Refinity ScanR Spectrophotometer

User Guide

Refinity

USA – FCC Supplier Declaration of Conformity Product Identification and Responsible Party

X-Rite   [2.1077(a)(3)]

www.xrite.com

4300 44th St SE

Grand Rapids, MI 49512

MAK-Spectrophotometer   [2.1077(a)(1)]

We, X-Rite, declare under our sole responsibility that the product MAK-Spectrophotometer complies with Part 15 Subpart B of FCC CFR47 Rules.

FCC Compliance Statement FCC 15.19 Labeling Requirements

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a installation. If this equipment does cause harmful interference to radio or television reception, which can be deter-mined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC RF Exposure Statement

The device shall be used in such a manner that the potential for human contact normal operation is minimized. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Canada ISED Compliance Statement

CAN ICES-3 (B)/NMB-3(B)

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1) l'appareil ne doit pas produire de brouillage;

2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, when operated in 5150 to 5250 MHz frequency range, this device is restricted to indoor use to reduce the potential for harmful interference with co-channel Mobile Satellite Systems. Users are advised that high power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Conformément aux réglementations d'Industrie Canada, en cas d'utilisation dans la plage de fréquences de 5150 à 5250 MHz, cet appareil doit uniquement être utilisé en intérieur afin de réduire les risques d'interférence avec les systèmes satellites mobiles partageant le même canal. Les utilisateurs êtes avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Canada RF Exposure Statement

The device shall be used in such a manner that the potential for human contact normal operation is minimized. This equipment complies with RSS-102 radiation exposure limits. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Le dispositif doit être utilisé de manière à minimiser le potentiel de fonctionnement normal par contact humain. Cet équipement est conforme aux limites d'exposition au rayonnement RSS-102. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps. Cet appareil et son (ses) antenne (s) ne doivent pas être co-localisés ou utilisés conjointement avec une autre antenne ou un autre émetteur

European Union Compliance Statement

Hereby, Manufacturer declares that this MAK-Spectrophotometer is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. The full text of the EU declaration of conformity is available upon request.

[Include Manufacturer signed Declaration of Conformity for Product in User's Manual.]

Note: The manufacturers shall ensure that each item of radio equipment is accompanied by a copy of the EU declaration of conformity or by a simplified EU declaration of conformity (Article 10(9) RED)]

Hereby, Manufacturer declares that this device operates on frequencies that are harmonized in the European Union in one or more member states in the frequency range(s)

Modular Radio EIRP, Conducted Power, and Field Strength References				
Ref No.	Report Number	Radio	Range	Tx
[R-1]		SterlingLWB-LWB5	2400 MHz to 2480MHz	6.30dBm EIRP

Users are advised that high power radars are allocated as primary users of the bands 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to Licensed Exempt WLAN devices.

European Union RF Exposure Statement

The device shall be used in such a manner that the potential for human contact normal operation is minimized. This equipment complies with EN 62311:2008 and basic restrictions listed in 1999/519/EC. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

WEEE

This product is manufactured to ensure compliance with European Union regulations and policies that preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally. In compliance with the Waste Electrical and Electronic Equipment (WEEE) directive return this product it to a local recycling center, the original dealer or supplier at the end of life. Otherwise return device to the following office:

X-Rite

4300 44th St SE

Grand Rapids, MI 49512

RoHS

The Product is in conformity with Directive 2011/65/EU on Restriction of the use of certain Hazardous Substances in electrical and electronic equipment.

REACH

The Product is in conformity with Regulation (EC) No 1907/2006 concerning Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). The list of controlled substances is available at https://echa.europa.eu/candidate-list-table.

NCC Requirements

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Equipment Information

Use of this equipment in a manner other than that specified by X-Rite, Incorporated may compromise design integrity and become unsafe.

To avoid discomfort, do not look directly into the measurement optics when the device is on.

No user serviceable parts in this product.

WARNING:

- This device is not for use in explosive environments.

- Do not immerse the device in liquid.

- Do not expose the device to temperatures beyond 120 °F (50 °C) and/or direct sunlight.

- Do not expose the device to dusty environment.

- Do not measure wet paint.

Transportation: This product contains a lithium-ion battery. Should you need to ship this device, you may wish to consult published guidance documents by one or more of these organizations for advice on how to comply with the regulations: IATA, ICOA, IMDG & PHMSA. The battery contained in this device is 46g in weight, 3.6V, 2.15 Ah, and complies with the UN 38.3 tests in effect the year it was originally shipped.

The device is a sensitive measurement device. If the device experiences a drop, a calibration should be performed followed by a self-test before any measurements are taken to ensure the device is working properly. Refer to the Calibration section for information on performing a Calibration.

Instructions for disposal: Please dispose of Waste Electrical and Electronic Equipment (WEEE) at designated collection points for the recycling of such equipment.

IEC 62471 Information

The device's lamp system emits light in the visible range which exceeds the Exempt Group of IEC62471.

The most restrictive radiation hazard is the blue light hazard being in Risk Group 1.

The exposure hazard value (EHV) at a distance of 200 mm is 7,770 $\frac{W}{sr \times m^2}$.

The hazard distance (HD) for exempt group is > 570 mm. At that distance, the EHV equals the applicable emission limit. Maximum exposure time at all distances < 570 mm is 1,287 seconds.

To avoid possible exposure to hazardous optical radiation, do not look directly into the illumination window during operation.

Proprietary Notice

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Publication of this information does not imply any rights to reproduce or use it for purposes other than installing, operating, or maintaining this instrument described herein. No part of this manual may be reproduced, transcribed or translated into any language or computer language in any form or by any means: electronic, magnetic, mechanical, optical, manual, or otherwise; without the prior written permission of an authorized officer of X-Rite, Incorporated.

Patents: www.xrite.com/ip

Warranty Information

X-Rite warrants this Product against defects in material and workmanship for a period of twelve (12) months from the date of shipment from X-Rite's facility, unless mandatory law provides for longer periods. During such time, X-Rite will either replace or repair at its discretion defective parts free of charge.

X-Rite's warranties herein do not cover failure of warranted goods resulting from: (i) damage after shipment, accident, abuse, misuse, neglect, alteration or any other use not in accordance with X-Rite's recommendations, accompanying documentation, published specifications, and standard industry practice; (ii) using the device in an operating environment outside the recommended specifications or failure to follow the maintenance procedures in X-Rite's accompanying documentation or published specifications; (iii) repair or service by anyone other than X-Rite or its authorized representatives; (iv) the failure of the warranted goods caused by use of any parts or consumables not manufactured, distributed, or approved by X-Rite; (v) any attachments or modifications to the warranted goods that are not manufactured, distributed or approved by X-Rite. Consumable parts and Product cleaning are also not covered by the warranty.

X-Rite's sole and exclusive obligation for breach of the above warranties shall be the repair or replacement of any part, without charge, which within the warranty period is proven to X-Rite's reasonable satisfaction to have been defective. Repairs or replacement by X-Rite shall not revive an otherwise expired warranty, nor shall the same extend the duration of a warranty.

Customer shall be responsible for packaging and shipping the defective product to the service center designated by X-Rite. X-Rite shall pay for the return of the product to Customer if the shipment is to a location within the region in which the X-Rite service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations. Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service. Do not try to dismantle the Product. Unauthorized dismantling of the equipment will void all warranty claims. Contact the X-Rite Support or the nearest X-Rite Service Center, if you believe that the unit does not work anymore or does not work correctly.

THESE WARRANTIES ARE GIVEN SOLELY TO BUYER AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR APPLICATION, AND NON-INFRINGEMENT. NO EMPLOYEE OR AGENT OF X-RITE, OTHER THAN AN OFFICER OF X-RITE, IS AUTHORIZED TO MAKE ANY WARRANTY IN ADDITION TO THE FOREGOING.

IN NO EVENT WILL X-RITE BE LIABLE FOR ANY OF BUYER'S MANUFACTURING COSTS, OVERHEAD, LOST PROFITS, GOODWILL, OTHER EXPENSES OR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES BASED UPON BREACH OF ANY WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL THEORY. IN ANY EVENT OF LIABILITY, X-RITE'S MAXIMUM LIABILITY HEREUNDER WILL NOT EXCEED THE PRICE OF THE GOODS OR SERVICES FURNISHED BY X-RITE GIVING RISE TO THE CLAIM.
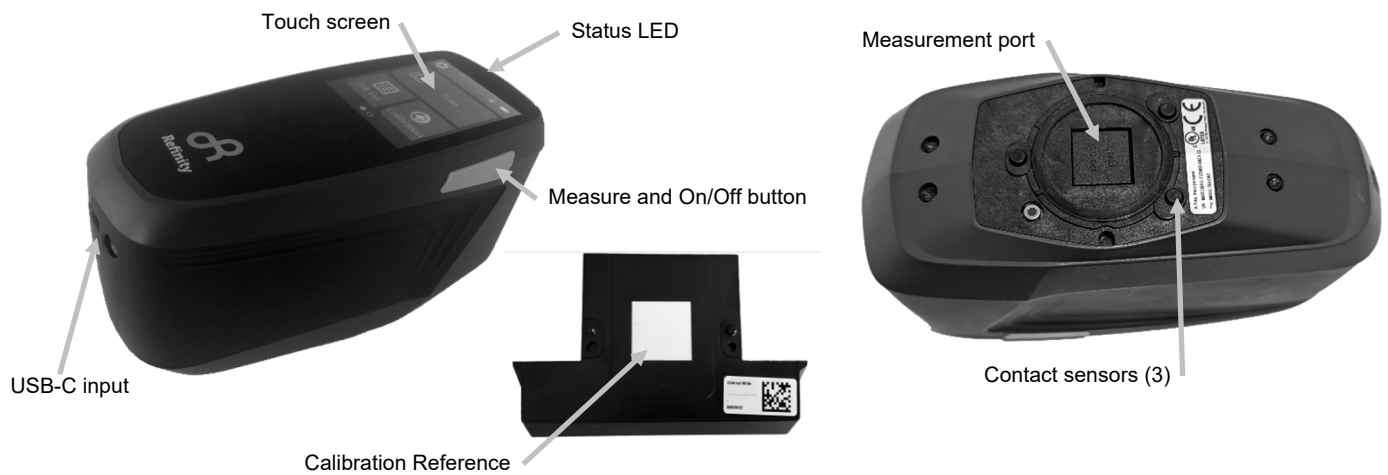
Table of Contents

INTRODUCTION AND SETUP

The multi-angle spectrophotometer is designed for consistent, precise color measurement of metallic, pearlescent, and other complex special effect finishes.

This manual covers the installation, operation and maintenance of the device. Specific instructions for using the device with your software application can be found in the software documentation.

Key features of the device are:

- Color display with touch screen operation
- Measure and power on/off button
- Video targeting system for accurate positioning
- Three contact sensors located on the bottom of the device to aid in proper positioning
- Wi-Fi technology (optional) for wireless communication

Touch screen · Status LED · Measurement port · Measure and On/Off button · USB-C input · Contact sensors (3) · Calibration Reference

Packaging

Your device packaging should contain all the items listed below. If any of these items are missing or damaged, contact X-Rite or your Authorized Representative.

- Refinity ScanR device
- Calibration reference (white tile and camera target)
- Docking station
- USB-C interface cable

- Quick start guide
- Spare light seal
- Wrist strap
- Calibration certificate
- Stylus (2)

Device Battery Pack

General

The battery pack for your new device comes in a low to medium charge state and should be charged before use (up to 4 hours for full charge). Plug the USB connector into a standard USB charger or your device docking station to charge the battery.

Battery Icon Information

 This icon at the top of the screen would indicate the battery is fully charged.

 This icon at the top of the screen would indicate the battery has a sufficient charge for a substantial number of measurements.

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This icon at the top of the screen would indicate the battery pack is low, but measurements are still possible. Battery should be charged soon.

The "lightning bolt" in the center of the battery icon at the top of the screen indicates the battery is charging.

Important

You should charge the battery regularly if you are not using the device for an extended amount of time. Store it in a cool environment when not in use to maintain battery performance. The battery charge temperature range is 5°C to 40°C (40°F to 105°F).

The lifespan of lithium-ion batteries typically decays to 80% capacity after approximately 700 charge cycles. The number of measurements you can expect to achieve from one full charge is reduced. Please contact Technical Support to replace the battery pack.

NOTE: A charge cycle is defined as several partial charges equaling 100%. Partial charge and discharge cycles will help maintain the life of the battery.

Please avoid full discharge and charge cycles. Do not discharge the battery below 20% (battery icon red.)

Do not measure with device charging. Only measure with device disconnected from cable.

Setup

Powering on the Device

Press and hold the Measure and Power On/Off button (1) for 3 seconds to turn on the device.

If the device does not power up after pressing the button, the battery may require charging. Refer to Section Connecting the USB-C Cable.

Powering off the Device

Press and hold the On/Off button for one second. You can also power off the device by tapping the power icon located in the Settings screen.

(1)

When powered-up, the device goes through a diagnostics test. The status LED and screen illuminate white, followed by a splash screen before the main screen. This startup sequence will take a few seconds to complete.
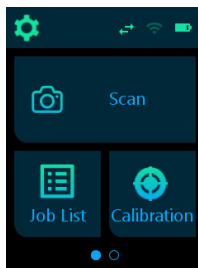
Splash Screen   **Main Screen**

Connecting the USB-C Cable

1. Install the software application if not already installed. Refer to the software documentation for additional information.
2. Unpack the docking station. Insert the white tile and the camera target into the docking station.
3. Plug the USB connector into an available port on your computer.

   NOTE: The device can also be connected directly using a USB-C cable. Turn the device on and plug the round end of the USB-C cable into the back of the device (1). Do not measure when the device is connected

(1)
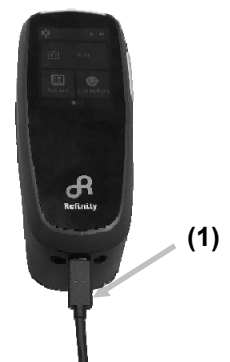
4. Open the lid of the docking station. Insert the device in the docking station with the USB-C connector facing down. Use the two pins (2) as a guide. The wrist band fits into the groove at the bottom of the docking station.

5. The blue LED indicates the device is charging.

6. Once the device is charged, you can download your data using the USB connection.

7. Plug the other end of the USB-C cable into an available port on your computer.

8. Always store the device in the docking station when not in use to protect it from dust and dirt.

(2)
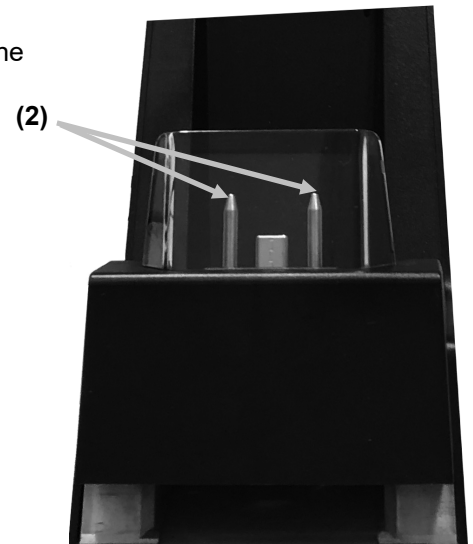
Measure and Power On/Off Button

The button (1) is located on the side of the device. This is the same button that is used to power the device on and off and to take measurements. You can also tap the screen (2) to initiate a measurement.

(2)

NOTE: Use this button to reset the device in case it stops responding or locks up. Press and hold the button for more than 10 seconds. Refer to the Troubleshooting section for additional information.

(1)

To reset the device, disconnect the USB-C cable, press and hold the button for 3 seconds and release. The device will turn off. You also can use the power off icon in the settings menu.
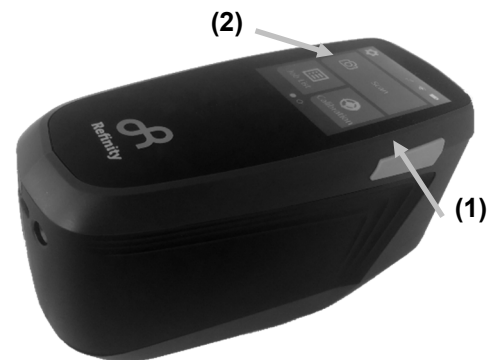
USER INTERFACE

The device features a graphical touch screen display. All functionality is accessed directly through the screen.

Main Screen Description

When the device is powered-up, the main (top level) screen appears after the diagnostics test is complete. The main screen consists of the top bar and operation modes. Select the modes by tapping the icons located on the display screen. Swipe the screen to the left to view the other operation modes.
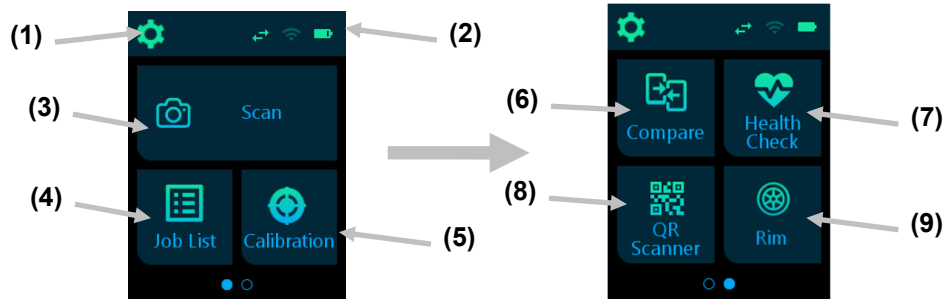
(1) **Settings:** Used to set and edit the device configuration options and power the device off. The settings options should be reviewed before you use your device for the first time. Refer to the Settings Mode section for information.

(2) **Status Icons:** Displays the battery charge level, Wi-Fi connection, and software connection status (green when connected).

(3) **Scan:** This mode is the main mode of operation. Sample measurements are taken and saved in this mode. Refer to Creating a Job and Sample Measurement section for information.

(4) **Job List:** This mode is used to measure stored jobs and edit existing stored jobs. Refer to Creating a Job and Sample Measurement section for information.

(5) **Calibrate:** This mode is used to calibrate the device. Refer to the Calibration section for information.

(6) **Compare:** This mode is a simple QC tool used to compare two samples. Refer to Compare Mode section for information.

(7) **Health Check:** This function is used to perform a system check of the device. Refer Health Check section for Information.

(8) **QR Scanner**: This mode is used to scan a QR Code. Refer to QR Scanner for information.

(9) **Rim Mode**: This mode is used to measure vehicle parts that do not allow flat alignment of the device. Refer to Rim Mode for information.

Contact Sensors and Indicators

To aid in proper positioning and ensure repeatability of sample measurements, the device incorporates three contact sensors that are arranged around the measurement port. These sensors require an even amount of contact to be applied across all three sensors before a measurement is triggered.

Three positioning indicators that appear in the screen as well as the indicator LEDs on the top of the device provide positioning feedback. The indicators in the screen are arranged in the same pattern (top, back/side) as the contact sensors located around the measurement port.

- **Green Indicator:** ideal contact is being applied to the corresponding sensor. A measurement can be taken when all three indicators illuminate green. If the required contact is not maintained for the duration of the measurement, an error message appears on the display and the measurement must be retaken.

- **Red Indicator:** the required contact is not being applied to the corresponding sensor. Correct contact must be applied to achieve a green indicator condition.

Example 1: All contact sensors are contacting correctly, and a measurement can be triggered

Example 2: Two contact sensors are not contacting, and the measurement cannot be triggered

The multi-color LED located on the top/front of device provides visual feedback on the status of a measurement and contact sensor switches.

- **Green LED**: Indicates the device is powered up. It also indicates that all three contact sensors are activated properly, and a measurement can now be triggered.
- **Red LED**: Indicates one or more of the contact sensors is not properly activated or an error has occurred during a measurement.
- **Blue LED**: Indicates the device is charging with the USB cable plugged into the computer. In sleep mode the screen is darkened.
- **White LED**: Indicates the device is being powered up.
- **Grey LED**: Indicates the device is measuring in Rim mode.
- **LED Off**: Indicates the device is either in battery mode, stand-by or off.

SETTINGS MODE

Settings mode is used to adjust and view the device's settings. You should review the current settings before using the device for the first time. However, you can go back and change these settings at any time.

Entering Settings Mode

1. From the main screen, tap the icon to access the Settings screen.
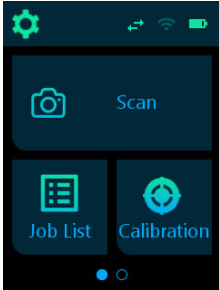
2. Tap Measurement, Device, or System settings option. Once the Device and System settings screen is opened, additional options can be viewed by swiping the screen up or down. Each option is explained below.
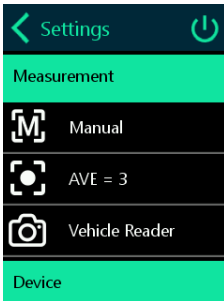
Shut Down Device

 This option is used to shut down the device. To access, tap the icon at the top of the Settings screen and then tap **Yes** to confirm.

Measurement Settings

Automatic/Manual

 This option is used to set auto measure mode.

Manual Measure: When set to Manual, you must press the Measure and On/Off button or tap the screen once all three contact sensor indicators turn green in the display to take a measurement.

Auto Mode: When set to Auto Mode, this option allows the device to automatically take a measurement once all three contact sensor indicators turn green in the display. No button press or screen tap is required. Once a measurement is taken, the device must be lifted up and repositioned to take another measurement.

Trigger Delay: This option is used to set the time delay once all contact sensors are engaged. Use the slider to select the delay in seconds from 0.5 to 5.0 seconds.

Avg Option

 This option is used to set the default number of measurements required. Use the slider to select an average of 3 measurements or select **Smart average** of 5 or 7. Smart average selects the best measurements.
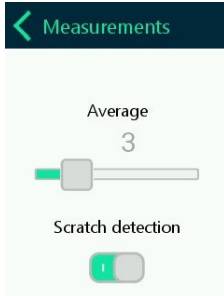
Scratch Detection: When set to On, scratch detection highlights scratches in the measurement preview. Reposition the device to a better measurement location without imperfections.
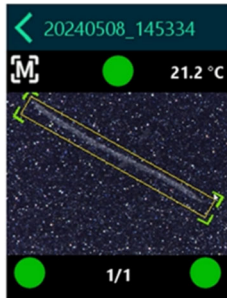
Vehicle Reader

 This option is used to activate the **Vehicle Reader**.
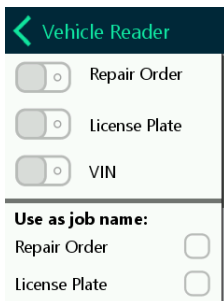
Turn **Repair Order**, **License Plate**, or **VIN** on or off to encourage the user to take a reading of the repair order, license plate or VIN sticker before the measurement. You can select a combination of two auxiliary measurements. Under **Use as job name**, select to use either the reading of **Repair Order**, **License Plate**, **VIN**, or **Default** (date/time) as the job name.

NOTE: When the Vehicle Reader is active, the Scan icon changes from to .

Settings

Wi-Fi Setup

This option is used to turn Wi-Fi on/off and setup the selected Wi-Fi network.

Off: When set to off , Wi-Fi is turned off (saving battery power).

On: When set to on , Wi-Fi is turned on during normal operation. Wi-Fi is turned off during deep sleep mode.

When set to On, the device scans for available network. After scanning the available networks are displayed on the screen. Tap a desired network and setup the password if required. When finished, tap **Connect** to select the Wi-Fi network.
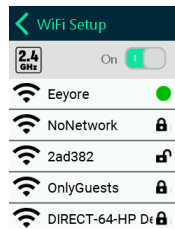
Forget Network: Tap a setup network and tap **Forget** to clear the Wi-Fi name, password and security.

NOTE: The Device supports only 2.4 GHz Wi-Fi networks during setup. Select the corresponding 2.4 GHz SSID to connect the device to your network.

Speaker Option

This option is used to turn the device speaker on or off. When set to on, the device beeps after a measurement.

Display Option

This option is used to adjust the LCD sleep time and display brightness. The LCD sleep time can be turned off or adjusted from 10 to 600 seconds by sliding the control from left to right. Once the LCD screen is asleep, simply tap the screen to activate it. The screen brightness can also be adjusted by sliding the control left or right.

Battery Saver Option

This option is used to adjust the Standby time and power off time to conserve battery power. The Standby time is used to set the time before the device goes to sleep mode to help preserve battery life. Tapping the screen will reactivate the device. The option can be set from 10 to 60 minutes in 5 minute increments or turned off. The Power off setting is used to set the time before the device shuts down to help preserve battery life. Pressing the measure and power on/off button reactivates the device. The option can be set from 30 to 300 minutes in 5 minute increments.

Device Info Option

This option is used to view important device information such as hardware version, white tile serial number, network information, firmware version, production date, etc.

Compliance Option

. This option is used to view regulatory compliance information. To access this information, tap **Settings** and then **Compliance**.

1. To access, tap **Settings** in the **Main Menu**.
2. Swipe down to **Compliance** and tap to select.
3. The device shows the **Compliance** information.

System Settings

Apps

This option is used to select and unselect apps for the device main screen. You can select Compare, QR Scanner, and Rim. Refer to the Apps section later in this document for information on these apps.

Note: Health Check is selected by default and cannot be unselected.

Language

This option is used to set the language that is displayed on the device during operation.

To set the language, tap **Language** and then tap the desired language.

Date & Time Option

.This option is used to adjust the timestamp clock for the device.

1. To access, tap **Date & Time.**
2. Scroll the date and time values to the desired setting.
3. Tap **OK** to save when finished.

FW Update

This option is used to check for updates and to update your device firmware.

To update the device, tap **FW Update** and then tap **Check Update** to see if an update is available. If an update is available, tap **Update Firmware** to perform the update. For this service the instrument has to be connected to the Wi-Fi network.

NOTE: You can also use the Refinity software to update the firmware. Please refer to the software for more information.

Factory Reset

This option is used to reset the device to the factory settings.

To reset the device, tap **Factory Reset**. The device asks you to confirm the reset. Tap **Yes** to reset the device or **No** to cancel the process.

NOTE: The Factory Reset deletes all measurement data, user data and settings.

CALIBRATION MODE

The device must be calibrated every 30 days using the white tile and camera target. The two parts are combined in the calibration reference.

Refer to the Cleaning section in the Appendices for information on cleaning the calibration reference.

NOTE: Make sure to use the calibration reference supplied with the device for calibrating. Do not substitute this reference with a reference from another device. The serial number on the reference should match the reference serial number displayed on the device calibration screen.

Calibration Notes

- The **white tile and camera target are severely affected by smudge marks, dust, and finger prints**. Refer to Appendices for calibration reference cleaning procedures.

- **Do not move device while taking the calibration measurements**. If motion is detected by the contact sensors, an error message will be displayed and calibration aborted.

Calibration Reference

The calibration reference is designed to keep the white tile and camera target free of dust and debris. The calibration reference is stored in the docking station and is separated into two parts when used.
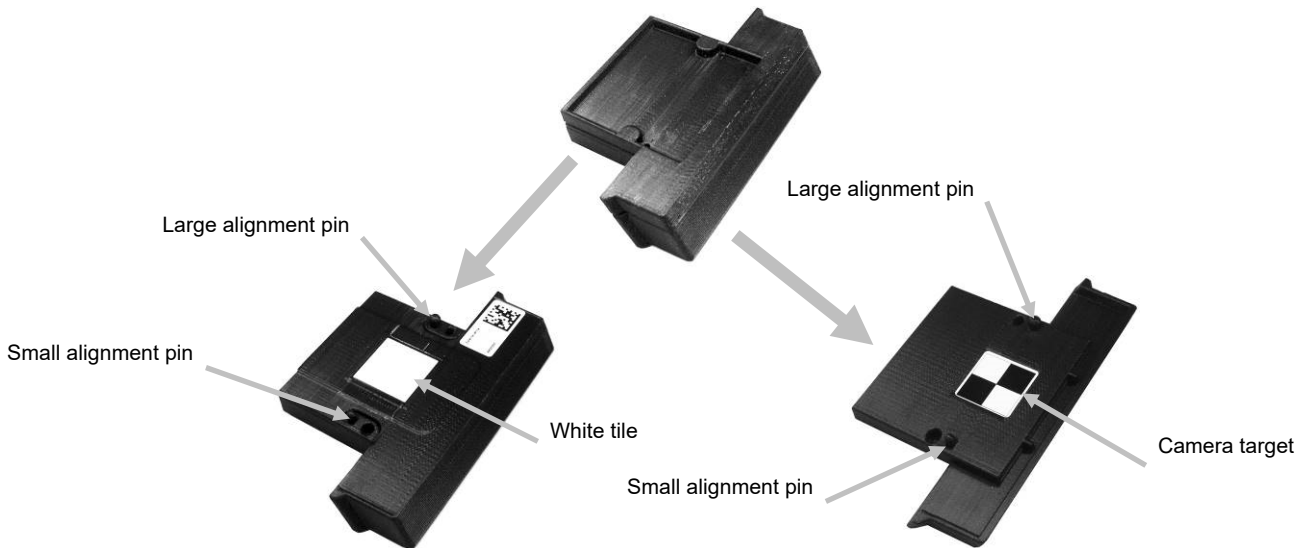
Calibrating the Device

1. Tap **Calibrate** on the main screen. The calibration menu will appear showing the number of days until the next calibration is required.
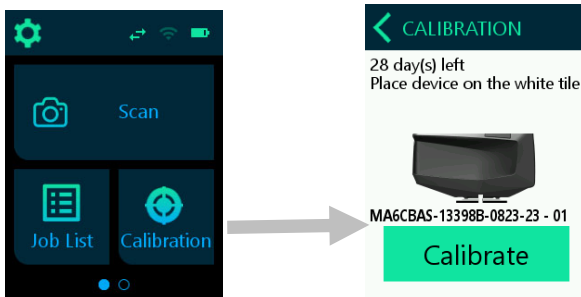
2. Separate the calibration reference and position the device measurement port over the white tile as shown in the image below. Make sure that the two alignment pins insert into the openings in the white tile reference. **Note:** The pins will only insert in one direction. Make sure you have the device aligned correctly. Disconnect the device from the USB cable while calibrating the device.

White tile
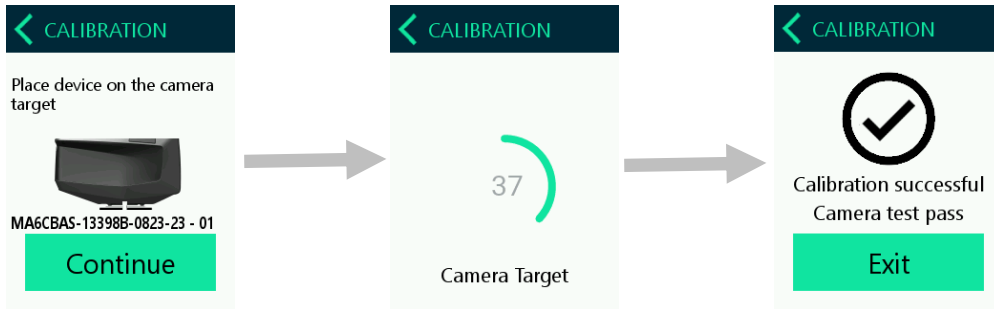
Large alignment pin
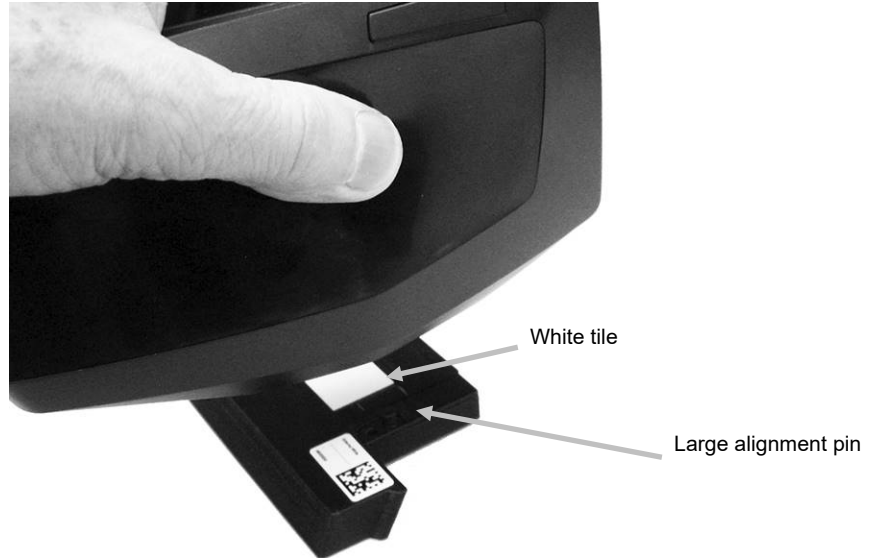
3. When ready, tap **Calibrate**. Do not touch the device throughout the measurement sequence.
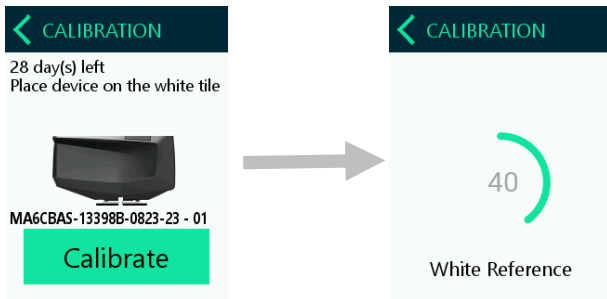
4. After white tile calibration, remove the device from the white tile and position the device measurement port over the camera target as shown in the image below. Make sure that the two alignment pins insert into the openings in the camera target. **Note:** The pins will only insert in one direction. Make sure you have the device orientated correctly.

Camera target

Large alignment pin
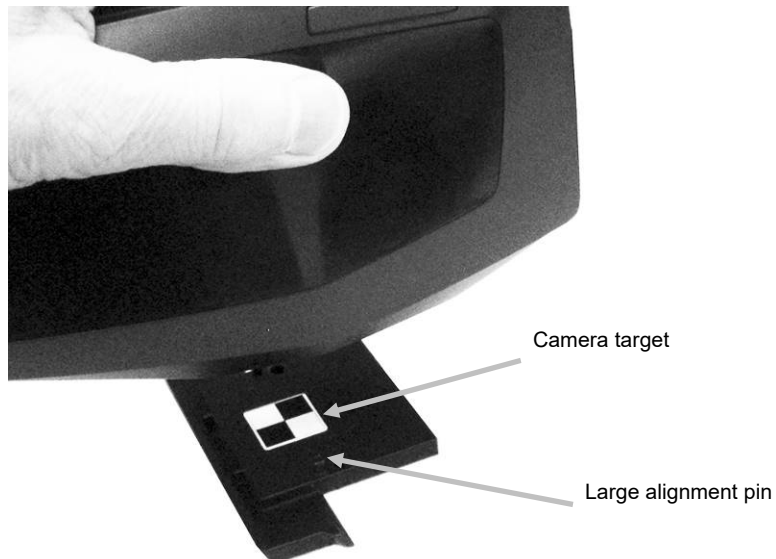
5. When ready, tap **Continue**. Do not touch the device throughout the measurement sequence.

CALIBRATION

Place device on the camera target

MA6CBAS-13398B-0823-23 - 01

Continue

CALIBRATION

37

Camera Target

CALIBRATION

Calibration successful
Camera test pass

Exit

6. Remove the device after the calibration is complete.

7. Combine the two calibration reference parts together and return it to its storage location in the docking station.

CREATING A JOB AND SAMPLE MEASUREMENT

In order for the device to obtain accurate and repeatable measurements, the bottom of the measurement port must be flat with the sample surface to be measured. Any movement of the device can cause the measurement angles to vary, greatly affecting measurements on metallic and pearlescent paint finishes. The contact sensors ensure the integrity of the measurement data. It is recommended to complete each job before the next job is measured to avoid storing incomplete jobs on the device. The measurement sequence is displayed at the bottom of the screen to help you track your progress for a job.

Measurement Tips:

- Measurements performed on a surface with a curve can cause measurement errors especially at the near specular angles (±15° and 25°). Measurements should be made on the flattest part of a sample whenever possible.
- Hold the device firmly during a measurement.

NOTE: Use the Rim Mode to perform a measurement on a surface with a curve.

Scan

The Scan mode is used to create and measure jobs on the device. The device stores measurements as jobs (multiple measurements per job).

Tap Scan on the main screen. The device automatically goes into targeting mode.

NOTE: If the Vehicle Reader is enabled, the device first goes into Vehicle Reader mode. Refer to the section Vehicle Reader below for more information.
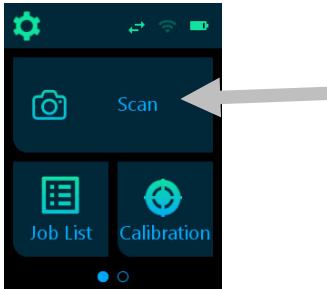
1. Locate the measurement port in the bottom of the device over the measurement area while viewing the screen.
2. Gently rock the device until all three positioning indicators in the screen turn green. This indicates that all three contact sensors are activated.
3. If the device is configured for automatic measurement, the measurement will be triggered as soon as (with a delay based on settings) the device is correctly positioned on the check zone and all pins are in contact (green indicators on screen). You can also initiate a measurement by tapping the screen in Automatic Mode if desired. If Manual measurement mode is selected, start the measurement by tapping the screen or by pressing the Measure and On/Off button.
4. Hold the device steady throughout the entire measurement.
5. After first measurement is finished, lift the device, move it to the next measurement spot and continue with the remaining area measurements to complete the job.

    NOTE: You cannot start another measurement until the device has been lifted and repositioned.

6. After the last measurement is completed, the Job completed screen shows that all measurements for the job have been done and the job is completed.
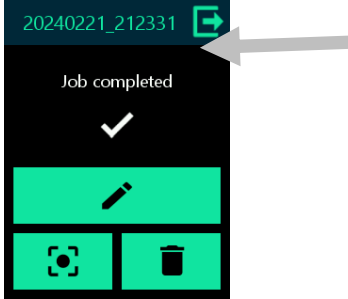
7. You can remeasure the job if desired by tapping the icon and then tapping **Yes** to start the measurement sequence over.

8. You can delete the job by tapping the icon and then tapping Yes to delete the job measurements.

9. You can edit job information if desired. Tap the icon and enter or edit the Job Name, Make, Color Code, License Plate, VIN, or add a Remark using the virtual keyboard. Tap the back arrow to save the job information.
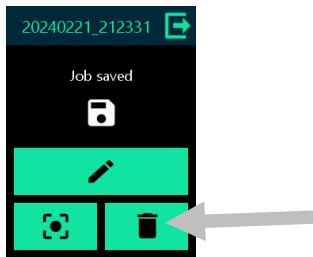
Vehicle Reader

The Vehicle Reader mode is used to read repair order, license plates or VIN stickers to identify vehicles. The device stores the license plate or VIN with the job and either can be used as the job name.

NOTE: The Vehicle Reader must be enabled in the Settings. You can enable two of the vehicle readers: Repair Order, License Plate or VIN. Refer to the section Vehicle Reader in the Measurement Settings for information on enabling the vehicle reader.

NOTE: Tap the globe icon to open the **Country & Region** list. Select the country to improve license plate recognition.

1. Tap **Scan** on the main screen.
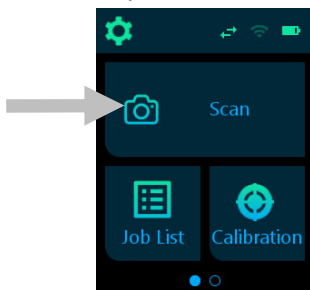
2. The vehicle reader opens with the selected option.

 or
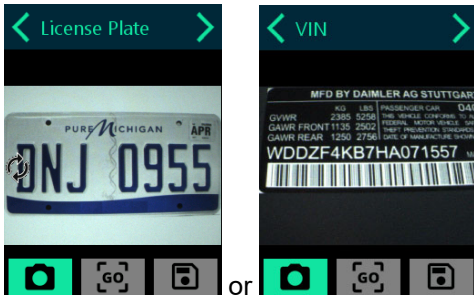
NOTE: The vehicle reader needs good lighting to read the information. If you are in a low light situation, the Low Light indicator ☀ appears in the top left corner of the screen.
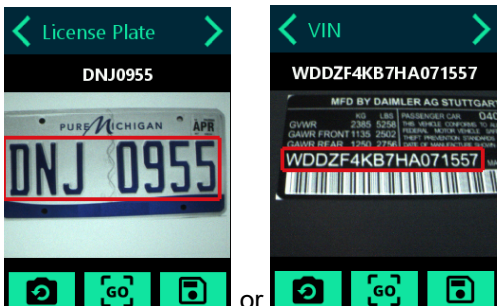
3. Tap the ⬛ icon, to take a picture of the repair order, license plate or VIN.
4. A red frame appears over the image.

 or
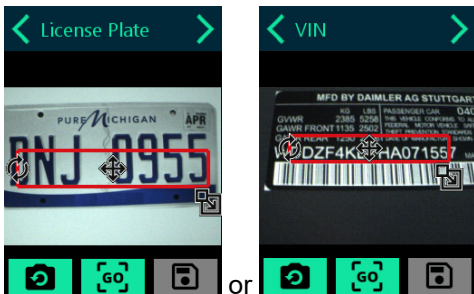
5. You can position ✛, rotate ↻ and resize ⌗ the frame to capture the repair order, license plate number or VIN.

 or
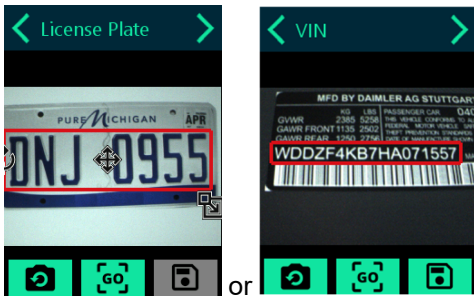
6. Tap the GO icon, to OCR the letters and numbers.

 or .

7. Tap the 💾 icon, to save the repair order information, license plate number or VIN to the job.
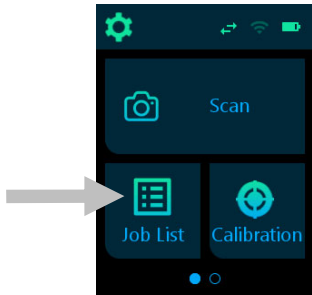**NOTE**: Based on your settings, the device uses this number as the name for the current job.
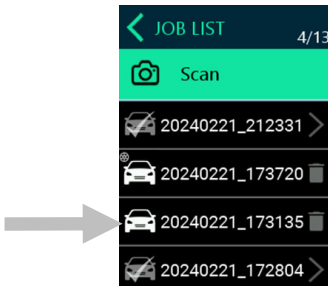
Job List

The Job List mode is used to measure downloaded jobs and delete saved jobs. The device stores measurements as jobs (multiple measurements per job).

1. Tap **Job List** on the main screen.

2. Select a job that was sent via the **Refinity** software. Jobs that have not been measured are shown "unchecked" next to the name.


3. Follow the measurement procedure as described in the section **Scan** above.
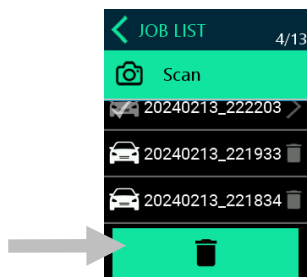
Delete Jobs

Single Job

1. To delete a saved job, tap the desired job in list. You will need to swipe the screen up or down if the job you want to delete is not showing up in the list. A checkmark next to the job indicates the job is saved. Jobs that are not checked indicate jobs that have not been measured.
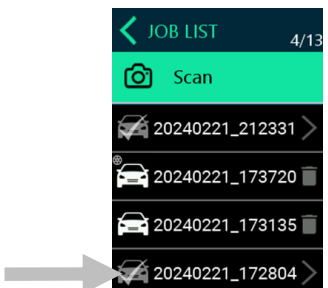
2. Tap the ⬛ icon and then tap **Yes** to confirm that you want to delete the job.

All Jobs

3. To delete all jobs, swipe the screen up to advance to the end of the list.

4. Tap the icon at the bottom of the screen and then tap **Yes** to confirm that you want to delete all the jobs.

APPS

Apps are additional operation modes that can be selected from the main screen. Swipe the main screen to the left to access the additional app modes.
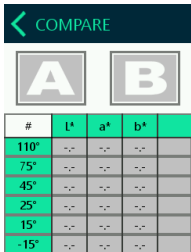
Refer below for an explanation of each operation mode.
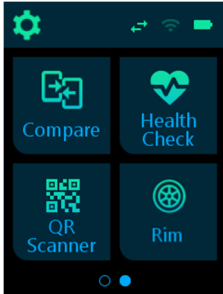
Compare

The Compare mode is a simple QC tool used to compare the color distance of two adjacent parts. CIEL*a*b* values are displayed for the measurements. The following procedure explain the steps for operating the device in Compare mode.

1. Tap Compare on the main screen to open the Compare screen.

2. Tap on the Compare screen. The device automatically goes into targeting mode.

3. Locate the measurement port in the bottom of the device over the first check zone while viewing the screen.

4. Tap the screen or press the **Measure and On/Off** button. After the measurement the L*a*b* values for the first measurement appear on the screen.
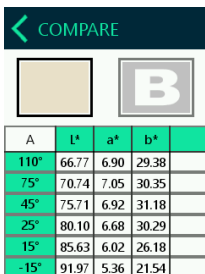
5. After the measurement, tap on the Compare screen. The device automatically goes into targeting mode.

6. Locate the measurement port in the bottom of the device over the second check zone while viewing the screen.

7. Tap the screen or press the **Measure and On/Off** button. After the measurement, delta values appear for the two measurements.

| Δ	ΔL*	Δa*	Δb*	ΔE*
110°	-2.51	0.12	-0.52	2.57
75°	-3.02	0.19	-0.62	3.09
45°	-2.62	0.07	-0.82	2.74
25°	-1.47	-0.05	-0.75	1.65
15°	-0.98	-0.04	-0.55	1.13
-15°	0.13	-0.08	-0.13	0.20

8. Tap the Δ icon to toggle between Delta values, and the L*a*b* values of sample A and B.

Health Check

The Health Check is typically performed with the standard calibration that is due after 30 days. However, a Health Check can be initiated in case you experience issues during the operation of the device.

Viewing Details

1. Tap **Health Check** on the Apps screen to open the Health Check screen.
2. Tap **Detail** to view the current device details.
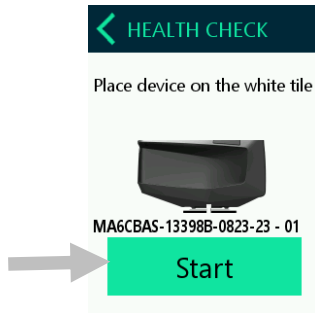3. Tap **Send** if you want to transfer the device status.
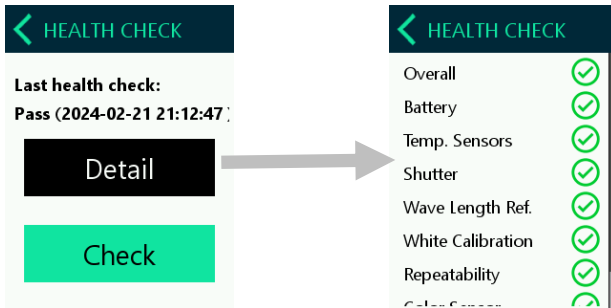
   NOTE: Please perform the health check after every calibration cycle.

**Performing a Health Check**

1. Tap **Health Check** on the Apps screen to open the Health Check screen.
2. Tap the **Check** button.

3. Place the device on the white tile as explained in the Calibration Mode section and tap the **Start** button.

4. After the white tile calibration is completed, place the device on the camera target as explained in the Calibration Mode section and tap the **Continue** button.
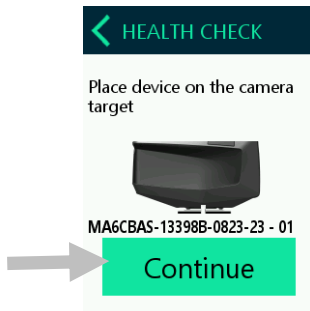
5. After the camera target is finalized, the test results are displayed. Swipe the screen up to view all the test results.
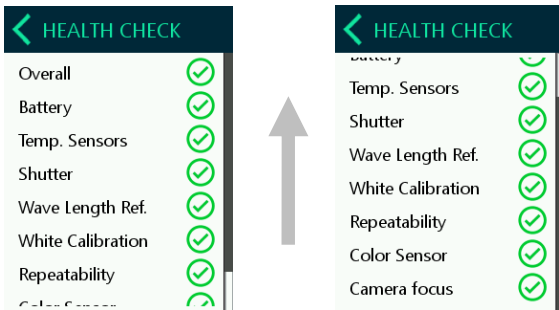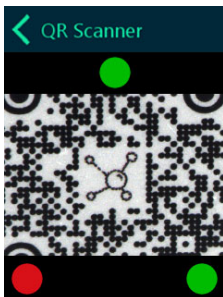

QR Scanner

The QR Scanner mode is used to scan a QR code.

NOTE: This is an advanced function for expert users.

1. Tap **QR Scanner** on the Apps screen to open the QR Scanner. The device automatically goes into targeting mode.


2. The device automatically recognizes a QR code in the measurement port.

Rim Mode

The Rim mode is used to scan uneven or curved surfaces. It allows a measurement to be taken with only one contact sensors engaged. The sensor indicators are grey when not engaged and green when engaged.

1. Tap **Rim** on the Apps screen to open the rim measurement screen. The device automatically goes into targeting mode.
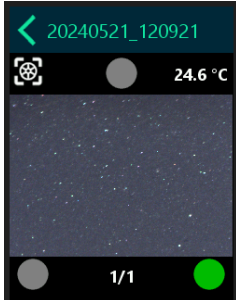
2. Locate the measurement port in the bottom of the device over the measurement area while viewing the screen.

3. Initiate a measurement by tapping the screen or by pressing the Measure and On/Off button.

4. Hold the device steady throughout the entire measurement.

5. After the measurement is completed, the Job completed screen shows that the rim measurement is completed. Only one measurement is required.
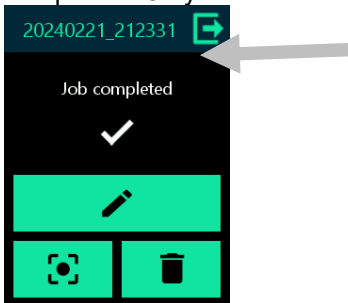
10. You can remeasure the rim if desired by tapping the icon and then tapping **Yes** to start the measurement sequence over.

11. You can delete the rim measurement by tapping the icon and then tapping **Yes** to delete the rim measurements.

6. You can edit rim measurement information if desired. Tap the icon and enter or edit the Job Name, Make, Color Code, License Plate, VIN, or add a Remark using the virtual keyboard. Tap the back arrow to save the rim information.

NOTE: A rim icon next to the scan indicates the measurement was taken in Rim Mode.
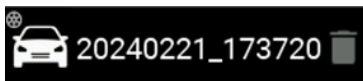
APPENDICES

Service Information

X-Rite provides repair service to their customers. Because of the complexity of the circuitry, all warranty and non warranty repairs should be referred to an authorized service center. For non warranty repairs, the customer shall pay shipping and repair cost to the authorized service center, and the device shall be submitted in the original carton, as a complete unaltered unit, along with all the supplied accessories.

- Device
- Carrying Case
- White Calibration Tile and Camera Target

Please do not ship your product until you receive an Email from X-Rite or X-Rite certified service partner with the RMA Number and shipping instructions.

X-Rite, Incorporated, has offices around the world.

America: ServiceSupport@xrite.com

EMEA: basfemeaservice@xrite.com

Japan: JapanServiceTeam@xrite.com

Hong-Kong, China: ServiceAsia@xrite.com

Shanghai, China: SHService@xrite.com

India: ServiceIndia@xrite.com

Cleaning the Device

The exterior of the device may be wiped clean with a cloth dampened in water or mild cleaner.

⚠ **Important Notes:**

- DO NOT use any solvents to the clean the device, this will cause damage to the cover and internal electronic components.
- Compressed air should not be used to clean the device. Cleaning the device with blown air can cause dirt on the outside of the device to enter into the device and contaminate optical components.

Cleaning the Calibration Reference

The white tile and camera target in the calibration reference should be cleaned using a mild soap and warm water solution, thoroughly rinsed with warm water, and wiped dry with a clean, lint-free cloth. You must let the reference dry completely before taking a calibration measurement.

Light Seal Check and Replacement
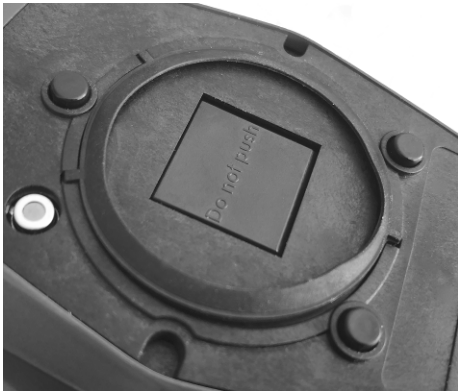
The light seal that surrounds the measurement port on the bottom of the instrument is important in providing consistent and accurate measurements. Refer below for information on proper light seal installation. Light Seal Part Number: TPZ-28727

Checking the Light Seal Installation

Verify the seal is lying flat and properly installed. If not, press into place using your finger.

Not Properly Installed	Properly Installed
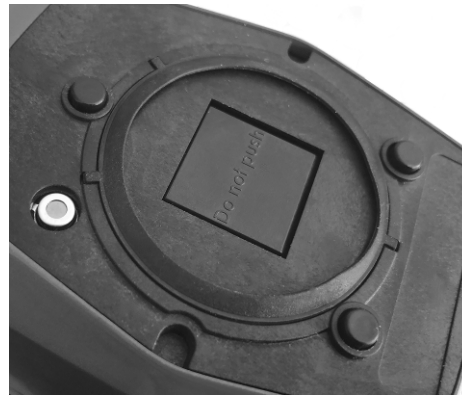
Replacing the Light Seal

1. Use your fingernail to lift one edge of the light seal (1) from the recessed area and remove.

(1)

2. Orientate the new light seal over the recessed area around the measurement port.

3. Press the new light seal into place until all rubber tabs are inserted properly and the light seal is lying flat.

Replacing the Battery Pack

The battery pack cannot be serviced or replaced by the user. Contact Technical Support if you experience issues with the battery.

Troubleshooting

Prior to contacting X-Rite support department for device problems, try the applicable solution(s) described below. If the condition persists, contact us using one of the methods listed in the Service Information section.
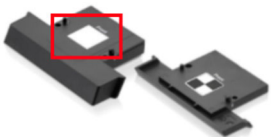
Problem	Cause	Solution
Device unable to boot or firmware crashes.	Firmware is corrupt or incompletely loaded.	Safe-boot the device while "long holding" the power on/off button until the LED indicator turns red. In safe boot, you can factory-reset the device or install new firmware.
Device screen remains dark.	Device is turned off.	Turn device on by pressing the power on/off button. The battery pack for your new device/longer storage time results in a low to medium charge state and should be charged before use (up to 4 hours for full charge). Refer to the Setup section for more information.
	Device is in power down mode.	Touch the screen or lift the device.
	Battery is very low.	Charge the battery min. 1 hour. After max. 5 minutes the screen will turn on. This icon at the top of the screen would indicate the battery is fully charged.
	Battery is defective.	Charge the battery. If the screen does not turn on after max. 5 minutes check if the USB cable is correctly connected to the computer or power supply. If it still does not work the battery needs to be replaced.
Screen is instable (turns on/off periodically) when device is connected to a computer.	Battery is defective.	Battery needs to be replaced. Exposure to temperature beyond 120 °F (50 °C) can cause irreversible damage to the battery.
Screen is frozen.	Firmware is locked up.	Disconnect USB cable. Press and hold the measure power on/off button for 10 seconds and then release. Device turns off. Device can be started normally.
Error Message: Fail Check White Tile.	White Tile dirty.	Clean with a microfiber towel. Make sure to have no fingerprints on the white tile.
	Wrong White Tile used.	Check if serial number of the device matches the serial number of white tile.
Measurement error or results appear inaccurate.	Material being measured is damaged (e.g. scratched).	Repeat measurement.
	Calibration was performed on a dirty white tile or camera target.	Clean the calibration reference. Repeat the calibration as described in the Calibration section.
	Device requires calibration.	Perform a health check and calibration on

		calibration reference. If health check and calibration fail, the device is defective. Contact technical support.
	Device is defective.	Perform a health check in the Apps screen. If the health check fails the device is defective. Contact technical support.
Sensor indicators remain red.	Pin jammed/dirty.	Please clean all three pins.
Calibration procedure fails.	Device movement, dirty white tile, etc.	Try measuring the white tile and camera target again. If an error still occurs, clean the white tile and camera target as explained in the Appendices. If the issue persists, check battery status, perform a reset by holding the Measure Power On/Off button for 10 seconds, and then repeat the calibration.
	Device defective.	Contact technical support.
Device and software not communicating (USB connection).	USB cable not connected.	Connect the USB cable between the computer and the device.
	USB cable is defective.	Exchange USB cable.
	Communication crashed between application software and the device.	Unplug the USB cable, wait 1 second and connect the cable again. If the communication still does not work, close and restart the software application. Restart the device. If the communication still does not work, reboot the computer.
Message: New Firmware Version	Firmware needs to be updated to the latest version.	Refer to FW Update in the System Settings.
Error message "White Tile Dirty"	Dirty white tile	Clean the white tile. See section Cleaning the Calibration Reference
Error message: Wrong Camera Target.		Please clean Camera Target. Make sure that you use the camera target that matches your device. If Error message persists, contact First Level Support.
Error message: "No database [2] Imagedata entries"		Please update to the latest firmware.
Error message "Wavelength reference"	Device most likely dropped. Drop Damage.	Perform calibration on calibration reference. If Error message persists, contact X-Rite Service.
Device will not measure or calibrate.	Contact sensor(s) do not properly contact the sample surface.	Lift the device and place it properly on the sample. Make sure that all 3 sensor indicators on the screen turn green.
	Contact sensor(s) are not working correctly. Sensors may be stuck due to dirt or paint; or they are defective.	Open a new job to show the 3 contact indicators on the screen and place the device on a flat surface and then lift it. If one or more of the sensor indicators in the screen do not change color when lifted, there may be a problem with the contact sensor(s). Contact technical support.

	Sensor indicators in the display do not change color.	Contact sensors are not working correctly. Put the device into measure mode, place device on a flat surface and then lift. If one or more of the sensor indicators in the display do not change color when lifted, there may be a problem with the contact sensor. Contact technical support.
Wi-Fi not connected.	Wi-Fi turned off.	Turn on Wi-Fi in Wi-Fi Setup screen.
	Wi-Fi signal too weak or not available.	Approach the Wi-Fi access point; optimally closer than 5 meters.
Wi-Fi not connecting.	Network not correctly set.	Perform the Wi-Fi setup procedure in Wi-Fi Setup screen, by scanning the available networks. Select the desired network and enter the password.
Wi-Fi network cannot be configured.	Wrong password entered.	Repeat the Wi-Fi setup procedure in Wi-Fi Setup by selecting the desired network and enter the password. Make sure the password is entered correctly.
	Wi-Fi signal too weak.	Approach the Wi-Fi access point; optimally closer than 5 meters. Repeat the Wi-Fi setup procedure in Wi-Fi Setup, by scanning the available networks. Select the desired network and enter the password.
Shutter error.	Device defective.	Contact technical support.
Multiple error messages.	Device encountered a cascade of errors.	Press OK button in error message for 2 seconds.
Date and time wrong.	Incorrect setting.	Refer to Date Time Option in the Settings section.

Technical Specifications

Device dimensions
L: 170 mm
W: 75 mm
H: 100 mm
Weight: 0.6 kg

Environmental
Operating Temp:	50°F to 95°F (10°C to 35°C)
Humidity Max:	85% RH max (non condensing)
Storage Temp:	-4°F to 122°F (-20°C to 50°C)

Short-term repeatability MCDM on BCRA white
Typical 0.02 DE_{00}

Battery
Type: Lithium Ion Battery
Charging with **2.5 W** (USB 2.0 PC port, USB 3.0 PC port, USB Charger)

USB connectivity
USB-C connector
USB 2.0 Hi-Speed (USB 3.0 Hi-Speed compatible), 480 Mbit/s, 60 MB/s (theoretical)

Wi-Fi module
Wi-Fi module 2.4 GHz according to IEEE 802.11b/g/n standard

Pollution degree:	2
Altitude:	up to 2000 m
Location for Use:	Indoor Use only

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