FAG FLUO DX preliminary User Manual

Contents

The FLUO DX invisible ink colorimeter

The FLUO DX Invisible ink colorimeter is the ideal Device to control the use of invisible and phosphorescent inks in the press room. The FLUO DX is equipped with two UV LEDs, at 365nm and 256nm and measures the Fluorescent Intensity, the Colorimetric parameters XYZ, xy, Lab, LCh and the Phosphorescent characteristics of an ink.

Important: This manual describes the current version of the FLUO DX hardware and software. Future enhancements or modifications are reserved.

Safety Instructions

For safety reasons, it is absolutely necessary to read the entire user's guide and all of the instructions it contains. If the safety recommendations and instructions in this User Guide are not complied with, measurement errors or data loss or physical injury or property damage may result.

The FLUO DX is not intrinsically safe. Therefore, the device cannot be used in an environment with explosive vapors where there is a risk of spark ignition or in an area with strong electromagnetic fields. It should be protected against chemicals, corrosive vapors, strong mechanical vibrations and impacts

The FLUO DX is equipped with UV LEDs. Never Ever look directly into the Aperture of the device while on UV LED is turned on! UV Light might hurt your eyes!

Use the FLUO DX in ambient temperatures between 20°C(68°F) and 25°C (77°F), and do not expose the device to direct sun light.

The FLUO DX should never be opened as there are no user-serviceable parts inside. Doing so voids the guarantee. Contact your authorized dealer if repairs are necessary.

To avoid incorrect handling, the FLUO DX should only be used by trained personnel.

Use original PERET spare parts and accessories only.

Use the original packaging exclusively when transporting.

DECLARATION OF CONFORMITY

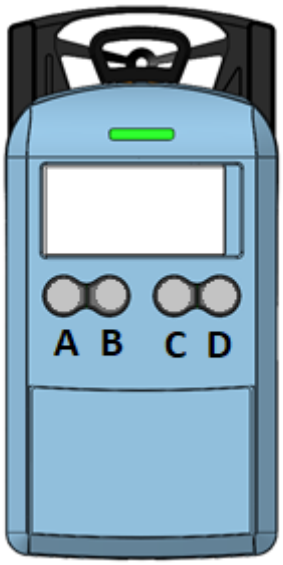
The undersigned representing the following manufacturer: herewith declares that the product FLUO DX is in conformity with the provisions of the following CE directives including all applicable amendments:

77/23/EEC Electrical equipment for use within specified voltage limits.

89/336/EEC Electromagnetic compatibility and the standards and technical specifications referenced overleaf have been applied.

Konrad Silbernagl, FAG Graphic Systems SA

This Manual

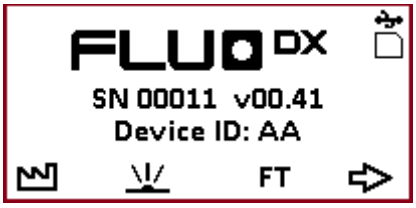


The manual describes the functions of the Device using a A,B,C,D labelling of the keys. A is the left most key, D the right most key.

HARDWARE RESET of the DEVICE

On the bottom of the device you can find the RESET key. Press this key to perform a Hardware RESET.

After a Hardware Reset the FLUO DX will show the key information about the device such as Serial Number, Firmware version, Device ID.



Key A: Reset the device parameters to factory defaults.

Key B: Transfer measurement data via IR-Interface to the Host PC.

Key C: Perform a Function test of the device.

Key D: Next screen

Device Status information

Whenever appropriate the device status information will be displayed on the right top corner:

USB is connected.

Data memory used, empty to full.

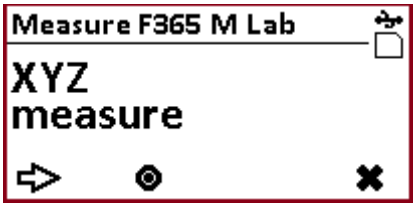
Battery empty, change Batteries.

Battery nearly empty. Change battery at the end of the measurement sequence.

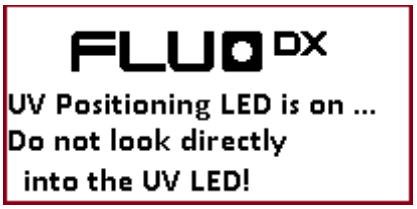
Battery still ok.

Positioning LED

Whenever the device is in measurement mode you can use the positioning LED in front of the device to find the measurement position on the invisible ink. Press and hold Key B. The positioning LED will go off upon release of Key B or after 20 seconds.



Never ever look directly into the UV positioning LED as this might hurt your eyes. The device display shows a proper warning.

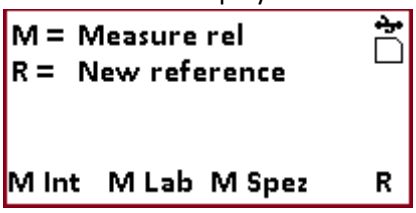


In order to turn the positioning LED on, the following conditions have to be met;

- Device is in the flat position.
- Device is not in the measurement position but in parking position.
- After 20 seconds on, the UV positioning LED turns off. In order to switch it on again release and press Key B. Release Key B to switch the positioning LED off.

Start Display

After the reset display or when returning from any other mode, the Start display is shown.



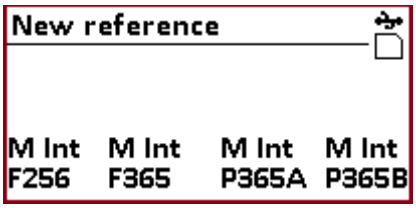
Key A: Measure the intensity of the Fluorescence or Phosphorescence signal.

Key B: Laboratory functions (Colorimetric measurements, Phosphorescence curve)

Key C: Special Functions (Delta E measurement)

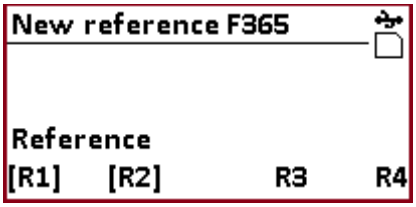
Key D: Measure references for Intensity Measurements.

Measure References

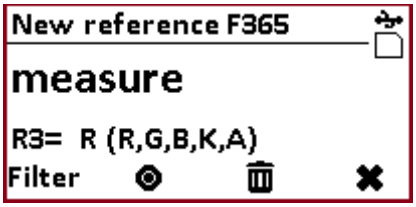


References for Fluorescence with 256nm or 365nm and two Phosphorescence reference sets with different timing settings can be measured.

Fluorescence Intensity Reference (F256 or F365)



Up to 4 references can be stored in the device. If a reference is available, the proper number is displayed with brackets [ ]. Select the reference number you would like to measure.



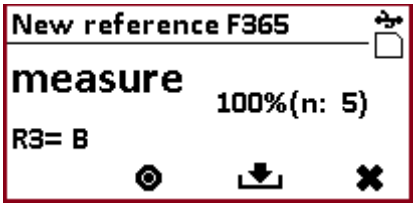
Key A: Select the Filter. You can choose one of the physical filters R, G or B. You can also select the black Filter K which is defined as R+G+B. Finally the A (Automatic filter selection) will automatically select the filter with the highest Signal response on the very first reference measurement.

Key B: Switch the positioning LED on.

Key C: Delete previously stored reference values.

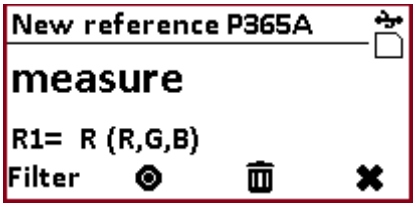
Key D: Exit

Measure the reference. Up to 20 measurements can be taken. The average will be calculated at the end.



Press Key C to save the Reference.

Phosphorescence Reference



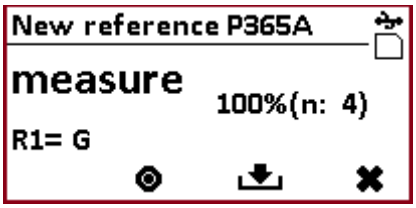
Key A: Select the Filter.

Key B: Switch the positioning LED on.

Key C: Delete the current values.

Key D: Exit

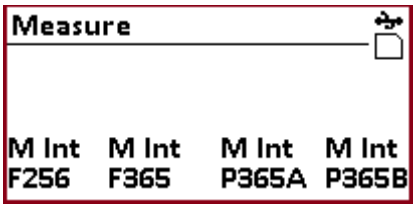
Measure the reference. Up to 10 measurements can be taken. The average will be calculated at the end.



Press Key C to save the reference.

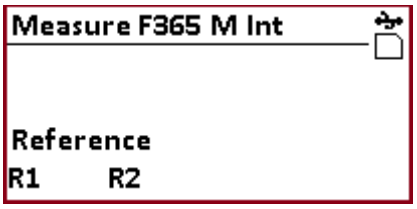
Measure Intensity

Press Key A on the start screen.

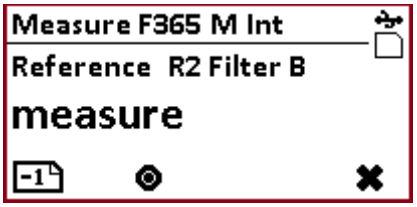


Measure Fluorescent Intensity

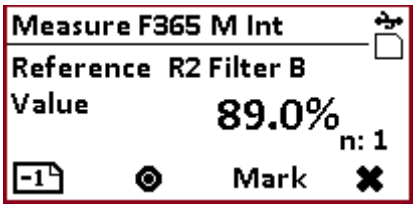
Press Key A or Key B to measure Fluorescent intensity against a reference.

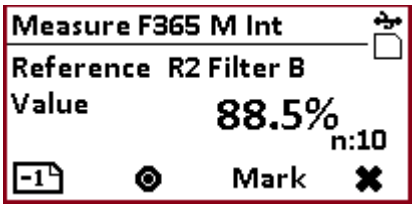


Select one of the references available by pressing the key below the reference number.



Measure up to 20 samples.





The pigmentation in relation to the reference is displayed. The screen on the left shows that only 89% of the pigmentation has been achieved.

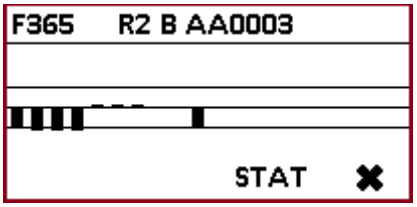
Key A: Delete the most recent reading.

Key B: Positioning LED on

Key C: Terminate the measurement process and save data permanently using an Identification mark.

Key D: Exit

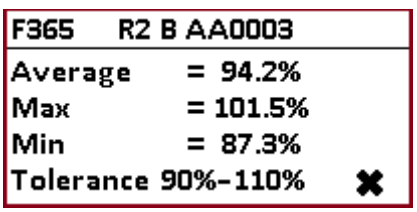
If you save the measurement data, the statistics will be displayed.



The current mark is displayed on the top line. Use this to Identify the sheet on which the measurements have been taken.

Key C: Statistics

Key D: Exit



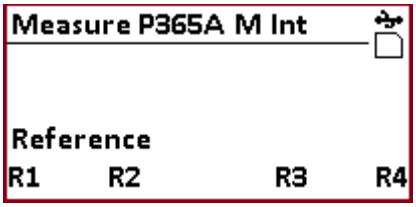
The Tolerance is configured using the Software FLUODXConnect.

Measure Phosphorescence Intensity

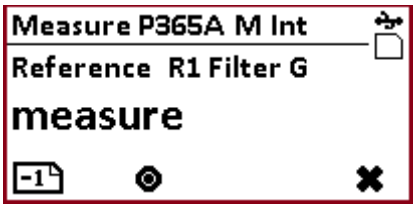
The Phosphorescence is measured based on three time frames:

1. Wait OFF Time: Before switching on the UV light, the FLUO DX measures the base Fluorescence of the sample.
2. Exposure Time: During the exposure time the sample is illuminated by a 365nm UV light of a pre-defined power. The sample is charging. At the end of the Exposure Time the Fluorescence is measured.
3. Cool Down Time: The UV light is switched off and the FLUO DX waits the Cool Down Time before measuring the Phosphorescence. If the measured signal is zero, no phosphorescence can be measured.

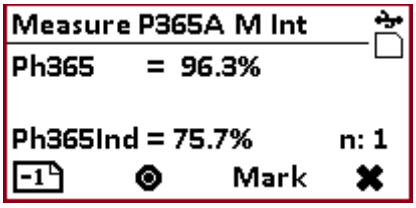
The time frames are configured using the FLUODXConnect Software.



Select a reference by pressing the key below the reference number.



Measure a sample.



The PH365 Value is the Phosphorescence measured after the Cool Down Time in relation to the reference. The Ph365Ind is the ratio between Phosphorescence and Fluorescence.

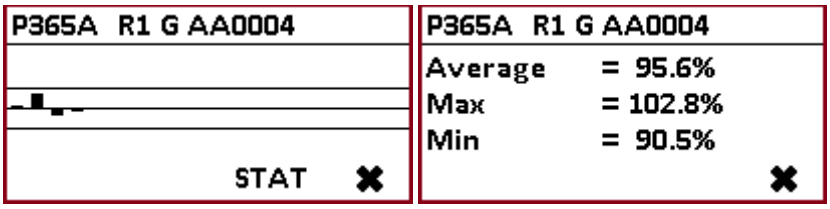
You can measure up to 20 samples in one process.

Key A: Delete the most recent reading.

Key B: Positioning LED on

Key C: Terminate the measurement process and save data permanently using an Identification mark.

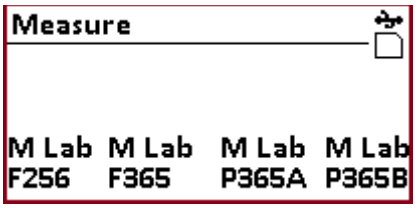
Key D: Exit



Key C: Display the statistics.

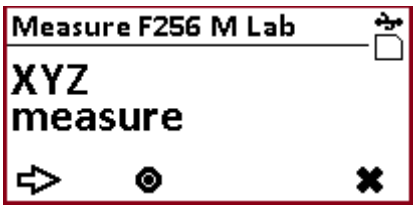
Key D: Next sheet

MLab Laboratory function

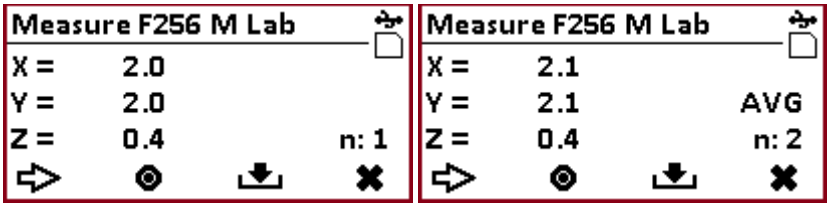


In this mode colorimetric analysis for fluorescent inks and phosphorescent analysis for phosphorescent inks can be made.

Fluorescent MLab function



Measure a sample. You can measure several times and take the average value.

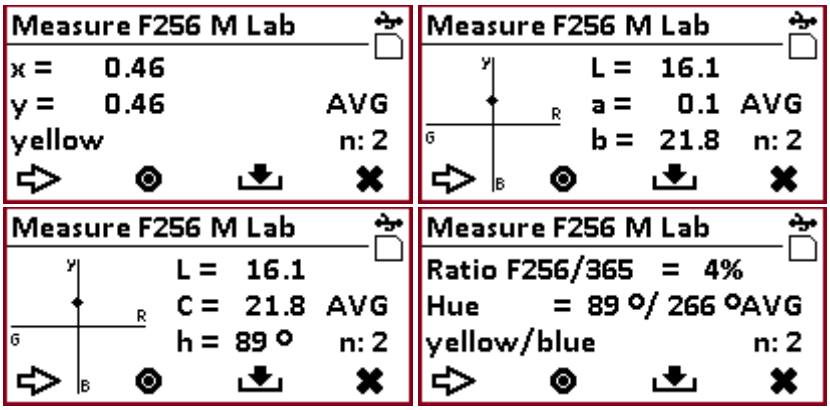


Key A: Next display

Key B: Positioning LED on

Key C: Save measurement

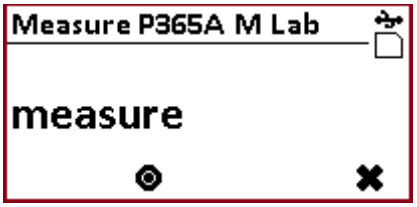
Key D: Exit



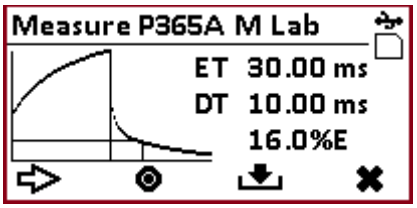
Bi-Fluorescent Analysis is available only in F256 Mode. Any measurement in F256 Mode is based on two readings, one with UV 256nm illumination and the second one with 365nm illumination. The Bi-Fluorescent Analysis screen shows the following values:

- Ratio F256/365 is the ratio between the Fluorescent signals measured. The above example shows that the 256nm Fluorescence is only 4% compared to 365nm Fluorescence.
- Hue: if the sample is exposed to 256nm UV light, the fluorescent color Hue is 89° (yellow) while when exposed to 365nm UV light, the fluorescent color Hue is 266° (blue).

M Lab Phosphorescence



Measure a sample.



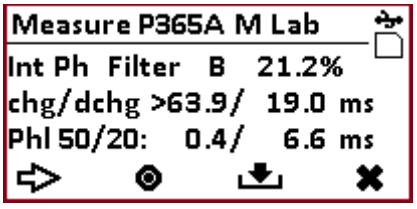
The graph shows the charging and discharging behavior of the sample. The ET (exposure time) is configured as 30ms, the DT (Cool down time) is 10ms. The exposure energy E is 16%.

Key A: Next display

Key B: Positioning LED on

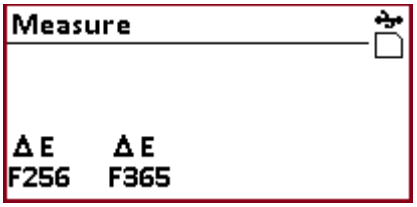
Key C: Save measurement

Key D: Exit

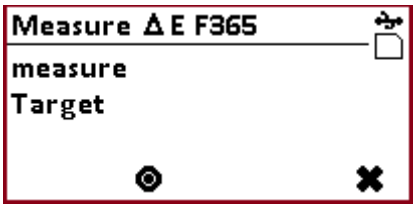


The sample has been measured using the B (blue) filter. The Phosphorescence (emitted light intensity) measured after the Cool down time is 21.2% of the Fluorescence, measured after the Exposure Time before switching the light source off. The charging time is estimated to be at least 63.9ms to reach saturation. The discharging time is estimated to be 19ms. After 0.4ms the Phosphorescence decays below 50% of the Fluorescence. After 6.6ms the Phosphorescence decays below 20%.

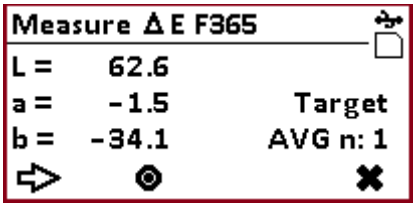
MSpez function



In this mode you can measure the delta E between two samples



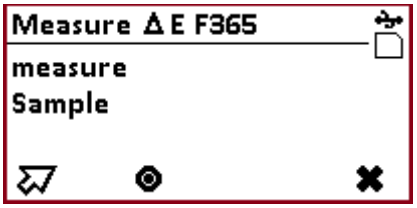
Measure the Target several times. The Average is taken as reference.



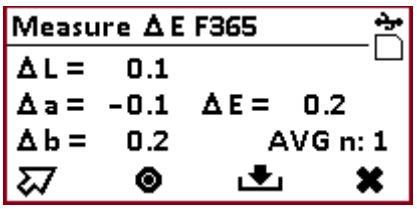
Key A: Switch to sample measurement

Key B: Positioning LED on

Key D: Exit



Measure the sample several times. The Average is calculated.



Key A: New reference

Key B: Positioning LED on

Key C: Save measurement

Key D: exit