MYIRO-1

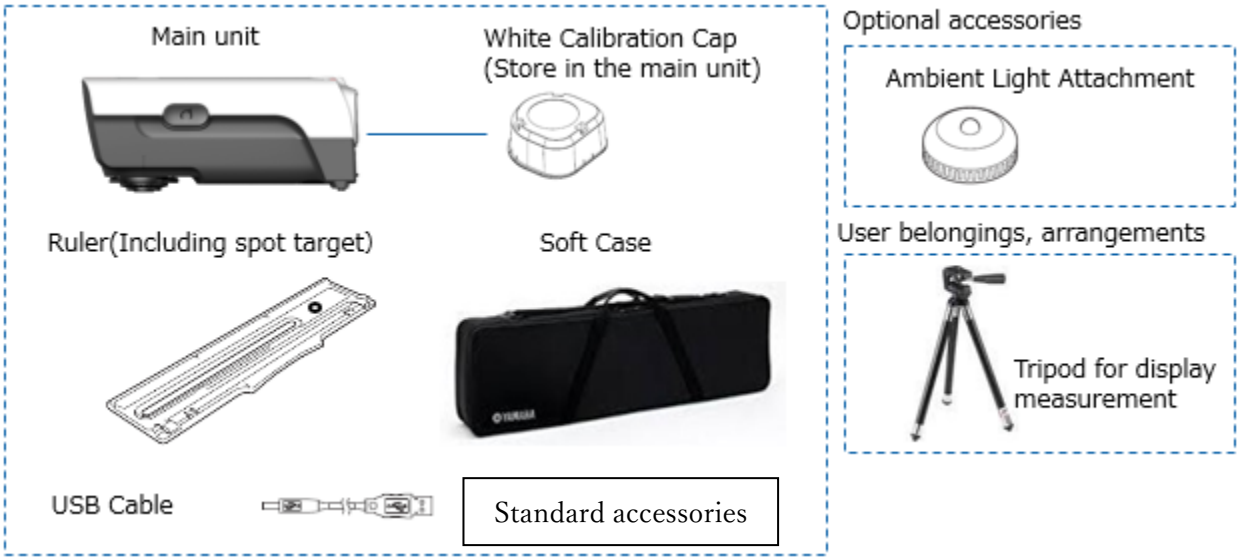
Introduction Instruction Manual

[Rev 1.01]

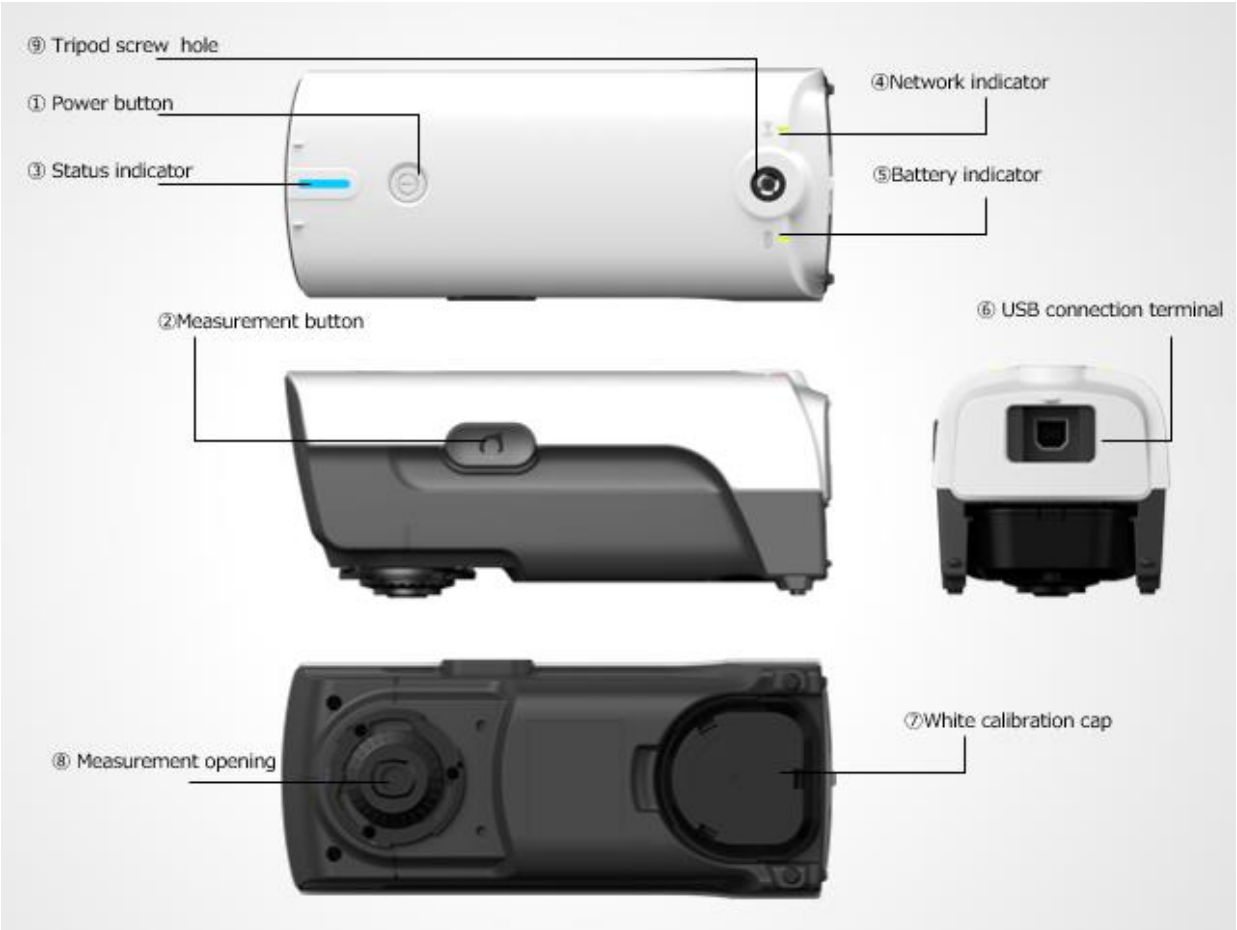
KONICA MINOLTA, INC.

R&D Division, Sensing Business Unit

1. System configuration



2. Name and function of each part



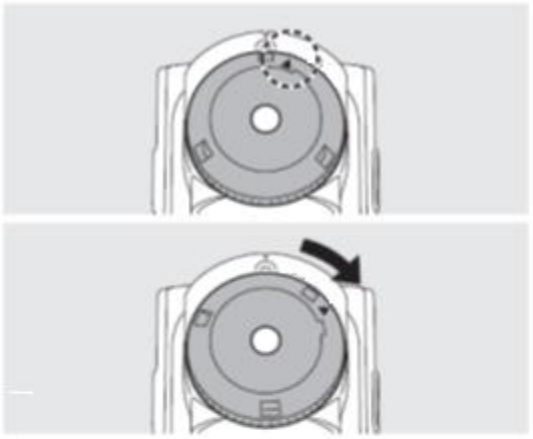
Name	Explanation
① Power button	It is a button to turn the power on / off. Each time the button is pressed, the status changes to ON and OFF.
② Measurement button	It is used for measurement.
③ Status indicator	The status of MYIRO - 1 is displayed. Indicates states such as measurable, scan success / failure, errors, etc. with color and blinking.
④ Network indicator	Indicates the connection status of the wireless LAN.
⑤ Battery indicator	Indicates the battery status of the battery remaining capacity and charging.
⑥ USB connection terminal	It is used to connect MYIRO-1 and PC with USB cable. Besides communication with the PC, it is also used for charging.
⑦ White calibration cap	It is used for calibration. When calibrating, attach it to the measurement opening.
⑧ Measurement opening	It is an opening for measuring the sample.
⑨ Tripod screw hole	It is a screw for fixing a commercially available tripod. It is used for display measurement.

3. Attaching / removing the ambient light attachment

Used for ambient light measurements.

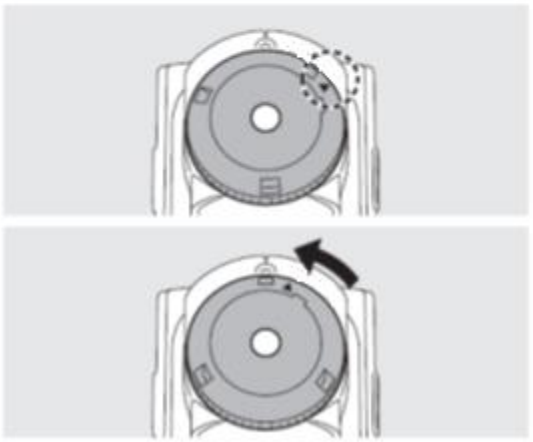
How to install

1 You can install the ambient light attachment by turning the ▲ mark in the right figure in the direction of the arrow.



How to uninstall

2 You can uninstall the ambient light attachment by turning the ▲ mark in the right figure in the direction of the arrow.



4. Charging method

It charges by connecting to a PC or a commercially available USB-AC adapter with a USB cable.

The remaining amount and state of charge of the built-in lithium-ion battery are indicated by the battery indicator as follows.

Indicator status	Status	Explanation	Supplementary explanation
No light	Enough battery power	Built-in lithium-ion batteries have sufficient power and can be measured.	Approximately 670 scan measurements are possible from the fully charged state. If you leave after turning on the power, the power will run out in about 2 hours.
Blinking(Dark orange)	Low battery level	Battery level is low. Although you can measure for a while, we recommend charging.	Approximately more than 50 scanning measurements can be done after flashing begins.
Lighting up(Dark orange)	Charging	Battery is charging.	It will be fully charged in about 2 to 3 hours with the power off status.

5. Power ON / OFF

Pushing the power button from the OFF state turns on the power.

Pushing the power button from the ON state turns off the power.

6. Auto power off function

MYIRO-1 has “auto power off” function, and when communication doesn’t operate for a certain period of time, the power turns off automatically.

To turn on the power again, press the power button. At this time, the connection with the application is disconnected and the calibration data is deleted, so it is necessary to reconnect with the application and recalibrate.

7. Connecting to PC

Connection with PC has USB connection and wireless LAN connection.

When using USB connection, connect MYIRO-1 and PC with USB cable.

In the case of wireless LAN connection, connection work with the initial setting tool is necessary at first connection. Please look at the instruction manual of the initial setting tool.

The second and subsequent times are automatically connected to the network under the conditions set above.

If both USB and wireless LAN are connected, priority is given to USB connection.

If you disconnect the USB cable, it will be connected via wireless LAN.

8. Calibration

There are the following types of calibrations, but in either case the work in MYIRO-1 is the same.

- For Chart measurement
- For Ambient light measurement
- For Display measurement

Procedure

8－1　Attach the white calibration cap to the measurement opening.

Before mounting the cap）

How to attach) Align the line of the main body and the line of the calibration cap (hereinafter, gray line) and rotate it in the direction of the arrow described on the calibration cap.

After mounting the cap）

Note:When not using the measuring instrument, keep it with the calibration cap attached to prevent dust adhesion.

Reference) At the time of measurement, the calibration cap can be stored as shown below.

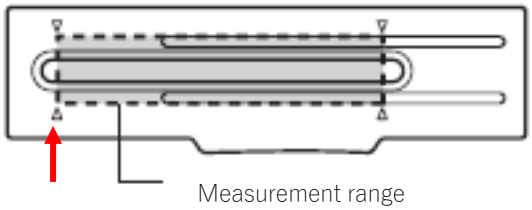
8－2　White calibration is performed by measurement button or control from SDK.

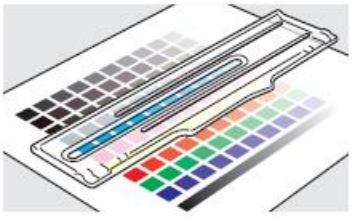
When white calibration is performed, the status indicator changes as follows depending on the calibration status.

Status indicator	Status	Explanation	Supplementary explanation
Lighting up(Yellow)	Uncalibrated	In uncalibrated condition, calibration is necessary to measure.	
Blinking light blue	During calibration	Calibration is in progress.	
After blinking light blue (during calibration), green lighting (calibration success)	Successful calibration	The calibration was completed correctly.	After that, the state becomes automatically measurable.
After blinking light blue (during calibration), dark orange lighting (calibration failure	Calibration failure	The calibration failed. It is necessary to recalibration in the correct way.	After that, it is automatically uncalibrated.
After successful calibration, lights up(Blue).	Measurable	Measurement is possible.	

9. Scanning measurement

Set the ruler on the chart so that the △ mark(Red arrow in the figure) of the ruler matches the left edge of the chart.





Set MYIRO - 1 to the left edge of the ruler. The scan operation needs to start from the paper white part.

If you keep pushing the measurement button and the status indicator changes from blue to white, slide MYIRO - 1 as it is. After measuring, release the button and the measurement is over. Please slide at a constant speed as much as possible, in about 3 to 5 seconds from the edge of the ruler to the end.

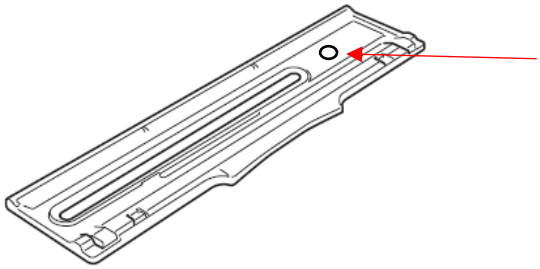
Scanning is possible from the right or from the left. Regardless of which way you operate, the data will be output from left to right.

When measuring, the status indicator changes as follows depending on the condition.

Indicator status	Status	Explanation	Supplementary explanation
Lights up(Blue)	Measurable	Measurable.	
Lights up(Blue) →Lights up(White)	Scannable	Start sliding after this state （White lit）.	If you start the slide earlier, a measurement error will result.
Lights up(White)	During scanning measurement	Scanning measurement in progress	
After light white (During measurement), green lighting (Measurement success)	Measurement success	Correct measurement completed.	After that, the state becomes automatically measurable.
After light white (During measurement), dark orange lighting (Measurement failure)	Measurement failure	Measurement failed. Please repeat the measurement in the correct way.	After that, the state becomes automatically measurable.

10. Spot measurement

    Adjust the spot target of the ruler to the part to be measured.



    Place the measurement opening of MYIRO-1 so that it meets the spot target, and perform measurement with the measurement button or control from the SDK.

11. Ambient Light Measurement

    With the ambient light attachment attached, perform measurement with the measurement button or control from the SDK.

12. Display measurement

    Attach a commercially available tripod to the tripod screw of MYIRO - 1 and set the MYIRO - 1 so that the measurement opening faces the display to be measured at a distance of about 5 to 30 mm.

    Measurement is performed by measurement button or control from SDK.

13. Specification

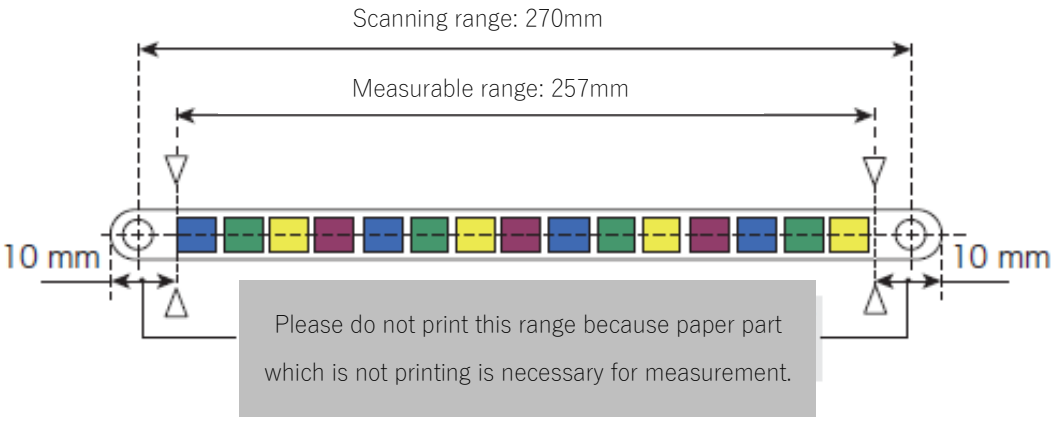
① MYIRO-1 specification

Model	Spectrophotometer
Illumination	45°a: 0° （45/0 ring illumination） Conforms to DIN5033 Teil7、JIS Z 8722 Condition a、ISO7724/1、CIE No.15、ASTM E 1164、ISO13655
Spectral separation device	Concave diffraction grating
Wavelength range	380 to 730nm （Ambient light measurement, Display measurement: 360-730 nm）
Wavelength pitch	10nm(Ambient light measurement, Display measurement: 5 nm)
Half bandwidth	Approx.10nm
Measurement area	ϕ 3.5mm
Light source	LED
Measurement range	Density：0.0D to 2.5D Reflectance：0 to 150％
Short-term repeatability	Colorimetric：Within δ ⊿E00 0.05 ＊When the white calibration plate is measured 30 times at 10 second intervals after white calibration
Inter-instrument agreement	Within ⊿E00 0.3 ＊Average of 12 BVRA Series Ⅱ color tiles compared to values measured with a master body under Konica Minolta standard conditions
Measurement time	Spot Measurement:Approx. 1 second Scan Measurement: Approx.1 second (Press the measurement button and then start scanning) Approx. 1 second (From end of scan to result display (with indicator display)
Measurement conditions	M0(A)、M1(D50)、M2(A+UV cut、C、ID50、D65、ID65、F2、F6、F7、F8、F9、F10、F11、F12、User-defined illuminant
Display	Status indication by LED
Data memory	None
Interface	Wireless LAN（802.11 b/g/n） USB2.0
Scanning measurements	Scan measurement of color chart is possible (It is possible to acquire color value of all illumination conditions with one scan.)
Power	USB bus power、Rechargeable internal battery
Dimensions(D×W×H)	171mm × 73mm × 71mm
Weight	Approx. 340g

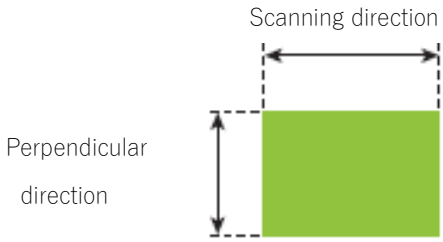
Operating temperature/humidity range	10 to 35℃、30 to 85％ relative humidity with no condensation
Storage temperature/humidity range	0 to 45℃、0 to 85％relative humidity with no condensation

② Chart specification

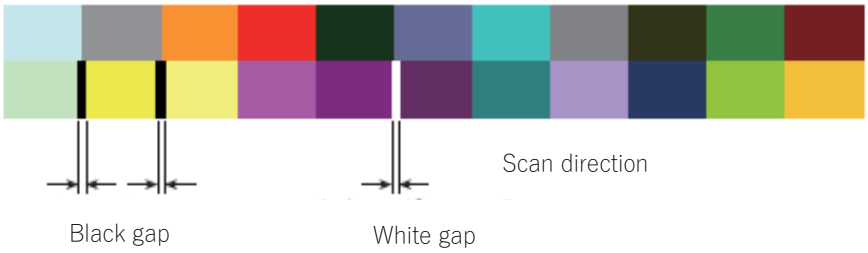
Item		Specification	Supplementary explanation
Chart	Scanning range	270 ㎜	
	Maximum chart width (Measurablerange)	257 ㎜	Scan measurement should start with paper white and end with paper white
	Paper color	Anything is possible	The color difference between patches at both ends must be ΔE*ab > 10



Item		Specification	Supplementary explanation
Patch	Scanning direction	7 ㎜	
	Perpendicular direction	7 ㎜	
	Color difference between patches	ΔE*ab >10	If color difference is small, put a gap between patches
	Gap condition	1 line or black and white doublet	



Item		Specification	Supplementary explanation
Gap	Gap Condition	1 line or black and white doublet	
	Color difference between gap and patch	Color difference from one patch ΔE*ab >20	There is no problem in black and white double lines.
	Gap width	0.5 to 1.0 ㎜	



③ Scan condition

Item		Specification	Supplementary explanation
Scanning speed	Patch width：7 ㎜	54 to 154 ㎜/s	It is determined from the number of required data per patch
	Patch width：10 ㎜	54 to 208 ㎜/s	
Scan direction		There is no difference in either direction	Detect scanning direction, and output data from left to right

Revision history

Date	Rev.	Revised content
2019/05/20	1.00	First edition
2019/05/23	1.01	8. Calibration （Add description of calibration cap）