PeakTech®

Prüf- und Messtechnik

Spitzentechnologie, die überzeugt

PeakTech® **5035**

**Bedienungsanleitung /
Operation manual**

**4 in 1 Multifunktions-
Umweltmessgerät /**

**4 in 1 Multi-Function-Environment
Meter**

Safety precautions

This product complies with the requirements of the following European Community Directives: 2004/108/EC (Electromagnetic Compatibility) amended by 2004/22/EC (CE-Marking). Pollution degree 2.

To ensure safe operation of the equipment and eliminate the danger of serious injury due to short-circuits (arcing), the following safety precautions must be observed.

Damages resulting from failure to observe these safety precautions are exempt from any legal claims whatever.

* Do not operate the meter before the cabinet has been closed and screwed safely.
* Check test leads and probes for faulty insulation or bare wires before connection to the equipment.
* Comply with the warning labels and other info on the equipment.
* Keep the equipment dry.
* CAUTION! Repeated sharp flexing can break the thermocouple leads. To prolong lead life, avoid sharp bends in the leads, especially near the connector.
* Always start with the highest measuring range when measuring unknown values.
* Do not subject the equipment to direct sunlight or extreme temperatures, humidity or dampness.
* Do not subject the equipment to shocks or strong vibrations.
* Do not operate the equipment near strong magnetic fields (motors, transformers etc.).
* Keep hot soldering irons or guns away from the equipment.
* To avoid electrical shock, do not use this instrument when voltages at the measurement surface exceed 24V AC or DC.
* To avoid damage or burns, do not make temperature measurement in microwaves ovens.
* Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurements).
* The measurement instrument is not to be to operated unattended.

* Replace the battery as soon as the battery indicator "BAT" appears. With a low battery, the meter might produce false reading that can lead to personal injury.
* Fetch out the battery when the meter will not be used for long period.
* Periodically wipe the cabinet with a damp cloth and mid detergent. Do not use abrasives or solvents.
* The meter is suitable for indoor use only
* Do not store the meter in a place of explosive, inflammable substances.
* Do not place the equipment face-down on any table or work bench to prevent damaging the controls at the front
* Do not modify the equipment in any way
* Opening the equipment and service – and repair work must only be performed by qualified service personnel
* **Measuring instruments don't belong to children hands**.

Cleaning the cabinet

Clean only with a damp, soft cloth and a commercially available mild household cleaner. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.

1. Introduction

The 4 in 1 digital Multi-Function Environment Meter has been designed to combine the functions of Sound Level Meter, Light Meter, Humidity Meter and Temperature Meter. It is an ideal Multi-Function Environment Meter Instrument with scores of practical applications for professional and home use.

The Sound Level function can be used to measure noise in factories, schools, offices, airports, home, etc., checking acoustics of studios, auditoriums and hi-fi installations.

The Light functions is used to measure illumination in buildings or in the field. It is fully cosine corrected for the angular incidence of light.

The light sensitive component used in the meter is a very stable, long life silicon diode.

The Humidity/Temperature is for use a humidity/semiconductor sensor and K type thermocouple. This operations manual contains general information and specification.

2. Features

*   3 ½ digit 17 mm LCD display
*   automatic overrange indication with "1" displayed
*   Hold-Function
*   Max-Hold-Function
*   Auto-Power OFF
*   tripot Holder
*   Sound-Level Meter
*   Lux-Meter
*   Humidity Meter
*   Temperature Meter

Sound Level

Measurement range:	A/C Lo 35...100 dB
	A/C Hi 65...130 dB
Resolution:	0,1 dB
Typical instrument frequency range:	30 Hz-10 kHz
Frequency Weighting:	A + C-weighting
Time Weighting:	Fast
Accuracy:	± 3,5 dB at 94 dB sound level, 1 kHz sine wave.
Microphone:	Electric condenser microphone

Light:

Measurement range: 20...20000 Lux
(20000 Luxrange = reading x 10)

Overrate Display: Highest digit of „1" is displayed

Accuracy: ± 5% rdg.   + 10 digit (Calibrated to standard incandescent lamp at colour temperature 2856 k)

Repeatability: ± 2 %

Temperature-
Characteristics: ± 0,1 % / °C

Photo-detector: One silicon photo diode with filter

Humidity:

Measurement range: 25 %..95 % RH

Resolution 0,1 % RH

Accuracy: ± 5% (at 25°,35...95% RH)

Input Protection: 60 V DC or 24 V AC$_{rms}$

Temperature:

Measurement range: -20..+200 °C , +200..+750 °C
-4…+200 °F, +200…+1400 °F

Resolution: 0,1, 1°C

Accuracy: ± 3% rdg. ± 2°C
(-20...+200°C/-4…+200 °F)
± 3,5% ± 2°C
(-20...+750°C/+200…+1400 °F)

Input Protection: 60 V DC or 24 V AC$_{rms}$

4. General Characteristics

Display	17 mm LCD display, 1999 counts (3 ½ digits) with automatic polarity indication and with annunciators Lux, x10Lux, °C, °F, %RH, dB, A + dB, C + dB, Lo + dB, Hi + dB, MAX HOLD, DATA HOLD
Overrange indication	"1" Figure only in the display
Common mode voltage	600 V max.
Reading rate time	2-3 readings per sec. (approx.)
Temperature for guaranteed accuracy	23° C ± 5° C
Operating Temperature	0° C...40° C, 32° F....104° F
Storage Temperature	-10° C...60° C, 14° F...140° F < 80 % RH
Power Supply	One 9 Volt battery (NEDA 1604, 6F22 Type or equivalent)
Low Battery Indication	"BAT" on the display
Size (WxHxD)	63,8 x 251 x 40 mm
Photo Detector Dimensions (WxHxD)	115 x 60 x 27 mm
Weight	250 g
Accessories	humidity probe, lightsensor, carrying case, battery, Operation Manual, temperature probe

5. Operation

5.1 Preliminary Note

1. Check the 9 V battery by turning to any position. If the battery is weak, a "BAT" sign will appear on the left of display. If this does not appear on the display proceed as below. See "Maintenance" if the battery has to be replaced.

2. The function switch should be set to the range which you want to test before operation

1. LCD-display
2. ON-OFF-Button
3. Select-button for manual range selection
4. MAX-HOLD-Button
5. HOLD-Button
6. Function Switch
7. Microphone
8. Light sensor
9. Humidity sensor
10. K-Type thermocouple socket

5.2. Measuring Sound Level

1. Turn the Power/function/Range switch to „dB" Position.

2. Face the microphone to sound source in a horizontal position.

3. Press Select Button: Selects A/C dB, Lo/Hi dB

4. The C-weighting curve is nearly uniform over the frequency range from 30 to 10.000 Hz, thus giving an indication of overall Sound Level.

5. The A-weighting is based on the human hearing and filters the frequencies which normally can´t be heard by a person. It is best suitable for measurements in buildings like in the workplace.

6. The fast response is suitable to measure shout bursts and peak values from sound source.

7. The sound level will be displayed.

8. Note: Strong wind (over 10m/sec.) striking the microphone can cause misreading for measurement in windy locations, a wind-screen should be used in front of microphone.

Table of sound level with the corresponding sound pressure and the acoustic intensity per unit area			
Example	Sound pressure level (dBSPL)	Sound pressure in N/m^2 = Pa	Acoustic intensity per unit area in Watt/m^2
Jet in a distance of 30m	140	200	100
Threshold of pain	130	63,2	10
Threshold of indisposition	120	20	1
Chain power saw in a distance of 1m	110	6,3	0,1
Disco: in a distance of 1m from the speaker	100	2	0,01
Diesel engine in a distance of 10m	90	0,63	0,001
The edge of the traffic street in a distance of 5m	80	0,2	0,0001
Vacuum cleaner in a distance of 1m	70	0,063	0,00001
Normal speaking in a distance of 1m	60	0,02	0,000001
Normal living room in a quiet corner	50	0,0063	0,0000001
Quiet library from afar	40	0,002	0,00000001

5.3. Measuring Light

1. Turn the Power/function/range switch to select the „Lux"-range.
2. Remove the light sensor´s cover
3. Face the photo detector to light source in a horizontal position.
4. Press Select Button: Selects 20, 200, 2000, 20000 Lux ranges.
5. Read the illuminance nominal from the LCD-display.
6. Over-range: If the instrument only display one „1" in the M. S. D. the input signal is too strong, and a higher range should be selected.

Wavelength (nm)
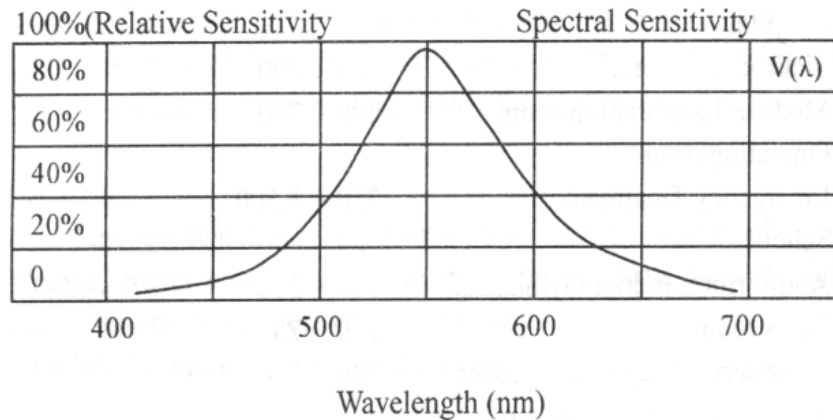
Standard Reference Table for Illumination

School	precision experiment, Blackboard, drawing office, sewing maschine, precision drawing	300 ... 1500
	Store room, corridor, stair-cases, washbasin stand	70 ... 300
	Fireescape	50 ... 70
	Classroom, teaching Staff office, Gymnasium, reading room, Restaurant, Indoor Gymnasium	150 ... 700
	Car Lane, Passage	70 ... 150

Office	Calculating, typing, punching, Design and drawing, Passage in hall	700 ... 1500
	Conference room, reception room	700 ... 300
	Book store, Lift	150 ... 300
	Entertainment room, restaurant	150 ... 700
	Tea room, dressing room, ware-house, washbasin stand	70 ... 150
	Fireescape	50 .. 70
Factory	Ultraprecion processing, design and drawing, precision inspection	1500 ... 3000
	Design room, Analysis Assembly Line Coating	700 ... 1500
	Packaging Metering Surface treatment warehouse office desk	300 ... 700
	Dyeing Foundry Electric room	150 ... 300
	Frozen food compartment, Drying room	70 ... 150
	Fireescape	50 ... 70
Hospital	Surgical operation room	300 ... 3000
	Ward, Therapy, drug storage room, dressing room	70 ... 300
	visibility examination	1500 ... 3000
	Anatomization examination, First aid treatment, pharmacy	700 ... 1500
	Injection, medical treatment Room First aid-room	300 ... 700
	Reading on bed in a ward, to change fresh dressing for a wound, plaster dressing	150 ... 300
	X-Ray, room Ward corridor	70 ... 150
	Animals room, dark room, Fireescape	50 ... 70
Beauty Saloon **Hairdressers** **Saloon**	Hair dyeing	1500 ... 3000
	Hairstyling, Make-up	700 ... 1500
	Hair washing, Cashiers counter	300 ... 700
	In the saloon, Washbasin stand	150 ... 300
	Corridor staircases	70 ... 150

Inns, Hotels,	Counter (Cashier counter)	700 ... 1500
Entertaiment	The door of a house, banquet hall	300 ... 700
Place	Office, restaurant toilet	150 ... 300
	Entertainment room, corridor	
	Staircases	70 ... 150
	Fireescape	50 ... 70
Shops, department	display inside the shop, window	
store	display, demonstration venue	1500 ... 3000
	packing table	700 ... 1500
	sitting room, conference room	300 ... 700
	washbasin stand, toilet staircases	150 ... 300
Residence	houshold handicraft, tailoring	700 ... 3000
	reading, make-up	300 ... 700
	Kitchen, Entertainment room,	
	Dining	150 ... 300
	wardrobe, staircases, bed room,	
	corridor, toilet, study room	50 ... 150

5.4. Measuring Humidity

1. Set the Power/function/range switch to „%RH" position.

2. The display will show the humidity reading value (%RH) directly.

3. When the tested environment humidity value changed, it needs a few minutes to get the stable „%RH" reading.

Warning!

Don´t expose the humidity sensor to direct sunlight.
Don´t touch or manipulate the humidity sensor.

5.5. Measuring Temperature

1. Set the Power/function/range switch to "Temp".

2. Press Select Button: Selects 0,1℃ or 1℃ and 0,1℉ or 1℉ range.

3. Then the display will show the environment temperature reading value (℃/℉) directly.

4. Connect the temperature probe into the K-type thermocouple socket (10).

5. Touch the end of the temperature sensor to the area or surface of the object to be measured. The display will show the temperature reading value (℃/℉) directly.

5.6. Battery Replacement

Note the condition of the 9-V-battery using the procedure described above. If the battery needs to be replaced, open the battery cover, remove the spent battery and replace with a battery of the same type.

Batteries, which are used up dispose duly. Used up batteries are hazardous and must be given in the for this being supposed collective container.

Statutory Notification about the Battery Regulations

The delivery of many devices includes batteries, which for example serve to operate the remote control. There also could be batteries or accumulators built into the device itself. In connection with the sale of these batteries or accumulators, we are obliged under the Battery Regulations to notify our customers of the following:

Please dispose of old batteries at a council collection point or return them to a local shop at no cost. The disposal in domestic refuse is strictly forbidden according to the Battery Regulations. You can return used batteries obtained from us at no charge at the address on the last side in this manual or by posting with sufficient stamps.

Batteries, which contain harmful substances, are marked with the symbol of a crossed-out waste bin, similar to the illustration shown left. Under the waste bin symbol is the chemical symbol for the harmful substance, e.g. „Cd" for cadmium, „Pb" stands for lead and „Hg" for mercury.

You can obtain further information about the Battery Regulations from the Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit *(Federal Ministry of Environment, Nature Conservation and Reactor Safety)*.

We herewith confirm that the unit is calibrated by the factory according to the specifications as per the technical specifications.

We recommend to calibrate the unit again, after 1 year.