Before using the COLOR READER CR-20

KONICA MINOLTA

⚠ **Before using this instrument, please read this manual.**

Notes on Instruction Manual

The Operation Manual of COLOR READER CR-20 is stored in the instrument as a PDF file.
To view the PDF file, you need a PDF viewing software.
The latest instruction manual also can be downloaded from the following URL:
https://www.konicaminolta.com/instruments/download/instruction_manual/index.html

Introduction

Thank you for purchasing this KONICA MINOLTA instrument.This instrument is a lightweight, compact colorimeter for reflecting an object's color. It was developed to provide colorimetry in a variety of industrial fields.
In addition, when used with the included PC application, data saved in the instrument can be displayed in a list and saved to the PC.

Packing materials of the product
Be sure to keep all packing materials used for shipping the product (cardboard box, cushioning material, plastic bags, etc.).
This instrument is a precision measuring instrument. When transporting the instrument to a service facility for maintenance or for other reasons, be sure to use the packing materials to minimize shock or vibration. If the packing materials are lost or damaged, contact a KONICA MINOLTA-authorized service facility.

Safety Symbols

The following symbols are used in this manual to prevent accidents that may occur as result of incorrect use of the instrument.

⚠	Denotes a sentence regarding a safety warning or note. Read the sentence carefully to ensure safe and correct use.	🚫	Denotes a prohibited operation. Never disassemble the instrument.
🚫	Denotes a prohibited operation. The operation must never been performed.		Denotes an instruction. Always disconnect the AC adapter from the AC outlet.
❗	Denotes an instruction. The instruction must be strictly adhered to.	∼	This symbol indicates alternating current (AC).
		⎓	This symbol indicates direct current (DC).
		▫	This symbol indicates class II protection against electric shock.

Safety Precautions

To ensure correct use of this instrument, read the following points carefully and adhere to them. After you have read this manual, keep it in a safe place where it can be referred to anytime a question arises.

⚠ Warning
(Failure to adhere to the following points may result in death or serious injury.)

🚫 Do not use the instrument in places where flammable or combustible gases (gasoline, etc.) are present. Doing so may cause a fire.

❗ Always use KONICA MINOLTA's optional accessory AC adapter (AC-A308) or USB bus power AC adapter (AC-A305J,K,L,M) connected to an AC outlet of the rated voltage and frequency 100-240 VAC (50/60 Hz). If an AC adapter other than those specified by KONICA MINOLTA is used, or if the adapter is connected to an unsupported voltage, it may result in damage to the adapter, fire, or electric shock.

🔌 If the instrument will not be used for a long time, disconnect the AC adapter power plug from the AC outlet. Accumulated dirt or water on the prongs of the AC adapter's plug may cause a fire and should be removed.

🚫 Do not insert or disconnect the AC adapter with wet hands. Doing so may cause electric shock.

🚫 Do not disassemble or modify the instrument or the AC adapter. Doing so may cause a fire or electric shock.

🚫 The instrument should not be operated if it is or the AC adapter is damaged, or if smoke or odd smells occur. Doing so may cause a fire. In such situations, turn the power OFF immediately, disconnect the AC adapter power plug from the AC outlet (or remove the batteries if using battery power) and contact the nearest KONICA MINOLTA-authorized service facility.

🚫 Take special care not to allow liquid or metal objects to enter the instrument and the AC adapter. Doing so may cause a fire. Should liquid or metal objects enter the instrument, turn the power OFF immediately, disconnect the AC adapter power plug from the AC outlet (or remove the batteries if using battery power) and contact the nearest KONICA MINOLTA-authorized service facility.

🚫 Do not forcibly bend, twist or pull the power cord. Do not place heavy objects on, or damage or modify the power cord. Doing so may damage the power cord and cause fire or electric shock.

❗ Always disconnect the power cord by holding the power plug. Pulling the power cord itself may damage it and cause fire or electric shock.

❗ Firmly push the AC adapter power plug completely into the outlet. If the power plug is not pushed completely in, it may cause a fire or electric shock.

🚫 Do not dispose of the batteries in a fire or charge, short-circuit, heat, or disassemble the batteries. Doing so may ca

❗ In the event that a battery leaks and the fluid comes into contact with your eye, do not rub your eye and wash it with clean water, and then immediately consult a doctor. If the leaked fluid comes into contact with skin or clothing, immediately rinse with water. In addition, stop using the instrument if one of its batteries has leaked.

❗ Use a dedicated charger (of the specified type, model, etc.) to charge nickelmetal hydride batteries. If charging conditions or a charger different from that specified is used for charging, the battery may leak, overheat, or catch fire.

❗ Correctly dispose of batteries used in the instrument. Batteries incorrectly disposed of may short-circuit, overheat, and catch fire. This may lead to fire, injury, or burns. Battery disposal methods vary depending on each municipality. Adhere to municipal instructions when disposing of batteries, or give the batteries to your contracted waste disposal contractor.

🚫 Do not touch the batteries with wet hands. Doing so may result in electric shock or a malfunction.

🚫 Do not look directly at the lamp. The lamp is extremely bright and emits ultraviolet rays. Doing so may injure the eyes.

⚠ Caution
(Failure to adhere to the following points may result in injury or damage to the instrument or other property.)

🔌 When using the AC adapter, provide an environment such that there is an outlet near the instrument and the power plug of the AC adapter can be easily plugged or unplugged.

❗ Take care not to pinch yourself on the areas of the instrument that open and close. Doing so may result in injury

🚫 Do not use any batteries other than those specified for the instrument. Do not use a new battery and an old battery or batteries of different types together.
When loading the batteries into the instrument, ensure they are oriented according to the polarity indication (positive + and negative -) on the instrument.
Otherwise, the batteries may break or leak, resulting in a fire or injury, or contamination of the area.

🚫 Do not use the instrument if the sample surface aperture (measurement area) is in the line of sight. Doing so may result in injury to the eye.

❗ Take sufficient care when handling the target mask. The sample surface aperture glass may become cracked, resulting in injury.

🔌 When cleaning the instrument, unplug the AC adapter power plug from the outlet. Failure to do so may cause electric shock.

Connecting to a PC

This instrument is equipped with a USB connection terminal.
The included USB cable (IF-A25) can be used to connect the instrument to a PC and transmit data as well as to allow the instrument to be controlled or configured from a PC application.

Notes • Do not connect any cable other than the designated cable to the USB connection terminal.
  • When connected via USB and communicating, communications may be interrupted by being exposed to strong external static electricity or radio waves from the surrounding area. In such cases, turn the power OFF and then turn it ON again.
  • Firmly connect the USB connector plug in the correct orientation.
  • Always connect and disconnect the USB cable by the connector's plug.
    Do not pull it out by the cable itself or bend it with unreasonable force.
    Doing so may break the cable.
  • Connect the instrument using a cable with a suitable length. If the cable is not of a suitable length, connection problems may arise or the cable may break.
  • Firmly push in the USB cable connector that matches the shape of the port (connection terminal) until it can go in no further.
  • With Windows 10 or 11, if the instrument can only be operated using USB Feed, set "USB selective suspend setting" under Power Options to "Disabled".

Memo • The USB communication port on the instrument is USB 2.0-compliant.

Connecting to a PC

PC System Requirements
●OS   Windows 10 Pro 32bit, 64bit
             Windows 11 Pro
             (English or Japanese)
●The hardware of the computer system to be used must meet or exceed the recommended system requirements for compatible OS being used.
●One USB2.0 port is necessary.

(Connection diagram)

USB cable
IF-A25

COLOR READER
CR-20

PC
(commercially available)
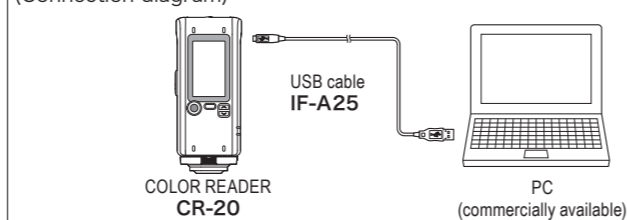
Connecting to a PC

Operating Procedure

❶ **Connect the Micro-B connector of the USB cable to the USB connection terminal on the instrument.**
Firmly push it in until it can go no further and verify that it is securely connected.

❷ **Verify that the instrument power has been turned ON.**

❸ **Press [MENU/OK] , move the selection frame to "USB Connec." using either [∧] or [∨] , and then press [MENU/OK] .**

❹ **Move the selection frame to "PC" using either [∧] or [∨] , and then press [MENU/OK] .**
"Connecting to PC" will be displayed on the instrument.

Memo Pressing the MENU/OK key while "Connecting to PC" is displayed on the screen will cause the instrument to be disconnected from the PC.

❺ **Connect the A connector of the USB cable to the USB port on the PC.**
After connecting to the PC, the instrument will be recognized as a mass storage device, and an AutoPlay dialog box will be displayed.

Memo If the instrument is not recognized as a mass storage device, disconnect and reconnect the cable, and start the procedure over again from step 2.

When First Connecting to the PC

Notes • To use a PC application with the instrument connected to a PC, the dedicated USB driver must be installed.
  • If the PC being used is connected to the Internet, the Windows updater will be used to automatically install the drivers.
  • Installation may take several minutes.
  • Once installation is complete, a COM port will be assigned to the instrument.

If the PC's operating system is Windows 10 or Windows 11, the USB driver will be installed automatically the first time the instrument is connected to the PC.
If the PC is not connected to the Internet, manually install the drivers by accessing the APP folder in the instrument's mass storage folder.

❶ **Checking the connection status (COM port number)**
**[Windows 10/11]**
Right-click on the Start button in the lower-left corner of the screen, and navigate to [Device Manager] → [Ports (COM & LPT)].
⇨ Measuring Instruments(COM**): The COM port number assigned to the instrument will be displayed for "**".
"USB Serial Device (COM**)" may be displayed.
Regardless of the PC's OS, if the connected instrument is not displayed under [Ports (COM & LPT)] and is instead displayed under [Unknown device] with an "!" mark, follow the procedure under "Updating the drive manually".
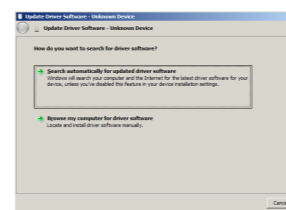
❷ **Updating the drive manually**
If the connected instrument is not displayed under [Ports (COM & LPT)] and is instead displayed under [Other Devices] as "! Unknown Device", the USB driver will need to be installed manually.
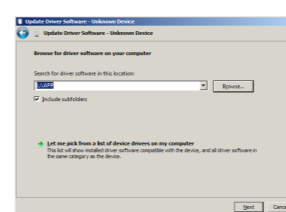
❷-1 **Right-click on the unknown device marked with "!"**
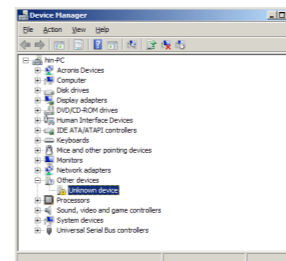
❷-2 **Select [Update Driver Software], and click "Locate and install driver software manually."**

❷-3 **Specify the APP folder in the instrument's mass storage folder as the save destination, and click "Next".**

❷-4 **Confirm the COM port number from step 1, and then navigate to [Device Manager] → [Ports (COM & LPT)]. If "Measuring Instruments(COM**)" is displayed, driver update has been completed.**

Click "Install" on the confirmation screen with the message that reads, "Would you like to install this device software?"
After installing, click "Close".
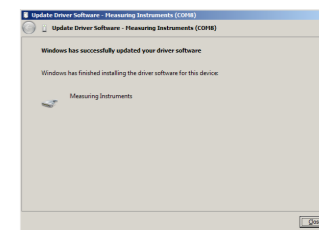
Launching the PC Application

Notes on Use
• This software is application software for use with Windows 10 or Windows 11 Please note that this software does not include any OS.
• One of the above OS must be installed on the PC in order to install this software.

Memo The PC application cannot be run when logged in to the PC under a "Guest" account.

Notes **[Windows 10/11]**
When starting the PC application, if ".NET Framework 3.5" is requested, follow the procedure below to configure the settings.
(Procedure)
Under [Control Panel] → [Programs and Features], select "Turn Windows features on or off".
In the Windows Features window, check the box next to ".NET Framework 3.5" and click "OK". Follow the displayed procedure to install.
If this installation is not completed properly, be sure to verify that Windows Update works as it should.

❶ **When connecting to a PC, an AutoPlay dialog will be displayed. Click "Open folder to view files"**

Notes Writing to the instrument memory is not permitted. Note that even if files are moved they will not be saved to the instrument.

❷ **Copy the "CRX_APP.exe" file in the APP folder and the MANUAL folder to the PC's hard drive.**

Notes If the PC application is run from within the APP folder, some functions may not be usable depending on the PC. Copy the file to the PC's hard drive before using.

❸ **Double-click the "CRX_APP.exe" file copied to the PC's hard drive to launch the PC application.**

Notes If a screen app "No instrument could be found", click "OK" to close the dialog, check the following points, and then reconnect the instrument via USB.
If "Connecting to PC" is not shown in the display, repeat steps ❶ to ❷ of Connecting to a PC.
Check the connection status (see When First Connecting to the PC) and update the driver manually if necessary.

Memo The PC application does not support connections to multiple instruments.
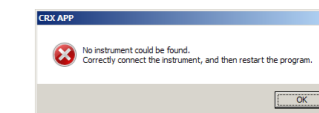
About the folder structure in the mass storage of the instrument

The mass storage of the instrument has the following structure. Files in each folder are as follows:
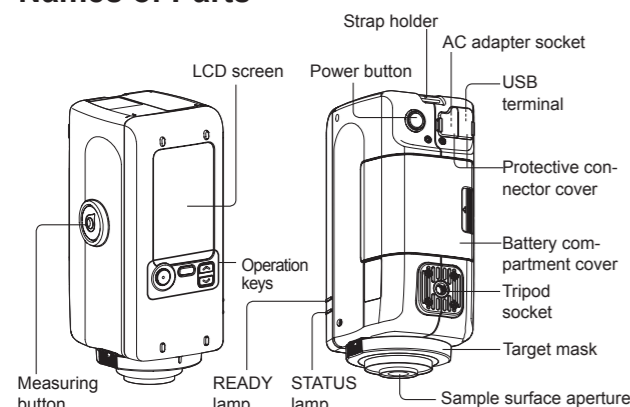
PC application (stored in the instrument)

📁 APP · · · · Application "CRX_APP.EXE" is contained.
📁 DATA · · · · The instrument can hold data.
📁 MANUAL · · · · Various manuals can be accessed.

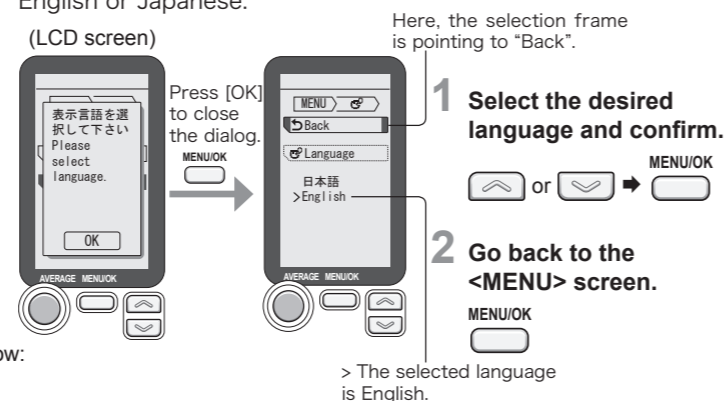# CR-20 Basic Operating Instructions　－Measuring instrument－

These instructions provide you with the basic procedure for using the COLOR READER CR-20.
See the CR-20 Operation Manual for a detailed description on how to set or use the instrument.

Names of Parts

Strap holder
AC adapter socket
LCD screen　Power button
USB terminal
Protective connector cover
Battery compartment cover
Operation keys
Tripod socket
Target mask
Measuring button　READY lamp　STATUS lamp
Sample surface aperture

[Preparations]
Supply power to the instrument in one of the manners described below:
① Battery
② USB bus power
③ AC adapter (Optional Accessories)

Display Language (When first turning the CR-20 ON)

When first turning the instrument ON after purchasing, a message that reads, "Please select language." will be displayed. One of two languages can be selected for the display language: English or Japanese.

(LCD screen)

表示言語を選択して下さい Please select language.
OK

Press [OK] to close the dialog.
MENU/OK

MENU
Back
Language
日本語
>English

Here, the selection frame is pointing to "Back".

1 Select the desired language and confirm.
⌃ or ⌄ ➡ MENU/OK

2 Go back to the <MENU> screen.
MENU/OK

> The selected language is English.

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1 Turning the Power ON

Press and hold POWER for about 1 second.

(BEEP BEEP!)

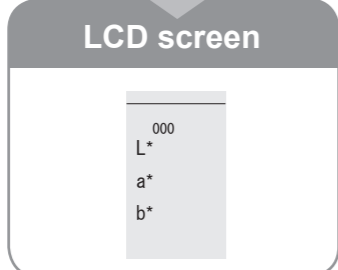The display of the instrument shows "Perform white calibration" and the Ready lamp illuminates blue.

LCD screen

Perform white calibration.

Notes
If the protective cap is attached to the Instrument, remove it before performing white calibration or measurement.
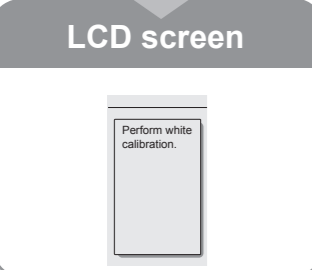
2 White Calibration

Place the instrument on the white calibration cap.

Press the measuring button.
Beep　Beep　Beep

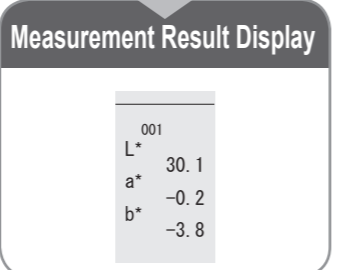White calibration will be performed, and the measurement screen will be displayed.

LCD screen

000
L*
a*
b*

Memo
When a calibration error occurs, the buzzer will beep three times on the third try, and "Calibration Error" will be displayed. Click the MENU/OK button, check that the white calibration cap is correctly attached, and perform white calibration again.

3 Measurement

Remove the instrument from the white calibration cap, and set the sample surface aperture on the sample to measure.
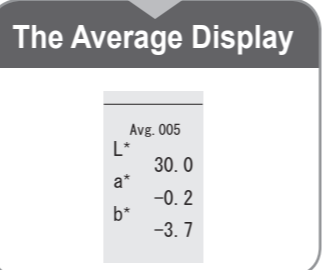
Press the measuring button.
Beep

Measurement will be performed, and the results will be displayed on the screen.

Measurement Result Display

001
L*　30.1
a*　−0.2
b*　−3.8

■**To take multiple measurements**
Press ⊚ the measuring button again.

■**To retake a measurement**
MENU/OK ➡ Undo
Then measure again.

4 Confirmation of the average

While the measurement is displayed, quickly press the ◯ AVERAGE button.

The average of the measurement results up to that point will be displayed.

Press the measurement button again to continue measuring.

The Average Display

Avg. 005
L*　30.0
a*　−0.2
b*　−3.7

■**To take measurements**
Press ⊚ the measuring button again.

■**To reset AVERAGE results**
◯ Press and hold the AVERAGE button for at least 1 second.

⇒Go back to the **3 Measurement**

Setting of CR-20 basic functions　－Using PC application－

Connecting the instrument to a PC allows the following functions to be used. This section describes the setting of the main basic functions.
Viewing of data stored in instrument / Transfer of stored data to PC / Auto off enable/disable / Buzzer enable/disable and printout of data using compatible printer.

How to set up

Install the PC application in accordance with the "Before using COLOR READER CR-20" on the back, and start the application.

A. To measured data store in the instrument.
　1. Go to the "Setting" screen.
　2. Click the check box to the left of "Save to Instrument".
　　"Browse Data" is displayed in the <Menu> screen of this instrument.

B. To recall all data saved in the instrument and display them in a list.
　1. In the [Data] tab, click "Read".
　2. Click [OK] to confirm.

C. Save to PC
(Import data stored in the instrument to a specified destination.)
　1. After operation B above, click "Save to PC".
　2. Click the save location for the data to select it, and click "OK".
(Saving data to PC while taking measurements)
　1. Under "Save Meas. Data" in the [Measure] tab, click ○ to the left of "PC".
　　The "Browse For Folder" window will appear.
　2. Select the save destination and Click [OK].
　　Measured data will be saved as a csv. file.
　　🗀 Serial No
　　└ 🗀 yyyymmdd (*date of measurement*)
　　　└ ▢ File name: hhmmss (*time of measurement; 24-hr clock*). csv

See the Operation Manual for a detailed description on how to set or use the instrument. Before connecting the instrument to a PC, carefully read "Connecting to a PC" in the separate sheet "Before using COLOR READER CR-20".