MINOLTA

COLOR METER II

OWNER'S MANUAL
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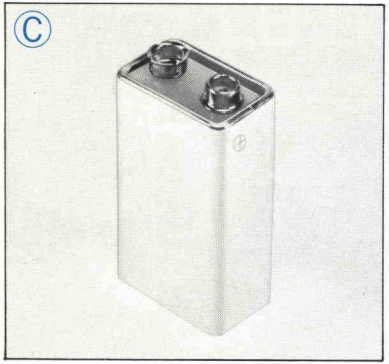
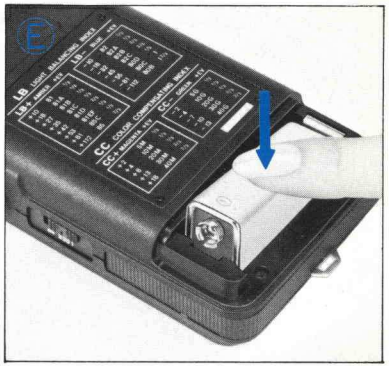
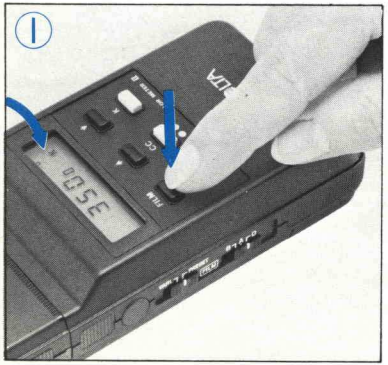
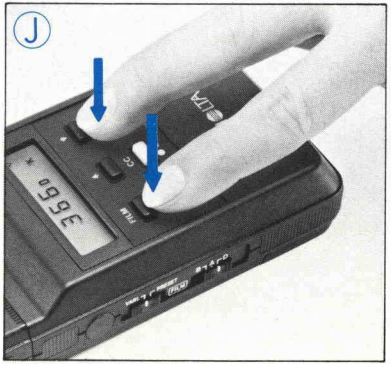
MODE D'EMPLOI
MANUAL DE INSTRUCCIONES

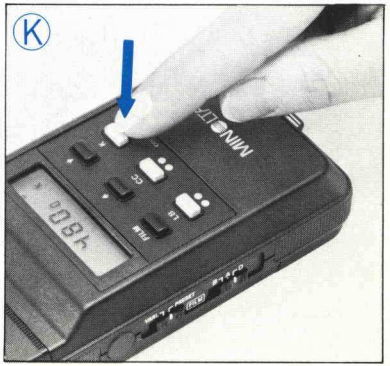

A
B
FILM
CC
LB
COLOR METER II
MINOLTA
MINOLTA COLOR METER II
LB LIGHT BALANCING INDEX
CC COLOR COMPENSATING INDEX
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

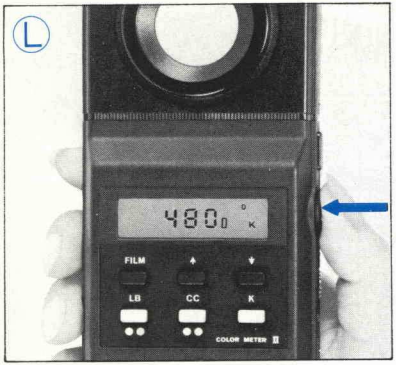








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COLOR METER II


N
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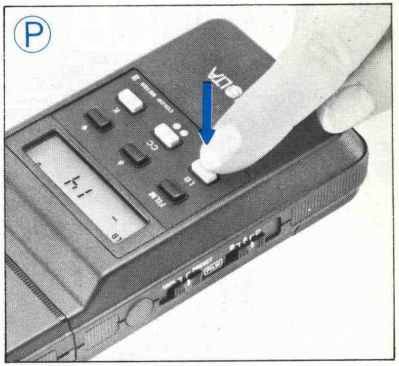
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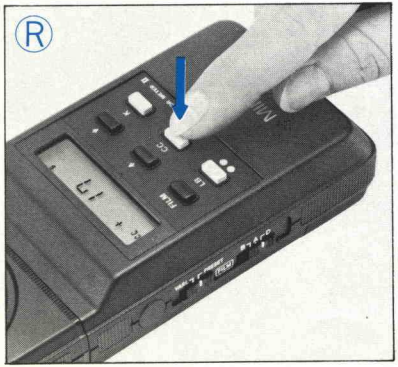
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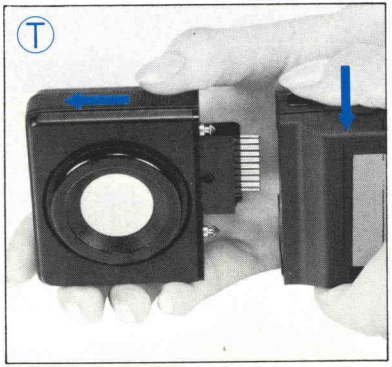
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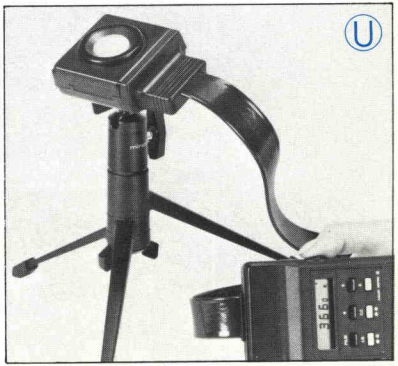
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ENGLISH (pp. 1 – 12)

The Minolta Color Meter II combines for the first time the latest LSI microprocessor circuitry with an easy-to-read liquid-crystal display to produce a three-color meter that is lightweight, incredibly easy to use, and unequaled in accuracy and range.

The Color Meter II employs three high-sensitivity silicon photo cells to make simultaneous measurement of both the blue/red and green/red light ratios, and light-balancing and color-compensating indexes are immediately displayed in digital form at the push of a button. All information is inputted or displayed by simply pressing the proper keys, thereby eliminating complicated dial settings and multiple needle or scale readings.

To further simplify use, the meter has a three position preset film-type selector to allow instantly setting it for the most commonly used film types. There is also a variable setting that allows making precise adjustments for any other film types, or to suit your own individual preference for color balance.

The detachable receptor head and ability to make continuous readings further enhance the Color Meter II's versatility.

Please read and study this manual thoroughly, so you will be able to realize the full potential of your new meter.

NOTE

The Color Meter II is designed specifically for photographic use. For scientific and industrial colorimetry, the Minolta Chroma Meter is recommended.

Throughout the text you will find a series of numbers. Each of these refers to a picture on the fold-out pages at the front.

LB LIGHT BALANCING INDEX

LB+	AMBER	+EV
+9	81	1/3
+18	81A	1/3
+27	81B	1/3
+35	81C	1/3
+42	81D	2/3
+52	81EF	2/3
+81	85C	1/3
+112	85	2/3

LB−	BLUE	+EV
−10	82	1/3
−21	82A	1/3
−32	82B	2/3
−45	82C	2/3
−56	80D	1/3
−81	80C	1
−112	80B	1 2/3

CC COLOR COMPENSATING INDEX

CC+	MAGENTA	+EV
+2	5M	1/3
+4	10M	1/3
+8	20M	1/3
+13	30M	2/3
+18	40M	2/3

CC−	GREEN	+EV
−2	5G	1/3
−4	10G	1/3
−7	20G	1/3
−10	30G	2/3
−13	40G	2/3

LB LIGHT BALANCING INDEX

LB+	AMBER	+EV
+9	81	1/3
+18	81A	1/3
+27	81B	1/3
+35	81C	1/3
+42	81D	2/3
+52	81EF	2/3
+81	85C	1/3
+112	85	2/3

LB−	BLUE	+EV
−10	82	1/3
−21	82A	1/3
−32	82B	2/3
−45	82C	2/3
−56	80D	1/3
−81	80C	1
−112	80B	1 2/3

CC COLOR COMPENSATING INDEX

CC+	MAGENTA	+EV
+2	5M	1/3
+4	10M	1/3
+8	20M	1/3
+13	30M	2/3
+18	40M	2/3

CC−	GREEN	+EV
−2	5G	1/3
−4	10G	1/3
−7	20G	1/3
−10	30G	2/3
−13	40G	2/3

NAMES OF PARTS

(A-1) Light receptor
(A-2) Receptor head
(A-3) Display window
(A-4) Film-display/input key
(A-5) Variable/preset selector
(A-6) Variable-setting increase key
(A-7) Variable-setting decrease key
(A-8) LB-index display key
(A-9) CC-index display key
(A-10) Color-temperature display key
(A-11) Film-type selector

(B-12) Tripod socket
(B-13) Receptor-head release button
(B-14) Measuring button
(B-15) Filter tables
(B-16) Measuring-button Lock
(B-17) Battery-chamber cover
(B-18) Strap eyelet

CONTENTS

BATTERY ..... P. 2
Installing the battery ..... P. 2
Power consumption ..... P. 3
OPERATION ..... P. 4
Step 1. Setting film type ..... P. 4
Step 2. Taking a measurement ..... P. 5
Continuous measurement ..... P. 6
Step 3. LB and CC indexes ..... P. 6
USE OF THE FILTER TABLES ..... P. 7
EV compensation ..... P. 7
OVER-AND UNDER-RANGE WARNINGS ..... P. 8
DETACHABLE RECEPTOR HEAD ..... P. 9
OPTIONAL ADAPTER CORD MA-1 ..... P. 9
TECHNICAL INFORMATION ..... P. 10
CARE AND STORAGE ..... P. 12

BATTERY

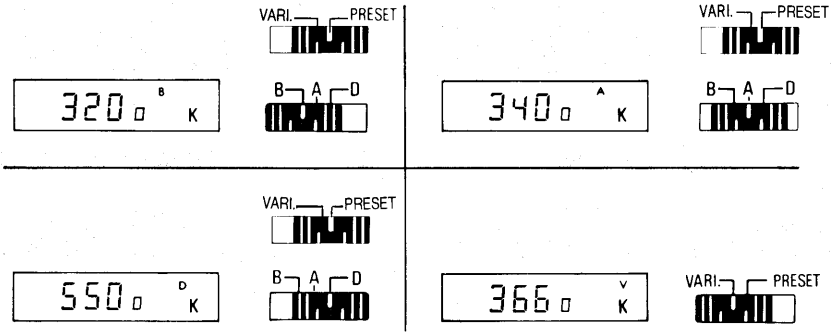
Installing the battery

Your Color Meter II is powered by a single 9-volt "transistor-type" battery, Eveready 216 or equivalent Ⓒ.

The battery is installed as follows:

1. Remove the battery-chamber cover by pressing down on it and sliding it in the direction of the arrow Ⓓ.
2. Insert the bottom of the battery into the chamber first, making sure the terminals are positioned as illustrated inside the battery chamber Ⓔ.
3. Replace the cover by carefully realigning and sliding it towards the meter body until it snaps securely into place.

After the battery has been installed, all display indications will appear. They will be replaced in a few seconds, depending upon the positions of the film-type and variable/preset selectors, by one of four displays.



NOTE

If any figures other than those shown are displayed, remove the battery and wait at least ten seconds before reinstalling it. If you do not wait at least ten seconds, the figures displayed will be incorrect, and measurements cannot be made.

Power consumption

The power consumption of the Color Meter II is so low in the non-measuring mode that a power switch is not needed. Instead, the meter employs an automatic cancelling feature that clears the display approximately four minutes after a measurement has been taken, or any of the display keys have been released. Cancelling of the display also clears all data inputted to the meter, except the film-type setting. If you wish to retain the data or display for more than four minutes, pressing any of the display keys ("FILM", "K", "LB", or "CC") will restart the four-minute cycle.

The meter's low power consumption permits a fresh battery under normal conditions to yield more than 30,000 three-second measurements, or continuous measurement for 24 or more hours.

When the battery's power level drops below minimum requirements, the display figures will be replaced by three decimal points as shown Ⓗ. If the battery is totally exhausted, the display window will be blank.

NOTE

- If the meter is not to be used for two weeks or longer, it is recommendable to remove the battery and store it in a cool, dry place.
- To avoid accidentally pressing the measuring button and draining the battery, use the measuring-button lock (B-16).

OPERATION

The basic function of the Color Meter II is to provide data that will allow selection of proper filtration to color-correct the light for a specific film.

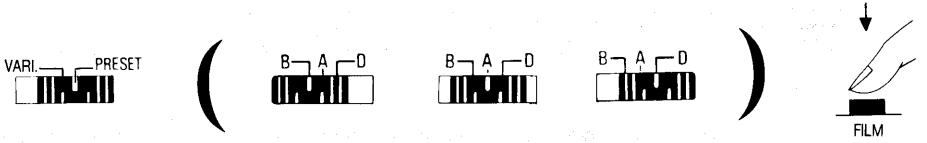
The meter's sophisticated electronics permit this data to be obtained in a variety of ways, as well as performing other functions.

The following steps show one method of operation, and are recommended until you become familiar with the meter. They follow a logical progression, employ all functions of the meter, and provide full information. Supplementary notes will explain which steps can be eliminated, or when their order can be changed according to your needs.

Step 1. Setting film type

To obtain the filter data needed to color-correct a film, its type or the color temperature for which it is balanced must first be set. The meter has three preset settings for the most commonly used film types ("B" for Type-B tungsten films balanced for 3200K, "A" for Type-A tungsten films balanced for 3400K, and "D" for daylight films balanced for 5500K), as well as a variable setting for other film types.

To input one of the preset film types, move the variable/preset selector (A-5) to the "PRESET" position and the film-type selector (A-11) to the letter designation of the film to be used ("B", "A", or "D"). Then press the film-input/display ("FILM") key ① to input your selection. The film's color temperature and its letter designation will now appear in the display window.



The variable setting allows you to input a film type that is not balanced for one of the three preset color temperatures. For example, Minolta testing has found that Kodak's Ektachrome 64, 200, and 400 ASA Professional daylight films are balanced for approx. 5000K, rather than the 5500K of most other daylight films, such as Kodachrome or Fujichrome.

The range of the variable setting is from 2000 to 7500K, and a color-temperature figure is inputted by first moving the variable/preset selector (A-5) to the "VARI" position and pressing the film key Ⓘ . The letter "V" will now appear in the display window. Hold the film key down and press either the variable-setting increase (↑) or decrease (↓) key until the desired figure is displayed Ⓙ. Release the film key to input this setting.

NOTE

- The preset or variable film-type setting will remain inputted to the meter until changed or the battery is removed.
- While a film type is displayed, the meter cannot take a measurement.
- Once the film-type setting has been inputted, it can be changed at any time before or after a measurement has been taken. Thus Step 1 can be done again after either Step 2 or 3 if you wish to use the meter to help compare or select film types for a reading already taken.

Step 2. Taking a measurement

After the film type has been inputted, press the "K" key Ⓚ, which will clear the film-type display and put the meter into its measuring mode.

Hold the meter at the subject position with the white receptor facing directly towards the camera, making sure the same light falling on your subject is also striking the meter's light receptor (A-1). To take a reading, press and hold in the measuring button Ⓛ until the display appears and stabilizes. Release the button to input and hold the reading. The display will now show the color temperature for the red/blue ratio of the light being measured.

If the figure displayed is very much different from the balance of the film inputted, you may wish to change to one balanced for a color temperature nearer the meter's readout, to eliminate filtration or keep it to a minimum.

NOTE

If you do not need to know the color temperature, you can put the meter into its measuring mode by pressing either the "LB" or "CC" key instead of the "K" key. This would take you directly to Step 3.

Continuous measurement

The meter will measure and give readouts continuously, as long as the measuring button is fully depressed Ⓛ. This can be done by either holding the button in manually or by using the measuring-button lock on the side of the meter. To use the lock, slide it towards the measuring button while the button is held in Ⓝ. The lock can also be engaged while the button is not depressed to keep it from being pushed accidentally.

NOTE

The display mode cannot be changed while the measuring button is held in and a measurement is being made.

Step 3. LB and CC indexes

After inputting film type and/or taking a reading, press the "LB" key Ⓟ. This will clear the previous display, and the designation "LB" will appear. A plus (+) or minus (—) figure of up to three digits or a "0" will also be displayed. Appearance of a "0" indicates that no filtration is needed for the red/blue ratio of the light measured. If a plus (+) or minus (—) figure is displayed, consult the light-balancing filter tables on the back of the meter to obtain the proper LB filtration. Details about tables are as shown Ⓠ.

Next press the "CC" key Ⓡ to change the display mode. The designation "CC" will appear along with either "0", if no filtration is needed, or a plus (+) or minus (—) figure of up to two digits, if filtration is necessary for the green/red ratio. Refer to the color-compensating filter tables Ⓠ on the back of the meter when a figure is displayed with a plus (+) or minus (—) index to obtain the proper CC filtration. Details about tables are given in the next section.

NOTE

- The LB and CC indexes can be displayed or recalled in any order.
- Continuous measurements can be taken in either the LB- or CC-display modes, as well as the K-display mode outlined in Step 2.

USE OF THE FILTER TABLES

On the back of the meter, there are four filter tables that are used to convert the LB and CC indexes given by the meter into standard Kodak filter designations ⓚ .

The two top tables are for light-balancing (LB) filters, and the two bottom tables are for the color-compensating (CC) filters. Positive index figures (for "warming" filters) are listed in the two left-hand tables; negative ones (for "cooling" filters) in the two on the right.

To use the tables, look up the plus (+) or minus (–) LB index in the appropriate one, then do the same with the CC index. The figures in the middle column of each table are the Kodak designations for filters that correspond to the figures listed.

If the index given by the meter does not exactly match an index number on the table, pick the number nearest to the index given by the meter. Two numbers on the table can also be added together to equal the index given by the meter. For example, if the meter indicates an LB index of –53, adding –21 and –32 will give you –53 which corresponds to an 82A and an 82B filter. Using these two filters together will give you correct light balancing. The same procedures are used to obtain color-compensating filtration.

The number of filters used should be kept to a minimum, and it is not recommendable to use more than three filters together.

EV Compensation

The filter tables also give the amount of exposure increase needed for each filter used. The amount of increase is shown in the right-hand column of each table, and the total exposure correction is obtained by adding the LB- and CC-filter factors together. For example, if an 81D filter with a EV factor of +2/3 used for light balancing, and a 20 magenta color-compensating filter with a factor of +1/3 are used together, a total of one stops' additional exposure is needed (2/3 + 1/3 = 1).

If you are using a camera with through-the-lens (TTL) metering, exposure compensation will not be necessary.

NOTE

- When color-correcting a tungsten film for use in daylight, it is recommended that a UV (ultraviolet) filter be used in addition to the other filters. Tungsten film is not designed to be exposed to the amount of UV light present in daylight.
- The filter tables are based on the use of Kodak filters, or filters using Kodak designations. The table Ⓢ gives the designations used by some other manufacturers for equivalent filters. The equivalency of other filters to Kodak's is based upon their own manufacturer's specifications. If the filters you use are not listed, refer to their manufacturer's specifications.

OVER- AND UNDER-RANGE WARNINGS

If either the color temperature or the illuminance level of the light being measured exceeds the meter's range, the display will blink on and off as a warning.

The meter's color-temperature range is from 1600 to 40,000K. Depending on whether the color-temperature goes below or above this range, either the 1600 or 40,000K figure will appear and begin to blink. Even if this happens, the LB and CC indexes can still be obtained.

For practical purposes, there is no over-range illuminance level; only low-light levels will affect the meter. If the light level drops below approx. 10 lx. (EV2 at ASA 100), the meter's display will begin to blink on and off as a warning that the light level is too low to measure.

NOTE

- In light levels below approx. 100 lx. the meter's display will take longer than normal to stabilize. In this case, be sure to hold the measuring button in Ⓛ until the display stabilizes.
- To stop the display from blinking, point the meter towards another light source and take another reading that is within the meter's range.

DETACHABLE RECEPTOR HEAD

The Color Meter II's receptor head (A-2) can be detached from the meter body for use with the optional accessory Adapter Cord MA-1.

To detach the head, depress the receptor-head release button (B-13) and pull the head straight out from the meter body as shown Ⓣ.

The adapter cord can now be installed between the meter body and receptor head. All operations and functions of the meter will remain the same as when the head and body are directly attached.

To replace the receptor head, align it with the meter body and press it all the way into the body until it clicks securely in place.

NOTE

- When the receptor head is separated from the body, be careful not to damage or touch the connecting pins.
- The receptor head can be installed in only one position; never force it into the meter body.
- When using the MA-1 cord, be sure to keep it away from electric motors or relays that could cause interference or noise.

OPTIONAL ADAPTER CORD MA-1

The Minolta Adapter Cord MA-1 is used to allow taking measurements in otherwise inaccessibly positions. To use this accessory, connect the adaptor cord MA-1 between the receptor head and meter body Ⓤ.

TECHNICAL INFORMATION

Type:	3-color-measuring light analyzer that digitally indicates filtration for color-photographic use by microprocessor and liquid-crystal display
Sensors:	3 silicon photo cells respectively filtered to detect blue, green, and red light under integrating flat opal diffuser; receptor head detachable
Electronic components:	Hermetically sealed microprocessor chip; custom designed liquid-crystal display; 18 gold-plated plug contacts connect receptor head with meter body
Controls:	Measuring button with lock to prevent readings or make continuous ones; selector slides and input/display, increase, and decrease keys for film-type settings; "LB," "CC," and "K" display keys
Display:	LC type; 5 digits with plus/minus prefix and unit identifications as applicable; desired readout selectable by depressing appropriate key before/after reading made; film type can be changed for new readout (s) without taking new reading; display blinks as over-under-range warning, cancels approx. 4 min. after last control released; film-type input retained until changed
Function readouts:	1) Light-balancing (LB) filter indexes in mireds (micro-reciprocal degrees = $1/K \times 10^6$) automatically calculated from blue: red-reading ratio 2) Color-compensating (CC) filter indexes in decamireds ($\frac{\text{mireds}}{10}$) automatically calculated from green; red-reading ratio 3) Color temperature in K (Kelvins) automatically calculated from green: blue: red-reading ratio

Independent *ranges:	1) LB indexes: −762 to +999 mireds (covering indications far beyond range of available filters) 2) CC indexes: −99 to +99 decamireds (covering indications far beyond range of available filters) 3) Color temperatures: 1600 to 40,000K
Repeatability:	1) LB indexes: ±2 mireds 2) CC indexes: ±1 decamired 3) Color temperature: ±2 mireds (Kelvin figure varies with color temperature; e.g., ±20K at 3200K, ±50K at 5000K, etc.)
Minimum illumination required:	10 lx. (luces) (=EV 2 at ASA 100)
Operable temperature range:	−10 to +50°C (14 to 122°F)
Film-type settings:	1) Preset: "B" (=Type-B tungsten) : 3200K "A" (=Type-A tungsten) : 3400K "D" (="photographic" daylight) : 5500K 2) Variable: 2000 to 7500K
Power source:	One 9v battery (eveready 216 or equivalent)
Other:	Body housing and head of reinforced molded ABS synthetic resin; automatic zero calibration; index/filter conversion table on back of body; tripod socket; strap eyelet
Dimensions:	170 x 72 x 33mm (6-11/16 x 2-13/16 x 1-5/16 in.)
Weight:	230g (8-1/16 oz.) without battery
Accessories:	Included with unit: Neck strap, carrying case Available: Adapter Cord MA-1 (length: 2m or 6 ft. 6-1/2 in.; attaches between head and body for extension readings)

* Full LB and CC ranges available even if K reading out of range

CARE AND STORAGE

- Do not press on or damage the indication-display window.
- Do not subject the meter to shocks or vibration.
- The meter should never be placed or left in the glove compartment or other places in a motor vehicle, or eleswhere, where it may be subject to temperatures higher than 55°C, or lower than −20°C, as it may be permanently damaged. Particular care should be taken not to leave the meter in sunlight or near sources of heat such strong lights, etc. Do not store it in humid places, or near corrosive chemicals.
- The Color Meter II is designed for use at temperatures between 50° and −10°C. If the unit becomes hotter or colder than this, operation will be more or less unsatisfactory.
- If the meter is left or placed in direct sunlight for any long period, the indication-display window will turn black. In this case, use the Adapter Cord MA-1 and place the meter body away from the sunlight.
- When the meter is to be stored, place it in its original packaging, and put it in an air-tight container with an appropriate amount of dehumidifying agent, such as silica gel.
- Never attempt to disassemble the unit. Any repairs necessary should be undertaken only by an authorized Minolta service facility.
- The meter body may be wiped with a silicone-treated cloth to clean it. Do not allow alcohol or chemicals of any other kind to touch its surface.
- If the meter is not to be used for two or more weeks, it is advisable to remove the battery.

Specifications subject to change without notice