ENGLISH

User manual

Release EN 1.04 - 11/05/2011

CONTENTS:

1. SAFETY PRECAUTIONS AND PROCEDURES

For your own safety and to avoid damaging the instrument follow the procedures described in this instruction manual and read carefully all notes preceded by this symbol ⚠.

Do not use the meter in presence of explosive gas (material), combustible gas (material), steam or dust.

The followings symbols are used:

Caution: refer to the instruction manual. An incorrect use may damage the luxmeter or its components.

1.1. PRELIMINARY

- Before turning on the instrument make sure that the battery is correctly installed. Replace the battery as soon as the low battery indication ("🔋") is displayed.
- Don't touch the photodiode sensor during measurements to prevent any damage due to contamination or static electricity.

1.2. DURING USE

Always keep to the instructions contained in this manual.

CAUTION
An improper use may damage the instrument and/or its components or injure the operator.

- If the reading value or the sign indication remains unchanged during the measurement, check if the DATA HOLD function is active.

1.3. AFTER USE

- After using the instrument turn it off.
- If you expect not to use the instrument for a long period remove the battery to avoid leakages of battery liquids which may damage its inner components.

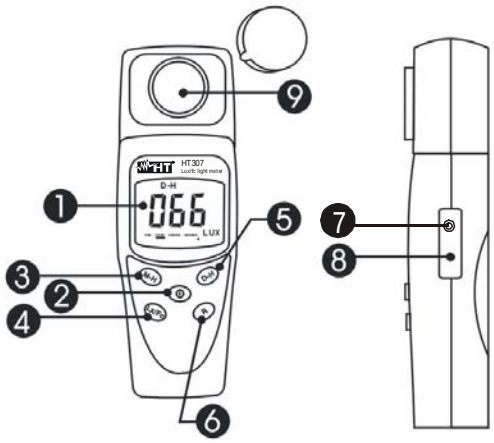
2. GENERAL DESCRIPTION

HT307 is a precision digital illuminance meter for light measurements (lux, ft), complying with the CIE (International Commission on Illumination) spectral response.
It's fully cosine corrected for the angular incidence of light. Compact, tough and easy to handle.
The photo detector is a very stable long-life silicon photodiode with spectral response filter.

2.1. FEATURES

- Light measuring levels up to 200.000 lux / 20.000 fc.
- High accuracy and rapid response.
- DATA HOLD function to hold measuring values.
- Unit and sign display for easy reading.
- Manual zeroing with trimmer.
- Corrected for spectral relative efficiency.
- Possibility to select the measuring mode in lux or fc scale, alternatively.
- Maximum and minimum values.
- DC analogic output for connection to external datalogger.
- Low battery indication.

2.2. INSTRUMENT DESCRIPTION



LEGEND:

1. LCD display with a maximum reading of 2000 points. Signs of measured values, unit function symbols and decimal points are displayed.
2. Power key: press it to turn ON or OFF the meter.
3. **M/H** key: press it to select the maximum, minimum or current reading. Press for more than 1 second to resume normal measurement.
4. **Lx/Fc** key: press it to express values in fc scale instead of lux (1 fc=10.76 lux).
5. **D-H** key: press it to hold displayed data. Press again to resume normal measurement.
6. **R** selection key: press it to select 20 lux, 200 lux, 2000 lux, 20 Klux, 200 klux, / 20 fc, 200 fc, 2000 fc, 20 Kfc. Overall, 5 ranges for lux and 4 ranges for fc. Upon pressure, a mobile cursor selects the desired full scale.
7. Output for analogic DC. Refer to Table 1 below to get the equivalence Lux/fc and mV values.
8. ADJ Trimmer for manual zeroing regulation.
9. Photo detector.

Fig. 1: Instrument description.

Range	DC output
20 Lux/fc	1 Lux/fc = 10 mV
200 Lux/fc	1 Lux/fc = 1 mV
2000 Lux/fc	1 Lux/fc = 0.1 mV
20 kLux/fc	1 Lux/fc = 0.01 mV
200 kLux	1 Lux = 0.001 mV

Plug for DC analogic output

Table 1: signal equivalence values between Lux/fc and mV.

3. PREPARATION FOR USE

3.1. INITIAL

This instrument was checked both mechanically and electrically prior to shipment. All possible cares and precautions were taken to let you receive the instrument in perfect conditions. Notwithstanding we suggest you to check it rapidly (eventual damages may have occurred during transport – if so please contact the local distributor from whom you bought the item).
Make sure that all standard accessories mentioned in paragraph 6.3.1 are included. Should you have to return back the instrument for any reason please follow the instructions mentioned in paragraph 7.

3.2. POWER SUPPLY

The instrument is powered by 1 battery 9V 6LR61, included in the package. Battery life: about 200 hours (carbon zinc.).
When the battery is low, the symbol "🔋" appears on the display. Replace it immediately, following the instructions given in paragraph 5.2.

3.3. CALIBRATION

The instrument complies with the technical specifications contained in this manual and such compliance is guaranteed for 1 year.
The calibration interval for the photo detector varies according to the operating conditions, but generally the sensitivity decreases in direct proportion to the product of luminous intensity and operating time. In order to maintain the basic accuracy of the instrument, a periodic recalibration is recommended.

3.4. STORAGE

After a period of storage in extreme environmental conditions exceeding the limits mentioned in paragraph 6.2.1 let the instrument resume normal measuring conditions before using it.

4. OPERATING INSTRUCTIONS

4.1. MEASUREMENT DESCRIPTION

1. Press the power key "⊙" to turn on the meter.
2. Press the "Lx/fc" key to select lux or fc measurement.
3. Remove the protection cap of the photo detector and expose it to the light source in horizontal position. Read the illuminance nominal value on the LCD display.
4. Wait for values to be stable on the display. Press "D-H" key to activate the DATA HOLD function blocking the result on the display.

CAUTION

If the instrument displays "OL", the input signal is too strong. A higher range must be selected.

5. When the measurement is completed, fit the photo detector cap and check that the indication value should be "**000**" regardless of the range. If no, adjust the "ADJ" trimmer on "000" before pressing the power key to turn off the meter.

5. PREVENTIVE MAINTENANCE

5.1. GENERAL INFORMATION

This is a precision instrument. To guarantee its performances be sure to use it according to these instructions and keep it stored on suitable environmental conditions Do not expose it to high temperatures or humidity. Be sure to turn it off after use. If you expect not to use the instrument for a long period remove batteries to avoid leakages of battery liquid which could damage the its inner components.

5.2. BATTERY REPLACEMENT

When the low battery indication "🔋" is displayed, replace the battery.

1. Switch off the instrument
2. Press the battery cover and push in the direction of the arrow to open
3. Replace the battery with a new one of the same type (9V 6LR61)
4. Replace the battery cover
5. Use an environmentally safe disposal unit at a municipal waste disposal centre to dispose of a damaged or worn out batteries

5.3. CLEANING

To clean the instrument use a soft dry cloth. Never use a wet cloth, solvents or water, etc.
The white plastic lens of the detector should be cleaned with a damp cloth when necessary.

5.4. END OF LIFE

Caution: this symbol indicates that equipment, the battery and its accessories shall be subject to a separate collection and correct disposal.

6. TECHNICAL SPECIFICATIONS

6.1. CHARACTERISTICS

Accuracy is referred to the following reference conditions: 23°C ± 5°C with RH < 70%.
The luxmeter is calibrated with a standard incandescent lamp at color temperature 2856°K.

Measuring range and accuracy

Range in lux	20	200	2000	20k	200k
Resolution	0.01	0.1	1	10	100
Accuracy	± (3% rdg)				

Range in fc	20	200	2000	20k
Resolution	0.01	0.1	1	10
Accuracy	± (3% rdg)			

NOTE: 1fc=10.76Lux, 1Klux=1000Lux, 1Kfc=1000fc
for temperature/color different from the reference, accuracy is 6% rdg

Accuracy on angular deviation from cosine characteristic	
30°	± 2%
60°	± 6%
80°	± 25%

6.1.1. Spectral sensitivity

The photodiode with filters makes the spectral sensitivity meet the CIE photo-optic curve V(λ) as shown below.

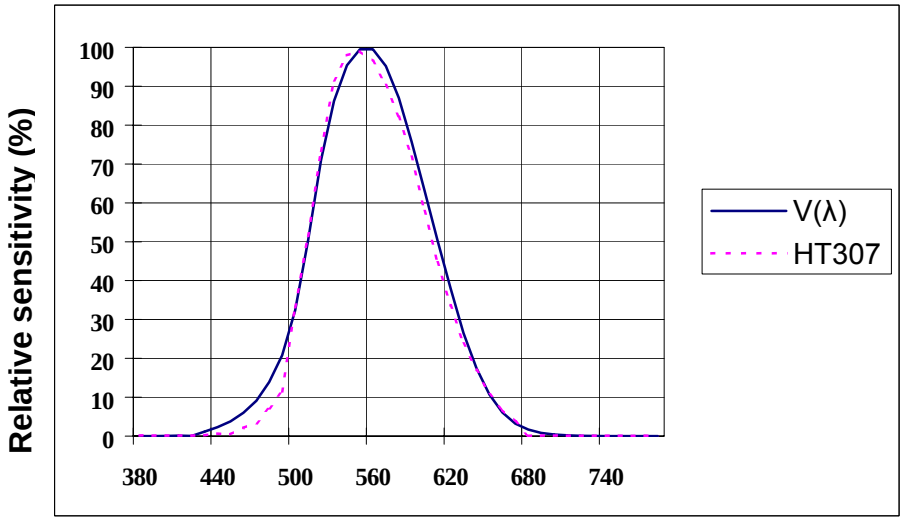


Fig. 2: CIE photo-optic curve V(λ).

6.1.2. Photo detector

The photo detector is a silicon photodiode with spectral response filter.

6.1.3. General data

Mechanical characteristics

Size:	172(L) x 55(W) x 38(H)mm 7(L) x 2(W) x 1(H) inches
Weight (including battery):	about 250g (9 ounces)

Supply

Battery type:	1 battery 9V type 6LR61
Low battery indication:	"🔋" is displayed when the battery is low
Battery life:	about 200 hours (carbon zinc.)

Display

Characteristics:	LCD, 2000 counts with “OL” indication
Sample rate:	2.5 times/sec

Reference standards

Standards:	According to JIS C 1609:1993 and CNS 5119 general A class Specifications ISO3059 DIN 5032

6.2. ENVIRONMENT

6.2.1. Environmental conditions

Reference temperature:	23° ± 5°C (73° ± 41°F)
Operating temperature:	-10° ÷ 50°C (14° ÷ 122°F)
Operating humidity:	<80%RH
Storage temperature:	-10° ÷ 50°C (14° ÷ 122°F)
Storage humidity:	<70%RH
Max height of use:	2000m (6562 ft)

This instrument complies with the requirements of the EMC Directive 2004/108/CE

6.3. ACCESSORIES

6.3.1. Standard accessories

The packaging contains:

- Instrument HT307
- Carrying case
- Connection plug for DC analogic output
- Screwdriver for zero adjustment
- Certificate of test
- Battery
- User manual

7. SERVICE

7.1. WARRANTY CONDITIONS

This instrument is guaranteed against material or production defects, in accordance with our general sales conditions. During the warranty period the manufacturer reserves the right to decide either to repair or replace the product.
Should you need for any reason to return back the instrument for repair or replacement take prior agreements with the local distributor from whom you bought it. Do not forget to enclose a report describing the reasons for returning (detected fault). Use only original packaging. Any damage occurred in transit due to non original packaging will be charged anyhow to the customer.
The manufacturer will not be responsible for any damage to persons or things.

The warranty doesn't apply to:

- Accessories and batteries (not covered by warranty).
- Repairs made necessary by improper use (including adaptation to particular applications not foreseen in the instructions manual) or improper combination with incompatible accessories or equipment.
- Repairs made necessary by improper shipping material causing damages in transit.
- Repairs made necessary by previous attempts for repair carried out by non skilled or unauthorized personnel.
- Instruments for whatever reason modified by the customer himself without explicit authorization of our Technical Dept.

Our products are patented and our logotypes registered. We reserve the right to modify specifications and prices in view of technological improvements or developments which might be necessary.

7.2. SERVICE

Shouldn't the instrument work properly, before contacting your distributor make sure that the battery is correctly installed and working, check the test leads and replace them if necessary. Make sure that your operating procedure corresponds to the one described in this manual.
Should you need for any reason to return back the instrument for repair or replacement take prior agreements with the local distributor from whom you bought it. Do not forget to enclose a report describing the reasons for returning (detected fault). Use only original packaging. Any damage occurred in transit due to non original packaging will be charged anyhow to the customer.
The manufacturer will not be responsible for any damage to persons or things.

8. APPENDIX A: RECOMMENDED ILLUMINATION

Table 2 below shows the recommended illumination for different types of locations expressed in lux (to get values in footcandles divide by 10,76).

LOCATIONS	LUX			LOCATIONS	LUX		
• OFFICE				• STORE			
Conference, reception room	200	~	750	Indoor stairs corridor	150	~	200
Clerical work	700	~	1500	Show window, packing table	750	~	1500
Typing, drafting	1000	~	2000	Forefront of show window	1500	~	3000
• FACTORY				• HOSPITAL			
Visual work at production line	300	~	750	Sickroom, warehouse	100	~	200
Inspection work	750	~	1500	Medical examination room	300	~	750
Electronic parts assembly line	1500	~	3000	Operating room	750	~	1500
Packing work, entrance passage	150	~	300	Emergency treatment	750	~	1500
• HOTEL				• SCHOOL			
Public room, cloakroom	100	~	200	Auditorium, indoor gymnasium	100	~	300
Reception	200	~	500	Class room	200	~	750
Cashier	750	~	1000	Laboratory, library, drafting room	500	~	1500

Table 2: Recommended illumination values.