

## Digital measuring head for erythema effective UV radiation (UVE) FLD7 33-UVE with ALMEMO® D7-connector. Weatherproof housing for outdoor use

Monitoring of UVE-radiation hazardous for human skin.

Stationary measurements in meteorological applications. Supplement to the weather station FMD7 60.

For connection to current measuring instruments ALMEMO® V7 : ALMEMO® 500, 710, 809, 202, 204



ALMEMO® UVE-measuring head in a weatherproof housing for outdoor use, FLD7 33-UVE

### Erythema effective UV radiation

The natural UV radiation of the sun or the UV radiation of artificial sources has different effects on human skin depending on the wavelength range.

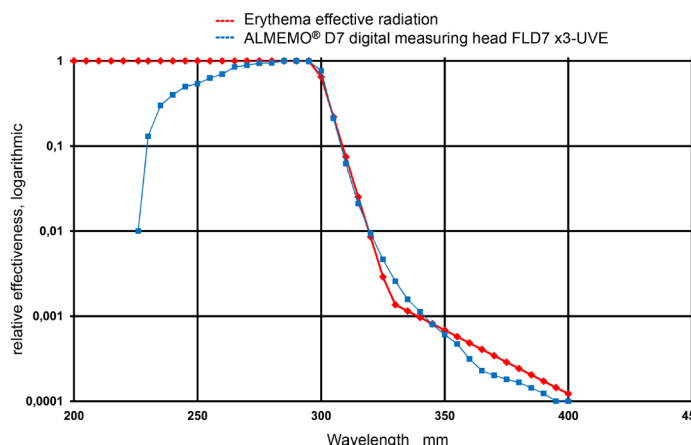
- The long-wave UV radiation (more than 313 nm, UVA) tans the skin and supports the human immune system.
- The short-wave UV radiation (less than 313 nm, UVB/UVE) may cause irreversible damage.

In the recommendation of the CIE (Commission Internationale de l'Eclairage) all spectral effect functions which can have a negative effect on the human skin are summarized. This recommendation is described in the DIN 5050 resp. ISO/CIE 17166 and valued as a directive.

### UVE-measuring head FLD7 03-UVE

The measuring head records the erythema effective UV radiation. The spectral sensitivity of the measuring head complies with the standards DIN 5050 and ISO/CIE 17166 and the Ordinance on Protection against the Harmful Effects of Artificial Ultraviolet Radiation (UV-Schutz-Verordnung - UVSV, published in the Federal Law Gazette 2011 Part I No. 37). The measurement results provide direct information about medically and biologically relevant correlations in this radiation range. DIN 5050 specifies four different skin types: Skin type I to IV. The UV Protection Ordinance - UVSV extends by two further skin types: skin type V and VI. The guideline for these six skin types are taken into account in the calculation of the various parameters. The measuring head is used in areas of medical and biological research, for the measurement of

UV radiation equipment (for cosmetic purposes, medical treatments or other human applications), in weather information and forecasting systems, in climate research and for general population information.. A popular measure of „sunburn sensitivity“ is



the UV index „UVI“, which is determined by the German Weather Service.

The measuring head FLD7 33-UVE has a weatherproof, eloxated aluminium housing. The device dome consists of UV-transparent, ground quartz glass. The measurement is cos-corrected. The measuring head is suitable for continuous operation or control measurements outdoors.

### Digital measuring head with ALMEMO® D7-connector

The measuring head works with its own AD converter. Extension cables and the ALMEMO® measuring instrument/data logger have no influence on the accuracy of the measurement. From the measured irradiance, all relevant measured variables are calculated and output to the ALMEMO® instrument. Different measuring channels can be selected and the measured variables can be displayed :

- UV-index: relative irradiance related to 25 mW/m<sup>2</sup>
- UVE irradiance (erythema-effective) in mW/m<sup>2</sup>.
- Dose (erythema effective irradiation) in J/m<sup>2</sup>: sum of irradiance over the irradiation period (energy).
- Relative minimum erythema-effective dose (MED): Dose related to 1 MED (= erythema-effective threshold irradiation) of the set skin type according to DIN 5050 and UVSV. Example: 1 MED for skin type 2 (light-skinned European skin type) = 250 J/m<sup>2</sup>.
- Remaining time of irradiation in minutes until the dose 1 MED of the selected skin type is reached.
- Current, predicted maximum irradiation time in minutes until the dose 1 MED of the selected skin type is reached.
- Relative standard erythema effective dose (SED): Dose related to 1 SED (100 mW/m<sup>2</sup>) according to ISO 17166.

## Technische Daten

Measuring range UVE:	0,1 ... 300 mW/m <sup>2</sup>	Dimensions:	
Resolution:	0,1 mW/m <sup>2</sup>	diameter	33 mm,
Sensor system:	SiC / interference filter	height	ca. 29 mm
Spectral sensitivity:	230 ... 400 nm	Mounting:	2 screws M2
Erythema effective spectral range:	250 ... 298 ... 328 nm	Weight (without cable)	approx. 50 g
Max. spectral sensitivity:	295 nm	ALMEMO® connecting cable: fixed attached cable, 1,5 m, with ALMEMO® D7-connector	
Diffuser:	PTFE	<b>ALMEMO® D7 connector</b>	
Cos-correction:	error f2 < 3 %	Refresh rate:	1 s for all channels
Linearity:	better 1 %	Settling time:	3 s (for data logger operation in sleep mode a sleep delay of 3 s has to be programmed)
Absolute error:	< 7 %	Power supply voltage:	from 6 V from ALMEMO® instrument
Nominal temperature:	23 °C ±3 K	Power consumption:	approx. 5 mA
Operating temperature:	-30 ... +60°C		
Switch-on time:	< 1 s		
Switch-off time:	< 1 s		

Erythema effective radiation	0,3 W/m <sup>2</sup>	UV- Index	12	UV radiation exposure	extreme
			11		
			10		very high
			9		
	0,2 W/m <sup>2</sup>		8		
			7		high
			6		
			5		medium
	0,1 W/m <sup>2</sup>		4		
			3		
			2		low
			1		

Intensity of Irradiation and UV-Index



Version for measurements in dry surroundings  
FLD7 03-UVE  
Data sheet see chapter optical radiation

**Versions** (incl. works test certificate)

Digital measuring head for UVE radiation in a weatherproof housing for outdoor use.

Sensor with built-in connector, incl. ALMEMO® connecting cable, 1,5 m, with ALMEMO® D7-connector.

**Order no.****FLD733UVE**

Digital measuring head for UVE radiation, for measurements in dry surroundings.

Sensor with permanently attached cable, 1,5 m, with ALMEMO® D7-connector

Data sheet see chapter optical radiation.

**FLD703UVE**