Thermal irradiance meter “TKA-ITO”

The principle of operation of the meter consists in converting the heat flux falling on the black ball into an electrical signal proportional to the density of this flux (irradiance), followed by scaling and indication of the measurement result.
The rise in temperature inside the black ball determines the response to external thermal radiation, proportional to the irradiation, averaged over the angle 4n (360 °) and exposure time, equivalent to the response of the human body to such environmental factors as radiation and convective heat transfer. This increase in temperature is measured by the induced infrared radiation from the inner surface of the black ball using a photodetector module located inside it.
The photodetector module contains a non-selective (in the wavelength range

from 1.5 to 20 microns) radiation receiver, a temperature sensor of the module body and a circuit for compensating the ambient temperature. The data of the module are processed by the microcontroller, and the measured irradiance values □□are displayed on the display of the electronic unit of the meter, as well as the temperature inside the black ball and the ambient temperature are indicated.

Main technical characteristics

Heat flux density measurement range	10 ÷ 3,500 W / m ^{2}
Basic absolute error of heat flux density measurements	± (2.0 + 0.08 IV) * W / m ^{2}
Time of establishment of an operating mode, not less	15 minutes

* Note: IV – the value of the measured quantity (irradiance)

dimensions

Overall dimensions of the electronic unit Overall dimensions of the black ball unit (without a tripod)	(135 x 70 x 24) mm (400 x Ø100) mm
Weight of the device (no more) (without a tripod)	0,4 kg
Two AA batteries	3 in

Benefits

The device makes it possible to simplify and accelerate the necessary measurements of the intensity of thermal radiation and, on the basis of this, calculate the average radiation temperature and the magnitude of the exposure to thermal radiation. Device meets regulatory requirements for Measuring Thermal irradiance, records thermal radiation with a viewing angle of 360 ^{0} has expanded measurement range of up to 3500 W / m ^{2} has increased performance due to the original design WL on the device display information about values of thermal irradiance, radiation and ambient temperatures.

Thermal exposure measurement is a process that can help calculate the temperature that is reached during radiation exposure and the degree of exposure to radiation. Specialized high-precision instruments for measuring thermal radiation can only be purchased in specialized stores, and our organization is one of such companies. “TKA-ITO” is a professional device that is capable of calculating and displaying irradiation indicators in the thermal spectrum in a short time. With a full 360-degree field of view and ultra-sensitive, extended-range sensors, results are calculated with the smallest error in the fastest workflow. Such a device is suitable both for measuring radiation exposure in a living space, and for research during the inspection of an industrial or scientific building. The price of the device for measuring thermal radiation includes verification with metrological standards, and the interval between verification is 24 months. Excellent build quality and attractive price are also important advantages that make this meter so popular in its class.