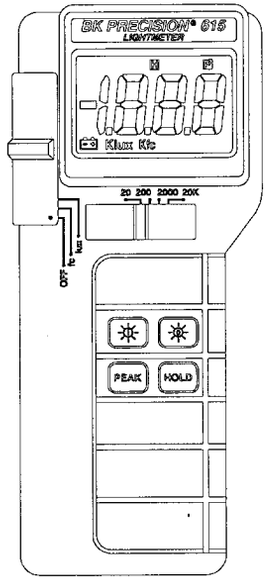
OPERATING INSTRUCTIONS

BK PRECISION® 615 CE

DIGITAL LIGHTMETER



INTRODUCTION

This instrument is a portable easy to use 3½ digit, compact digital lightmeter designed for simple one hand operation. It provides measurements in lux and fc units. The meter has a Backlit LCD display, PEAK-HOLD (50mS pulse light) and DATA-HOLD features.

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

SPECIFICATIONS

GENERAL

Display: 3½ digit liquid crystal display (LCD) with maximum reading of 1999.
Overrange: (OL) is displayed.
Low battery indication: The "⊟" 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 (32°F to 122°F) at < 70% relative humidity.
Storage Temperature: -20°C to 60°C (-4°F to 140°F) , 0 to 80% R.H. with battery removed from meter.
Accuracy: Stated accuracy at 23°C ± 5°C (73°F ± 9°F), <70% relative humidity.
Battery: Standard 9V battery (NEDA 1604, IEC 6F22 006P).
Battery Life: 200 hours typical with carbon zinc battery.
Dimensions(HxWxD): 7.5"x2.58"x1.38"(190x65.5x35mm)
Weight: 7.4oz (210g) including battery.

ELECTRICAL

Photometric Formulas:
10.764·footcandles=lux (lumens/meter²)
0.0929·lux=footcandles(lumens/foot²)
Range: 20lux, 200lux, 2000lux, 20klux
20fc, 200fc, 2000fc, 20kfc
Resolution: 0.01lux,0.01fc
Spectral response: CIE photopic

The CIE photopic curve is an international standard for the color response of the average human eye

Acceptance angle: $f'_2 < 3\%$ cosine corrected (150°)
Total accuracy for CIE standard illuminant A (2856K): ±(3%rdg + 10dgts)

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: 0.1x (specified accuracy)/°C (<18°C or >28°C), 0.056x(specified accuracy)/°F (<64.4°F or >82.4°F)
Peak Hold response time: >50mS pulse light.

OPERATING INSTRUCTIONS

Push buttons

Peak-Hold Switch :

Press "PEAK" button to toggle in and out of the PEAK-HOLD mode. The "P" annunciator are displayed. (Response Time: >50mS).

Display Back-Light Button:

Pressing "☼" button to turn on the Back-Light.
Pressing "☼" button to turn off the Back-Light.

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.

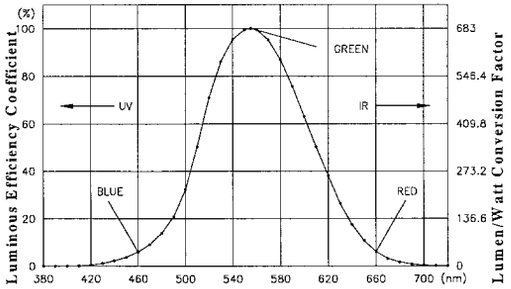
OPERATION

1. Set the function switch to the desired lux or fc units.
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, set RANGE switch 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.
- **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 low and the cosine law can be combined as $E=(I \cos \theta)/d^2$.

CIE Photopic Curve



Wavelength (nm)	Vλ CIE Photopic Luminous Effciency 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	7.91
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	0.9950	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	0.2650	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	0.716
730	0.0005	0.355
740	0.0003	0.170
750	0.0001	0.820
760	0.0001	0.041

OPERATOR MAINTENANCE

Battery Replacement

Power is supplied by a 9 volt "transistor" battery. (NEDA 1604, IEC 6F22). The "⊡" appears on the LCD display when replacement is needed. To replace the battery, remove the two screws from the back of the meter and lift off the battery cover. Remove the battery from battery contacts.

Cleaning

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

LIMITED ONE YEAR WARRANTY

BK PRECISION warrants to the original purchaser that its product, and the component parts thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

BK PRECISION will, without charge, repair or replace, at its option, defective product or component parts upon delivery to an authorized ***BK PRECISION*** service contractor or to the factory service department, accompanied by proof of the purchase date in the form of a sales receipt.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. It is void if the serial number is altered , defaced or removed.

BK PRECISION shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.
This warranty gives you specific rights and you may have other rights which vary from state-to-state.

For your convenience, we suggest you contact your ***BK PRECISION*** distributor, who may be authorized to make repairs or can refer you to the nearest service contractor.

If warranty cannot be obtained locally, please send the unit to ***BK PRECISION*** Service Department, 1031 Segovia Circle Placentia, CA 92870, properly packaged to avoid damage in shipment.

BK PRECISION Test Instruments only warrants products sold in the U.S.A. and its overseas territories. In other countries each distributor warrants the ***BK PRECISION*** products which it sells.

CUSTOMER SUPPORT 1-800-462-9832

Precision offers courteous, professional technical support before and after the sale of their test instruments. The following services are typical of those available from our toll-free telephone number:

- Technical advice on the use of your instrument.
- Technical advice on special applications of your instrument.
- Technical advice on selecting the best instrument for a given task.
- Instrument for information on optional accessories for your instrument.
- Information on instrument repair and recalibration services.
- Replacement parts ordering.
- Information on other ***BK PRECISION*** instruments.
- Requests for a new ***BK PRECISION*** catalog.
- The name of your nearest ***BK PRECISION*** distributor.

Call toll-free 1-800-462-9832
Monday through Friday, 8:00 A.M. to 5:00 P.M.
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