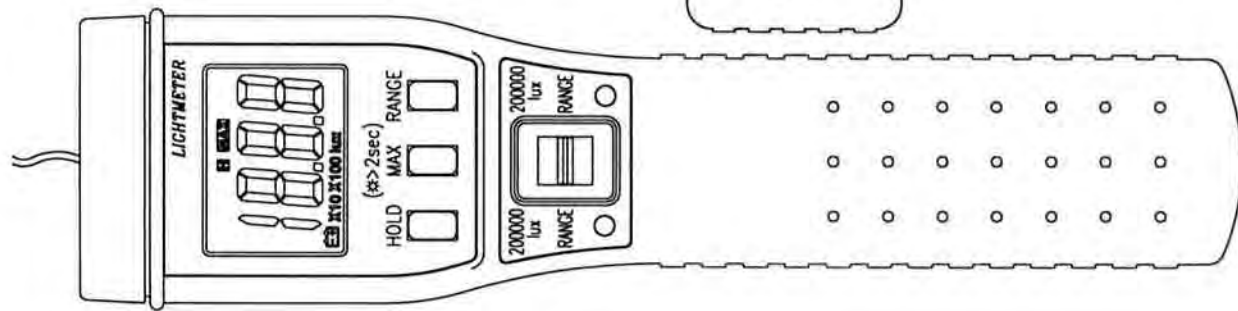


OPERATING INSTRUCTIONS

TECPEL 530

DIGITAL LIGHTMETER



INTRODUCTION

This instrument is a portable easy use 3 1/2 digit, compact-sized digital lightmeter designed for simple one hand operation. The meter provides measurements in Lux units and features backlight LCD display, MAX-HOLD and DATA-HOLD facilities.

SAFETY INFORMATION

It is recommended that you read the safety and operation instructions before using the lightmeter.

WARNING

- To avoid electric shock, do not operate this product in wet or damp conditions.
- To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.
- To avoid eye injury, wear eye protection if there is a possibility of exposure to high-intensity rays.
- Do not immerse in liquids, clean the sensor head using only a damp cloth.
- Cover sensor head when not in use to extend silicon photodiode sensor life.

The Δ symbol on the instrument indicates that the operator must refer to an explanation in this manual.

SPECIFICATIONS

GENERAL

Display:

3 1/2 digit liquid crystal display (LCD) with maximum reading of 999

OPERATION

1. Set the power switch to the desired range (use range button select 20lux, 200lux, 2000lux, 20000lux) or only 200000lux range.
2. Remove the sensor head cover.
3. Hold the sensor head steady and make certain that the light source completely fills the cosine correction dome.
4. Move away from the sensor head to avoid shadowing it. The sensor head has a 1.5 meter cable to allow separation between the observer and the measurement location.
5. Read the illuminance value from the display. If magnitude of lux (or fc) is not known, press RANGE button to the highest range and reduce until a satisfactory reading is obtained.
6. Cover sensor head to extend sensor life.

SPECIAL CONSIDERATIONS

- Keep the plastic domed cosine corrector clean and free of scratches. It may be cleaned with a soft cloth and isopropyl alcohol.
- When light is received from many directions simultaneously, take special care to avoid reflections or shadowing the sensor with your body.
- For best accuracy, repeat the measurement several times to ensure that the light source has remained stable.
- Avoid flexing the cable excessively at either end of the cable.

Overrange: (OL) is displayed
 Low battery indication: the "E" is displayed when the battery voltage drops below the operating level
 Measurement rate: 2.5 times per second, nominal.
 Operating Environment: 0°C to 50°C at < 70% relative humidity

Storage Temperature: -20°C to 60°C, 0 to 80% R.H. with battery removed from meter
 Accuracy: Stated accuracy at 23°C ± 5°C, < 70% relative humidity

Analog Output: 0.1mV/counts
 Battery: 4 pcs 1.5V (AAA size) UM-4 R03
 Battery Life: 200 hours typical with carbon zinc battery
 Dimensions: 170mm(H) x 44mm(W) x 40mm(D)
 Weight: 220g including batteries

ELECTRICAL

Photometric Formulas:

10.764-footcandles = lux (lumens/meter²)
 0.0929-lux = footcandles(lumens/foot²)
 Range: 20lux, 200lux, 2000lux, 20000lux, 200000lux
 Resolution: 0.01lux
 Spectral response: CIE photopic

The CIE photopic curve is an international standard for the color response of the average human eye
 Acceptance angle: $f_s < 2^\circ$ cosine corrected (150°)
 Total accuracy for CIE standard illuminant A (2856K): ±(3% rdg + 10dpts)

CIE standard illuminant A can be realised by means of CIE standard source A, which is defined as: A gas-filled tungsten-filament lamp operating at a correlated colour temperature of 2856K

Temperature Coefficient: 0.1% (specified accuracy)/°C (<18°C or >28°C)

OPERATING INSTRUCTIONS

Push buttons

Back-Light (☼ > 2sec) and **MAX-HOLD Switch**: Press this button to toggle in and out of the MAX-HOLD mode. The "MAX" annunciator is displayed.

Press this button for two seconds to turn the Back-Light on. As this also activates the MAX-HOLD mode, briefly press the button to return to normal display. To turn the Back-Light off press again for two seconds.

Range Select Button

Press "RANGE" button to select the desired lux range. Each time you press "RANGE" button, the range (and the input range annunciator) increments, and a new value is displayed.

HOLD (DATA-HOLD) Button

Press "HOLD" button to toggle in and out of the DATA-HOLD mode. In the DATA-HOLD mode, the "H" annunciator is displayed and the last reading is held on the display.

The Inverse-square Law

The law stating that the illuminance E at a point on a surface varies directly with the intensity I of a point source, and inversely as the square of the distance d between the source and the point. If the surface at the point is normal to the direction of the incident light, the law is expressed by $E = I/d^2$.

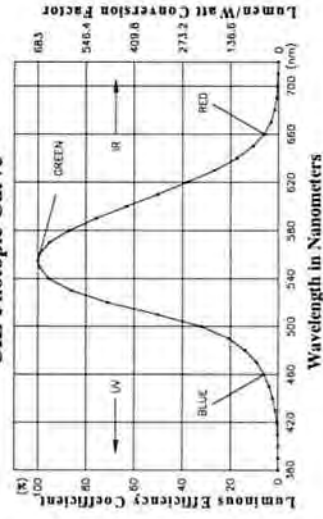
Cosine Law

The law that the illuminance on any surface varies as the cosine of the angle of incidence. The angle of incidence θ is the angle between the normal to the surface and the direction of the incident light. The inverse-square law and the cosine law can be combined as $E = (I \cos \theta) / d^2$.

Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.

CIE Photopic Curve



Wavelength (nm)	V λ CIE Photopic Luminous Efficiency Coefficient	Photopic Lumen/Watt Conversion Factor
380	0.0000	0.05
390	0.0001	0.13
400	0.0004	0.27
410	0.0012	0.82
420	0.0040	2.73
430	0.0116	7.81
440	0.0230	15.7
450	0.0380	25.9
460	0.0600	40.9
470	0.0910	62.1
480	0.1390	94.8
490	0.2080	142.0
500	0.3230	220.0
510	0.5030	343.0
520	0.7100	484.0
530	0.8620	588.0
540	0.9540	650.0
550	0.9850	679.0
555	1.0000	683.0
560	0.9950	679.0
570	0.9520	649.0
580	0.8700	593.0
590	0.7570	516.0
600	0.6310	430.0
610	0.5030	343.0
620	0.3810	260.0
630	0.2850	181.0
640	0.1750	119.0
650	0.1070	73.0
660	0.0610	41.4
670	0.0320	21.8
680	0.0170	11.6
690	0.0082	5.59
700	0.0041	2.78
710	0.0021	1.43
720	0.0010	0.718
730	0.0005	0.355
740	0.0003	0.170
750	0.0001	0.082
760	0.0001	0.041

GENERAL OFFICE		UNIT(LUX)
ENVIRONMENT		
design room, general office		2000-1500
lobby, store, typing		1500-750
meeting room, telephone switchboard room, printer room, entertainment, restaurant		750-300
dancing house, security room, hall, rest-room		300-150
tea room, warehouse		150-75
outdoor stair		75-30

FACTORY		UNIT(LUX)
ENVIRONMENT		
precision working, design		3000-1500
research & development department		1500-750
packing, measurement, hall, rest-room		750-300
dye, passway, hall, rest-room		150-75
warehouse		75-30

HOSPITAL		UNIT(LUX)
ENVIRONMENT		
Vision examination		10000-5000
operating room		1500-750
clinic room, drug room, nursing room		750-300
waiting room		300-150
x-ray room		150-75
elevator		75-30

SCHOOL		UNIT(LUX)
ENVIRONMENT		
computer room		1500-300
classroom, laboratory, workshop, office, library, meeting room, indoor stadium		750-200
hall, stair, rest-room, outdoor stadium		300-150
warehouse, garage, safety door		75-30

HOUSE		UNIT(LUX)
ENVIRONMENT		
sawing		2000-750
writing		1000-500
study desk, make-up desk, island, phone station		750-300
laundry room, entertainment, living room, entrance		300-150
closet, bedroom, stair, hall		150-70
balcony, porch		70-30

HOTEL		UNIT(LUX)
ENVIRONMENT		
check-in, check-out desk		1500-750
lobby, office, parking, kitchen		750-300
restaurant, rest-room		300-150
hall, escalator, stair, shower, garden		150-75
elevator		75-30