

Operating Manual RM-31



1. General Description

The main operated (220/110 V) monitor RM-31 is designed for continuous measurement of lamps, mainly UV-lamps. Besides lamp control also absorption, transmission and reflection-measurement is possible. With the optional reference element and comparator, lamp power regulation can be done.

The read out is displayed on an analog scale (0-100 %) or optional digital. Three LED's indicate the status of the lamp:

- Green: Lamp signal is above the predefined "Go-value"
- Red: Lamp signal is below the predefined "No-Go-value" (Alarm)
- Yellow: Lamp signal is in between the "Go-" and "No-Go-value" (Pre-alarm)

In conjunction with the light signal two relay contacts are provided. The relay switching at values higher than "Go-value" is delayed 120 sec. The delay is adjustable between 30 and 130 sec (R38). The second relay's threshold is below the predefined "No Go-value". This relay is not delayed.

The output signal (X28) is 10 V (100% correspond to 10V) for external registration, for lamp power control or for remote sensing. Also a 0-20 mA or 4-20 mA output is available. The RM-31 offers the possibility of using different sensors such as UVC-, UVB-, UVA- and VIS-Sensors.

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2. Operation

Connect the corresponding sensor to the meter (X13). Never use another sensor than the one which is designed for this operation. Use only the original sensor, the meter was ordered for. The connection of another sensor might cause severe malfunctions and destruction. Please also follow the information belonging to the sensor.

The absolute sensitivity of the RM-31 with sensor can be adjusted over a wide range (R19).

3. Adjustments

The potentiometers are on the back of the equipment and can be adjusted with a tiny screw driver. The potentiometers are multiturn with 20 turns. Watch the reading when adjusting. If no reaction can be noticed, you might have reached the limit. In case of uncertainty simply move 20 turns counterclockwise. Now you are sure to be at the lower end. Then count right turns.

When delivered the thresholds are set to 60 % (alarm) and 80% (pre-alarm). The pre-set values can only be changed inside the equipment. The threshold operates with a hysteresis of 5% to ensure stable switching of the contacts. The output X28 feeds at full reading (100%) of the meter, 10 V (1/2) or 20 mA (2/3) respectively.

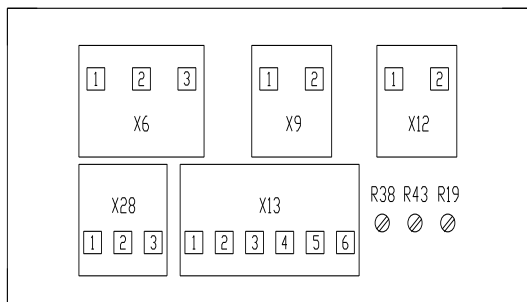


Fig. 2 Connectors and potentiometers

The delay of the relay switching at values above the Go-Value is set by the potentiometer R38. The delaytime ranges from 30 to 130 sec.

The reference input is set by the optional potentiometer R43. This regulator is only used in conjunction with the additional lamp regulation equipment.

The sensitivity of the amplifier is set by potentiometer R19.

4. Transmission Measurement

Transmission measurements can easily be done. Simply put the probe between sensor and lamp. The ratio of the signal with probe to the signal without probe is the transmission value. Calibration of the instrument signal without probe to 100 % (R19) results in direct transmission values for measurements with probe.

For spectral analysis use interference filters in front of the sensor.

5. WARNING

UV-radiation is hazardous to man, animal and plants. Respect regulations for health care and radiative protection. Avoid high irradiance and use a diaphragm if possible. Protect your eyes with safety-goggles.

Extensive radiative or thermal stress will make the usage of a shutter or diaphragm necessary to protect the instrument.

6. Connectors / Operating Elements

Connector X6

- 1 PE
- 2 N 230V AC
- 3 L1 230V AC

Connector X9

Pin 1 and 2 open if pre-alarm
Power rating 230V AC 1A

Connector X12

Pin 1 and 2 open if alarm
Power rating 230V AC 1A

Connector X28 Output

- 1 Voltage output 0-10 V
- 2 GND
- 3 Current output 0-20 mA or 4-20 mA,
reference output for lamp regulation

Connector X13 Output

- 1 -12V
- 2 +5V
- 3 -5V
- 4 Signal high
- 5 GND
- 6 Shield

Sensor UVC-L (810310)

No. at X13	Colour	Signal
	white	none
2	brown	+ 5V
3	green	- 5V
4	yellow	Signal HI
5	grey	GND
6	black	Shield

Sensor UVC-S (810311,810312, 810315)

810 311:

No. at X13	Colour	Signal
4	red	Signal
5	blue	GND

810312, 810315:

No. at X13	Cable	Signal
4	Centre	Signal HI
5	Shield	GND

Relay contacts

230 VAC 1 A

Closed when signal is above threshold

(available as opening and closing contact) LED

Red: Lamp power less than
lower threshold setting

Green: Lamp power above
upper threshold setting

Yellow: Lamp power between
upper and lower threshold Potentiometer

R38 "Go-Delay" 30-130 sec.

R43 optional level reverence output

R19 sensitivity amplifier

7. Technical Data

Order No.	820370 Analog Display 820371 Digital Display
Dimensions:	91 x 43 mm about 140 mm with plug+cable Front panel 96 x 48 mm DIN 43700
Weight:	360 g
Operating temp.:	0 to +40 °C
Storage temp.:	-10 to +40 °C
Humidity:	< 80 %, not condensing
Sensitivity:	Range 1:100 continuous
Threshold:	0 to 100 % continuous (only inside the equipment)

Hysteresis:	typical 5 %
Alarm contact:	250 VAC 1 A
Mains:	230 VAC 200 mA (110 V possible)
Voltage output:	0 to 10 V, max. 1 mA
Current output:	0 to 20 mA or 4 to 20 mA RL _{max} = 500 Ohm

Sensors

Sensor UVC-L

Dimensions:	D 14 mm L 130 mm (longer on request)
Weight:	180 g
Spectral region:	180 to 290 nm UVC 280 to 315 nm UVB
Operating temp.:	0 to +40 °C
Storage temp.:	-10 to +40 °C

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Humidity: < 80 %, not condensing
Cable: 5-lead shielded,
Length 2 m (longer on request)

Order No.: **810310**

Sensor UVC-S

Dimensions: Bolt 32 mm L 23 mm
Thread R 3/4" L 14 mm
Total length L 37 mm

Weight: 180 g

Spectral region: 180 - 280 nm
Sensitivity: >280 nm, about 4 % for
low-pressure mercury lamps
Sensitivity VIS: around 650 nm

Operating temp.: 0 to +40 °C
Storage temp.: -10 to +40 °C
Humidity: < 80 %, not condensing
Cable: coaxial with coaxial plug,
Length 2 m (longer on request)

Order No.: **810311** IP65
810312 Stainless Steel
810315 Brass