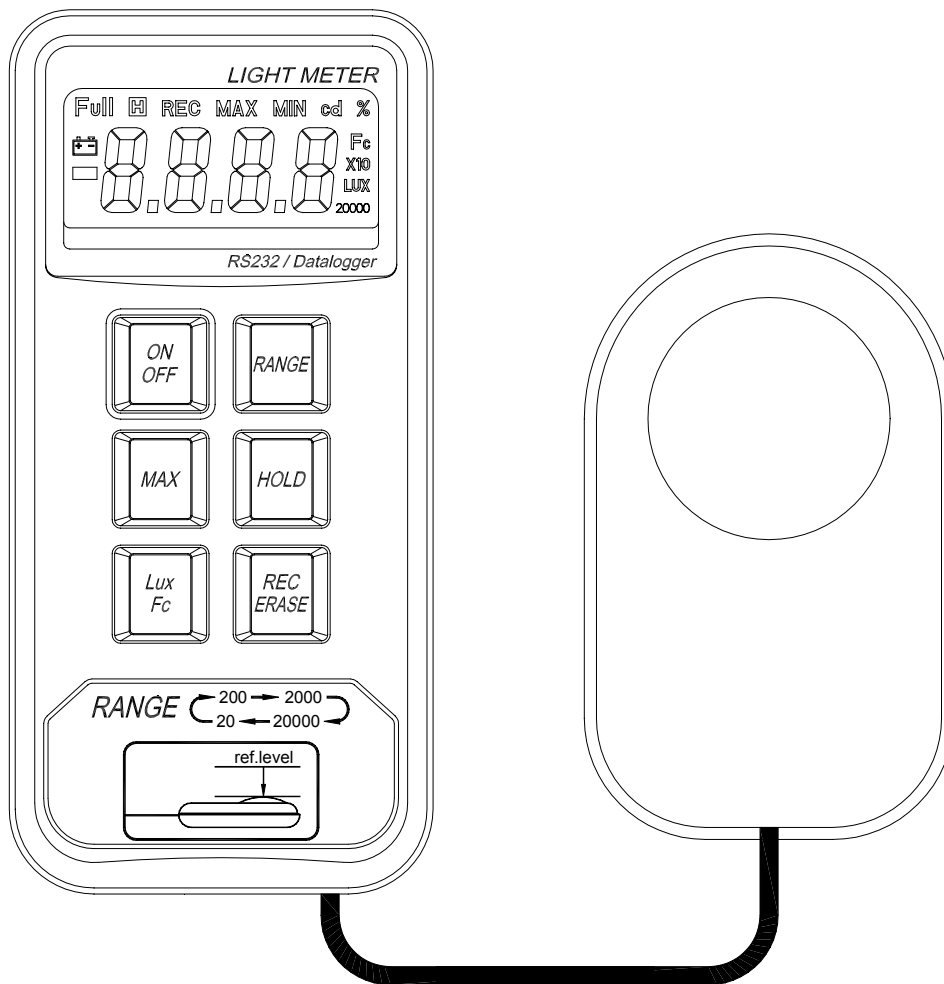


LIGHT METER

INSTRUCTION MANUAL



CONTENTS

Title	Page
1.SAFETY INFORMATION	1
2.SPECIFICATIONS	2
3.NAME OF PARTS AND POSITIONS.....	4
4.MEASUREMENT PREPARATION.....	6
5.OPERATING INSTRUCTIONS	7
6.SPECTRAL SENSITIVITY CHARACTERISTIC	8
7.RECOMMENDED ILLUMINATION.....	9
8.HARDWARE SETUP	11
9.SOFTWARE.....	12
10.METER WINDOWS	15
11.DATA DOWNLOAD	18
12.MEASUREMENT OF LUMINOUS INTENSITY (cd Mode)	19

1.SAFETY INFORMATION

- Read the following safety information carefully before attempting to operate or service the meter.
- Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

Environment conditions

- ① Altitude up to 2000 meters
- ② Relatively humidity 80% max.
- ③ Operation Ambient 0~40°C
- ④ Indoor use only

Maintenance & Clearing

- ① Repairs or servicing not covered in this manual should only be performed by qualified personnel.
- ② Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on this instruments.

Safety symbols



Meter is protected throughout by double insulation or reinforced insulation.
When servicing, use only specified replacement parts.



Comply with EMC

2.SPECIFICATIONS

- Display : 3-1/2 digit LCD.
- Measuring Range : 20, 200, 2,000 and 20,000 Lux/Fc
(20,000 Lux/Fc range reading $\times 10$)
- Overrange Display : " OL " is displayed.
- Accuracy : $\pm(3\%rdg + 5dgts)$.
- Repeatability : $\pm 2\%$.
- Temperature Characteristic : $\pm 0.1\%$ / $^{\circ}C$.
- Measuring Rate : 2.5 time / sec.
- Photo detector : One silicon photo diode.
- Memory Capacity : 16000 records data, utmost 255 sets of results.

- Serial Interface Baud Rate : 9600bps.
- Operating Temperature and Humidity : 0°C to 40°C (32°F to 104°F)
10 to 80% RH.
- Storage Temperature and Humidity : -10°C to 60°C (14°F to 140°F)
10 to 70% RH.
- Power Source : One 9 Volt battery, NEDA 1604 or JIS 006P or
IEC6F22.
- Battery Life (typical) : 50hours (Alkaline Battery).
- Photo Detector Lead Length : 150 cm (approx.).
- Photo Detector Dimensions : 87.5L×60W×29H (mm).
- Dimensions : 146L×70W×39 (mm).
- Weight : 300g.
- Accessories : Carry case, instruction manual, battery, RS-232
cable, 9 pins to 25 pins gender charger, software for
windows, screwdriver.

3.NAME OF PARTS AND POSITIONS

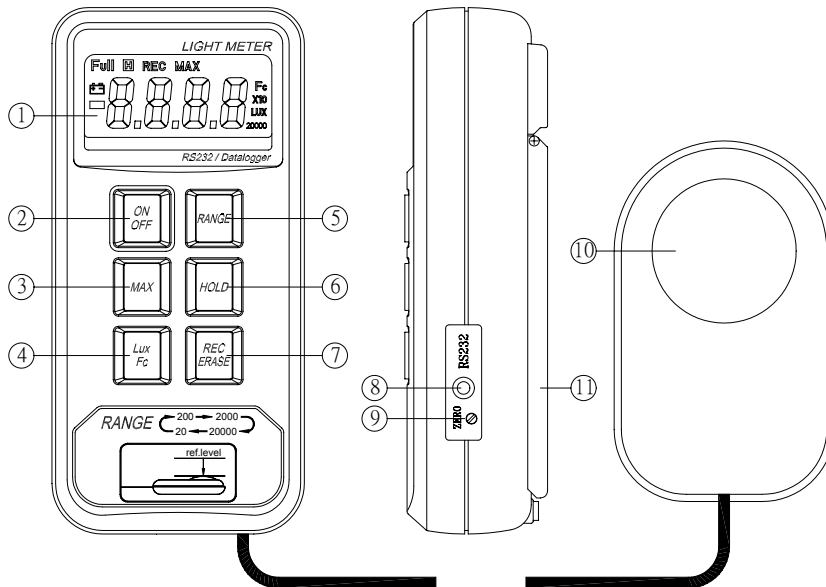



Figure-1

- 1). LCD Display : 3-1/2 Digits with a maximum reading of 1999, and the indicating sign of " Lux ", " Fc " " MAX " , " H " , Range "20,000 " , " x10 " (reading by ten) ,

"  " , " REC" , " Full " .

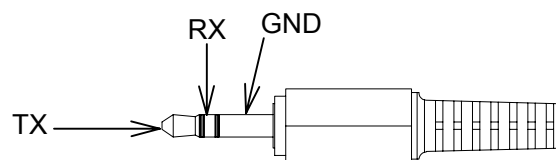
- 2). Power Button : The power button turns the illuminance meter ON or OFF.
- 3). MAX Button : Pressing the button, then the maximum value will displayed and updated.

- 4). Lux / Fc Button : Press this button will change the light scale between “ Lux ”and “ Fc ”.
- 5). Range Button : Pressing the range button changes 20, 200, 2,000 and 20,000 Lux / Fc ranges, circularly.
- 6). Hold Button : Once this button is pressed, the reading will be hold on the LCD.
- 7). REC / ERASE :
 - ◆Record - ON: To record one set of record, press this button once, and the “ REC ” will be displayed.
To record data continuously, press and hold the button for 3 seconds, “ REC ” flash 1 time/sec in the display.
Pressing the button again to stop recording.
To set the sampling time of recording, refer to page 18 (figure 7).

- ◆Reset Memory : Keep pressing and hold the button before the power is turned on. Press the ON / OFF button to turn the power on then let go the ON / OFF button. The LCD display “ dEL ”.

Note: “ Full ” displays when memory is full.

8). RS-232 Terminal.



9). ZERO : Adjust 0.0 Lux / Fc.

10). Photo Detector.


11). Tilt stand.

4.MEASUREMENT PREPARATION

1). Battery Loading

Remove the cover on the back and put in one 006p 9V Battery.
(Note : Take care to observe battery polarity).

2). Battery Replacement

When the battery voltage drops below the operating voltage, mark  appears and flashes . If it appears, battery should be replaced with new one.

5. OPERATING INSTRUCTIONS

- 1). Power-up : Press the power button to turn the meter ON or OFF.
- 2). Selecting the Lux scale : Set the range selection switch to desired Lux or Fc range. (1Fc=10.76Lux)
- 3). Remove the photo detector cap and face it to light source in a horizontal position.
- 4). Read the illuminance nominal from the LCD display.
- 5). Over range : If the instrument only display “ OL ” the input signal is too strong, and a higher range should be selected.
- 6). If 20000 range then real value is LCD value \times 10.

6.SPECTRAL SENSITIVITY CHARACTERISTIC

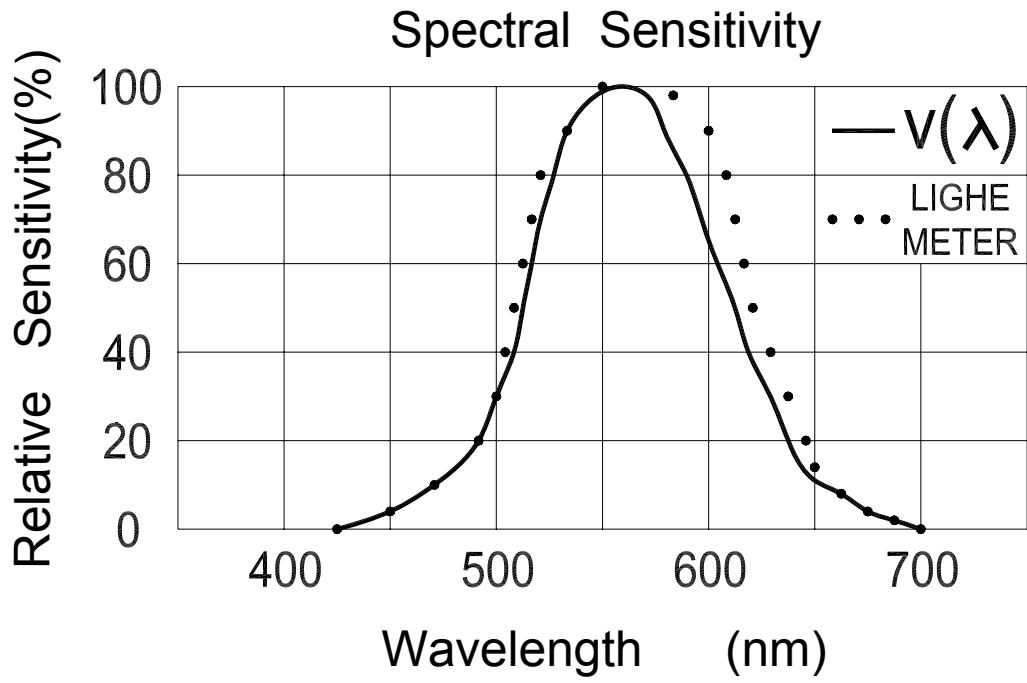


Figure-2

7.RECOMMENDED ILLUMINATION

You may easily obtain the desired illuminance nominal about footcandle from the product of the recommended lux, offered below in the field, divided with the factor 10.76.

LOCATIONS	Lux	
● OFFICE		
Conference, Reception room.	200	~ 750
Clerical work	700	~ 1,500
Typing drafting	1000	~ 2,000
● FACTORY		
Visual work at production line	300	~ 750
Inspection work	750	~ 1,500
Electronic parts assembly line	1500	~ 3,000
Packing work, Entrance passage	150	~ 300

- HOTEL

Public room, Cloakroom	100	~	200
Reception	200	~	500
Cashier	750	~	1000

- STORE

Indoors Stairs Corridor	150	~	200
Show window, Packing table	750	~	1,500
Forefront of show window	1500	~	3,000

- HOSPITAL

Sickroom, Warehouse	100	~	200
Medical Examination room	300	~	750
Operating room			
Emergency Treatmet	750	~	1,500

- SCHOOL

Auditorium, Indoor Gymnasium	100	~	300
Class room	200	~	750
Laboratory, Library, Drafting, room	500	~	1,500

8.HARDWARE SETUP

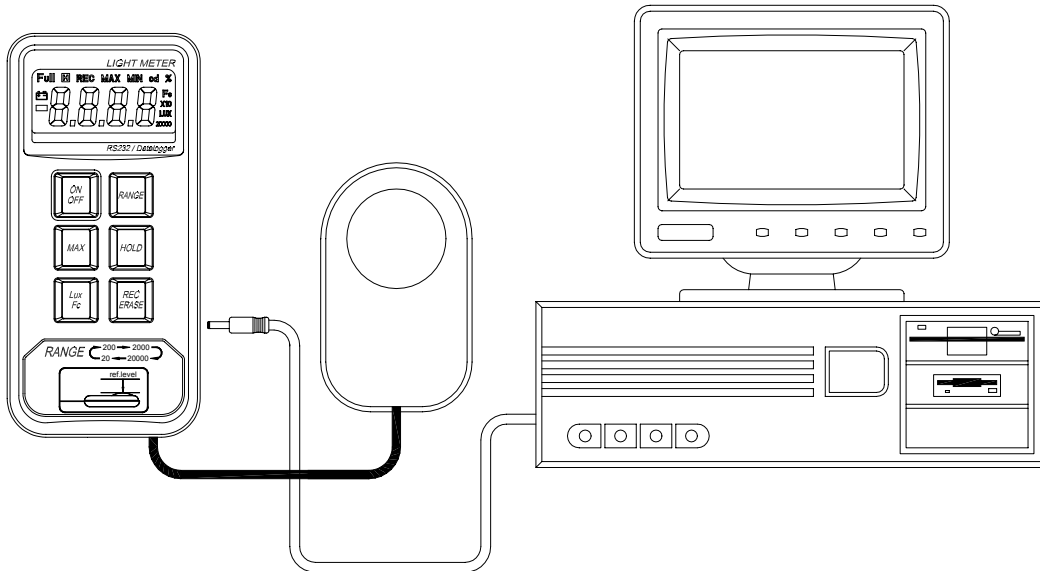


Figure-3

✧ **Connect the METER to a PC**

Referring to Figure-3, connect the RS-232 plug connector to the METER, and connect the 9 pins female connector to the 9 pins COM1 of PC. If COM1 is used by mouse(usually), then connect 25 pins female connector to the 25 pins COM2 of PC (Of course, you need a 9 pins to 25 pins adapter).

Most note-book computer has only one RS-232 port, COM1. But it always comes with a system mouse. So you can use 9 pins COM1 for communication.

For desktop computer, there are two RS-232 ports, COM1, and COM2. Most of the time, COM1 is used for mouse. So you have to use COM2(25 pins).

9.SOFTWARE

(1) Software and Hardware

- 386 IBM compatible personal computer or better.
- One 3.5" high density disk driver.
- Two serial ports(one for mouse, the other for LIGHTMETER).
- 4M bytes of memory or better.
- Hard disk with at least 4M Bytes available storage space.
- EGA or VGA monitor.
- Windows 95 or higher version.
- 3-button or 2-button Microsoft compatible mouse. 486 personal computer is recommended for displaying all the windows on the screen at a fast sampling interval such as 1 second. If 386/25 PC is used, you can only open one of the LIST or GRAPHIC DISPLAY at 1 second sampling interval.

(2) Installation of the Windows Application Program

When you setup LIGHTMETER software , it will copy files necessary to your hard disk automatically. (You'd better make your windows system with 600×480)

— install LIGHTMETER software to hard disk

- a). Start Microsoft Windows
- b). Close all application.
- c). Insert disk in drive A(or B).
- d). From the Program Manager, select File menu and choose Run.
- e). Type a:\ setup(or b:\ setup) and press Enter key.

— Start LIGHTMETER program:

- a). Start Windows
- b). Use mouse or keyboard to start LIGHTMETER

— Use mouse to start LIGHTMETER :

- a). Move mouse to LIGHTMETER program group and choose LIGHTMETER ◦
- b). Double click left button of mouse ◦

- Use keyboard to start LIGHTMETER:
 - a). Hold Ctrl and press TAB to choose LIGHTMETER group and choose LIGHTMETER program ◦
 - b). Press Enter ◦

(3) Software Communication

- a). Please check the connection between meter and computer. If there is no connection, screen will show "No COM" on the left bottom corner .
- b). No matter there is connection between meter and computer or not , under normal circumstance that the Panel will still show up.
- c). When you turn meter power off, the connection will be off.

10.METER WINDOWS

— Control Panel

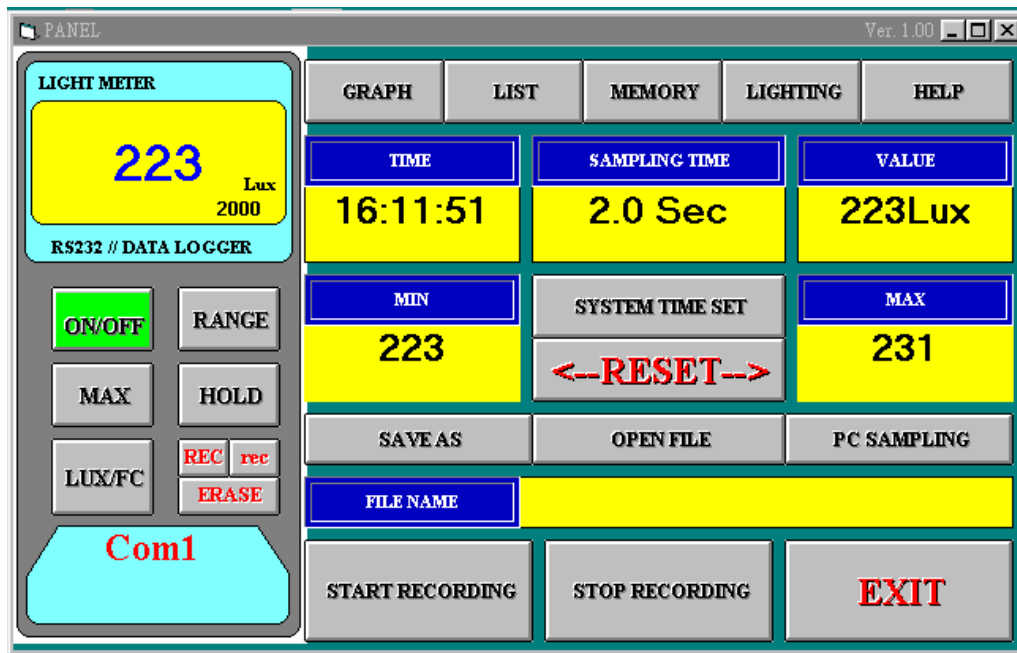


Figure-4

Time : Current time of computer

Value : Current value of meter

PC Sampling : Time interval of graph and list

Min : The minimum value ever recorded.

Reset : Clear minimum and maximum value recorded.

Max : The maximum value ever recorded.

Save as : Click here to open a file to record data.

Open file : Open file to read data.

File name : When you open a file to record data, filename will display here.

Start recording : After opening a file, click it to start recording.

Stop recording : Stop recording and close the file.

menu function

Display

— Graph

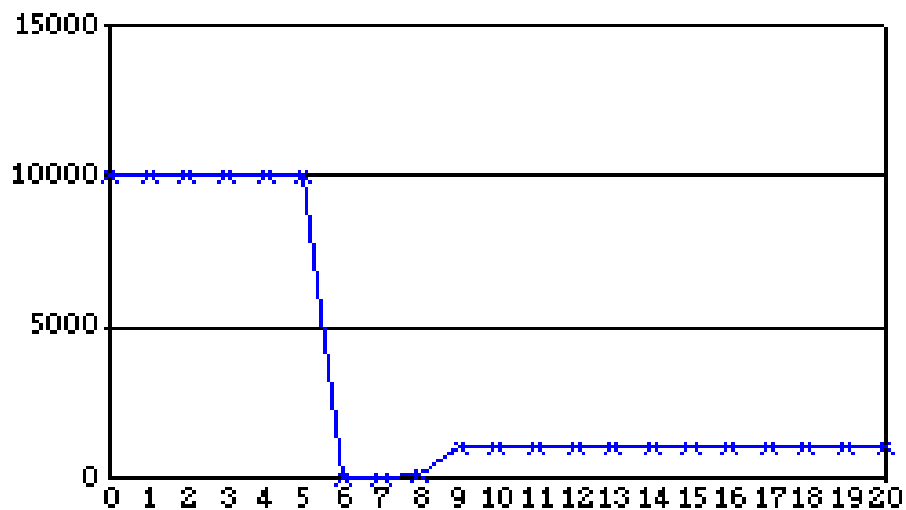
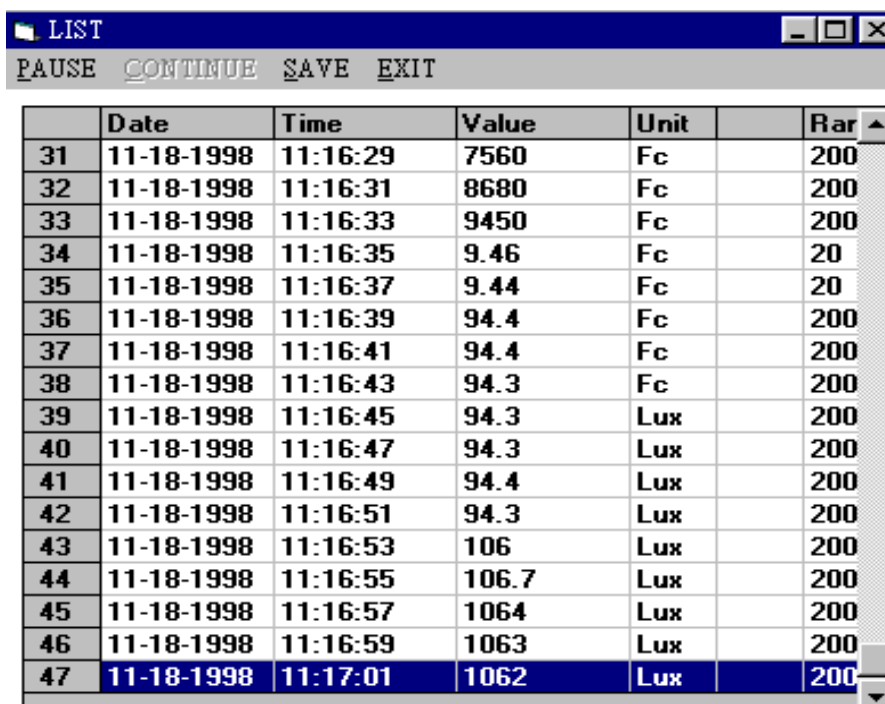


Figure-5

— List



	Date	Time	Value	Unit	Bar
31	11-18-1998	11:16:29	7560	Fc	200
32	11-18-1998	11:16:31	8680	Fc	200
33	11-18-1998	11:16:33	9450	Fc	200
34	11-18-1998	11:16:35	9.46	Fc	20
35	11-18-1998	11:16:37	9.44	Fc	20
36	11-18-1998	11:16:39	94.4	Fc	200
37	11-18-1998	11:16:41	94.4	Fc	200
38	11-18-1998	11:16:43	94.3	Fc	200
39	11-18-1998	11:16:45	94.3	Lux	200
40	11-18-1998	11:16:47	94.3	Lux	200
41	11-18-1998	11:16:49	94.4	Lux	200
42	11-18-1998	11:16:51	94.3	Lux	200
43	11-18-1998	11:16:53	106	Lux	200
44	11-18-1998	11:16:55	106.7	Lux	200
45	11-18-1998	11:16:57	1064	Lux	200
46	11-18-1998	11:16:59	1063	Lux	200
47	11-18-1998	11:17:01	1062	Lux	200

Figure-6

Menu command

- Pause - pause the list data
- Continue - continue to list data
- Save - save list data to file
- Exit -Exit current window

11.DATA DOWNLOAD

❑ Memory

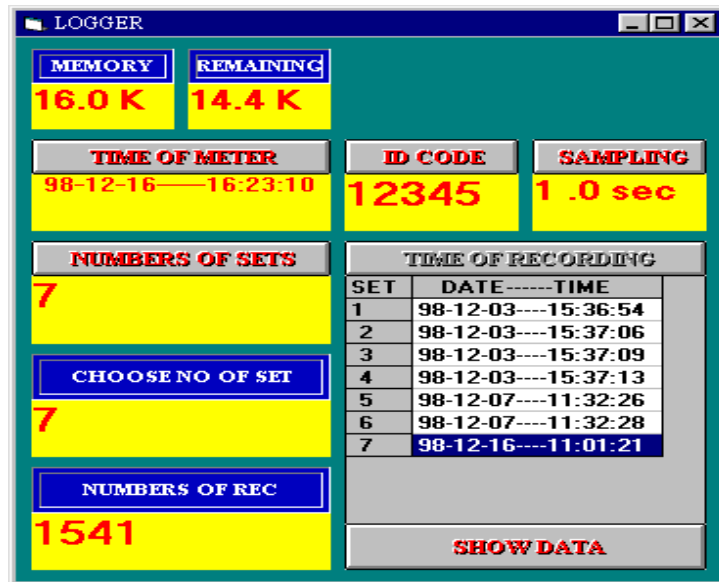


Figure-7

✧ In this sample figure, there are 7 sets recorded in memory, the NO.

7 set got 1541 records.

If you want to change ID CODE or Sampling Time, use mouse to drag, then enter or change the figures, click the button ID CODE.

Memory size: 16K

Load memory: When you want to load data from the memory of the meter you recorded previously, follow these steps.

Step1: connect your meter to PC and turn on the power, and click MEMORY.

Step2: click the button named “ NUMBERS OF SETS ”, then will show the amount of sets (TIMES) you recorded.

Step3:use mouse to click the button named “ TIME OF RECORDING ” then will show the time of each set you recorded.

Step4:Fill in the blank to choose the No. of set and then will show you how many records in this set.

Step5:For more details, click the button named “ SHOW DATA ”.

12.MEASUREMENT OF LUMINOUS INTENSITY (cd MODE)

Lighting

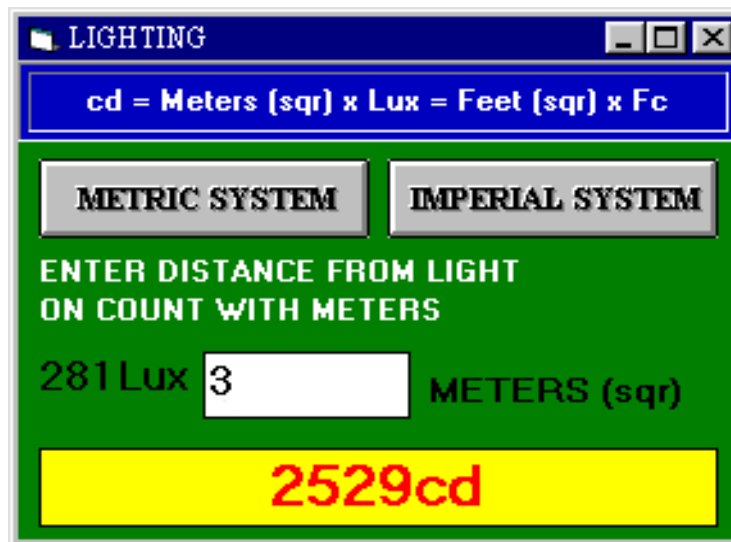


Figure-8

✧ To calculate lighting with “ cd ” unit, choose the button of which system you are now using then it will automatically calculate the “ cd ” values.

