ILLUMINANCE SPECTROPHOTOMETER

CL-700A

En Instruction Manual

Please read before using the instrument.

KONICA MINOLTA

Safety Symbols

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

Denotes a sentence regarding a safety warning or caution.
Read the sentence carefully to ensure safe and proper use of the instrument.

Denotes a prohibited operation.
The operation must never be performed.

Denotes an instruction.
The instruction must be strictly adhered to.

Denotes an instruction.
Disconnect the power plug from the AC outlet.

Denotes a prohibited operation.
Never disassemble the instrument.

Trademarks

- The KONICA MINOLTA logo and symbol mark are trademarks or registered trademarks of KONICA MINOLTA.

Notes on This Manual

- Copying or reproduction of all or any part of the contents of this manual without KONICA MINOLTA's permission is strictly prohibited.
- The contents of this manual are subject to change without prior notice.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors or omission, please contact the nearest **KONICA MINOLTA**-authorized service facility.
- KONICA MINOLTA will not accept any responsibility for consequences arising from the use of the instrument.

Safety Precautions

To ensure correct use of the 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 quickly referred to anytime a question arises.

	Warning (Failure to adhere to the following points may result in death or serious injury)
	Do not use this instrument in places where flammable or combustible gases (gasoline, etc.) are present. Doing so may cause fire.
	If this instrument is not used for a long time, disconnect the USB cable and LAN cable from this instrument. Accumulated dirt or water on the connecting parts of these cables may cause fire. Accumulated dirt or water on the connecting parts of the USB cable and LAN cable may cause fire and should be removed.
	Also, do not connect or disconnect cables with wet hands. Doing so may cause electric shock.
	Do not disassemble or modify this instrument. Doing so may cause fire or electric shock.
	Should this instrument be damaged or emit smoke or an odd smell, do not keep using such an instrument without correction. Doing so may cause fire. In such situations, immediately disconnect the USB cable or LAN cable from the instrument, and then contact the nearest KONICA MINOLTA-authorized service facility.
	Do not spill liquid on this instrument or drop metallic objects onto it. Doing so may cause fire. Should either of these happen, immediately disconnect the USB cable or LAN cable from the instrument, and then contact the nearest KONICA MINOLTA-authorized service facility.
	Do not forcibly bend, twist or pull the cables. Also, do not place heavy objects on the cables, or damage or modify them. Such actions may cause fire or electric shock due to damage to the cables.
	When disconnecting the cables, be sure to hold their plugs. Do not forcibly pull the cables when disconnecting them as this may damage them or cause fire or electric shock.
	Fully insert the plugs until they are securely seated. Failure to do so may result in fire or electric shock.

Introduction

This instrument is a highly accurate, highly functional illuminance spectrophotometer that can measure low illuminance and near-infrared light having a wavelength of up to 1,000 nm on production lines.
Carefully read this manual before using it.

Packaging materials
Be sure to save all packaging materials (corrugated cardboard boxes, pads, and plastic bags) supplied with the purchase.
This is a precision measuring instrument. Use supplied packaging materials to minimize shocks and vibrations in case this instrument needs to be transported for purposes such as maintenance in KONICA MINOLTA's factories.
Should any of these packaging materials be lost or broken, please contact the nearest KONICA MINOLTA-authorized service facility.

Cap of the measurement unit
There is a cap on this instrument to protect its measurement unit (light-receiving window).
Before using this instrument, remove this cap.
Be sure to attach this cap when transporting this instrument.

Notes on Use

Please use this instrument properly. Using the instrument in a manner other than that described in this Instruction Manual may result in injury, electric shock, or damage to the instrument.

Operating Environment

- This instrument is a precision device, so exercise caution when handling it.
- The tip of this instrument's light-receiving window is the illuminance reference surface.
- Do not disassemble this instrument as it is composed of precision electronic components.
- This instrument corresponds to an Overvoltage Category I product (instruments connected to a circuit with measures taken to limit transient overvoltage to a suitably low level).
- This instrument complies with Electrical equipment for measurement, control and laboratory use - EMC(Electromagnetic Compatibility) requirements - Part 1: General requirements (EU Harmonized Standards EN 61326-1:2021). Conformity verification is performed under KONICA MINOLTA's test conditions in an INDUSTRIAL ELECTROMAGNETIC ENVIRONMENT specified in the relevant harmonized standards. The limit of performance degradation when subjected to continuous disturbance during immunity testing is up to 4 times KONICA MINOLTA's repeatability specifications (Ev, x, y).
- Take care not to allow foreign substances like water and metal to penetrate the instrument. Operating it in such a state is extremely dangerous.
- Do not use this instrument in places exposed to direct sunlight or near a heating appliance. Doing so may cause the internal temperature of the instrument to greatly exceed the ambient temperature, which may break the instrument. Also, use the instrument in a well-ventilated place.
- Avoid a rapid change in ambient temperature to prevent condensation.
- Avoid using the instrument in extremely dusty or humid places.
- Do not use the instrument in dusty, smoky, or humid places or in places where chemical gases occur.
- This instrument corresponds to a Pollution Degree 2 product (instruments used mainly in manufacturing plants, laboratories, warehouses, or equivalents).
  Use the instrument in environments not exposed to metallic dust and condensation.
- Use of the instrument and the PoE injector/hub in home environments may cause radio interference. Users may be required to take appropriate measures in such cases.
- This instrument should be used in an environment with an ambient temperature between 0°C and 40°C, a relative humidity of 85% (up to 35°C; the upper limit decreases linearly to 66% from 35°C to 40°C), and no condensation. Use of the instrument outside this range will result in unsatisfactory performance.
- Do not use the instrument at altitudes higher than 2,000 m above sea level.

System

- Do not subject the instrument to strong impact or vibration.
- Do not forcibly pull, bend, or apply strong force to the included USB cable or LAN cable. This may result in the cable snapping.
- Using the instrument close to a television, radio, wireless transceiver, or similar device may impair reception.
- Do not disconnect the USB cable or LAN cable during communication with a computer such as during calibration and measurement.
- The instrument may not operate normally if it is not compatible with the computer or other connected device. Check that the instrument operated normally.
- If this instrument will not be used, disconnect the USB cable (or commercially available LAN cable) connecting it to the computer, and then disconnect the power supply.
- You are recommended to back up important data and settings to a separate storage medium.
- Should this instrument break down, do not try to disassemble and repair it by yourself. Please contact the nearest KONICA MINOLTA-authorized service facility.
- Do not measure a light source beyond the measurement range (on the high-illuminance side). Failure to observe this warning could result in damage to the instrument's optical system.
- Should you notice any breakage or abnormality during operation, immediately switch the power supply off and disconnect the cables. Then refer to "Troubleshooting." P. 17

Notes on Storage

- Store this instrument at an ambient temperature between −10°C and 45°C and relative humidity of 85% or less (at 35°C) with no condensation. Storage under high temperature and humidity may impede the performance of this instrument, so we recommend storage at or near to room temperature and humidity.
- Take care to prevent condensation forming when storing the instrument. Also, when moving the instrument to a location where it will be stored, be careful of sudden temperature changes to avoid condensation.
- Do not store this instrument in places exposed to direct sunlight or near a heating appliance. Doing so may cause the internal temperature of the instrument to greatly exceed the ambient temperature, leading to malfunction.
- Avoid storing the instrument in dusty or smoky places or in places where chemical gases occur. Storing the instrument in such places may deteriorate the performance of the instrument or cause it to malfunction. Do not leave the instrument inside cars or trucks or their trunks or in similar places. Doing so may cause the internal temperature of the instrument to exceed the storage temperature range, leading to malfunction.
- When storing the instrument, cover it with the standard accessory cap.

Cleaning

- If the instrument becomes dirty, wipe it with a dry and soft cloth. Do not use an organic solvent, such as benzine or thinner, or any other chemical agent to clean it.
- Should dirt or dust get on the light-receiving window, use a blower or a similar device to blow the dirt or dust off, and then wipe the light-receiving window off with a dry and soft cloth or lens cleaning paper. Do not use an organic solvent, such as benzine or thinner, or any other chemical agent to clean it.
- If the dirt cannot be removed from the light-receiving window or this window is scratched, please contact the nearest KONICA MINOLTA-authorized service facility.

Notes on Transporting

- Use the packaging material supplied at purchase to minimize vibration or shocks generated while transporting the instrument.
- Put all materials including the main unit and accessories in the original packaging material when returning the instrument for servicing.

Maintenance

- Periodic maintenance is recommended annually to maintain measurement accuracy of the instrument. For details on maintenance, please contact the nearest KONICA MINOLTA-authorized service facility.

Disposal Method

- Make sure that the instrument, its accessories, and the packing materials are either disposed of or recycled correctly in accordance with local laws and regulations.

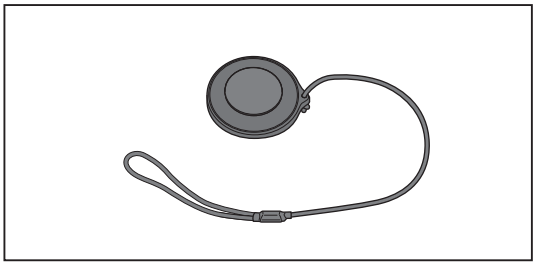
Contents

Standard Accessories

Standard and optional accessories are available with the instrument.
Memo The shapes of some products may be different from those shown.

Cap (With Strap) CL-A14

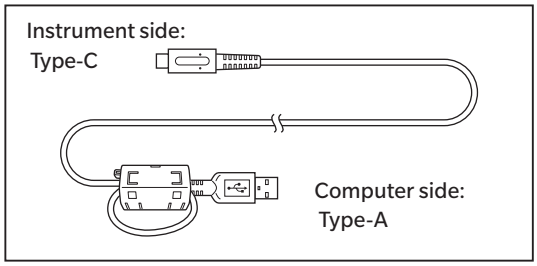
- Protects the light-receiving window. Attach this cap to the instrument during instrument transportation and storage and in all other situations except when performing measurement.
  A strap that can be attached to the instrument is provided to prevent the cap from being lost.



USB Cable (2 m) Type-C IF-A49

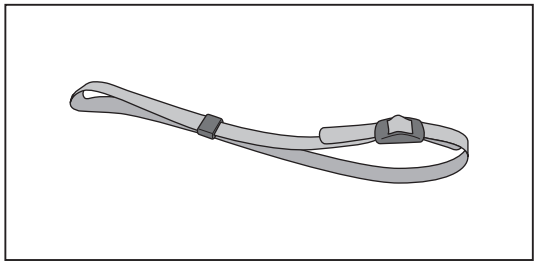
- Connects this instrument and a computer.
  Power is supplied through this accessory.

  Note Be sure to connect the included USB cable to the product.



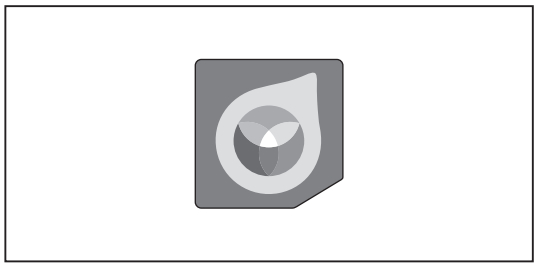
Wrist Strap CR-A73

- A wrist strap that can be attached to the instrument to prevent it from being dropped unintentionally.



Software for Light Measurement CL-S30

- This software allows the instrument to be controlled from a computer, enabling the setting of measurement conditions, the performing of measurement, and the saving of data.



ID Setting Tool CL-ID1

- This software sets the ID of each instrument when multiple instruments are connected and used.
  It is included with Software for Light Measurement CL-S30.

Communication Specifications

- Use these specifications to control this instrument with a user-created program.
  It also includes sample programs for socket communication.

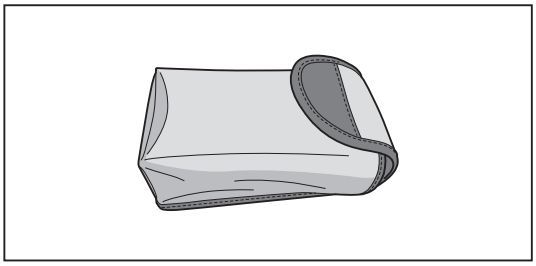
* You can download Software for Light Measurement CL-S30, ID Setting Tool CL-ID1, and the Communication Specifications from the following product support page.
  https://www.konicaminolta.com/instruments/download/software/light/index.html

Optional Accessory

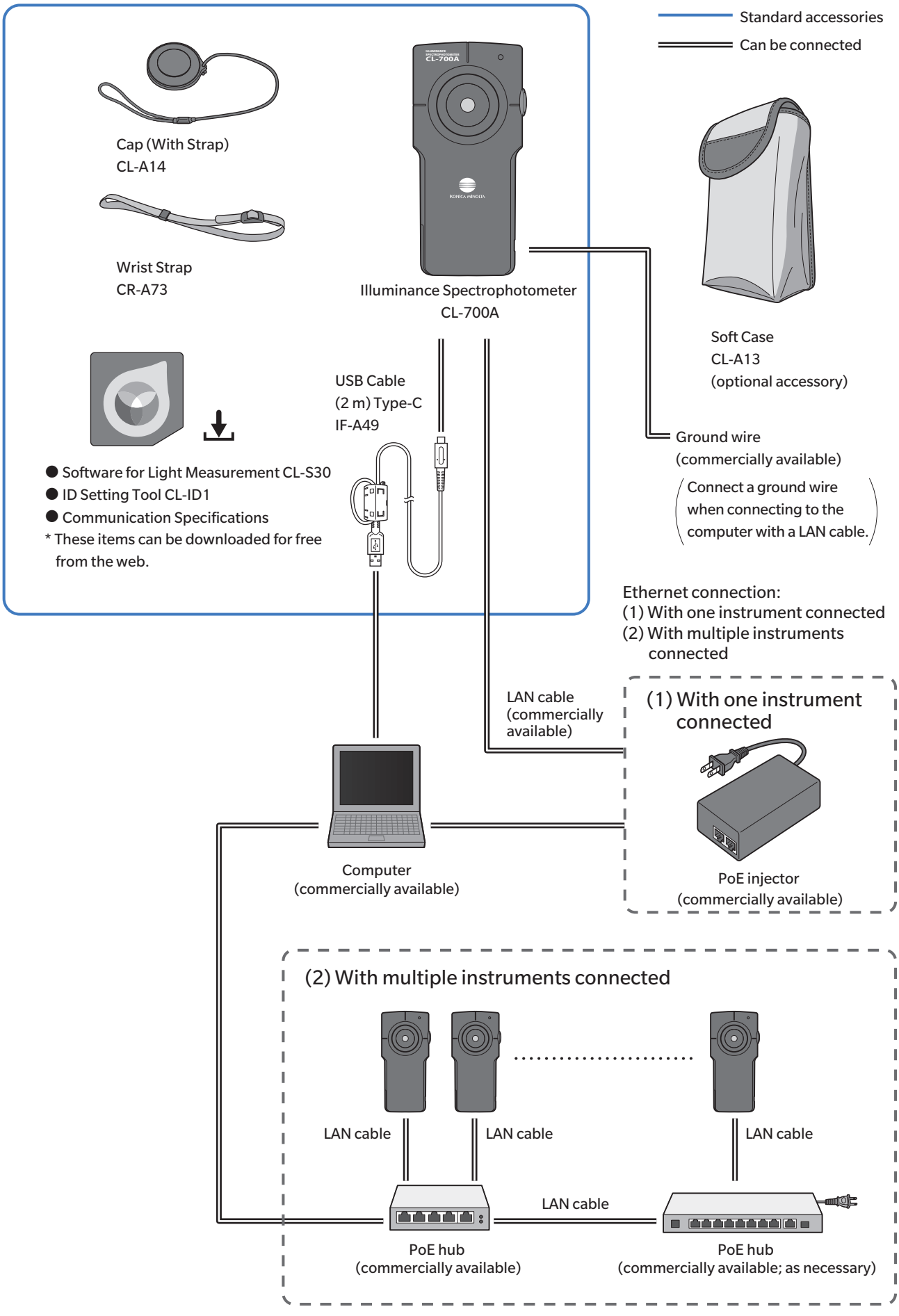
Memo The shapes of some products may be different from those shown.

Soft Case CL-A13

- Used to store the instrument and accessories.



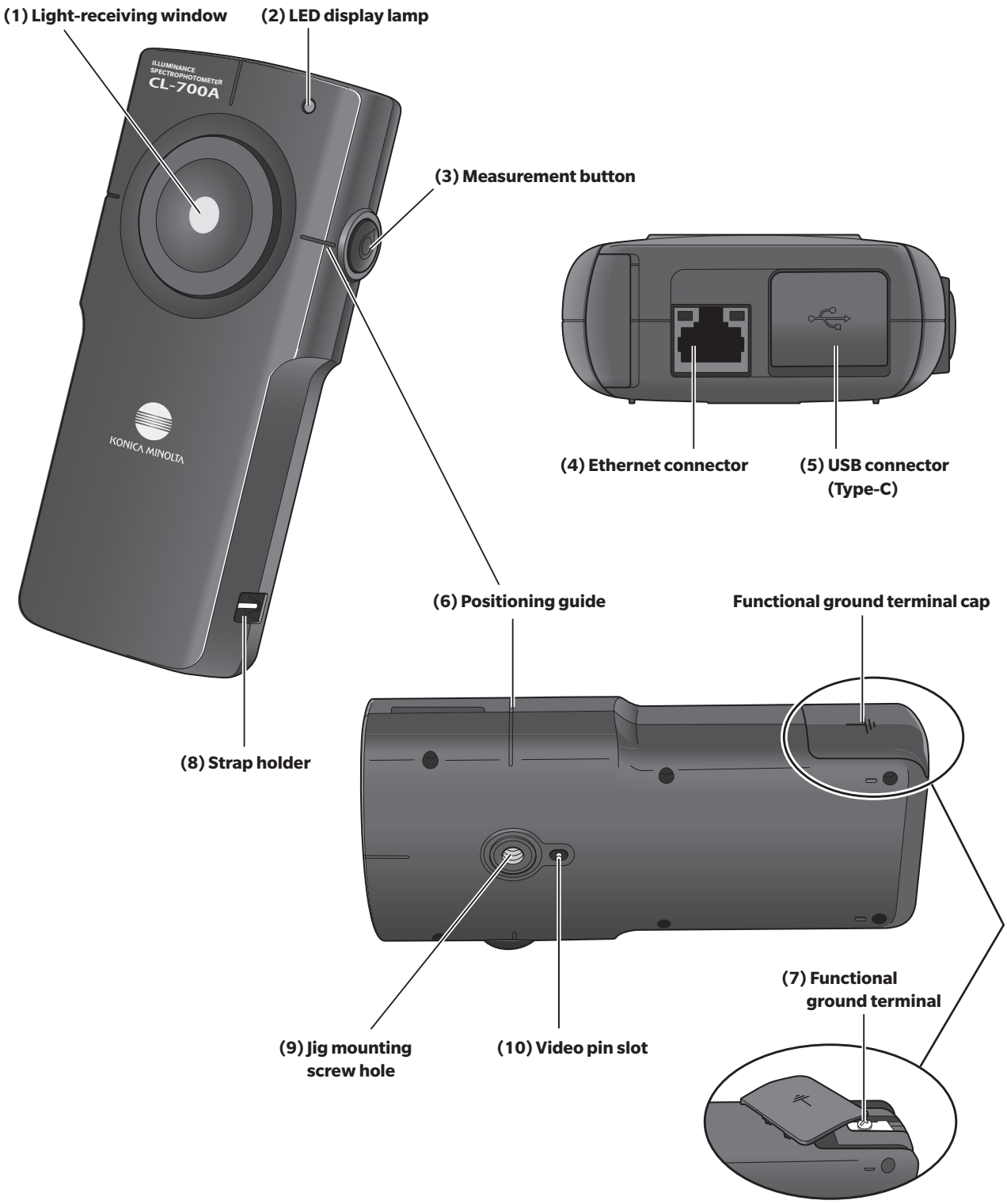
System Diagram



Names and Functions of Parts

Names of Each Part

CL-700A



Functions of Each Part

(1) Light-receiving window This is the light-receiving unit used to measure the illuminance.

(2) LED display lamp This display lamp indicates the communication status of the device when power is supplied. During normal operation, this lamp turns on in blue. When a warning occurs, it turns on in yellow. When an error occurs, it turns on in red.
The relationship between the status of the device and the color of the lamp and the pattern with which it turns on is shown in the following table.

Display color and pattern	Status	Description
Blue (blinking)	Initial status	Power is supplied to the instrument.
Blue (on)	Ready for measurement	This is the normal operating status in which measurement is possible and settings can be configured.
Off	Measurement in progress, (automatic) zero calibration/wavelength compensation in progress	The lamp turns off so that measurement and zero calibration are not affected.
Yellow (on)	Zero calibration/ wavelength compensation not performed	This status occurs when automatic zero calibration is set to OFF.
	Zero calibration/ wavelength compensation value limit exceeded	The lamp turns on when the compensation value, the result of wavelength compensation, exceeds the threshold.
	Decrease in sensor functionality	The lamp turns on when a decrease in sensor functionality is detected.
Yellow (blinking)	Connection re-establishment in progress	This status indicates that communication was interrupted and is in the process of being re-established.
Red (on)	Instrument error	An unexpected error has occurred on the instrument. For details, refer to "Messages" in the CL-S30 instruction manual or "Error Code List" in the Communication Specifications.

(3) Measurement button Press this button to start measurement (when using CL-S30).

(4) Ethernet connector (PoE compatible) Use this connector to connect this instrument and a computer with a LAN cable.
Using a CAT6A LAN cable and a PoE compatible switching hub allows for communication between the devices while power is supplied.

(5) USB connector (Type-C) Use this connector to connect this instrument and a computer with the USB cable (IF-A49) designated by KONICA MINOLTA.

(6) Positioning guide Indicates the center of the light-receiving unit. You can use this guide for positioning during measurement.

(7) Functional ground terminal Use this terminal to connect a ground wire. Pinch the ground wire between the screw and the washer.
To prevent communication problems with the computer due to external noise, connect a ground wire when connecting to the computer with a LAN cable. (Screw size: M4)
* If necessary, purchase a commercially available ground wire.

(8) Strap holder The standard accessory wrist strap attaches to this holder.
For details on how to attach it, read P. 10 "Attaching the Wrist Strap and Cap (With Strap) to This Instrument" in this manual.

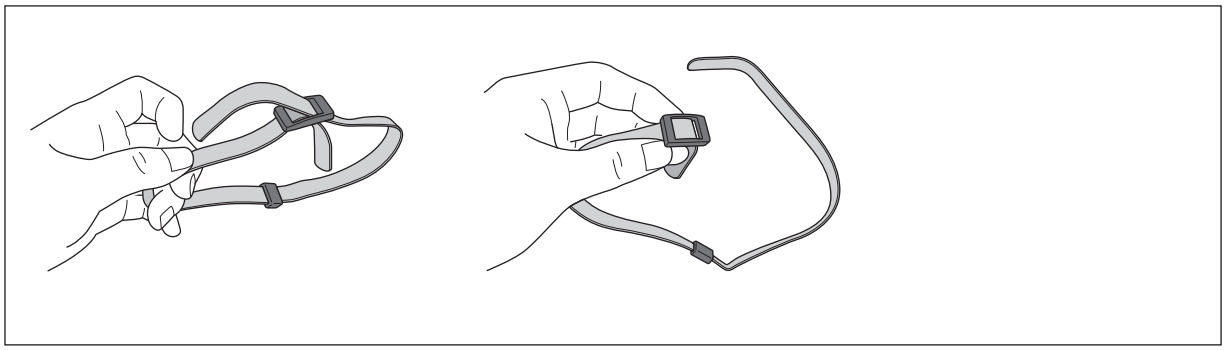
(9) Jig mounting screw hole Use this screw hole to mount the instrument on a tripod or device.
(Use a 1/4-20UNC mounting screw.)
This hole is located directly below the light-receiving unit (measurement unit).

(10) Video pin slot Use this slot when preparing a pin according to the video pin standard to restrict the rotation of the instrument if it is necessary to do so when attaching the instrument to an original fixing jig.

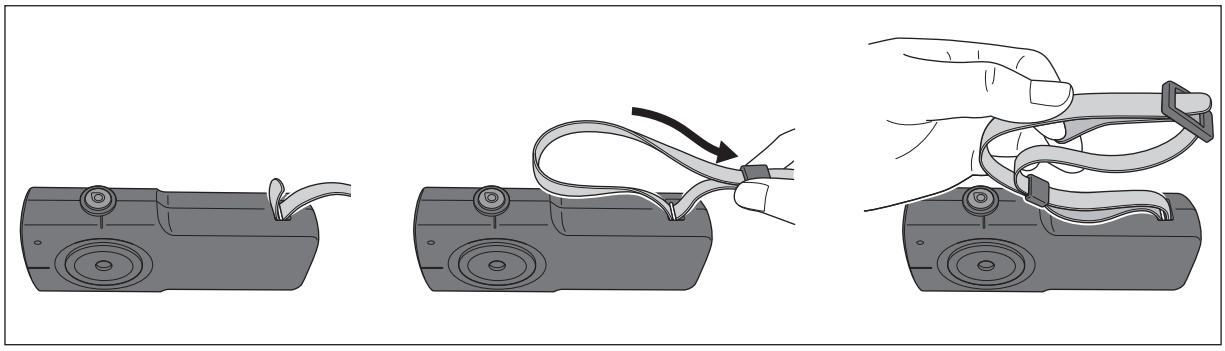
Before Using This Instrument

Attaching the Wrist Strap and Cap (With Strap) to This Instrument

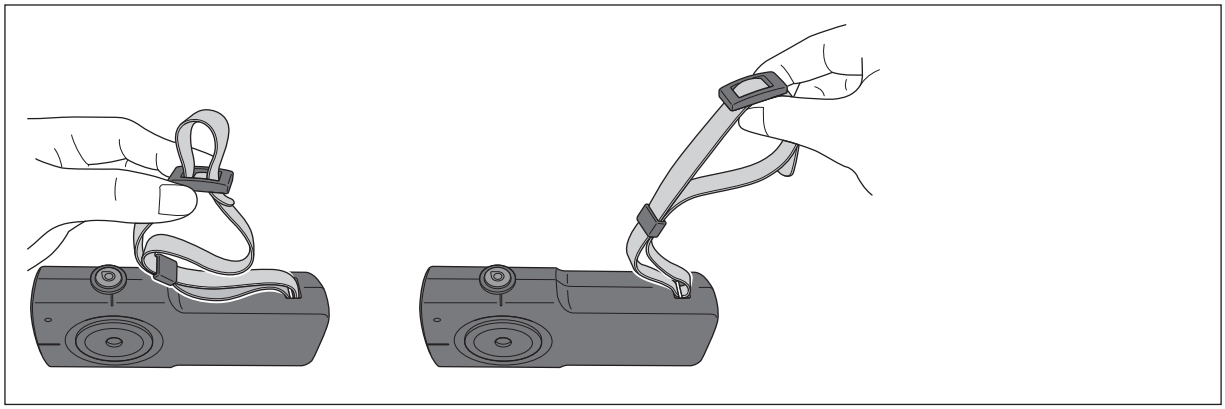
1 **Remove one end of the wrist strap from its buckle.**



2 **Pass the removed end of the wrist strap through the strap holder on the instrument as shown in the figure. Then, pass this end of the wrist strap through the wrist strap loop.**

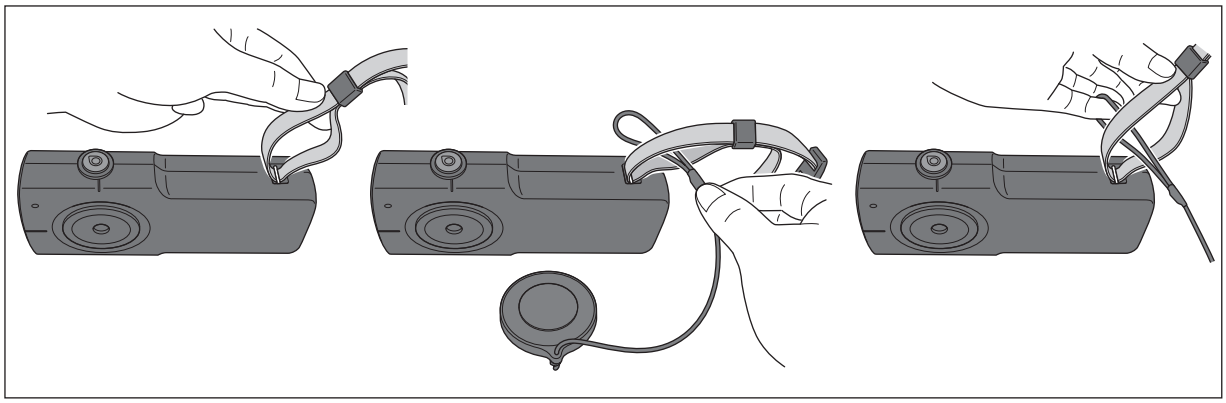


3 **Pass the wrist strap through the buckle, adjust the length of the wrist strap, and then fix it in place.**

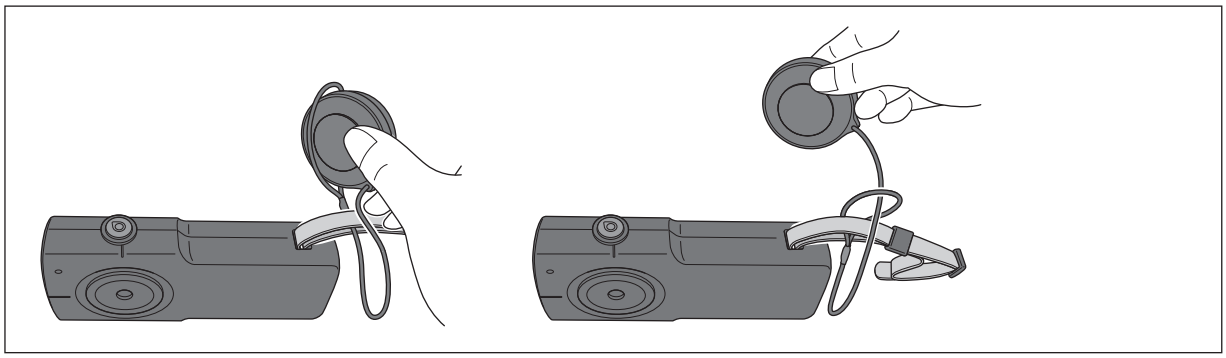


If you will only attach the wrist strap, proceed to step **6** and slide the loop to the strap holder, fixing the strap in place on the strap.

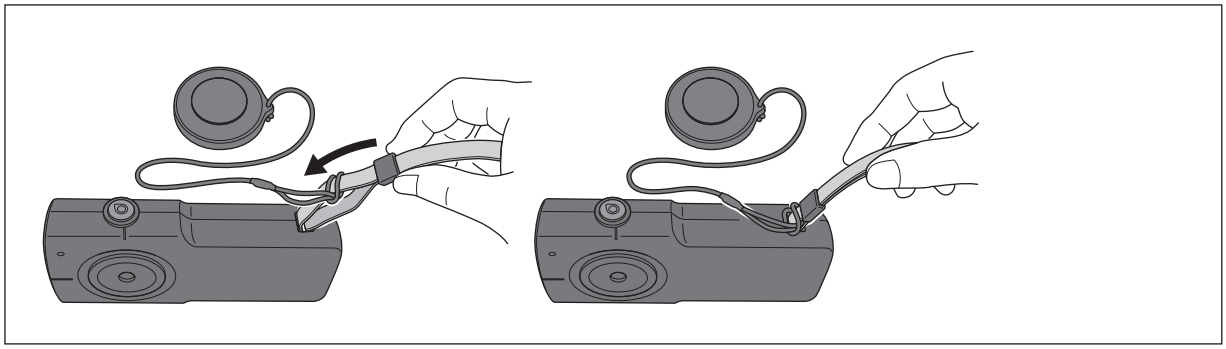
4 **As shown in the following figure, pass the strap attached to the cap through the ring that the strap makes between the strap holder and the loop.**



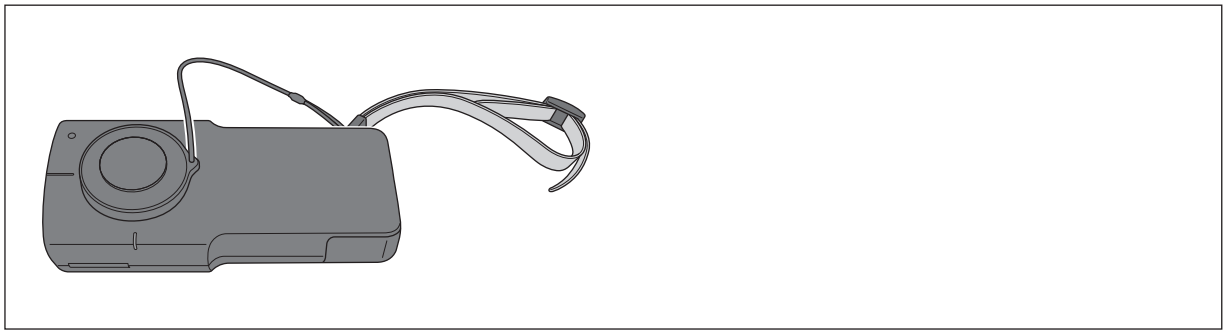
5 **Pass the cap through the ring in the cap's strap, and then tighten the knot in the strap.**



6 **Slide the loop to the strap holder, fixing the cap's strap in place on the strap.**

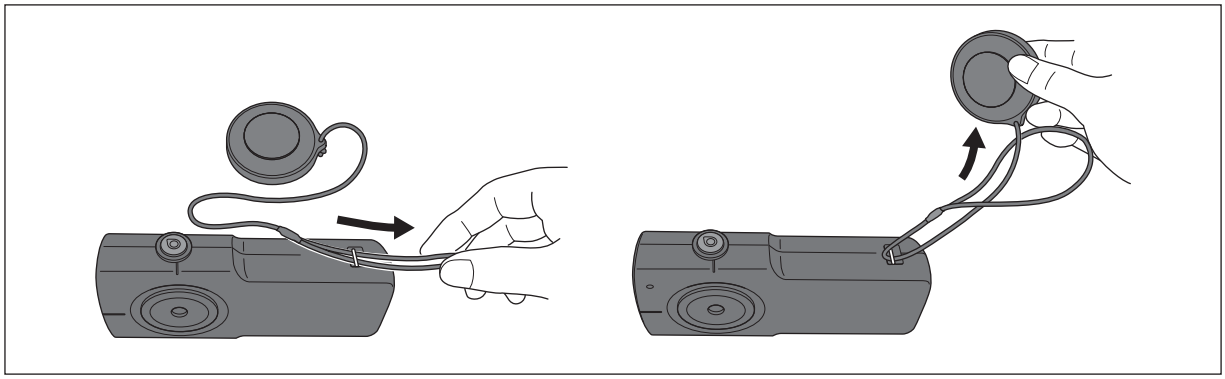


7 **When the instrument is not in use, attach the cap to the light-receiving window as shown in the following figure.**

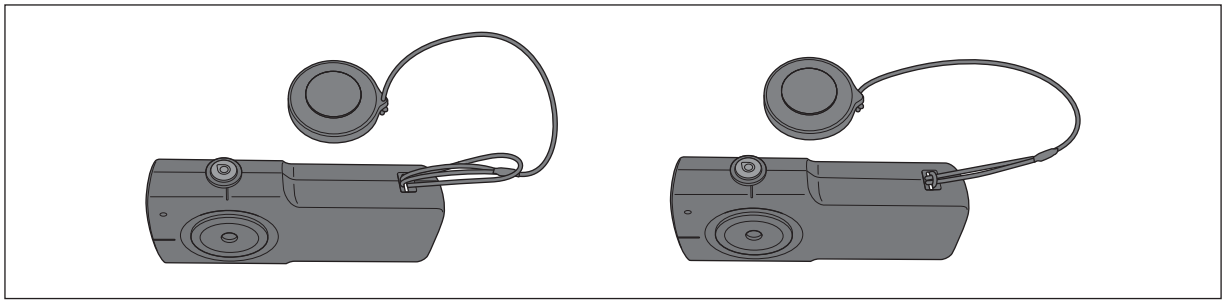


Attaching Only the Cap to This Instrument

1 **As shown in the following figure, pass the ring in the cap's strap through the strap holder.**



2 **Pass the cap through the ring in the cap's strap, and then pull the strap tight to fix the cap in place on the main unit.**



Connecting to a Computer

Use the USB Cable (2 m) IF-A49 or a commercially available LAN cable to connect the computer to the instrument.
The instrument's USB communication conforms to the USB 2.0 specifications.

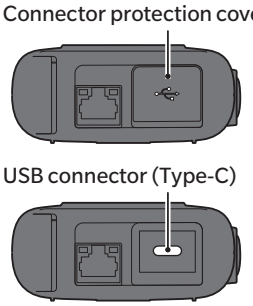
- To control the instrument with Software for Light Measurement CL-S30, download the installer from KONICA MINOLTA's website at the URL below, and then install this software. For details on CL-S30 specifications and use method, see the CL-S30 instruction manual.
- To use an independent program to control this instrument, download the Communication Specifications from KONICA MINOLTA's website at the URL below for your reference:
  https://www.konicaminolta.com/instruments/download/software/light/index.html
  • The above URL is subject to change without notice.
  • If the target page does not appear, please search the site by keywords, "CL-700A (CL-S30)" and "download."
- Power is supplied to the instrument from a computer via the USB cable or from a PoE hub via a LAN cable. It is also possible to communicate via Ethernet and provide power via USB.
- If you require high measurement accuracy, allow the instrument to warm up for 30 minutes after starting to supply power to it. You are also recommended to perform zero calibration before measurement.
- Make sure the USB connector plug is connected securely and correctly.
- When connecting or disconnecting the USB cable, be sure to hold the connector plug. Do not pull the cable or forcibly bend it. Doing so may result in the cable snapping.
  Make sure to use a cable with sufficient length. If the length is insufficient, the connection may be poor or the cable may snap.
- Firmly insert the USB cable or LAN cable connector all the way to the back of the corresponding entry point (connector), matching its shape.
- Even if you connect a USB cable and a LAN cable to the instrument, communication will only be possible over one of these cables.
- When you establish a USB connection to the instrument to update its firmware, disconnect the LAN cable.

Operating Procedure

Connecting with a USB cable

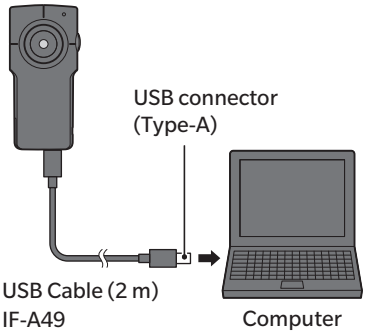
1 **Open the connector protection cover of the instrument, and then connect the plug of the standard accessory USB Cable (2 m) IF-A49 to the USB connector of the instrument.**

Make sure that the cable is firmly connected to the connector.



2 **Connect the other end of the USB cable (the Type-A connector) to the USB port of the computer.**

When power is supplied to the instrument, its LED display lamp blinks in blue (if the LED Drive mode is ON).



Connecting with a LAN cable

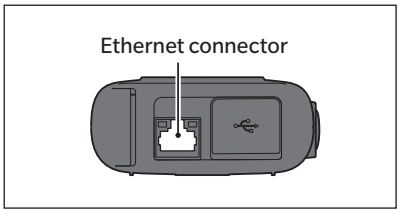
Note
- It may take approximately 1 minute to establish a LAN connection.
- Do not connect the instrument to the internet, a corporate LAN, or any other external network.
- To prevent communication problems with the computer due to external noise, connect a ground wire when connecting to the computer with a LAN cable.

This device assumes that it will be used in a closed network environment.
Pay attention to the note below. Failing to follow it may affect the measurement time or lead to other malfunctions.

- Only use automatically generated link-local addresses for the IPv6 address. You cannot set the global IPv6 address. You are also recommended to only connect the PoE hub and PoE injector to a network dedicated for this instrument and to not share the PoE hub and PoE injector with other networks.

1 **Connect the plug of your LAN cable to the Ethernet connector of the instrument.**

Make sure that the cable is firmly connected to the connector.



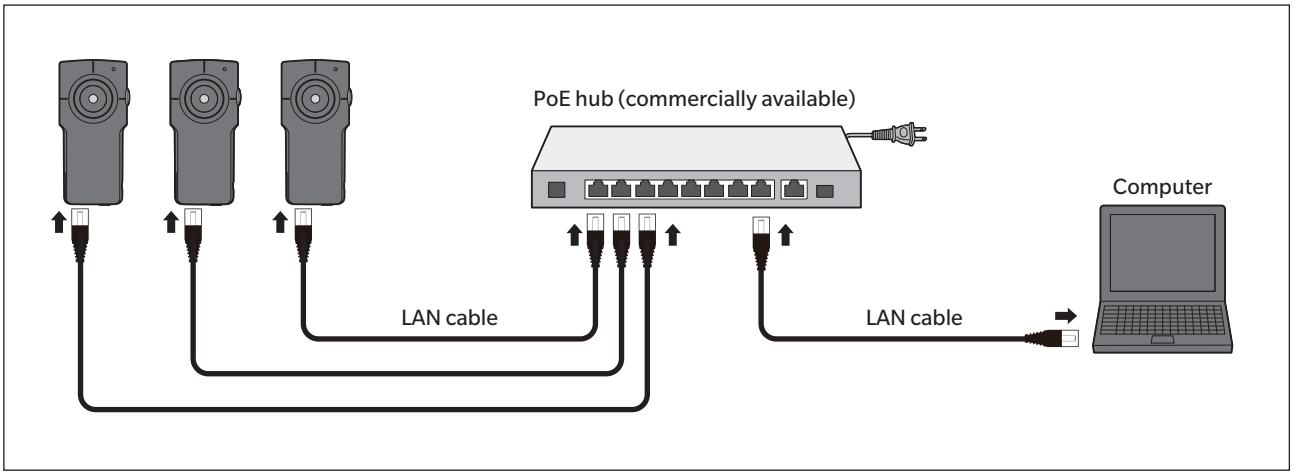
2 **Connect the plug on the other end of the LAN cable to the PoE hub.**

When power is supplied to the instrument, its LED display lamp blinks in blue (if the LED Drive mode is ON).

3 **To connect multiple instruments, repeat steps 1 and 2.**

4 **Connect the computer and the PoE hub. Connect the plug of another LAN cable to the PoE hub.**

5 **Connect the plug on the opposite end of the LAN cable to the Ethernet connector of the computer.**



Initial Settings

* For an explanation of how to change the settings and other details, refer to the Communication Specifications.

	Item	Factory default
Data	Zero calibration data	No data
	Measurement data	No data
Instrument settings	Synchronized frequency <Sync.>	59.94 [Hz]
	Setting of synchronized frequency	Disabled (not synchronized)
	Measurement speed mode <Speed Mode>	NORMAL
	Averaging count <Averaging Times>	1
	Calibration channel number <User Cal. CH>	OFF (KONICA MINOLTA's calibration standard)
	Color space mode	Ev, x, y
	Number output format	Number format
	Color matching function <CMF>	CIE-1931 (2°)
	Periodic calibration recommendation <CAL. Reminder>	ON
	Automatic zero calibration	ON
	Measurement range <Range>	Disabled (Auto)
	White point	x = 0.3333, y = 0.3333
	Illuminance spectrophotometer data block	360 to 1050 nm
	Ringing mode of the buzzer <Buzzer Drive Mode>	Only on err.
	LED display mode <LED Drive Mode>	ON
	Negative values <Negative Value>	Change to Zero
	Illuminance unit <ILLUMINANCE UNIT>	lx
Network settings	TCP port number	50100
	UDP port number (to search for the measurement head)	50101
	UDP port number (to search for the operating terminal)	50102

The values within the < > are the item names on the CL-S30.

Cleaning Parts

- Should dirt or dust get on the light-receiving window, use a blower or a similar device to blow the dirt or dust off or use a clean, dry, and soft cloth with lens cleaner to wipe the light-receiving window off. Never use thinner, benzine, or other solvents. If the dirt cannot be removed from the light-receiving window or this window is scratched, please contact the nearest KONICA MINOLTA-authorized service facility.
- If the instrument becomes dirty, wipe it with a clean, dry, and soft cloth. Never use thinner, benzine, or other solvents.
- Should this instrument break down, do not try to disassemble and repair it by yourself. Please contact the nearest KONICA MINOLTA-authorized service facility.

Troubleshooting

Should any errors be found in the instrument, try the corrective actions shown below. If the error persists, cycle power to the instrument. If the error still persists, please contact the nearest KONICA MINOLTA-authorized service facility.

Symptom	Item to check	Corrective action	Reference page
The LED display lamp does not turn on.	Has the LED display been set to OFF?	Set the LED display to ON. Set LED Drive Mode to "ON" in the CL-S30 application software.	Refer to the Software for Light Measurement CL-S30 instruction manual.
	If you are using a USB connection, has the USB cable been connected correctly to the instrument and the computer?	Correctly connect the USB cable to the instrument and the computer.	P. 13
	If you are using a PoE connection, has the LAN cable been connected correctly to the instrument and the PoE injector or PoE hub? Additionally, is power being supplied correctly to the PoE injector or PoE hub?	Correctly connect the LAN cable to the instrument and the PoE injector or PoE hub. Correctly connect the AC cable of the PoE injector or PoE hub to the outlet to supply power.	P. 14
The LED is displayed (on) in yellow.	Have you not performed zero calibration?	Perform zero calibration. If the symptoms are not remedied, the measurement performance may not meet the specifications. Please contact the nearest KONICA MINOLTA-authorized service facility.	–
Measurement values are inconsistent.	Does the measurement range display show "Under" (insufficient light intensity)?	Change the "Range" setting to Auto mode (to not specify the range manually) or select the checkbox of the "Range" setting and change the range (to a larger value).	Refer to the Software for Light Measurement CL-S30 instruction manual.
	Is a different measurement range used for each measurement?	The light to be measured may be in the illuminance that switches the range. Change the "Range" setting to Manual mode and set an appropriate range (so that the text on the CL-S30 display is white).	Refer to the Software for Light Measurement CL-S30 instruction manual.
	Is the light to be measured stable?	Conduct measurement while the light to be measured is stable.	–
	Is the light to be measured of low luminance?	Repeatability worsens if a light of low luminance is measured. Also, the lower limit of the illuminance that can be measured in an appropriate manner in FAST mode and S-FAST mode is approximately 15 lx and approximately 65 lx, respectively. You are recommended to measure illuminance lower than these values in NORMAL mode.	Refer to the Software for Light Measurement CL-S30 instruction manual.
	Is the light to be measured modulated light?	For SIN modulated light, PWM modulated light, and other such light whose illuminance changes periodically, use synchronized frequency mode and set the correct modulation frequency before measuring.	Refer to the Software for Light Measurement CL-S30 instruction manual.
	Has there been a significant change in the ambient temperature and/or humidity?	Perform measurement under an environment with minimal changes in ambient temperature and humidity.	–
	Did you start measurement immediately after startup?	If you require high measurement accuracy, allow the instrument to warm up for 30 minutes after starting to supply power to it. You are also recommended to perform zero calibration before measurement.	–
	Did medium- to high-illuminance light shine on the instrument immediately before it measured low-illuminance light?	After switching from medium- or high-illuminance light to low-illuminance light, wait at least 10 seconds before measuring in the low-illuminance environment.	–
There is an error in the measurement results.	Is the light-receiving window clean?	Should dirt get on this window, wipe it off with a dry and soft cloth with lens cleaner.	P. 16
	Do the warning display and error display not appear in the zero calibration results?	Perform zero calibration again.	Refer to the Software for Light Measurement CL-S30 instruction manual.
	User calibration may not have been performed correctly.	If you are using user calibration, set the user calibration channel to 0 (KONICA MINOLTA's calibration standard) to disable user calibration and check the measurement results.	Refer to the Software for Light Measurement CL-S30 instruction manual.
	Does the measurement range display show "Over" (excessive light intensity) or "Under" (insufficient light intensity)?	Change the "Range" setting to Auto mode (to not specify the range manually) or select the checkbox of the "Range" setting and change the range.	Refer to the Software for Light Measurement CL-S30 instruction manual.

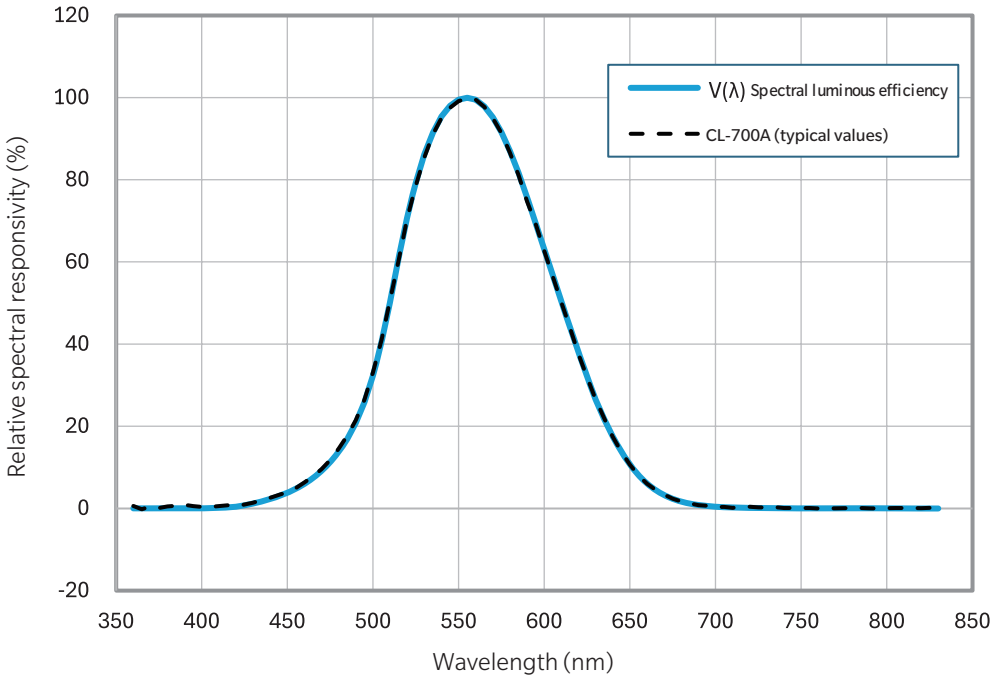
Symptom	Item to check	Corrective action	Reference page
Measurement does not complete according to the set time or is canceled.	If you are using a PoE connection, is the instrument grounded with a correct connection to the ground wire?	If the instrument is not grounded with a ground wire, packet loss may occur when the LAN cable is affected by external noise, possibly leading to longer measurement time due to communication being attempted again. Ground this instrument properly.	P. 9
	Are you measuring with multiple CL-700As connected via PoE?	The more instruments are connected, the longer it takes to transmit and process data. As a guideline, when 15 instruments are connected, the measurement time is the measurement time listed in the specifications + 1 second or less. Note that this time varies depending on factors such as the performance of the computer.	–
It is not possible to connect the computer and the instrument for communication.	If you are using a USB connection, has the USB cable been connected correctly to the instrument and the PC?	Correctly connect the USB cable to the instrument and the PC.	P. 13
	If you are using a PoE connection, has the LAN cable been connected correctly to the instrument and the PoE injector or PoE hub? Additionally, is power being supplied correctly to the PoE injector or PoE hub?	Correctly connect the LAN cable to the instrument and the PoE injector or PoE hub. Correctly connect the AC cable of the PoE injector or PoE hub to the outlet to supply power.	P. 14
	Are you using the standard accessory USB cable?	Use the USB cable included with the instrument and connect this cable correctly.	P. 13
	Has the USB cable or LAN cable snapped?	Replace the cable.	–
	If you are using an Ethernet connection, did you start the CL-S30 application software before the Ethernet connection was established?	It may take approximately 1 minute to establish an Ethernet connection. Make time to start the application software and establish the connection for communication.	–
	If you are using an Ethernet connection, did you set the port number and IP address correctly?	This instrument can only connect to other devices on the same network segment. If you are using an IPv6 link-local address, check the network environment between this instrument and the PC. If you are using something other than an IPv6 link-local address, check the network settings of the PC and this instrument. Refer to the Communication Specifications and check the network settings of this instrument.	–
	If you are using an Ethernet connection with the CL-S30 application software, did you register the instrument with ID Setting Tool in advance?	If you are using an Ethernet connection with the CL-S30 application software, you must register the instrument with ID Setting Tool in advance. In this situation, the UDP port number must be set to the initial value of the instrument. If the UDP port number has been changed from its initial value, refer to the Communication Specifications and set this port number.	–
	Has the program been prepared correctly?	Refer to the Communication Specifications and check the program.	–
The same error message appears repeatedly.	Check the appropriate corrective action for the error message.	If the symptoms are not remedied, please contact the nearest KONICA MINOLTA-authorized service facility.	–

Appendix

Performance of illuminance measurement

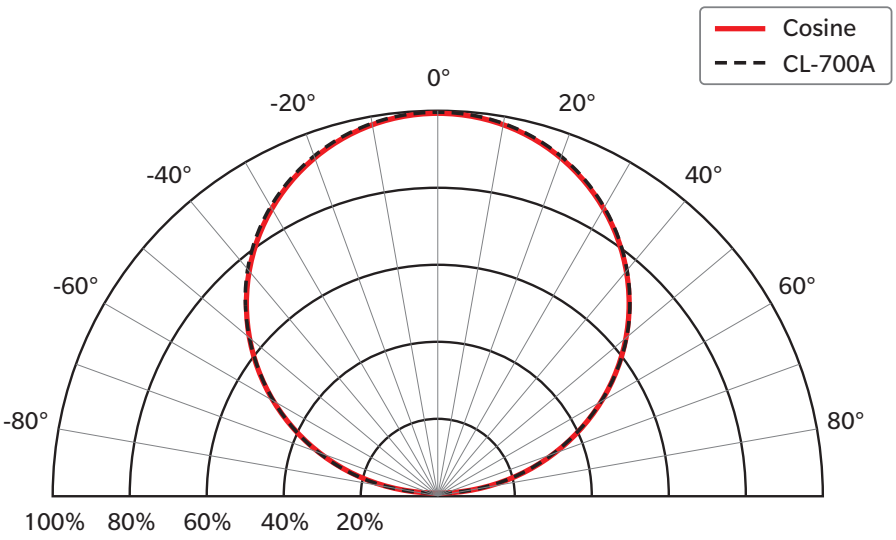
Relative spectral responsivity characteristic

It is ideal for the relative spectral responsivity characteristic of the light-receiving unit of the illuminance meter to match V (λ), the spectral luminous efficiency, which is also the sensitivity of the human eye. JIS and DIN define the degree of displacement (f_1') from V (λ) for each grade of illuminance meter. This instrument has the capability of a general, precision-grade illuminance meter as defined in JIS and of DIN 5032 Part 7 class L (that is, f_1' is 1.5% or lower).



Cosine correction characteristic

The brightness of the measurement surface varies proportionally to the cosine of the angle of incidence of the light. Therefore, the response to oblique-incident light from the light-receiving unit must be proportional to the cosine. The cosine correction characteristic of this instrument is—as shown in the following figure—that of a Class AA general illuminance meter of JIS and of DIN 5032 Part 7 class B (that is, f_2 is 3% or lower).



- Measurement reference surface
  The tip of the light-receiving window (Refer to Dimensions.)

- Color correction coefficients of general illumination light sources for standard illuminant A: CL-700A (typical values)

Light source	Color correction coefficient	Light source	Color correction coefficient
C light source	0.998	High-pressure sodium vapor lamp	1.003
D65 light source	0.998	Metal-halide lamp H1	1.000
Fluorescent lamp F6	1.002	Metal-halide lamp H2	1.001
Fluorescent lamp F8	1.000	High-pressure mercury vapor lamp	1.002
Fluorescent lamp F10	1.001		

  The relative spectral responsivity characteristic of the CL-700A has a very small error from V (λ), the spectral luminous efficiency (that is, f_1' is 1.5% or less), so there is no need to use these coefficients to correct the color in normal use.

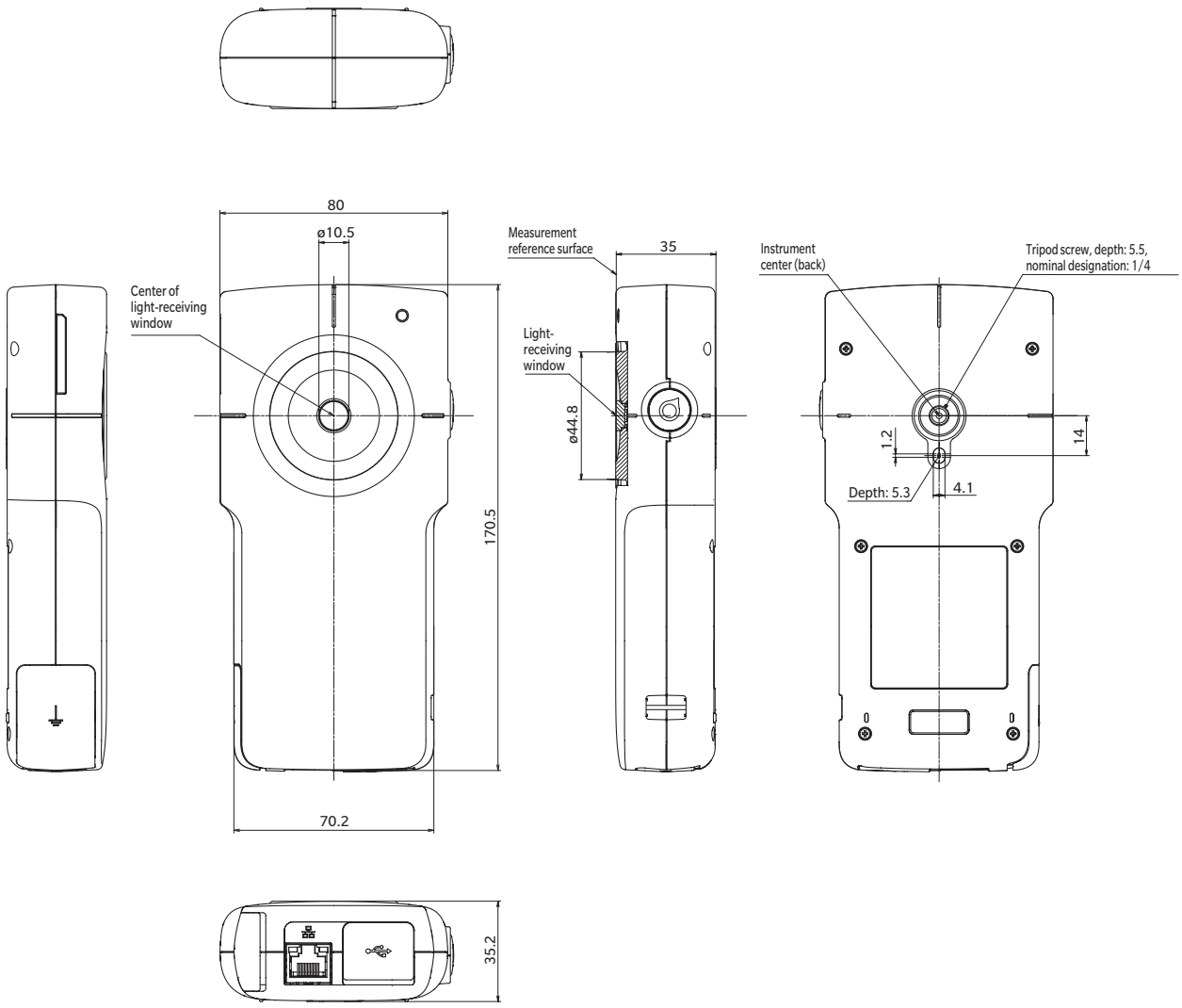
- Distance range in which the inverse square law of distance holds
  50 cm or more from the measurement reference surface

- Incidence uniformity
  It is expected that this instrument will be used in a manner such that light with a roughly uniform illuminance distribution completely covers the light-receiving surface.
  A light source with strong directivity or a non-uniform light distribution characteristic may result in errors.

Dimensions

As shown in the following figure, the tip of the light-receiving window is this instrument's illuminance reference surface.

(Unit: mm)



Main Specifications

Model	Illuminance Spectrophotometer CL-700A
Illuminance meter class	Complies with JIS C 1609-1:2006 Special type illuminance measuring instruments *1 Complies with DIN 5032-7:1985 class B *2
Wavelength range	360 to 1000 nm
Output wavelength pitch	1 nm
Spectral bandwidth	Approx. 10 nm (half bandwidth)
Wavelength precision *3	±0.3 nm (Centroid wavelengths of 435.8 nm, 546.1 nm, 696.5 nm, and 912.3 nm as specified in JIS Z 8724:2015)
Measuring range	0.01 to 200,000 lx (chromaticity accuracy guaranteed range is 0.5lx or more)
Accuracy*4 (Standard Illuminant A)	Ev (Illuminance) : ±2%±1 digit of displayed value
	xy: ±0.0015 (5 to 200,000 lx) xy: ±0.003 (0.5 to 5 lx)
Repeatability (2σ)*4 (Standard Illuminant A)	Ev: 0.5%+1 digit
	xy: 0.0005 (50 to 200,000 lx) xy: 0.001 (10 to 50 lx) xy: 0.002 (5 to 10 lx) xy: 0.004 (0.5 to 5 lx)
V(λ) mismatch (f_1')	Within 1.5% of spectral luminous efficiency V (λ)
Directional response (f_2)	Ev: Within 3%
Temperature dependence (f_T)	Ev: ±3% xy: ±0.003
Humidity resistance (f_H)	Ev: ±3% xy: ±0.003
Measurement time *5	Super FAST mode: Within 0.3 sec. FAST mode: Within 0.5 sec. NORMAL mode: Approx. 0.5 to 5 sec.
Measurement function	X,Y,Z Ev,x,y u',v' Tcp (Correlated color temperature), duv λd (Dominant wavelength), Pe (Excitation purity) Ra (General color-rendering index) Ri (i=1~15) (Special color-rendering indexes) TM-30-20*6 TLCI*6 SDCM*6 Ev',S/P EML(Equivalent Melanopic Lux) PPFD Ee(Irradiance)*6 Ee(λ) (Spectral irradiance) Spectral graph, Peak wavelength*6
Other functions	Automatic zero calibration/wavelength correction User calibration data input/output control*6 Averaged measurement Continuous measurement*6 Multi-point measurement (up to 15 units)*6 Color matching functions: CIE 1931(2° Standard Observer), CIE1964(10° Standard Observer), CIE170-2(2°), CIE170-2(10°)
Display languages (CL-S30)	English, Japanese, Simplified Chinese
Interface	USB 2.0, Ethernet
Power	USB bus power (when using USB), PoE (when using Ethernet, compliant with IEEE 802.3af)

Continued on the next page

Model	Illuminance Spectrophotometer CL-700A
Operation temperature/humidity range	0 to 40°C, relative humidity of 85% or less (at 35°C) with no condensation
Storage temperature/ humidity range	-10 to 45°C, relative humidity of 85% or less (at 35°C) with no condensation
Size (W × H × D)	80 × 170.5 × 35 mm
Weight	Approx.214 g

*1 This instrument does not comply with the following requirements for JIS C1609-1:2006 General type AA class illuminance meters:

- When Speed Mode is set to NORMAL mode, Range 7-10 do not comply with "5.5 Display characteristics (response time)."
- Temperatures below 0°C are outside the operation temperature range, non-compliant with "5.7 Temperature characteristics."
- No display, non-compliant with "6.3 Display"

This instrument complies with all other requirements.

*2 Within an illuminance range of 1 lx or higher

*3 Based on Konica Minolta test standards (temperature change ≤2°C after zero calibration).

*4 NORMAL mode (at 23°C ±2°C, relative humidity ≤75%).

*5 The measurement time is the value under the following conditions:

- Time from measurement request from the operating terminal to completion of result reception from the measuring instrument
- When connected via USB
- Super FAST mode when Manual range setting is active
- When Buzzer Drive Mode is OFF

Note: When 15 points are connected (via Ethernet), the measurement time is within measurement time shown + 1 second

*6 CL-S30 can be used when connected. There are no communication commands to execute these functions.

<CAUTION>

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