DPM66

Meter of eyepiece diopter power

Fig. 1. Photo of DPM66 meter

WHY EYEPIECE DIOPTREC POWER IS IMPORTANT?

A long series of electro-optical devices (telescopic sights, night vision monoculars/goggles/binoculars, thermal sights) project image of scenery of interest into direction of an eye of the observer using an optical ocular. Human observer should perceive sharp image even when having refractive eye defects (short-sightedness or long-sightedness). This ability is achieved by regulation of diopter power of the eyepiece using typically a simple rotation mechanism with a dioptric scale. This scale gives indication on diopter power of refractive eye defect of human observer that can be corrected typically in range from +4D to -6D (typical range of refractive eye defect of humans) or in range +6D to -6D (expanded range of refractive eye defect of humans).

Human observers with refractive eye defects have often ability to see sharp image generated by direct view imagers even when eyepiece diopter power differs quite significantly from diopter power of corrective glasses that are typically used. However, wrong setting of diopter power of eyepiece can lead to sight fatique, strong headache and possible different negative consequences. Therefore proper scale of eyepiece diopter power is important for safe use of direct view imagers. However, accurate measurement of diopter power of eyepieces is quite difficult and it is quite common to find on international market electro-optical devices with non-proper diopter scale even in case of highly reputable vendors. The consequences are quite serious. Users of direct view electro-optical devices having refractive eye defects cannot trust the diopric scale and determine optimal rotation of the ocular by themselves loosing time or have increased discomfort of observation when using recommended but improper eyepiece position.

WHAT IS DPM66?

DPM66 is a meter of dioptric power of oculars of electro-optical devices. In detail, DPM66 meter determines diopter power of refractive eye defect of human observer that can be corrected for current position of tested ocular or determines what ocular position is needed to correct a certain level of refractive eye defect of human observer.

From design point of view DPM66 can be treated as electronic simulator of human eye of variable refractive eye defects. Its users can regulate level of simulated refractive eye defect of the observer in range from +6D to -6D using manual rotation knob on a sidewall and a scale on the top of this device. DPM66 generates electronic copy of image projected by tested imager with an eyepiece at its electronic output. User can see image perceived by DPM66 meter when the meter is connected to any tablet/laptop/PC having USB input port. Image sharpness can evaluated subjectively by human observer or with support of Inframet software.

High accurary of determination of eyepiece diopter power of direct view imagers has been achieved by use in DPM66 meter imaging optics of very short focusing depth. It means that DPM66 meter can generates sharp image generated by tested direct view imager only when eyepiece diopter power of this imager exactly equals to value indicated at its dioptric scale. It is a sharp contrast to typical low cost meters of eyepiece diopter power that works as small refractive telescopes built using optics of long length and capable to generates quite sharp image even at moderate differences between eyepiece diopter power of tested imager and its values indicated at dioptric scale of the meter.

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BLOCKS OF DPM66

DPM66 is delivered as a set of blocks:

1. DPM66 meter
2. USB cable
3. SHARP computer program.

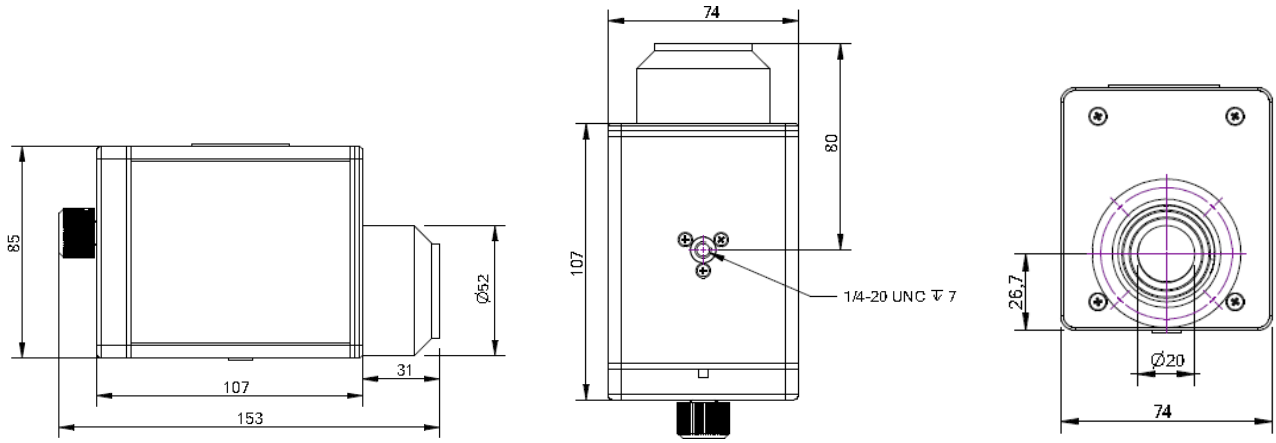
SHARP is a computer program working under Windows operating system that:

1. enables visualization of image perceived by DPM66 meter
2. works as evaluator of sharpness of image perceived by DPM66 meter.

TECHNICAL SPECIFICATIONS

Parameter	Value
Range of measurement of diopter power of optical oculars	+6D to -6D
Measurement uncertainty	0.1D
Output port	USB2.0
Software operating system	Windows 7/10
Operating temperature range	+5ºC to +35ºC
Storage temperature range	-5ºC to +55ºC
Mass	1kg
Dimension	153x74x74mm

DRAWINGS



WHY DPM66?

DPM66 meter is the first commercially available professional meter of optical power of oculars of electro-optical systems offered on international market. Its accuracy significantly exceeds accuracy of typically used method based on glasses of variable dioptric power. DPM66 can significantly improve comfort of use of electro-optical systems manufactured for direct view by human observers having refractive eye defects.

Version 2.2

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