



Grand Master Par Meter (GML420 Series) | User Manual

Thank you for choosing the **GML420 Series Spectral & Illuminance Analyzer**.

This user manual provides comprehensive information regarding the features, operation, safety guidelines, and technical specifications of the device. To ensure optimal performance and safety, please read this manual thoroughly before operating the instrument and strictly adhere to the stated regulations. Keep this manual in a convenient location for future reference.

Safety Guidelines

CAUTION: To prevent equipment damage, property loss, or personal injury due to improper operation, please strictly observe the following safety precautions:

- **Environmental Restrictions:** Do NOT operate the instrument in harsh environments, including areas with flammable or explosive gases, extreme temperatures, high humidity, high pressure, or heavy dust.
- **Load Restriction:** Do NOT place heavy objects on top of the device.
- **Hot-Plugging Restriction:** Do NOT insert or remove measuring probes, communication lines, or other accessories while the instrument is actively performing a measurement.
- **Screen Care:** Handle the 4.0-inch glass touch screen with care to prevent cracking or personal injury.
- **No User-Serviceable Parts:** Unauthorized personnel must not disassemble the housing for maintenance. Improper handling may exacerbate faults or cause personal injury and will void the warranty.

Product Profile

The **GML420 Series Spectral & Illuminance Analyzer** integrates a high-speed processor, a dedicated Linux-based OS, and a high-precision electronic CCD optical sensor. Utilizing an advanced long-focus, crossed asymmetric Czerny-Turner (CT) optical system, the device delivers a lightweight design, stable performance, exceptional accuracy, and outstanding portability.

Equipped with a **4.0-inch HD capacitive touch** screen, the interface offers an intuitive, smartphone-like user experience. It allows users to sample spectral distribution, color metrics, and illuminance parameters anytime, anywhere. Dedicated PC software is also included for streamlined data processing and in-depth analysis.

Applications

- Commercial Grow Rooms & Greenhouses
- Light Source R&D and Production Line QC
- Residential, Retail, School, and Factory Lighting
- Eyewear & Jewelry Industry Quality Control

Storage & Maintenance

1. **Environment:** Store in a clean environment with relative humidity $< 70\%$ RH and temperatures $< 50^{\circ}\text{C}$.
2. **Protection:** Keep away from water, oils, chemicals, corrosive liquids/gases, high pressure, and direct prolonged sunlight.
3. **Handling:** Protect the device from severe vibrations, mechanical impacts, drops, and heavy extrusion.

Operation Guide

Instrument Start-Up

- **Power On:** Press and hold the power button (the black circular button on the right side of the device) for **3 seconds**.
- **Power Off:** Press and hold the power button for **3 seconds**. When the shutdown dialog box appears on the screen, tap **[OFF]** to shut down.

NOTE: Clean the optical sampling aperture/sensor surface before use. Fingerprints, smudges, or dust will negatively impact the accuracy of your test results.

Measurement Procedure

- **Step 1: Positioning**
 - Place the device at the target measurement location, ensuring the sensor aperture faces the light source directly.
- **Step 2: Start Measurement**
 - Press the **Power Button** once, or tap either the  **【Single】** or  **【Continuous】** icon at the bottom of the screen.
 - Single Mode: Automatically stops and captures data after one scan.
 - Continuous Mode: Constantly refreshes data in real-time.
- **Step 3: Lock / Stop Measurement**
 - Once the data stabilizes, press the **Power Button** again, or tap the  **【Stop】** icon at the bottom of the screen to lock the measurement.
 - Button Shortcut Logic: The power button defaults to Single Mode. However, if you manually tap the Continuous icon on the screen, the physical power button will

trigger Continuous Mode on subsequent presses until you manually tap the Single icon again.

○ **Step 4: Save & Export**

- Tap the  **【Save】** icon at the bottom of the screen to log the data to the internal memory. Connect the device to your PC using the provided Type-C USB cable to export and analyze your records.

Packing List

Item	Qty	Remarks
GML420 Main Unit	1	Features a built-in rechargeable lithium battery
5V/2A Power Adapter	1	Standard charging block
Type-C USB Data Cable (1m)	1	Supports $\geq 2A$ current carrying capacity
Protective Carry Bag	1	Color selected at random
User Manual (Digital)	1	Please read carefully prior to initial setup

Main Technical Specifications

Parameter Type	GML420 Series Specifications
Wavelength Range	380 nm ~ 780 nm
Optical System	Long-focus crossed asymmetric Czerny-Turner (CT) spectrometer
Sensor Type	High-precision CCD
Spectral Bandwidth (FWHM)	2 nm
Wavelength Accuracy	± 0.5 nm
Chromaticity Repeatability	± 0.0005 (x,y coordinates)
Chromaticity Coordinate Accuracy	± 0.0025 (Traceable to NIM standard light source stability within ± 0.0005)

CCT Range	1,000 K ~ 100,000 K
Stray Light	$\leq 0.3\%$
Illuminance Accuracy	Class 1 ($\pm 4\%$ of reading ± 1 digit)
Illuminance Measurement Range	0.1 lx ~ 200 klx
Integration Time	0.1 ms ~ 5000 ms
Sensor Aperture Diameter	$\Phi 10$ mm
TM-30 Color Metrics	Supported (Yes)
Data Interface	Type-C USB interface
Operating Environment	-10°C ~ 40°C
Storage Environment	-20°C ~ 45°C
Display Screen	4.0-inch HD IPS capacitive touch screen
Storage Capacity	Built-in 16 GB Flash
Power Supply	Rechargeable internal lithium battery / External power adapter
Battery Life	Up to 12 hours of continuous operation on a full charge
Dimensions & Weight	132 mm (H) x 64 mm (W) x 16 mm (D) / Approx. 210g (including battery)

Warranty & Service Coverage

Grand Master LEDs guarantees that every device undergoes rigorous quality control and testing before shipment. However, this warranty does not cover damages resulting from transit, misuse, accidents, alterations, or unauthorized operations.

- **Warranty Period:** The standard factory warranty is **one (1) year** from the date of purchase (90 days for specific wearable parts and accessories).
- **User Liability:** Maintenance, repair costs, and component replacement fees arising from

improper handling, physical damage, or user error during the warranty period will be borne entirely by the user.

- **Post-Warranty Service:** Repairs conducted after the one-year warranty period expires will be subject to standard labor and parts fees.
- **Support Procedure:** If the instrument malfunctions, please contact Grand Master LEDs customer support or an authorized distributor. For all warranty evaluations, repairs, or replacements, the customer is responsible for standard return shipping/postage fees.
- **Repair Warranty:** Post-warranty service repairs carry a **30-day warranty** limited to the specific fault addressed. Newly replaced parts/accessories carry a **90-day warranty**. Wearable components are excluded from this coverage.



GRAND MASTER LEDS

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