User Manual

Astro-Gadget , 2019

Black Sky Meter - this is an innovative product for the observer of the stars. Within seconds you can determine the brightness of the sky.

Black Sky Meter (BSM) is device designed to measure the brightness of the night sky in places of astronomical observations.

BSM measures the brightness of the night sky in magnitude per square angular second (Mag / arcsec2).

Thanks to the use of the TAOS TSL237S sensor, BSM has unprecedented sensitivity!

BSM is made in the form of a key fob, which will allow it to be always at hand on observations.

With BSM you can:

Find out how good the night is for astronomical observations.

Compare the brightness of the sky in different places.

Send a short message and save the result to E-mail.

Accumulate measured data on E-mail for statistics.

Determine the best night for observe the least bright objects in deep space.

Make maps of the night sky brightness for your area.

Features:

Vibro and beep during measurement.

Sky brightness is displayed in magnitude per square second of arc (Mag / arcsec2).

The infrared blocking filter provides measurement only in a visual bandwidth.

Indication temperature is in degrees Celsius (° C).

Location indication.

Thermo compensation of measured values.

Custom calibration.

Specifications:

The half maximum width (FWHM) of the angular sensitivity is ~ 35 °.

Accuracy of indications - 0.10 Mag / arcsec2

Interface - microUSB.

Android OS 4.3 or newer version.

Powered by the battery of a smartphone or tablet.

Body material - Aluminum (surface anodized)

Size - 50 x 16 x 16 mm

Weight - 40g

The maximum light sampling time is 90 seconds.

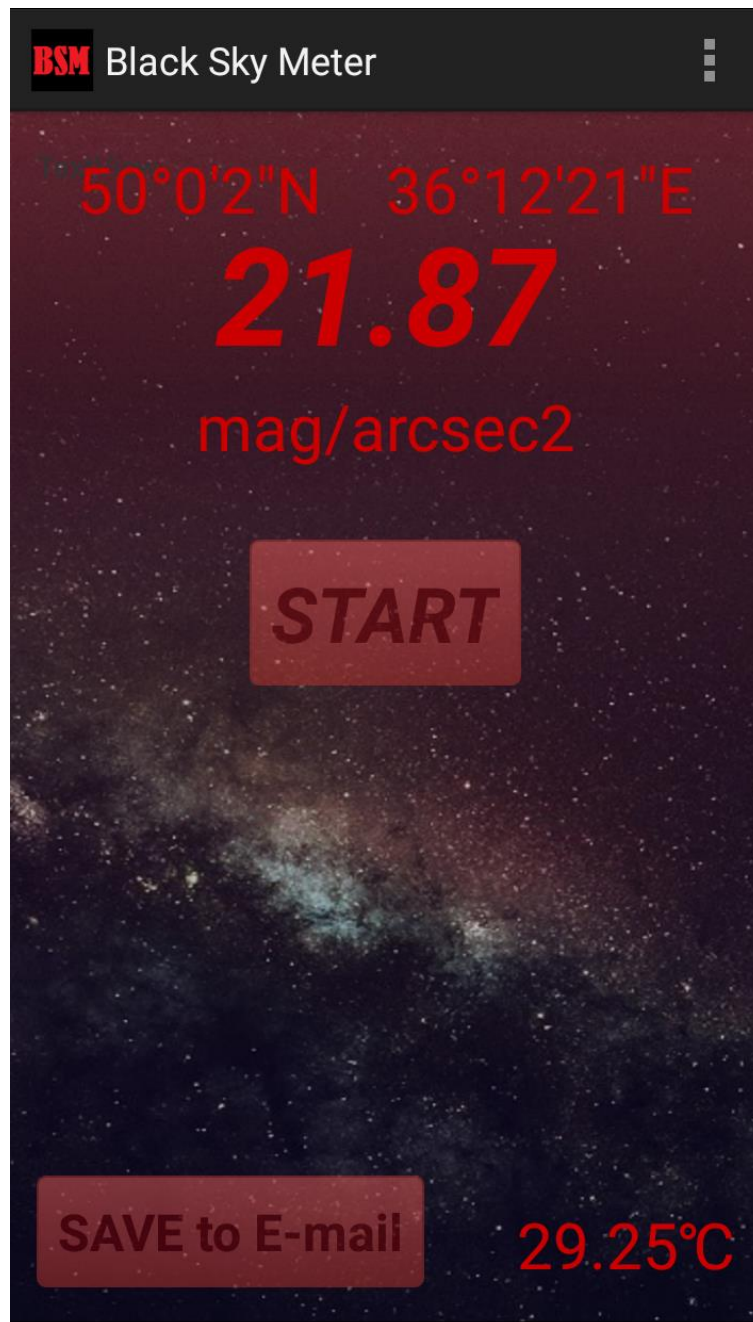The developer reserves the right to change the design and specifications without notice.

Using:

The instrument is calibrated and ready for operation. Simply connect the device to the micro USB connector of your mobile device and click the "Start" button on the screen of the opened application. Further, within 5 seconds, lift the device above head level so that shadows or reflections from your body do not interfere the measurement, and aim the device at the zenith. The measurement process will be accompanied by sound signals with a period of 1 second. After some time, the display will shows the corresponding readings. Take several measurements to get a more accurate result. The measurement time is highly depend on the level of illumination in the area. Under the city sky, the readings appear almost instantly, while under a very dark sky (a moonless night far from civilization) the measurement process can take more than a minute. The maximum signal accumulation time is 90 s. During the accumulation of the signal, the screen backlight of the mobile device will be turned off to eliminate the influence of spurious reflections from surrounding objects. For the same reason, try to choose the right places to measure. Avoid any artificial light sources, including surfaces that reflect and scatter light.
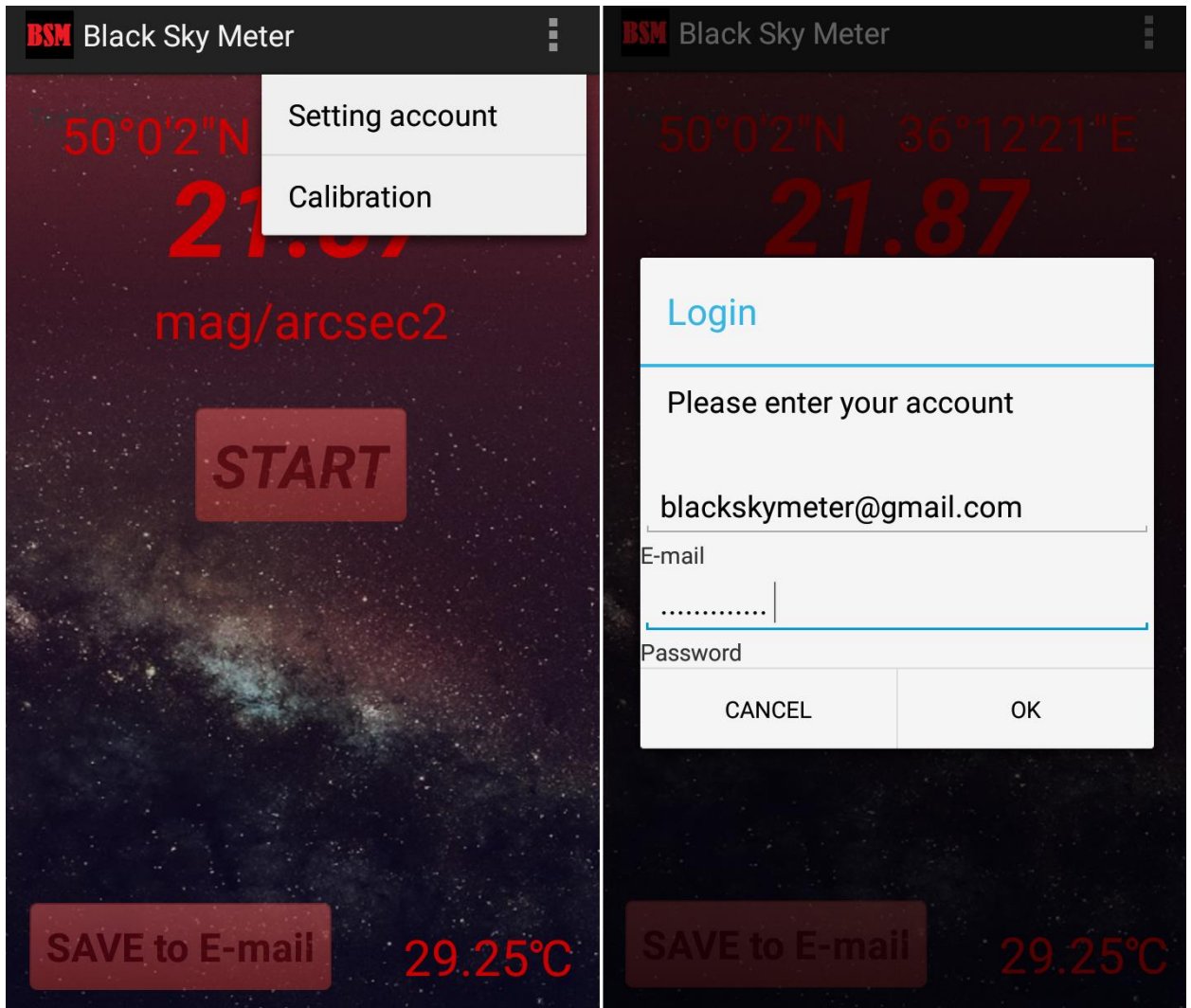
Different modes of operations

1. Measurement

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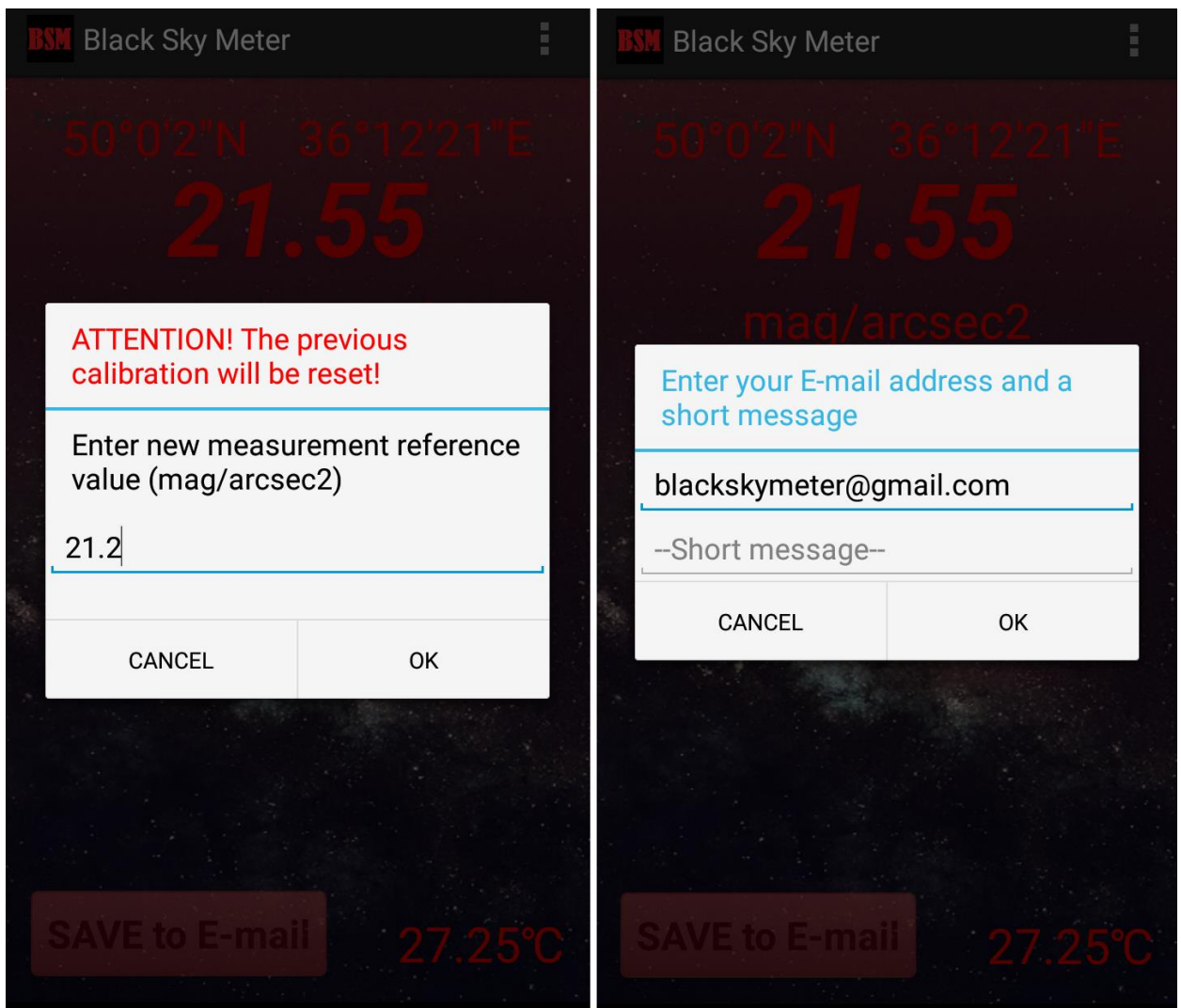
2.Save measurements on E-mail

Measurement data you can save in the form of a letter sent by e-mail. A letter with data is automatically generated when you click the "Save to E-mail" button. It is also possible to briefly describe in the letter the most important and interesting details of observations and measurements. To be able to use the "Save measurements to E-mail" function, select the "Setting account" option in the menu and enter the account data of a new or current email account from which you want to send measurement data. After that, click the "Save to E-mail" button, in the address field enter the E-mail address, the measurement data will be sent on, and a short message in the "Short message" field (optional).

3. Custom calibration.

If you have a more accurate instrument at your disposal, the readings of which can be taken as a reference value, then you can independently calibrate your BSM. For do this, measure the same sky with both instruments. Next, select the "Calibration" option in the BSM menu and enter the measurement data of the reference instrument in the appeared window. At the same time, it is important to remember that after entering the new calibration data, the previous calibration will be reset.

BSM is your reliable assistant ...