DUAL-H90

90 Degree Measuring Head Holder

Instructions

The DUAL-H90 has two main applications.

(i) Simultaneous measurements of chlorophyll fluorescence at two different wavebands with a DUAL-PAM-100 system. For this application, the measuring head DUAL-DB/FR enables F_0' measurements.

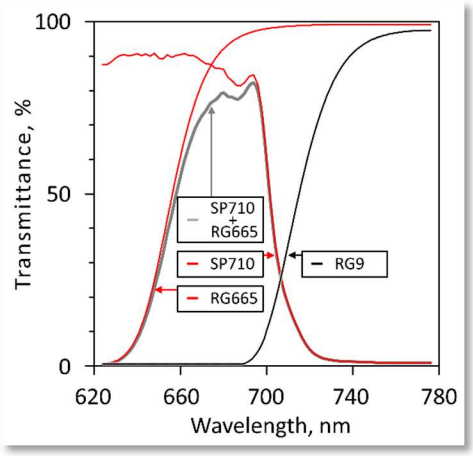

Fig. 1: **Filters for short wavelength (RG665 + SP710) and long wavelength chlorophyll fluorescence (RG9).**

(ii) Assessment of epidermal UV screening through exciting chlorophyll fluorescence at 365 nm by the MCP-E/UVA measuring head of the MULTI-COLOR-PAM fluorometer. The DUAL-H90 does not replace the Optical Unit for Leaf Measurements MCP-BK which provides very homogeneous illumination of the sample surface which is mandatory for evaluations of the functional antenna size of PS II.

These two options are outlined in (Fig. 2). Most certainly, many additional application will arise in future.

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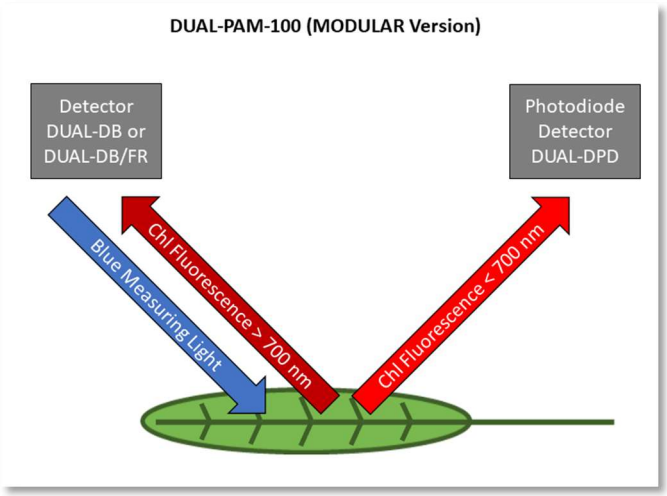
A



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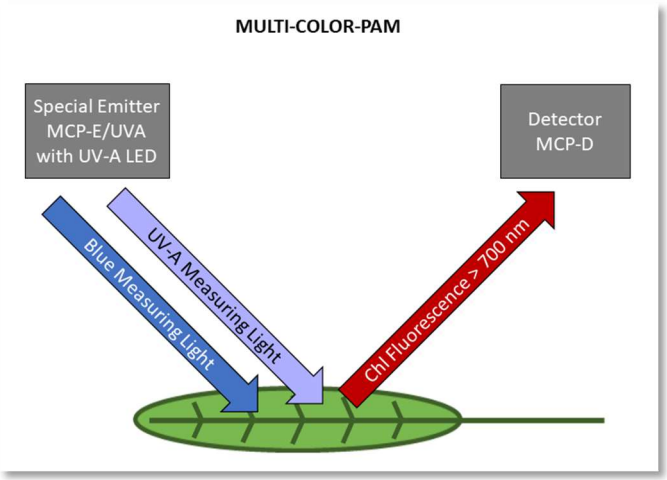

Fig. 2: **Principal Applications of the DUAL-H90 Holder.**

A DUAL-PAM-100 setup to simultaneously measure chlorophyll fluorescence in two spectral windows.

B MULTI-COLOR-PAM setup to sequentially excite chlorophyll fluorescence by UV-A and visible (here blue) light for assessment of epidermal UV screening.

STEP BY STEP INSTRUCTIONS

Using the MULTI-COLOR-PAM as example, the setup of the DUAL-H90 with measuring heads is explained.

1. Mount DUAL-H90 on a lab stand. See Fig. 3 (overleaf). Place below lab scissor jack with rubber foam mat.
2. The black metal tube to connect the Detector Head MCP-D with the DUAL-H90 holder has different ends (Fig. 3, callout). Insert the end with hole for plastic screw (S1) and groove for Allen screw (A1) in the MCP-D. The hole for the plastic screw S1 must be positioned beneath the corresponding hole of the adapter ring in which the metal tube was inserted. Fix tube with Allen screw.
3. Place filter(s) in filter slot of the MCP-D, carefully insert Perspex light guide in metal tube until the Perspex light guide touches the filter(s). Without applying pressure, further insert Perspex light guide until the filter(s) is fixed between Perspex light guide and housing of the MCP-D. Fix Perspex light guide with plastic screw S1.
4. Insert black metal tubes of MCP-D and MCP-E in opposite ports of the DUAL-H90 (Fig. 3) until the lower edges of both Perspex light guide are about 5 mm above the sample level. Fix with plastic screws S2 and S3.
5. Alternately lower the MCP-D und MCP-E/UVA units until the edges of both Perspex light guide touch each other.
6. Lift platform of lab scissor jack until it touches the DUAL-H90. Avoid applying pressure on the DUAL-H90.

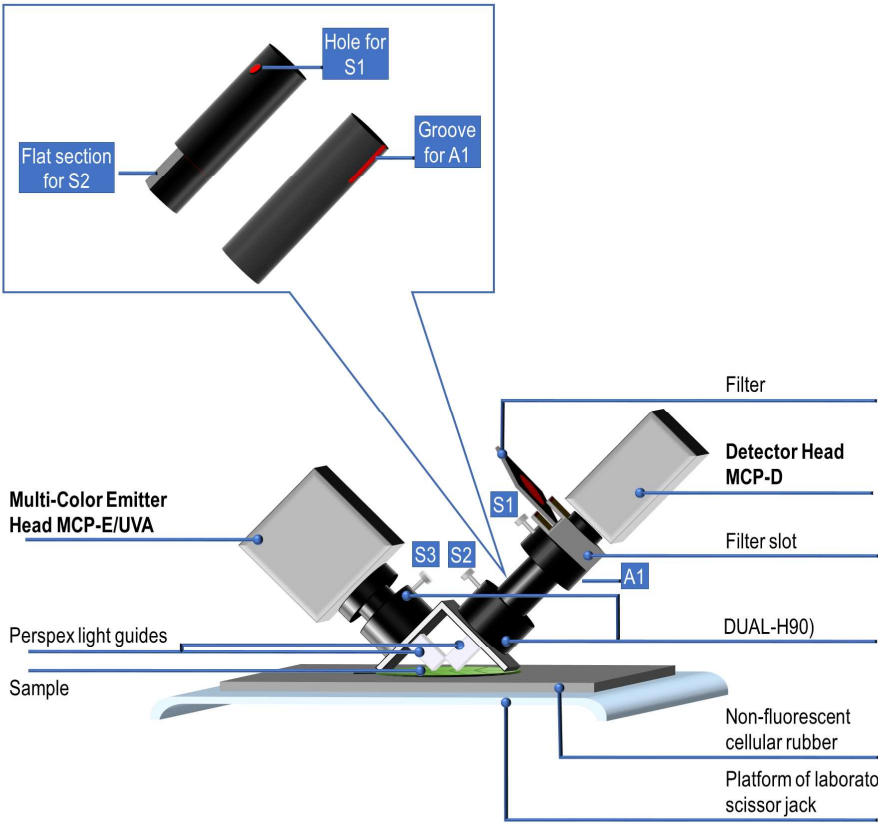

Fig. 3: DUAL-H90 Holder with Measuring Heads.

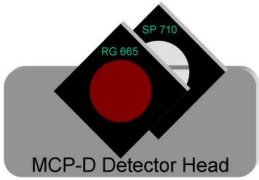

Fig. 4: Filter Arrangement.

Note: When the RG 665 and SP 710 are used together, the SP 710 filter should be placed next to the MCP-D head to screen the detector from the weak fluorescence of the RG665 filter.