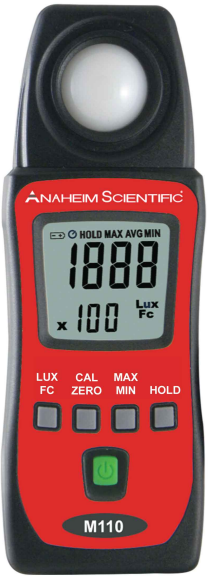
ANAHEIM SCIENTIFIC®

User Manual

Model M110
Mini Light Meter



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1 Introduction

Thank you for purchasing a M110 Light Meter from Anaheim Scientific. With this meter you can measure light coming from fluorescent, metal halide, high-pressure sodium and incandescent sources. Giving units in both Lux and Foot-candles, the M110 is durable, reliable, and easy to use.

1.1 The M110 Features:

- Measures all visible light sources
- Measuring intensities of illumination in Lux or Foot-candles
- Overload indication: LCD screen will show “OL” on the upper left-hand corner
- Low battery indication " "
- Sampling Rate: 2.5 times per second for digital display
- Spectral response close to CIE luminous spectral efficiency
- Cosine Angular corrected
- Data hold (HOLD)
- Maximum/Average/Minimum Hold (MAX/MIN)
- Zero adjustment (ZERO)
- Auto power-off and disable function
- Auto ranging

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1.2 The M110 Applications:

- Warehouses, factories, office buildings, restaurants, schools, library, hospitals, photographic, video, parking garages, museums, art galleries, stadiums, building security, etc.

2 Safety Summary

CAUTION

Adere to the following conditions for safe and effective usage of this meter

- Do not operate the meter in an environment filled with combustible gas, liquids, dust or fibers
- In order to avoid reading incorrect data, please replace the battery immediately when the symbol " " appears on the LCD
- In order to avoid damage caused by contamination or static electricity, do not touch the circuit board before taking adequate precautions
- Operating Environment: Indoors use. This instrument has been designed for usage within an environment of pollution degree 2
- Operation Altitude: Up to 2000M
- Operating Temperature & Humidity: 5ºC ~ 40ºC, 0%~ 80%RH
- Storage Temperature & Humidity: -10ºC ~ 60ºC, 0%~ 70%RH

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3 Compliance Statements

	Caution: This symbol indicates that the equipment and its accessories are subject to special collection and disposal procedures

- Complies with: EMC: EN61326-1(2006)
- Complies with: IEC 61000-4-2(2008, IEC 61000-4-3(2006) + (2007)
- Meets JIS C 1609:1993 and CNS 5119

4 Product Contents and Inspection

This unit is tested prior to shipment. It is therefore ready for immediate use upon receipt. An initial physical inspection should be made to ensure that no damage has been sustained during shipment.

Inspect the packing box on receipt for any external damage. If any external damage is evident, remove the instrument and visually inspect its case and parts for any damage. If damage to the instrument is evident, a description of the damage should be noted on the carrier's receipt and signed by the driver or carrier agent. Save all shipping packaging for inspection. Forward a report of any damage to the agent through which the unit is procured.

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Retain the original packing in case subsequent repackaging for return is required. Use of the original packing is essential.

After the mechanical inspection, verify the contents of the shipment. The items included in this package are:

- M110 Meter
- User Manual
- Carrying Case
- 2 x AAA Batteries

5 Device Description

1. Photo detector cover.
2. Photo detector.
3. Display (LCD).
4. Lux/Fc button.
5. Calibration and ZERO button.
6. Data hold button.
7. Maximun/Average/Minimum button.
8. Power Button: ON/OFF.

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6 Device Operation

6.1 Power Button:

Press the " " button more for than 2 seconds to power on the meter. Press the button again and the meter will immediately turn off.

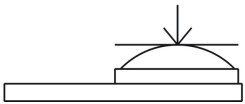
6.2 LUX/FC Button:

Select the units you will use: Lux or Foot-candle.

6.3 CAL/ZERO Button:

- Calibration of 1000 LUX:
  - The M110 meter must be calibrated with a 1000 Lux light source (2856 °K). Have your light source ready.
  - Press CAL button and POWER button for more than 2 seconds and the LCD will display CAL.
  - Place the photo dectector as close to the light and with as little angle as possible, as shown.
  - Press CAL button again for more than 2 seconds and the meter will shut down.
  - Your meter is now calibrated.

Light Source 0 degree



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- ZERO Button:
  - With the meter on, and the cover attached, press the “ZERO” button to reset the meter. Do this anytime the meter shows a value other than “zero” while the cap is on. If the light sensor cap is not properly attached,“CAP” will be shown on the screen.

6.4 MAX/MIN/AVG Button:

Press the “MAX/MIN” button. MAX will appear and the highest reading (since the meter was turned on) will stay showing. Press the button again to see AVG, the average value. This will change as time goes on and the average value changes. Press the button again for MIN, the minimum value. Press again to go to MAX again, or press for more than 1 second to leave this mode.

6.5 Data Hold Button:

Freezes the reading present on the LCD screen at the moment the button is pressed.

6.6 Auto Power-Off Feature:

When the LCD “” symbol is showing, the Auto Power-Off feature is engaged. To save battery life, the meter powers down automatically after approximately 12 minutes of inactivity. To turn this feature on or off, press and hold the Power Button, ”⏻”, for more than 2 seconds.

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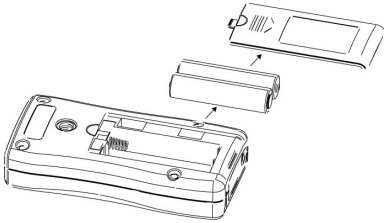
6.7 Storage of the Meter:

When the meter is not in use, please keep the photo detector cover in its place to avoid the photo diode from wearing out. When the meter not to be used for a long time, please remove the batteries. Avoid keeping the meter in a place of high temperature and humidity.

6.8 Battery Replacement:

	WARNING
⚠	If the symbol " [-+] " appears on the LCD, please replace the battery immediately

- Remove the battery cover
- Replace the battery.
- Install the battery cover.



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7 Technical Specifications

Display	4000 count, maximum display 3999	
Sensor	Silicon photodiode and filter	
Measuring Range	400, 4000, 40000, 400000 Lux 40, 400, 4000, 40000 Footcandles	
Angle deviation from cosine characteristics	30°	±2%
	60 °	±6%
	80 °	±25%
Power Supply	2 AAA Batteries	
Accuracy	±3% ±3Lux(0~500Lux), ±3%(above 501 Lux) (Calibrated to standard incandescent lamp 2856°K) 8% other visible light source	
Battery life	About 200 hours	
Operating Conditions	5ºC ~ 40ºC, 0%~ 80%RH, ≤2km altitude	
Storage Conditions	-10ºC ~ 60ºC, 0%~ 70%RH	
Dimensions	133(H) x48(W) x23(D) mm 5.3(H)x 1.9(W) x0.2(D) inch	
Weight	250g (including battery)	
Warranty	Limited two-year warranty	

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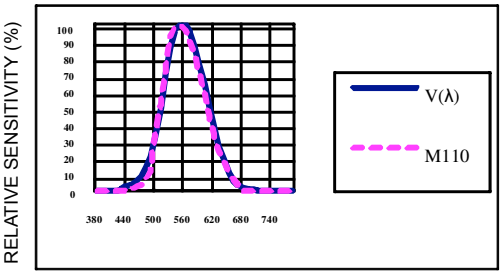
8 Relative SPECTRAL (Sensitivity)

The deviation from the comparative standards for luminosity is determined by JIS standard C 1609-1993.
Peak sensitivity wavelength: 550 nm .

Typ. T_a=23°C *



***CIE Luminosity Function**

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9 Recommended Levels of Illumination

Suitable levels of illuminance
(According to the OSHA Regulation 1926.56(a))

Illuminance (Foot-Candle)	Place
30	First aid stations, infirmaries, and offices.
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls, and indoor toilets and workrooms.
5	General construction area lighting. Indoors: warehouses, corridors, hallways, and exitways. Tunnels, shafts, and general underground work areas:
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.

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10 Maintenance

This is a precision instrument. To guarantee its performance be sure to use it or keep it stored within the suitable environmental conditions given in the Safety Summary and Technical Specifications. Be sure to turn it off after use. To store the instrument for an extended period of time, remove the batteries to avoid any damage to its inner components.

11 Service, Repairs, Calibration

- The following are instructions regarding policies for servicing, repairing or calibrating Anaheim Scientific products. Turnaround time is usually less than ten (10) working days unless expedited service is requested and pre-arranged.
- Send an email to service@anaheimscientific.com requesting an RMA number specifying your request for either service/repair and/or calibration with your product's model number.
- Once you receive a reply from service@anaheimscientific.com, you will be asked to ship prepaid to the address below. Package the unit carefully using filler or bubble wrap, and if possible, ship in the original box. Ship each unit separately. (Anaheim Scientific is not responsible for any shipping damage that may occur.)
- Include a packing list with each unit shipped stating what type of service is required and include the

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return shipping information: name, address and telephone number.

- If the unit is in warranty, please provide the following: proof of purchase or copy of the original invoice.
- If the unit is out of warranty, prepayment is required by Check, Money Order or Credit Card.
- Return all merchandise to Anaheim Scientific with pre-paid shipping. The flat-rate repair charge for Non-Warranty Service does not include return shipping. Return shipping to locations in North American is included for Warranty Service.
- For overnight shipments and non-North American shipping fees please contact Anaheim Scientific

Anaheim Scientific
ATTN: Service/Repair
22820 Savi Ranch Parkway
Yorba Linda, CA 92887

www.anaheimscientific.com

12 Limited Two-Year Warranty

- Scientific warrants to the original purchaser that its products and the component parts thereof, will be free from defects in workmanship and materials for a period of two years from date of purchase.

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- Anaheim Scientific will, without charge, repair or replace, at its option, defective product or component parts. Returned product must be accompanied by proof of the purchase date in the form of a sales receipt.
- To help us better serve you, please complete the warranty registration for your new instrument via our website www.anaheimscientific.com
- Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. The warranty is void if the serial number is altered, defaced or removed.
- Anaheim Scientific shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitations of incidental or consequential damages. So the above limitation or exclusion may not apply to you.
- This warranty gives you specific rights and you may have other rights, which vary from state-to-state.

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