ENGLISH

METOS®
BY PESSL INSTRUMENTS

Dualex

USER MANUAL

Version 1.0, 09-2023

Thank you for choosing our Dualex product. Our Dualex device is a hand-tool leaf-clip combining the use of fluorescence and a light transmission of a leaf to determine its physiological state.

Additionally, this sensors is adapted to determine the flavonol content of the leaf by measuring the optical absorbance of the epidermis in the ultraviolet (UV) optical range through the differential measurement of the chlorophyll content of the leaf by using different wavelengths in the RED and in the NIR.

Pessl Instruments GmbH
Werksweg 107, 8160 Weiz, Austria
office@metos.at
+43 317 255 21

Pessl INSTRUMENTS

THE DUALEX DEVICE WILL BE MAINLY USED FOR:

The measurement of the leaf chlorophyll content (CHL), the epidural UV-absorbance (Flav), and anthocyanins content (Anth) as well as the Nitrogen Balance Index (NBI) which is the ratio of CHL and Flav.

This information contain valuable indicators used in many applications such as:

- nitrogen fertilisation
- leaf ripeness
- plant senescence
- plant protection against UV radiation
- pathogen susceptibility
- variety selection

YOUR DUALEX

The Dualex is delivered in a case which consists of the Dualex device leaf-clip, a USB cable and a user manual. The Dualex device operates on an internal rechargeable battery.

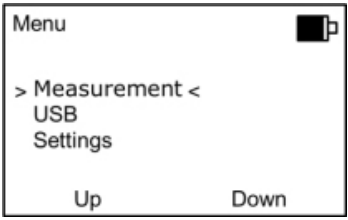
START-UP THE DUALEX

Unpack the Dualex device and check whether there is no evidence of any physical damage. In case of any damage, please contact Pessl Instruments as soon as possible. The device is charged before delivery. However, depending on storage time and delivery period, the battery may be discharged, hence the need to recharge.

This can be done using the USB Cable directly from the computer or using any compatible wall plug adapter.

TAKING A MEASUREMENT

To start using your Dualex device, press the power button. A beep and a welcome screen with the Pessl Logo displays shortly and then the main menu as shown below.



- Select Measurement and confirm with the OK button on the keyboard
- Make sure there is no leaf inside the clips and press OK again (when prompted to remove leaf and press OK). You will be greeted with the main measurement screen as shown below.

- Open the clip and introduce the intended leaf to measure between the 2 heads to take a measurement
- After the measurement is complete results will be displayed on the screen.

GET YOUR MEASURED VALUES

Measured values can be read from the screen on the Dualex device and the stored measurements can be obtained from the internal storage.

To access the measurement file the device needs to be connected to the PC using the USB cable. For more information, file definition and value description please refer to our standard Dualex user manual available at *https://metos.at/en/manuals/* .

MAINTAINING THE DUALEX

- Make sure the optics are always clean and free from all sorts of dirt at all times
- Ensure that the batteries are sufficiently charged during field activity operations to avoid running into low battery and the device shutting down.
- Device should be used only for its intended purpose

CLEANING AND MAINTENANCE:

During every return in the laboratory, the Dualex should be cleaned by using a tissue slightly moistened with a mixture of water and alcohol.

The optical parts of the device must be carefully cleaned by blowing clean and dry air, and then with a cotton swab slightly moistened with ethanol.

TECHNICAL SPECIFICATIONS

Measured material	Leaf
Measured parameters	4 measured indices: • Chl: Chlorophyll content • Flav: UV-absorbance • Anth: Anthocyanins content • NBI: Nitrogen Balance Index
Measurement process	Automatic or manual
Measured area	5 mm in diameter
Sample thickness	1 mm maximum
Measurement area access	8.5 cm maximum (half-leaf width)
Acquisition time	< 500 ms
Storage capacity	10,000 multiparametric measurements
Data classification	3 levels (file, group, and measurement numbers)
Temperature range	From 5 to 45°C
Light sources	5 LED: 1 UV-A, 1 green, 1 red and 2 NIR (near-infrared)
Detectors	1 silicon photodiode
User interface	LCD screen Sound warning
Data downloading	USB connection for data transfer
Battery	Li-ion rechargeable battery
Battery life	10 hours
Charge time	4 hours
Total weight	220 g (with battery)
Size	205 mm x 65 mm x 55 mm
Positioning	Internal GPS
Relative accuracy	< 2.5 m (CEP, 50%, 24 static)
Languages	English, French, Spanish, German
Safety	Ring for leash
Updating	Remote program updating

Pessl Instruments is continuously improving its products, technical specifications are subject to change without notice.

USER NOTES

For full user manual please visit:
metos.at/manuals

Visit *metos.at/terms-of-use/* to view legal information for Pessl Instruments products and services.