



BENETECH GM1030C Split Type Lux Meter Instruction Manual

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BENETECH GM1030C Split Type Lux Meter



Product Introduction

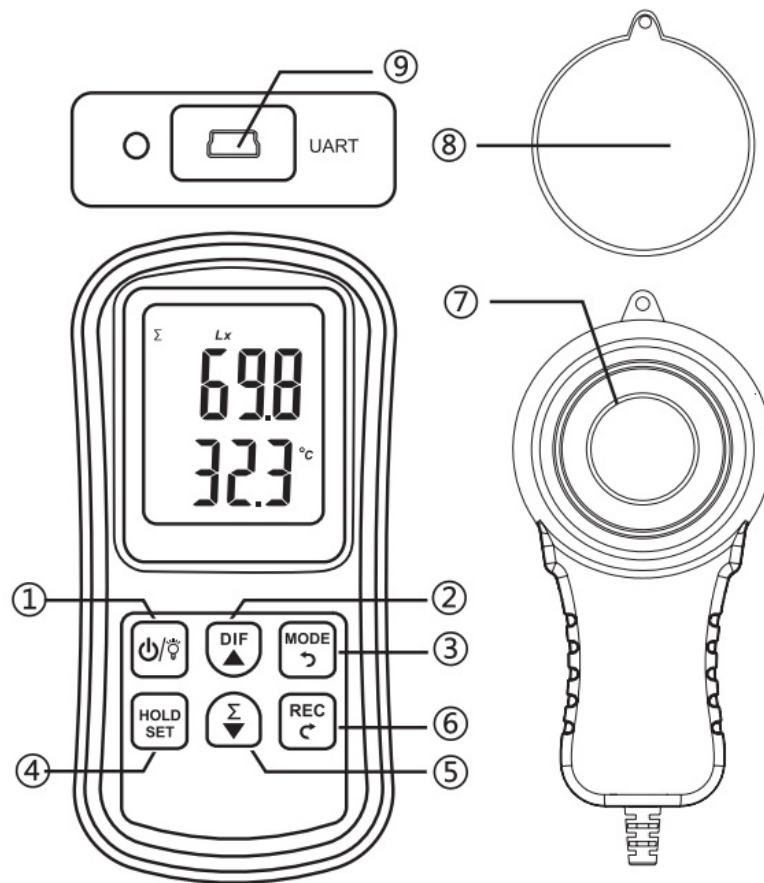
Split type illuminometer is a professional instrument for measuring light intensity and brightness, which is used in light intensity measurement engineering, quality control, health care and light intensity measurement in various surroundings, such as factories, schools, offices, transportation and homes.

Product Features

This can split type illuminometer not only measure current value, maximum value, minimum value and difference value of illumination and temperature, but also hold illumination and temperature data, calculate illuminance integral and average integral averaging and record data.

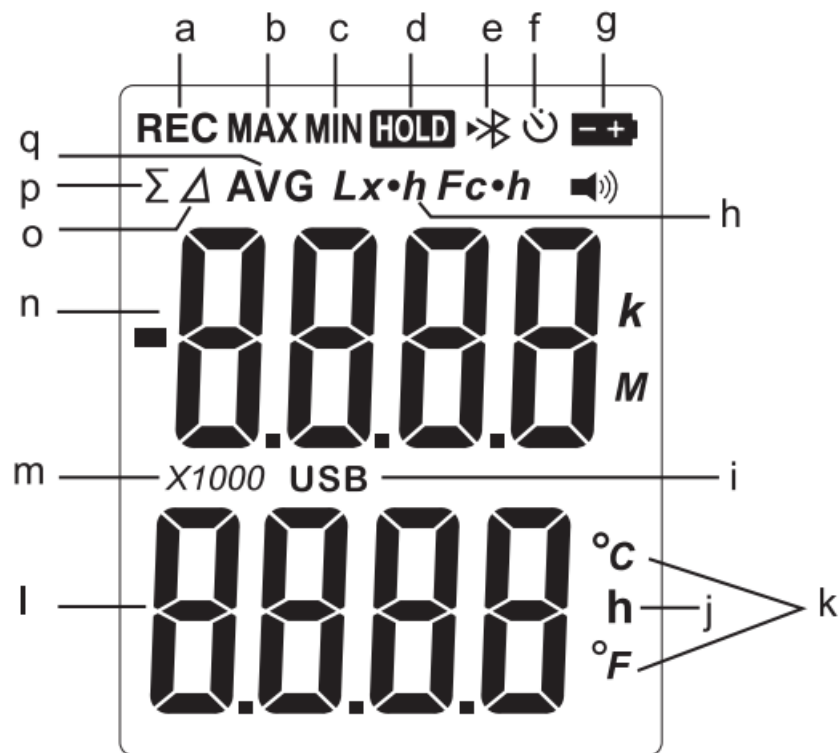
1. Switch illumination unit and (Lux/Fc) temperature unit ('C/'F)
2. Two recording modes: automatic storage of illumination data (up to 2000 groups) and manual storage (up to 60 groups)
3. Automatic range and quick response, measurement in environment with insufficient light.
4. Screen backlight for darkroom operation.
5. Auto-off after no operation for a long time (the default span is 10 mins and can be reset)

Names and functions of parts




1. Power/backlight
2. Back/difference value
3. Mode/return
4. Data holding/setting
5. Forward/integral
6. Record/confirm
7. Illumination head
8. Lens cover
9. UART connector (TTL)
 - (Bluetooth version only)

LCD display



- **a.** Data recording
- **b.** Max value/auto storage
- **c.** Min value/manual storage
- **d.** Data holding
- **e.** Bluetooth (Bluetooth version only)
- **f.** Power off timing icon
- **g.** Low battery indicator
- **h.** Illumination unit-symbol of lux
- **i.** USB connection symbol (Bluetooth version only)
- **j.** Hour
- **k.** Temperature unit
- **l.** Temperature value and measurement values
- **m.** Illumination value gear
- **n.** Illumination value and parameter setting
- **o.** Difference icon
- **p.** Integral value symbol
- **q.** Average value symbol

Note: When the indicator  flashes, please change batteries, or the measurement value may not be accurate and Bluetooth communication be abnormal.

Function description

There are two working modes of illuminometer, normal mode and setting mode. Each working mode has multiple interfaces:

Normal mode

1. Real-time interface: display current measured value of illumination and temperature.
2. Max value interface: record from startup, display maximum value of illumination and temperature.
3. Min value interface: record from startup, display minimum value of illumination and temperature.
4. Difference value interface: display the difference value between the latest measured value of illumination and enter the saved value when first entering the interface.
5. Holding interface: when the current measured value of illumination and temperature is no longer updated, the data remains unchanged.
6. Integral interface: the integral of the current illumination value against time (unit: hour).
7. Integral averaging interface: within the specified time(unit: hour), the average of illumination value integral against time.
8. Manual storage interface: you can manually save the current illumination value by pressing the button and can check the total groups of manually stored data (storage mode), with the maximum capacity of 60 groups. You can manually refer to certain illumination data or delete all manually stored data.
9. Automatic storage interface: you can set the timing period, and the illumination value will be automatically recorded; you can refer to the total groups of automatically stored data (storage mode), with the maximum capacity of 2000 groups; you can manually refer to certain illumination data or delete all auto-stored data.


Note: The integral operation and automatic storage operation can be turned on at the same time. If successful, “E” and “REC” at the top of the screen will flash.

Setting mode


1. **Manual storage setting interface:** set manual storage on and off.
2. **Auto storage settings interface:** set automatic storage on and off.
3. **Display unit setting interface:** set unit of illumination value (Lux/F) and temperature value unit (C/°F)
4. **Timing shutdown setting interface:** set shutdown timing on and off without button operation
5. **Bluetooth switch setting interface:** set Bluetooth on and off (Bluetooth version only)

Function Operations


1. Turn on/off

- Install batteries for the instrument, long press the  button for 2 seconds, and enter real-time interface after full-screen display for 1 second.




2. Backlight on/off

- After startup, short press  button in any interface to turn on/off the backlight. Backlight will add up power consumption, so it is set to be off since startup.



3. Max/min value of illumination and temperature

- In the real-time interface, short press  button to switch max value interface and min value interface, the top of the screen displays “MAX” and “MIN” respectively; short press the button again in the minimum interface to return to real-time interface.

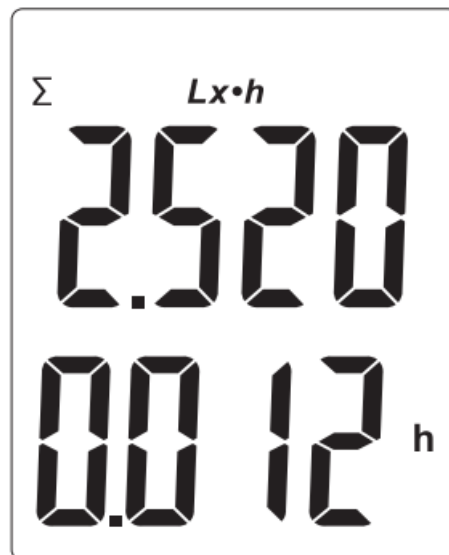
4. Difference value of illumination



- In the real-time interface, short press  button to switch to different value interface. A negative number indicates that the real-time value becomes smaller, positive number indicates that the real-time value becomes bigger. The top of the screen displays “” in the difference value interface; short press  again in the difference interface and return to real-time interface. You can also press the button to return to the real-time interface in the difference value interface.


5. Data holding

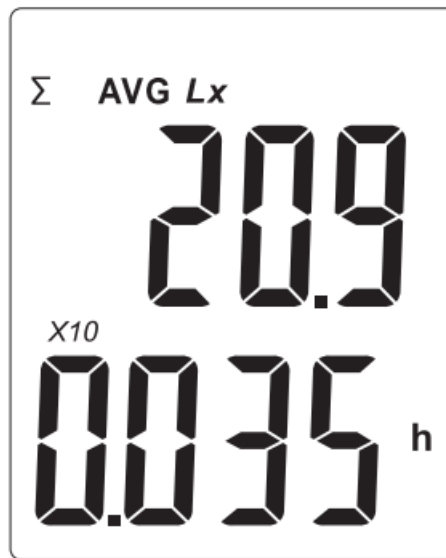
- In real-time interface or difference value interface, short press  button to switch to holding interface, and the top of the screen displays “HOLD”; short press the button again in holding interface to return to the interface before.
- You can also return to the real-time interface by short press the  button in holding interface.

Integral operation




In real-time interface, press  button to switch integral interface and integral averaging interface in turn. “L” and “2 AVG” are respectively displayed at the top of screen; short press again in integral averaging interface to return to real-time interface. You can also short press  button to return to the real-time interface under integral interface or integral averaging interface.

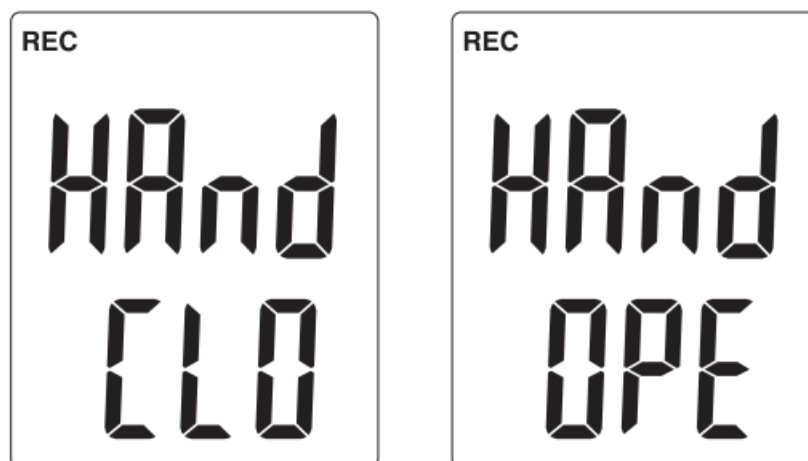
In Integral or Integral averages screen, start press  button to start or stop the integral. After the integration starts, it will keep running in the background, and the “Σ” at the top of the screen will start flashing, and the “Σ” will stop flashing when integration stops.






- In integral interface, the upper half of the screen shows the integral of illumination in unit of $Lx \cdot h$ or $Fc \cdot h$, the lower part shows the time span for integral, in unit of hour(h).
- In average integral interface, the upper half of the screen shows the average illuminance in unit of Lx or Fc , the lower part shows the time for integration, in unit of hour (h).

Manual storage operations

In real-time interface of normal mode, long press  button for 1s to enter into setting mode. Short press this button in the setting mode, switch the interface to manual storage setting interface, the upper half stands for the setting items for manual storage, and the lower half flashes to indicate whether setting items are on. As shown below:



(Left: manual storage off, right: manual storage on)


- In manual storage setting interface, short press  button, manual storage is on;
- In manual storage setting interface, short press  button, manual storage is off;
- After confirming manual storage state, long press  for 1s to exit the setting mode and return to real-time

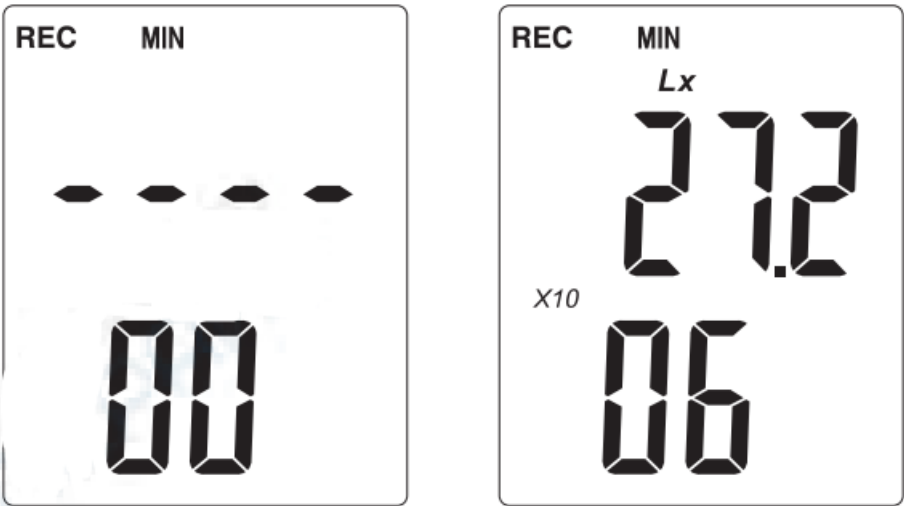
interface. Then you can manually save data by pressing  , the current saved result will be displayed for 1s of the storage is successful. As shown below:






- “MIN” at the top of screen means that the maximum storage groups in current manual storage area is up to 60;
- The upper part shows the current saved value of illumination, the lower part shows the current storage number of data.

Manual storage query



In real-time interface, long press  for 1s, if it is automatically stored interface now, short press (woo to switch to manual storage interface, as shown below:

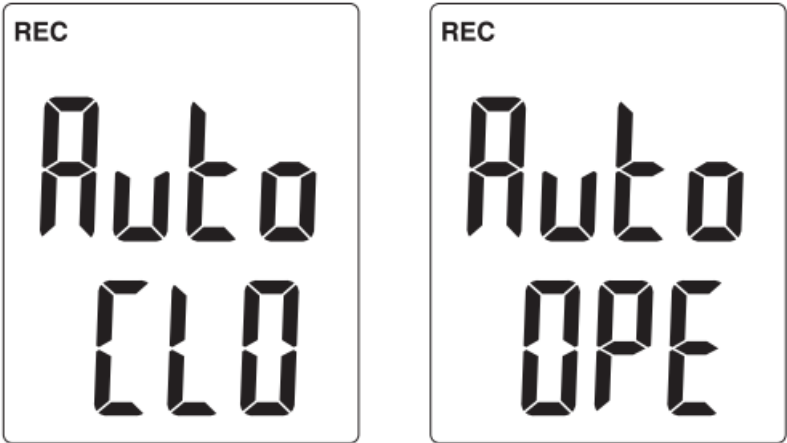


The “MIN” at the top of the screen refers to the latest stored record displayed initially in the current manual storage area; short press  to switch to the previous record, short press  to switch to the next record; the lower part indicates the record number, and the upper part indicates the recorded illumination value. Long press  for 1 s and return to the real-time interface.




“MIN” at the top of screen means that the maximum storage groups in the current manual storage area is up to 60; The upper part shows the current saved value of illumination, the lower part shows the current storage number of data.

Manual storage query




In real-time interface, long press  for 1s, if it is automatically stored interface now, short press  to switch to manual storage interface, as shown below:

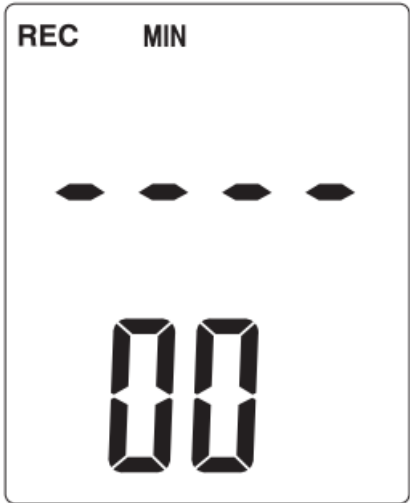



(Left: Auto storage is off, right: Auto storage is on)

The “MIN” at the top of the screen refers to the latest stored record displayed initially in the current manual storage area; short press  to switch to the previous record, short press  to switch to the next record; the lower part indicates the record number, and the upper part indicates the recorded illumination value. Long press  for 1s and return to the real-time interface.


Manually delete stored records

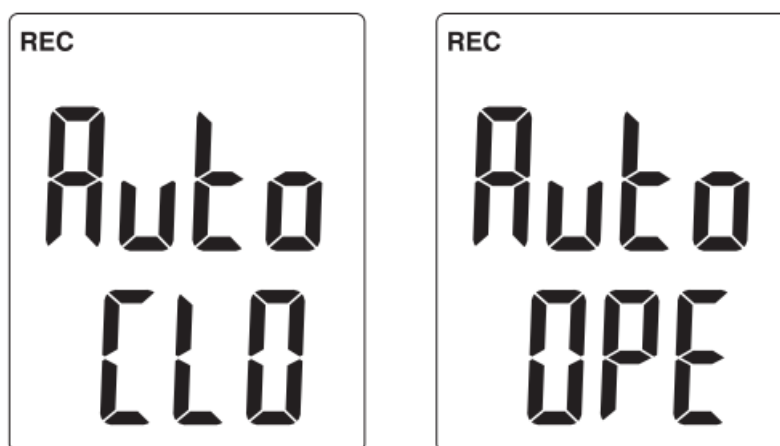
In real-time interface, press  for 1s, if it is auto-save interface now, short press  to switch to the manual storage interface, then long press  for 1s to delete all manually stored data, as shown below :








- Long press  for 1s and return to the real-time interface.

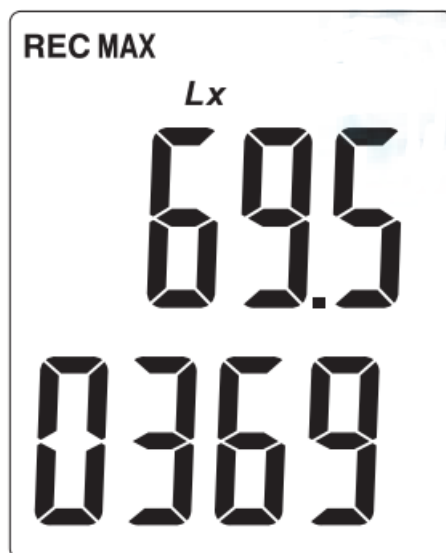
Automatic storage

In the real-time interface of normal MODE, long press  for 1 s, enter setting MODE and long press this key again or long press MODE/ back key to exit setting MODE. Press the key in the setting mode to switch to the automatic storage setting interface. The upper part represents the automatic storage setting item, and the lower part flashes to indicate the switch state. As is shown below.





(Left: Auto storage is off, right: Auto storage is on)


- In the automatic storage settings interface, short press  and automatic storage is on;
- In automatic storage settings interface, short press  and automatic storage off;
- **Note:** Automatic storage and manual storage can not be on simultaneously, but can be switched off at the same time. Manual storage is on as factory default.
- After confirming automatic storage, long press  for 1s to exit the setting mode and return to the real-time interface. In real-time interface, press  for 1 s. If it is in manual memory interface now, press  to switch automatic storage interface, as shown below:




“MAX” at the top of the screen indicates that the maximum data group in the current storage area is 2000 at



most. Under this interface, short press  button to start automatic storage timer, at the same time return to the real-time interface. Factory default is to record every 0.001 h (3.6s). After recording is on, “REC” on the top of the

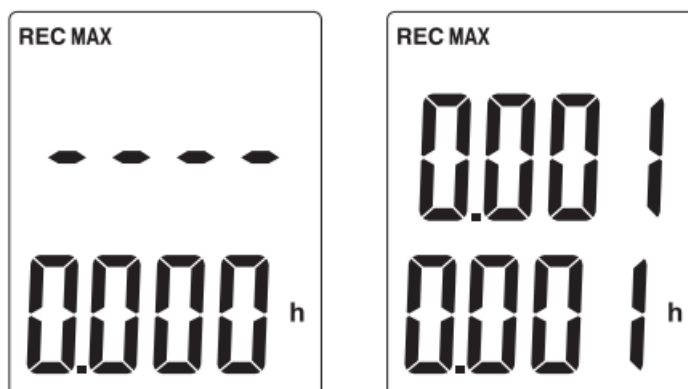
screen begins to flash. Long press and hold  for 1 s under automatic storage interface to enter into time

interval setting. When the current decimal point flashes, short press  to switch the position of decimal point, and you can set order of magnitude as “0.000 h” or “00.00 h”.



Then press  to enter into the setting of specific value. The upper half is the saved time interval (default 0.001



h), the lower part can be circuted to the right by short pressing , and to increase or decrease the value of

on flashing position with  . As shown below, the interval is set as 0.001 h:





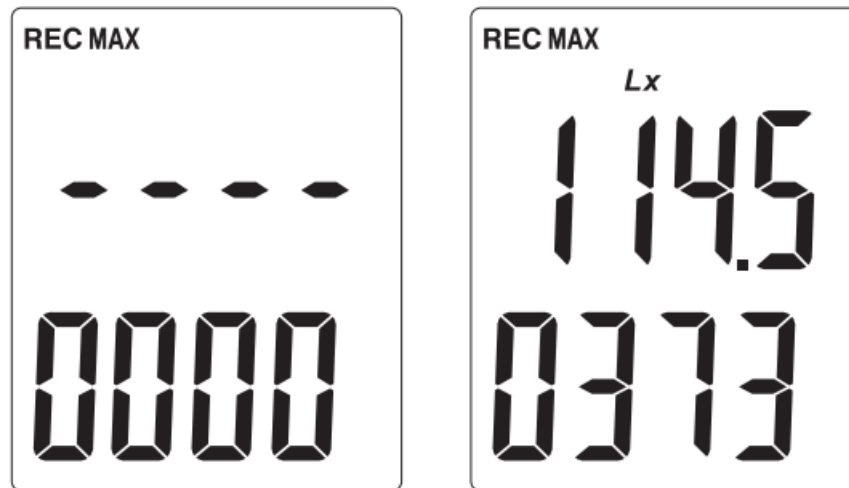
(Left: set decimal point of time interval, right: set time interval value)

After setting the value, long press  for 1 s and return to automatic storage interface. Short press  again to start the automatic storage timer, and return to the real-time interface. As shown above, the interval is set to record once every 0.002h (7.2s), the saved results will be dynamically displayed for 1 s after successful storage.






In the process of automatic storage, short press  under real-time interface to stop automatic storage. If you want to start again with the same interval, enter into automatic storage interface with the operation above, and short press .

Automatic store records query




In real-time interface, long press (each  for 1 s. if it is manual storage interface now, short press  button, and switch to automatic storage interface, as shown below:




(Left: Auto storage without record Right: Auto storage with 373 records)

The “MAX” at the top of the screen indicates the latest stored record displayed initially in the current manual storage area; short press  to switch to the previous record and press  to the next record. Keep pressing  or , you can switch the record by 10 item. The lower part shows the record number, the upper part shows the recorded luminance value. Long press  for 1 s and return to real-time interface.


Delete automatically stored records

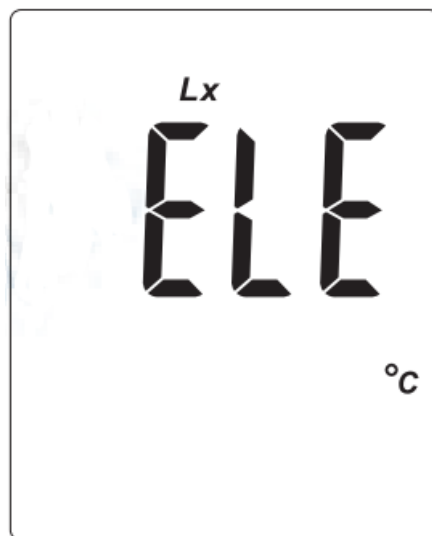
In real-time interface, long press  for 1s. if it is in manual storage interface now, short press  to switch to automatic storage interface, and then long press  for 1 s to delete all manually stored data, as shown below:





- Long press  for 1s to return to real-time interface.


Illumination and temperature unit

In real-time interface of normal mode, long press  for 1 s, and enter into setting mode. Short press this button in setting mode and switch the interface to unit setting interface, the selected illuminance and temperature unit are in flashing state, as shown below:




- LUX/°C–LUX/°F –FC/°C–FC/°F four kinds of unit group. You can short press  to circuit to the right or short press  to circuit to the left.

Timing on/ off setting


In real-time interface of normal mode, long press  for 1 s and enter the setting mode. Short press this button in the setting mode to switch to the setting interface for timing off. The upper part shows the setting item for off-timer, the flashing lower part indicates whether the item is on. As shown below:




- In timing off setting interface, short press , the off timer is on;

- In timing off-setting interface, short press , the off timer is on.

Bluetooth on/off setting (Bluetooth version only)

In real-time interface of normal mode, long press  for 1 s, and enter into setting mode. Short press this button in the setting mode to switch to Bluetooth off setting interface. The upper part shows the setting item for Bluetooth, the lower part shows whether the item is on. As shown below:



- In Bluetooth on/off settings interface, short press , Bluetooth is on;

- In Bluetooth switch settings interface, short press , Bluetooth is off.

Note: If the battery voltage is too low, Bluetooth may become abnormal. The system will automatically hide bluetooth setting after turning on instrument. Please replace batteries and turn on the instrument again.

Performance and indicators

Refer to JJG245-2005 “illuminometer verification procedures”

Illumination probe		Silicon Diode	
Illumination range		0 ~ 200,000Lux (0 ~ 20000Fc), divided into four gears	
Gear	Gear range	Minimum resolution	Accuracy
X1 gear	0.0 ~ 199.9Lux	0.1 Lux	$\pm 3\% \text{rdg} + 5 \text{dgts}$
X10 gear	20.0*10 ~ 199.9*10Lux	1 Lux	$\pm 3\% \text{rdg} + 10 \text{dgts}$
X100 gear	20.0*100 ~ 199.9*100Lux	10 Lux	$\pm 4\% \text{rdg} + 10 \text{dgts}$
X1000 gear	20.0*1000 ~ 199.9*1000Lux	100 Lux	$\pm 4\% \text{rdg} + 10 \text{dgts}$
Repeatability		$\pm 2\%$	
Refresh rate		2 times/second	
Temperature probe		NTC Thermistor	
Temperature range		-20 ~ 50°C (-4 ~ 122°F)	
Temperature accuracy		$\pm 1.0^\circ \text{C}$	
Power		Three AAA batteries	

App Operation Instruction

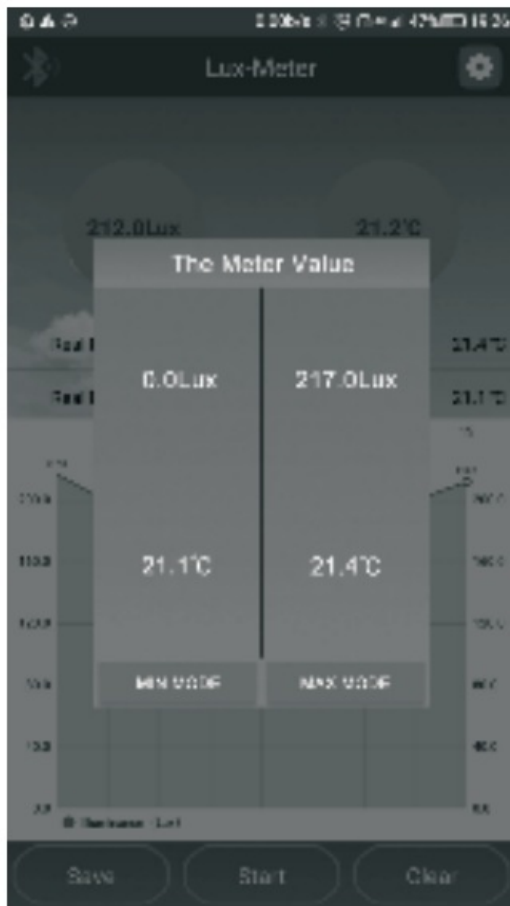
App operation instructions (Bluetooth version only)

App main interface:



1. After the Bluetooth device is connected, the app automatically synchronizes various states of the instrument, such as unit, and time interval of automatic storage.
2. The upper part shows real-time measured illumination value and temperature value, as well as real-time maximum value (\leq max value of the instrument) and real-time minimum value (\geq instrument minimum). You can also click the blue circle in the middle to check the maximum and minimum values saved by the instrument. The lower part displays the trend curve of illumination.
3. Click storage button to enter into storage interface, click the start button to record real-time measurement data, click the clear button to clear the saved real-time data.
4. Click the Bluetooth icon in the upper left corner to enter into Bluetooth interface. Click the button in the upper right corner, a window including "settings", "language switch" and "folder" pops out.

Extreme value interface:

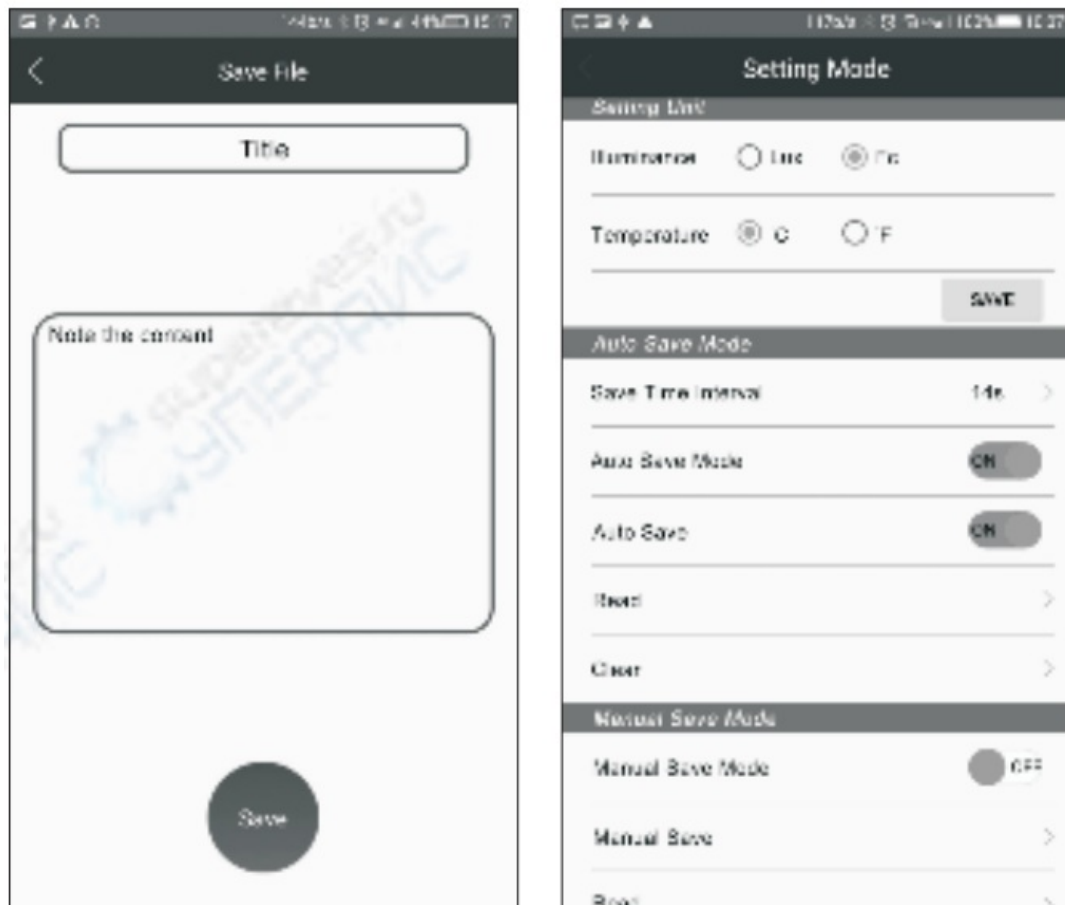


- Click minimum value button to check the minimum value of the instrument.
- Click maximum value button to check the maximum value of the instrument.

Bluetooth connection interface:

- Click Search button to start searching for nearby Bluetooth devices, and the search span is about 5 seconds.

Saving interface



- Click storage button to save the data you need to save.

Setting interface

1. Set the units of illumination and temperature.
2. Automatic storage mode (2000 groups) and manual storage mode (60 groups), the two modes cannot be on at the same time, but can be closed at the same time. Storing, reading and clearing can only be performed after automatic or manual storage mode has been started. Click Read button to read and save the data stored in the instrument. Click Clear button to clear the data stored in the instrument (auto storage interval >- 4s).
3. You can only turn on one mode among integral mode, average integral mode, and difference value mode wach tiem, and three modes can not be on at the same time. You have to switch to the corresponding mode to check the data.

File List:



- Short press to read files, long press to multi-select and delete files.

Data display interface:

The upper part of data display interface shows the trend curve of illumination and the average, maximum and minimum values of illumination, the lower part shows the remark information, and click the button in the upper right corner to input the stored data into Excel table and export to mobile phone (up to 65535 items of data in one table).

Host and PC connection

Host and PC connection (Bluetooth version only)

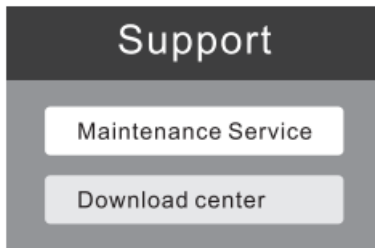
The computer terminal App (LuxMeter) is the reference software of UART serial port communication, through which the operation and use of the illuminometer can be more convenient. Through the computer side App, you can do the following.

1. The illuminometer parameters can be set more conveniently through this App, such as:
 - Whether to turn off or turn on the automatic shutdown function.
 - Setting of automatic shutdown time.
 - Whether to turn on automatic storage.
 - Automatic storage cycle setting of the instrument.
 - Setting of units.
2. Read the stored data in the instrument through this APP, or directly delete the stored data in the instrument.
3. Through the real-time measurement function of this software, the real-time measurement function data of the

instrument can be synchronized to the App, and the curve data can be generated for easy analysis, etc.

Note: please refer to the help options in this APP for specific operations.

1. Please download the LuxMeter software installation package (including instructions) at the following website: <http://www.benetechco.net>. After typing the website, press enter to find the menu “Support – Download center” as shown on the left, and click to enter the page and find the installation package “LuxMeter UART v2.1.zip” as shown in the picture on the right. Click the Download button to directly extract the “zip compression package” after downloading. First install UART to USB cable drive Mete (software installation includes), and then install LuxMeter v2.1.exe.



Left

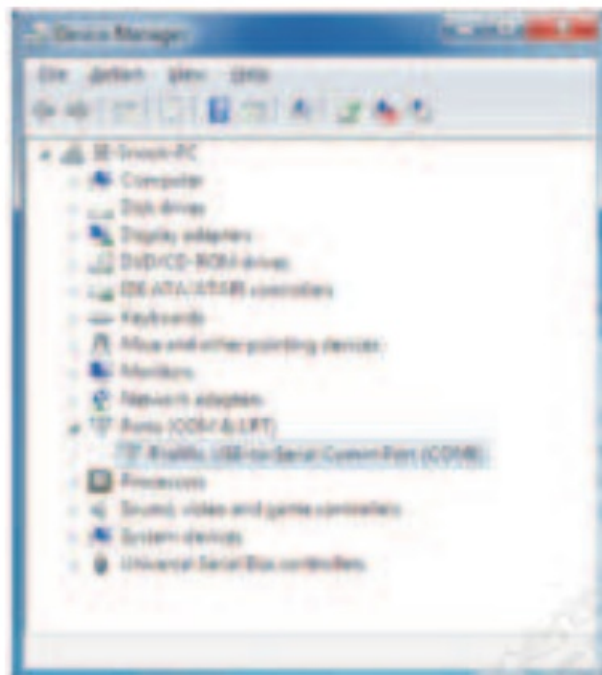
Download center			
PC Software			
Name	Download	Size	Pubdate
LuxMeter UART V2.1.zip		4.57MB	2019-03-12
View more			

right

2. According to the installation wizard dialog box prompt to complete the installation operation.

Note: the installation directory is recommended not to be placed in the operating system partition, which helps protect data from being lost when the computer reinstalls the system.

1. UART interface is developed for professionals in research institutes, companies, schools, etc.
 1. UART interface must be connected to computer through specialized UART-USB line provided by our company;
 2. Before using reference software, the driver of chip Prolific PL2303 must be installed (WIN10 comes with it and needs no installation, which can be automatically recognized after plugging in UART-USB line);
 3. Before connecting reference software to the instrument, first set COM port for software. Refer to device manager in computer for COM port number, as shown in the picture below (under WIN7 environment):



The COM port number shown in the picture is COM6.

Note

1. If COM port number is not selected right, reference software cannot be connected, and communication fails.
2. The default baud rate of the LuxMeter software connection is 9600bps, which does not need to be modified under normal circumstances.

Besides, if you need our protocol to develop and research, please contact with our sales department. The price of the purchasing protocol is RMB 500.

Scan



Please scan the QR code to download Lux-Meter App from Google Play.

Attention: Lux-Meter App only supports Android 5.0 version or above.

Specific Declarations

Our company shall hold no any responsibility resulting from using output from this product as direct or indirect evidence.

We reserves the right to modify product design and specification without notice.

Documents / Resources



[BENETECH GM1030C Split Type Lux Meter](#) [pdf] Instruction Manual
GM1030C Split Type Lux Meter, GM1030C, Split Type Lux Meter, Type Lux Meter, Lux Meter, Meter