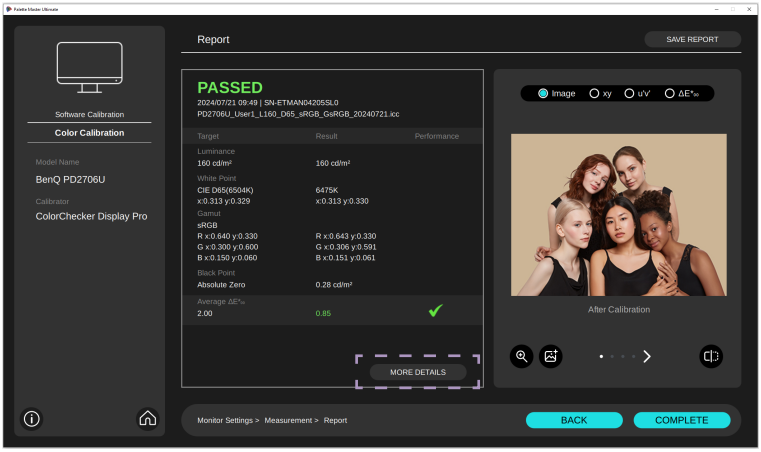
Check for supported image formats before uploading images to the gallery. You will be notified when uploading an incompatible image.

Item	Condition
Image format	*.jpg, *.png, *.tif
Aspect ratio	16:9 The image is center-aligned. An oversized image or an image of other aspect ratio will be cropped to fit into the gallery.
Number	You can add up to 5 images to the software gallery. If you try to upload more, an image uploaded previously will be replaced by the new one. If you exit the software, the gallery will be restored to the defaults. The images you uploaded will be erased.

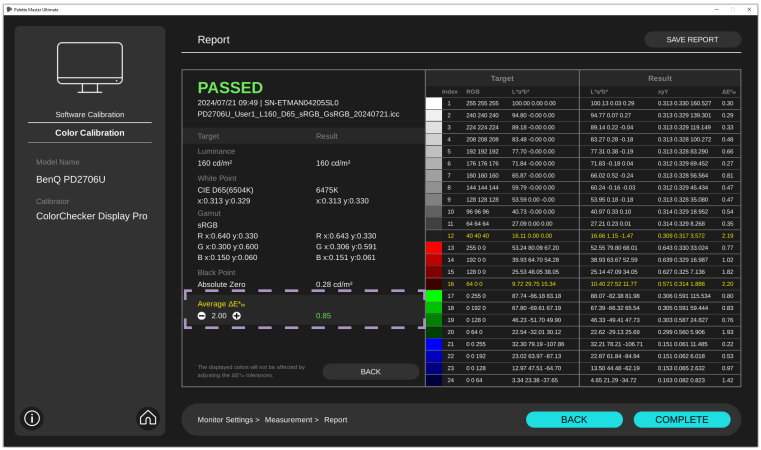
Reading and saving the calibration report

You are guided to a short calibration report after clicking **CHECK REPORT** at the end of monitor calibration.

1. Click **MORE DETAILS** for a detailed report.



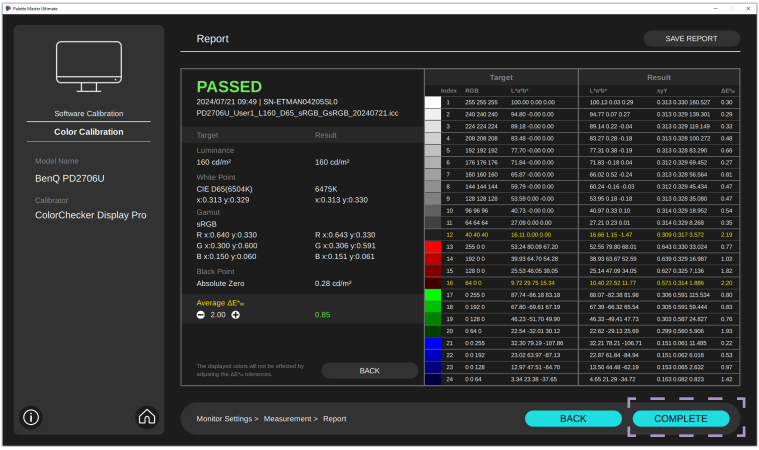
2. You can adjust the average Delta E (ΔE) thresholds manually from a detailed report to see if your monitor can pass with the adjusted standard. This is for reference only and does not change any display settings, ICC profile, or calibration results.



Refer to the following table for the meaning of different text colors. You might want to adjust your environment (for instance, check the monitor tilt angle so the calibrator can be attached to the monitor screen properly) and perform calibration again.

Text color	Descriptions
White	The color patch falls within the set average Delta E (ΔE) value.
Yellow	The color patch exceeds the set average Delta E (ΔE) value.

3. Click **SAVE REPORT** to save both the short and detailed calibration report for reference in the future.
4. Click **COMPLETE** to complete monitor calibration and return to the main page. The calibration results are saved to the monitor. The ICC profile generated by the calibration will be applied whenever the calibration mode is selected for the monitor.
   Note that if you choose **BACK** instead, the calibrated results will not be saved or applied. The screen keeps using the color settings before calibration.



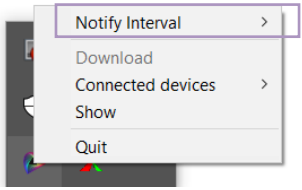
Note

- If the monitor calibration fails, click **Please calibrate again** from the short report and make adjustments as instructed by the troubleshooting information. Click **RECALIBRATE** to perform color calibration again. If it fails again, see Contacting customer service on page 61 for assistance.
- To ensure calibration results, do not change color settings from the monitor's OSD menus after color calibration by **Palette Master Ultimate**.

Calibrating the monitor periodically

Set a reminder to notify you of monitor calibration on a regular basis.

1. Right-click on the icon in the system tray.
2. Go to **Notify Interval** and select a preferred interval.

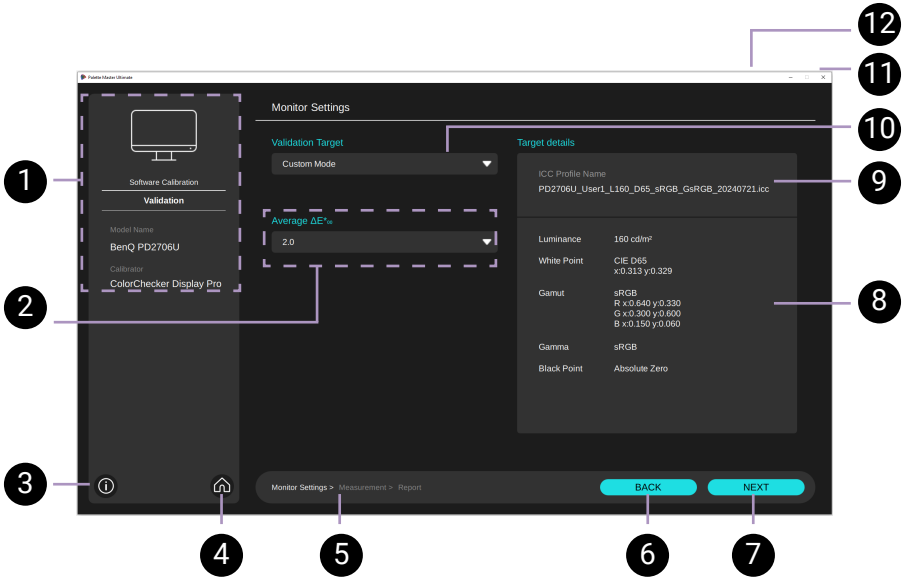


Validating your monitor (Validation)

Validate the current monitor by comparing it against a standard, i.e., a set of reference values suitable for the calibration targets selected. The validation results show how far the monitor is from the calibration standard.

1. Get ready by following the instructions in Getting ready before you start on page 11.
2. Select **Validation** and **ENTER** from the software main page.

Validation page



No.	Descriptions
1.	Shows the selected software function and information of the connected devices.
2.	Accesses to modify a validation threshold.
3.	Accesses to software information, including account, software version and update. See Software information page on page 18 for more information.
4.	Returns to the software main page.

No.	Descriptions
5.	Shows the progress towards function completion.
6.	Returns to the previous step.
7.	Goes to the next step.
8.	Shows the details of the selected validation target.
9.	Shows the ICC profile that goes with the selected target.
10.	Selects a calibration mode as the validation target.
11.	Exits the software without saving. The software works as a resident application in the system tray. See Menu options of resident application on page 20 for more information.
12.	Minimizes the software window.

Performing validation

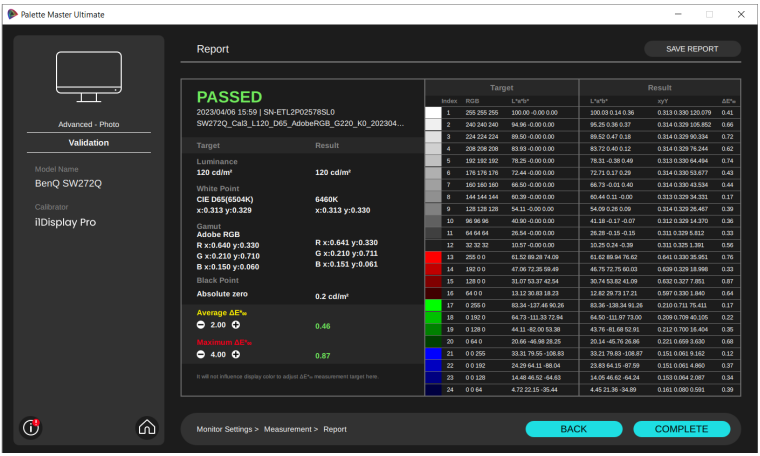
1. The calibration results have been saved to the calibration mode. Select it from **Validation Target** to be the standard.
2. Adjust Delta E (ΔE) threshold manually from the list.
3. Read the on-screen instructions to make sure the devices are ready for validation. Proceed with **NEXT**.
4. Follow the on-screen instructions to prepare the calibrator for validation. Proceed with **NEXT**.
5. Aim the calibrator to the image on the screen. Tilt the monitor so the calibrator can attach to the screen surface and measure properly.
6. Click **START**. It takes a while to complete validation. Once it is done, click **CHECK REPORT**. Continue with Reading and saving the validation report on page 59.

Reading and saving the validation report

You are guided to a validation report after clicking **CHECK REPORT** at the end of monitor validation.

If the validation reports shows **FAILED**, you are recommended to calibrate the monitor again from **Color Calibration** from the main page.

1. Click **SAVE REPORT** to save both the short and detailed calibration report for reference in the future.
2. Click **COMPLETE** to complete monitor calibration and return to the main screen.



Backing up ICC profiles to cloud storage

Network connection required

The cloud storage service is provided for registered users of the software. You can back up all the ICC profiles to the cloud. If you need to work with another computer or monitor or re-calibrate a reset monitor, you can download all the ICC profiles from the cloud to perform calibration quickly to ensure color consistency.

Note

Only the saved settings can be backed up to the cloud. If you have a set of preferred display settings, make sure the settings have been saved as a target. See Customizing a calibration target on page 25 for instructions.

Uploading ICC profiles to the cloud

1. Make sure you are logged in to the software as a registered user.
2. Click ⓘ on the lower-left part of software main page to bring up software information page, and go to **Account**.
3. Select **BACKUP** and follow the on-screen instructions to back up all the saved ICC profiles to the cloud.

Downloading ICC profiles from the cloud

1. Make sure you are logged in to the software as a registered user.
2. Click ⓘ on the lower-left part of software main page to bring up software information page, and go to **Account**.
3. Select **DOWNLOAD** to download all the ICC profiles to the computer. This will overwrite all the existing ICC profiles on your computer.
4. The downloaded ICC profiles will be available as targets from **Palette Master Ultimate**. Select one from the target list and perform color calibration as instructed in to apply the settings to the selected monitor.

Looking for assistance

Should you have any problem, go to Troubleshooting on page 62 to see if your problem can be resolved.

Alternatively, click ⓘ on the lower-left part of software main page to bring up software information page, and go to **Software info.**.

No.	Descriptions
1.	Shows the current software version.
2.	Accesses to the latest user manual. See Reading the latest user manual on page 61 for more information.
3.	A list of compatible BenQ monitors. The model list may be updated (if available) on each software update.

Reading the latest user manual

Network connection required

Click **OPEN FILE** from **Software info.**. A list of user manuals in all languages is displayed. Click the desired language to access the latest manual version from BenQ website.

Contacting customer service

Click **EXPORT LOG ID** from **Account** and provide the log ID generated by the software to customer service. With the log ID, the personnel will be able to look into your problem from the system backend.

Troubleshooting

Where to find the latest user manual?

- Click ⓘ on the lower-left part of software main page to bring up software information page, and go to **Software Info.** > **OPEN FILE**.
- Visit Support.BenQ.com > **Palette Master Ultimate** > **User Manuals**.

How to schedule a calibration reminder?

See Calibrating the monitor periodically on page 32 for more information.

How to obtain the latest software automatically?

Enable **Auto Update** and you will be notified when an software update is available. See Updating the software on page 14 for more information.

Where to find an ICC profile?

An ICC profile is generated and saved to a default folder automatically when performing color calibration by **Palette Master Ultimate**.

- On Mac: Mac HD/Library/ColorSync/Profiles
- On Windows: C:\Windows\System32\spool\drivers\color

Check your system to find out the current ICC profile applied to your computer. Folder names may vary by operating system.

- On Mac: **System Preference** > **Display** > **Color**
- On Windows: **Settings** > **System** > **Display** > **Color profile**.

How to sync ICC profile from OS when I switch my monitor to a calibration mode?

One of the features of **Palette Master Ultimate** is that ICCsync is performed automatically. Make sure the monitor and the computer are connected via USB upstream cable (USB-C / USB-B). When you switch your monitor to one of the calibration modes (**Calibration 1** / **Calibration 2** / **Calibration 3** from SW series or **Custom Mode** from PD series), the corresponding ICC profile will be applied automatically.

Which preset mode should I use as the calibration target?

- For complete hardware calibration
  See Selecting from a preset target on page 24 for the parameters of each preset calibration target.
  If you prefer to modify the parameters and create a new calibration target, see Customizing a calibration target on page 25 and Measuring color parameters from another display on page 26.
- For basic hardware calibration or software calibration
  The preset targets are defined for specific scenarios. Simply select one to suit your need.

What should be done before calibrating/validating a monitor?

To obtain the best calibration/validation results, get ready before calibrating/validating a monitor. Different procedures are required by operating system. See Getting ready before you start on page 11 for details.

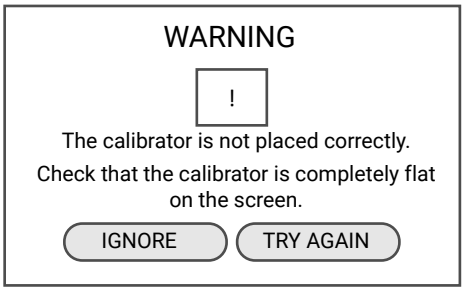
You will be reminded by the software before calibration/validation starts as well. Read the on-screen instructions carefully.

Palette Master Ultimate can not properly detect a monitor in a multi-monitor setup.

If you have selected a monitor from the model list on the software main page, the software page is supposed to display on the screen of the selected model automatically. If it is not displayed, check the connection and settings.

- Make sure the monitor is connected to the computer via either a USB-C™ or a USB cable. See Connections on page 9 for more information.
- Set **PROJECTION** or **Multiple displays** to be **Extend** from the computer.
- Right-click on the  icon in the system tray > **Connected devices** > **Check connected devices** to manually connect the monitor.

What should be done if I am prompted by this error message.



To calibrate a monitor correctly, sufficient screen brightness must be measured by the calibrator according to the selected calibration target. This prompted message indicates that the calibrator did not measure screen brightness properly.

1. Check if your monitor is tilted and the calibrator is attached to the screen properly.
2. Make sure the monitor firmware has been upgraded to the latest version (if available). An original factory firmware may be restricted by a regional energy regulations and thus reduces display settings. You are recommended to upgrade the monitor firmware.
3. (PD series only) Disable uniformity function before performing software calibration on a PD series monitor.

If you keep seeing this message, select IGNORE and continue with the calibration. If the calibrator fails in this case, contact BenQ and provide the log ID as instructed in Contacting customer service on page 61.

The Palette Master Ultimate interface is distorted. The aspect ratio is incorrect.

Change the screen resolution to 2560 x 1440 from your computer's setting menu and restart **Palette Master Ultimate**.

Need more help?

If your problems remain after checking this manual, please visit the local website from Support.BenQ.com for more support and local customer service.

Support.BenQ.com