

# TR-9600

<https://www.gigahertz-optik.com/en-us/product/tr-9600>

**Product tags:** Dosimeter



# Description

## High Speed Digital Data Sampler for Light Pulse Form Analysis

The TR-9600 optometers are designed for pulse locus analysis of frequency modulated and single pulse flashing light sources.

### Complete Analysis of Pulse Form and Pulse Data

- pulse locus shape
- peak power in absolute light measurement units
- pulse width and pulse half width
- single pulse energy
- pulse repetition rate

### 100 ns or 1 $\mu$ s rise time amplifier

The TR-9600 analog signal amplifier offers a rise time of 1  $\mu$ s (TR-9600-1) or 100 ns (TR-9600-2 \*). The gain of the current to voltage amplifier is in ten steps for best adjustable signal to noise ratio.

### 10 mega sample / second ADC

A high speed analog to digital converter (ADC) digitizes the analog signal with up to a 10Msample/s sample rate for high time resolution measurements. Its 12 Bit resolution is higher than that 8Bit of typical digital oscilloscopes.

### High-speed transient recorder with 100 ns sampling rate and pre-trigger function

The digital data is stored in a high-speed storage medium which is designed as transient recorder allowing a sampling rate of up to 10 Mega samples per second or one sample every 100 ns. The pre-trigger function of the transient recorder enables measurement data to be stored before the triggered event. Two million of samples can be stored in memory.

### Remote operation via RS232 or IEEE488 and trigger I/O interface

The unit is capable of remote control operation via RS232 and IEEE488 interface. BNC connectors are available for trigger signal input and output or for use with external devices with TTL signal capability.

### Software

Windows based software is supplied with the TR-9600 which provides all necessary functions to do remote control pulse-shape measurements and analysis via RS232 or IEEE488 interface.

### Measurement Range Specifications with Light Detectors

The measurement range of the TR-9600 optometer combined with light detector is calculated by the measurement range specification of the optometer and the responsivity of the detector head as follows:

*Example: Irradiance detector with typical responsivity of 3 nA/(W/cm<sup>2</sup>):*

- Maximal measurable irradiance (Range 0):  $2 \text{ mA} / 3 \text{ nA/(W/cm}^2\text{)} = 6,666,666 \text{ W/cm}^2$  \*\*
- Noise equivalent irradiance (Range 9):  $10 \text{ mV} = 0.3 \text{ nA} = 10 \text{ W/cm}^2$
- Minimal measurable irradiance (Range 0):  $10 \text{ W/cm}^2 * 50 \text{ (by user specified signal to noise ratio)} = 500 \text{ W/cm}^2$

### Limited Dynamic Range and Capacitance Limitation

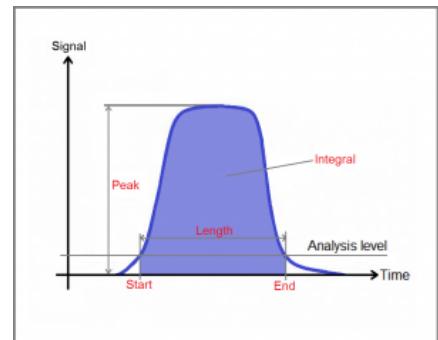
Because of the wide bandwidth of the TR-9600 devices the noise level is higher than that of standard optometers which limits the dynamic range of the instrument. As a result TR-9600 detectors must be carefully selected according to the signal intensity to be measured.

The detector capacitance effected by the photodiode and the cable must be considered to avoid distortion of the pulse locus. To reduce these effects the recommended cable length for large size detectors for use with TR-9600 is 0.2 meters. This is even a greater concern with the TR-9600-2. Please consult the factory for technical support.

\* The TR-9600-2 with 100 ns rise amplifier limits the freedom in selecting of the light detector because of capacitance matching as well as in the available dynamic range because of increased



TR-9600



Pulse Analysis

noise level by the wide bandwidth. Please contact therefore the factory to discuss your application.

**\*\*** The maximum measurable irradiation value may also be limited by thermal radiation, intense UV radiation or other application dependent parameters which must be considered by the end-user.

## Specifications

### General

|                      |   |
|----------------------|---|
| Short description    | The TR-9600 Optometer has been specially developed as a data collector for the analysis of single pulses, pulse cycles or frequency modulated signals.                      |
| typical applications | Pulse locus analysis of frequency modulated and single pulse flashing light sources   |
| Calibration          | Calibration and comparison of the current responsivity in each of amplifier range.  |
| Measurement range    | 1 $\mu$ s rise time amplifier: 10 (1 mA/V – 30 nA/V)<br><br>100 ns rise time amplifier: 4 (300 $\mu$ A/V – 10 $\mu$ A/V)  |
| Main features        | pulse locus shape, peak power in absolute light measurement units (depending on the detector), pulse width and pulse half width, single pulse energy, pulse repetition rate |

### Specification

|                      |  |
|----------------------|--|
| Display              | LEDs:<br><br>POWER: Device switched on, DC-power supply existing<br>CONNECTED: Remote-Commands received<br>ERROR: Error, DC-power supply low |
| Analog input         | BNC-Socket (max. $\pm$ 5 mA, max. $\pm$ 5 V)   |
| Bias                 | -12 V to + 12 V, 10 mA, Shielding BNC-Socket   |
| Trigger              | External trigger Input (TTL/CMOS, positive edge or level)  |
| Trigger              | Trigger Output (CMOS, 4 mA)  |
| Trigger              | Trigger Hysteresis: ca. 50 mV  |
| Measurement range    | 10 (three-step, 1 mA/V – 30 nA/V)  |
| ADC                  | 12 Bit, max. 10 M Samples/s  |
| sampling rate        | 5 Ranges (10 M Samples/s – 1 k Sample/s)   |
| Data logger          | 2 M Samples (4 MByte)  |
| Range Specifications | TR-9600-1: 10 (2.000 mA to 3.000 nA) manual or autorange   |

| Range nr. | Gain          | Max. Range        | Rise Time (10% – 90%) | Bandwidth |
|-----------|---------------|-------------------|-----------------------|-----------|
| AR0       | 1 mA/V        | $\pm$ 2 mA        | 1 $\mu$ s             | 333 kHz   |
| AR1       | 300 $\mu$ A/V | $\pm$ 600 $\mu$ A | 1 $\mu$ s             | 333 kHz   |
| AR2       | 100 $\mu$ A/V | $\pm$ 200 $\mu$ A | 1 $\mu$ s             | 333 kHz   |
| AR3       | 30 $\mu$ A/V  | $\pm$ 60 $\mu$ A  | 1 $\mu$ s             | 333 kHz   |
| AR4       | 10 $\mu$ A/V  | $\pm$ 20 $\mu$ A  | 1 $\mu$ s             | 333 kHz   |
| AR5       | 3 $\mu$ A/V   | $\pm$ 6 $\mu$ A   | 1 $\mu$ s             | 333 kHz   |
| AR6       | 1 $\mu$ A/V   | $\pm$ 2 $\mu$ A   | 3 $\mu$ s             | 111 kHz   |
| AR7       | 300 nA/V      | $\pm$ 600 nA      | 3 $\mu$ s             | 111 kHz   |
| AR8       | 100 nA/V      | $\pm$ 200 nA      | 30 $\mu$ s            | 11 kHz    |
| AR9       | 30 nA/V       | $\pm$ 60 nA       | 30 $\mu$ s            | 11 kHz    |

|         |                        |                                     |
|---------|------------------------|-------------------------------------|
| Version | TR-9600-1<br>TR-9600-2 | 1 $\mu$ s version<br>100 ns version |
|---------|------------------------|-------------------------------------|

## Miscellaneous

|                   |  |
|-------------------|--|
| Power Supply      | (6 - 8) V / 1.2 A, DC power plug 5.5 mm / 2.5 mm / 10 mm<br>AC/DC power supply (7V/1.5 A)  |
| temperature range | (5 - 40) °C  |
| Interface         | RS232 (75 - 57600Baud, 8 Data-Bit's, 1 Stop-Bit, no Parity)<br>DSUB9-Socket:<br><br>PIN 2: TxD<br>PIN 3: RxD<br>PIN 5: GND<br>PIN 1,4,6 connected<br>PIN 7,8 connected<br><br>IEEE488 (488-1978, AH1, SH1, L4, T4)   |
| Dimensions        | w = 28,0 cm<br><br>d = 25,2 cm<br><br>h = 7,8 cm   |
| Weight            | 2000 g (without battery)   |
| Warranty          | 12 months  |
| Humidity          | <80%, non-condensing   |
| Info              | Regular recalibration of the current calibration is recommended. Especially when very small measurement currents have to be measured. In the case of very high humidity, fault currents of the radiometer are possible at low measuring currents and should be taken into account. |

## Configurable with

| Product Name | Product Image   | Description  | Show product  |
|--------------|---|--|---|
| VL-3701      |  | Detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$ , $f2 \leq 1.5 \%$ , 0.5 nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate | <a href="https://www.gigahertz-optik.com/en-us/product/vl-3701">https://www.gigahertz-optik.com/en-us/product/vl-3701</a> |
| VL-3702      |  | Detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 6 \%$ , $f2 \leq 3 \%$ , 0.5 nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate   | <a href="https://www.gigahertz-optik.com/en-us/product/vl-3702">https://www.gigahertz-optik.com/en-us/product/vl-3702</a> |
| VL-3704      |  | Detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 5 \%$ , $f2 \leq 3 \%$ , 20pA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate     | <a href="https://www.gigahertz-optik.com/en-us/product/vl-3704">https://www.gigahertz-optik.com/en-us/product/vl-3704</a> |
| VL-3705      |  | Detector head for the measurement of scotopic illuminance in Lux [lx]. Features: $f1 \leq 5 \%$ , $f2 \leq 3 \%$ , 0.2nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate    | <a href="https://www.gigahertz-optik.com/en-us/product/vl-3705">https://www.gigahertz-optik.com/en-us/product/vl-3705</a> |

| Product Name           | Product Image   | Description   | Show product  |
|------------------------|---|---|---|
| PD-9310A               |    | High sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f_1 \leq 3\%$ , 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration certificate                                   | <a href="https://www.gigahertz-optik.com/en-us/product/pd-9310a">https://www.gigahertz-optik.com/en-us/product/pd-9310a</a>                             |
| PD-9310B               |    | High sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f_1 \leq 6\%$ , 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration certificate                                   | <a href="https://www.gigahertz-optik.com/en-us/product/pd-9310b">https://www.gigahertz-optik.com/en-us/product/pd-9310b</a>                             |
| PD-9310B-N             |    | Very high sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f_1 \leq 3\%$ , 28nA/lx, no diffuser, for the usage with optometers and amplifiers, calibration   | <a href="https://www.gigahertz-optik.com/en-us/product/pd-9310b-n">https://www.gigahertz-optik.com/en-us/product/pd-9310b-n</a>                         |
| LP-9901                |    | Detector head to measure LASER radiant power in W and LASER irradiance in W/m <sup>2</sup> . Features: Low height detector with 7mm dia active area, 400 to 1100nm, for the usage with optometers and signal amplifiers, calibration certificate. | <a href="https://www.gigahertz-optik.com/en-us/product/lp-9901">https://www.gigahertz-optik.com/en-us/product/lp-9901</a>                               |
| VL-3701 with SRT-M37-L |   | Detector head to measure the photopic illuminance in lx and the luminance in cd/m <sup>2</sup> . Features: front lenses with 1°, 2° or 5° viewing angle, for the usage with Optometers and amplifiers, calibration certificate                    | <a href="https://www.gigahertz-optik.com/en-us/product/vl-3701-with-srt-m37-l">https://www.gigahertz-optik.com/en-us/product/vl-3701-with-srt-m37-l</a> |
| LDM-9810               |  | Detector head to measure the photopic spot luminance in cd/m <sup>2</sup> . Features: selectable 20', 1° and 6° viewing angles, view finder, focus able achromatic lens, for the usage with Optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/ldm-9810">https://www.gigahertz-optik.com/en-us/product/ldm-9810</a>                             |
| VL-1101                |  | Photometric detector head with VL-11 mount. Features: modular detector for use with integrating spheres, front lenses etc. For use with optometers and signal amplifiers  | <a href="https://www.gigahertz-optik.com/en-us/product/vl-1101">https://www.gigahertz-optik.com/en-us/product/vl-1101</a>                               |
| LDM-9901               |  | Detector head to measure the photopic spot luminance in cd/m <sup>2</sup> . Features: 1.1° viewing angle, simple to use, very low stray light, for the usage with Optometers and amplifiers, calibration certificate.                             | <a href="https://www.gigahertz-optik.com/en-us/product/ldm-9901">https://www.gigahertz-optik.com/en-us/product/ldm-9901</a>                             |
| S-SDK-TR9600           |  | Software Development Kit for TR9600 variants.   | <a href="https://www.gigahertz-optik.com/en-us/product/s-sdk-tr9600">https://www.gigahertz-optik.com/en-us/product/s-sdk-tr9600</a>                     |

| Product Name                                 | Product Image   | Description  | Show product  |
|--|---|--|---|
| S-TR9600                                     |    | Application software for the TR9600 variants.  | <a href="https://www.gigahertz-optik.com/en-us/product/s-tr9600">https://www.gigahertz-optik.com/en-us/product/s-tr9600</a>                           |
| ISD-0.8-SiLP                                 |    | Integrating sphere detector with short rise time for Laser power in W. Features: 8 mm dia, ODM98 coating, 400 nm - 1100 nm responsivity, optional SMA Adapter, for the usage with fast optometers and signal amplifiers, Calibration certificate | <a href="https://www.gigahertz-optik.com/en-us/product/isd-0.8-silp">https://www.gigahertz-optik.com/en-us/product/isd-0.8-silp</a>                   |
| VL-1101 +<br>UMPA-0.5-11-RD<br>Detector head |    | Module detector head for the measurement of photopic illuminance in Lux [lx]. Features: UMPA adapter for usage with integrating spheres, for the usage with optometers and amplifiers, calibration certificate                                   | <a href="https://www.gigahertz-optik.com/en-us/product/vl-1101uumpa-05-11-rd">https://www.gigahertz-optik.com/en-us/product/vl-1101uumpa-05-11-rd</a> |
| ISD-5-VL                                     |    | Integrating sphere detector for luminous flux (lm) of 2π spot sources. Features: 50mm dia, BaSO4 coating, 12.5mm dia port, for the usage with optometers and signal amplifiers, Calibration certificate  | <a href="https://www.gigahertz-optik.com/en-us/product/isd-5-vl">https://www.gigahertz-optik.com/en-us/product/isd-5-vl</a>                           |
| ISD-10-VL                                    |  | Integrating sphere detector for luminous flux (lm) of 2π spot sources. Features: 100 mm dia, BaSO4 coating, 15 mm dia port, for the usage with optometers and signal amplifiers, Calibration certificate   | <a href="https://www.gigahertz-optik.com/en-us/product/isd-10-vl">https://www.gigahertz-optik.com/en-us/product/isd-10-vl</a>                         |
| ISD-15P-VL                                   |  | Integrating sphere detector for luminous flux (lm) of 2π sources. Features: 150mm dia, synthetic coating, 38.1mm dia port, for the usage with optometers and signal amplifiers, Calibration certificate  | <a href="https://www.gigahertz-optik.com/en-us/product/isd-15p-vl">https://www.gigahertz-optik.com/en-us/product/isd-15p-vl</a>                       |
| TD-11VL01                                    |  | Photometric, temperature stabilized detector with DP-11 mount. Features: for use with integrating spheres, Operation temperature 50 °C, for the usage with optometers and signal amplifiers  | <a href="https://www.gigahertz-optik.com/en-us/product/td-11vl01">https://www.gigahertz-optik.com/en-us/product/td-11vl01</a>                         |
| RW-3701                                      |  | Detector head for the measurement of irradiance in W/m². Features: spectral responsivity from 400-500nm (BLUE), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.                                     | <a href="https://www.gigahertz-optik.com/en-us/product/rw-3701">https://www.gigahertz-optik.com/en-us/product/rw-3701</a>                             |
| RW-3702                                      |  | Detector head for the measurement of irradiance in W/m². Features: spectral responsivity from 700-800nm (RED), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.                                      | <a href="https://www.gigahertz-optik.com/en-us/product/rw-3702">https://www.gigahertz-optik.com/en-us/product/rw-3702</a>                             |
| RW-3703                                      |  | Detector head for the measurement of irradiance in W/m². Features: spectral responsivity from 400-800nm (VIS), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.                                      | <a href="https://www.gigahertz-optik.com/en-us/product/rw-3703">https://www.gigahertz-optik.com/en-us/product/rw-3703</a>                             |

| Product Name | Product Image   | Description   | Show product  |
|--------------|---|---|---|
| RW-3704      |    | Detector head for the measurement of irradiance in W/m <sup>2</sup> . Features: spectral responsivity from 800-1000nm (NIR), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/rw-3704">https://www.gigahertz-optik.com/en-us/product/rw-3704</a> |
| RW-3705      |    | Detector head for the measurement of irradiance in W/m <sup>2</sup> . Features: spectral responsivity from 400-1000nm (VISNIR), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.  | <a href="https://www.gigahertz-optik.com/en-us/product/rw-3705">https://www.gigahertz-optik.com/en-us/product/rw-3705</a> |
| RW-3708      |    | Detector head for the measurement of irradiance in W/m <sup>2</sup> . Features: spectral responsivity from 950-1700nm (NIR), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/rw-3708">https://www.gigahertz-optik.com/en-us/product/rw-3708</a> |
| UV-3701      |    | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 315-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3701">https://www.gigahertz-optik.com/en-us/product/uv-3701</a> |
| UV-3702      |    | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 280-315nm (UV-B), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3702">https://www.gigahertz-optik.com/en-us/product/uv-3702</a> |
| UV-3703      |  | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 200/250-280nm (UV-C), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.                                     | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3703">https://www.gigahertz-optik.com/en-us/product/uv-3703</a> |
| UV-3710      |  | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 320-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3710">https://www.gigahertz-optik.com/en-us/product/uv-3710</a> |
| UV-3711      |  | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 280-320nm (UV-B), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3711">https://www.gigahertz-optik.com/en-us/product/uv-3711</a> |
| UV-3716      |  | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 305-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3716">https://www.gigahertz-optik.com/en-us/product/uv-3716</a> |
| UV-3717      |  | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 315-400nm (UV-A), low cross talk from radiation > 400 nm, cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate. | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3717">https://www.gigahertz-optik.com/en-us/product/uv-3717</a> |
| UV-3719      |  | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 250-400nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3719">https://www.gigahertz-optik.com/en-us/product/uv-3719</a> |

| Product Name       | Product Image   | Description   | Show product  |
|--------------------|---|---|---|
| UV-3720            |    | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 240-320nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.                                     | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3720">https://www.gigahertz-optik.com/en-us/product/uv-3720</a>           |
| UV-3721            |    | Detector head for the measurement of irradiance of UV radiation in W/m <sup>2</sup> . Features: spectral responsivity from 350-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.                                   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3721">https://www.gigahertz-optik.com/en-us/product/uv-3721</a>           |
| UV-3711-308        |    | Detector head for the measurement of irradiance of 308nm Eximer Lasers in W/m <sup>2</sup> . Features: flat spectral responsivity besides 308nm, cosine field-of-view, dose measurement in conjunction with P-9710-2 optometer, calibration certificate                     | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3711-308">https://www.gigahertz-optik.com/en-us/product/uv-3711-308</a>   |
| UV-3718            |    | Detector head for the measurement of high irradiance of UV-C 254nm radiation in W/m <sup>2</sup> . Features: pre-aging for long time stability, cosine field-of-view, metal shielded cable, for the usage with optometers and amplifiers, calibration certificate.          | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3718">https://www.gigahertz-optik.com/en-us/product/uv-3718</a>           |
| UV-3725 not active |    | Detector for the measurement of UV-C 254 nm irradiance in air disinfection applications. Features: wide dynamic range for UV hazard and effective irradiance, wide angle cosine F.O.V. for straylight measurements, for the usage with optometers, calibration certificate. | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3725-1">https://www.gigahertz-optik.com/en-us/product/uv-3725-1</a>       |
| ISD-5-VISNIR       |   | Integrating sphere detector for radiant power in W of 2π sources. Features: 400 nm - 1100 nm radiometric responsivity, 50 mm dia, 12.5 mm dia port, for the usage with optometers and signal amplifiers, Calibration certificate  | <a href="https://www.gigahertz-optik.com/en-us/product/isd-5-visnir">https://www.gigahertz-optik.com/en-us/product/isd-5-visnir</a> |
| ISD-3P-Si          |  | Integrating sphere detector for Laser power in W. Features: 30 mm dia, 5 mm dia port, synthetic ODM98 coating, 400 nm - 1100 nm responsivity, for the usage with optometers and signal amplifiers, Calibration certificate  | <a href="https://www.gigahertz-optik.com/en-us/product/isd-3p-si">https://www.gigahertz-optik.com/en-us/product/isd-3p-si</a>       |
| UV-3706            |  | Detector head to measure irradiance W/m <sup>2</sup> in Bilirubin phototherapy. Features: Bilirubin actinic responsivity, cosine field-of-view, for use with optometers, calibration certificate.   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3706">https://www.gigahertz-optik.com/en-us/product/uv-3706</a>           |
| UV-3724            |   | Detector head for the measurement of UV-B irradiance of TL1 sources in W/m <sup>2</sup> . Features: calibrated with TL1 source, cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.  | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3724">https://www.gigahertz-optik.com/en-us/product/uv-3724</a>           |
| UV-3709            |  | Detector for Blue-light hazard measurements. Features: Single-cell detector, BLH actinic irradiance, for the usage with optometers, calibration certificate   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3709">https://www.gigahertz-optik.com/en-us/product/uv-3709</a>           |

| Product Name            | Product Image   | Description   | Show product  |
|-------------------------|---|---|---|
| ISD-3P-IGA              |    | Integrating sphere detector with InGaAs photodiode and 30 mm sphere for Laser power in W. Features: 800 nm - 1800 nm spectral responsivity, 5 mm dia measurement port, synthetic ODM98 coating, optional SMA Adapter, for the usage with Optometer and signal amplifiers, calibration certificate     | <a href="https://www.gigahertz-optik.com/en-us/product/isd-3p-iga-2">https://www.gigahertz-optik.com/en-us/product/isd-3p-iga-2</a>             |
| UV-37 with SRT-M37-L-UV |    | Detector heads to measure the UV irradiance in W/m <sup>2</sup> and the UV-radiance in W/(m <sup>2</sup> *sr). Features: front lenses with 1°, 2° or 5° viewing angle, for the usage with Optometers and amplifiers, calibration certificate  | <a href="https://www.gigahertz-optik.com/en-us/product/uv-37usrt-m37-l-uv">https://www.gigahertz-optik.com/en-us/product/uv-37usrt-m37-l-uv</a> |
| UV-3725                 |    | Detector for the measurement of UV-C 254 nm irradiance in air disinfection applications. Features: wide dynamic range for UV hazard and effective irradiance, wide angle cosine F.O.V. for straylight measurements, for the usage with optometers, calibration certificate.                           | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3725">https://www.gigahertz-optik.com/en-us/product/uv-3725</a>                       |
| UV-3711-308             |    | Detector head for the measurement of irradiance of 308nm Eximer Lasers in W/m <sup>2</sup> . Features: flat spectral responsivity besides 308nm, cosine field-of-view, dose measurement in conjunction with P-9710-2 optometer, calibration certificate   | <a href="https://www.gigahertz-optik.com/en-us/product/uv-3711-2">https://www.gigahertz-optik.com/en-us/product/uv-3711-2</a>                   |
| RCH-0                   |   | Detector head for high intensity irradiation as in UV or blue light curing processes. Features: Separate light integrator and detector with flexible fiber coupling, light, 320-460nm UVABLU responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate. | <a href="https://www.gigahertz-optik.com/en-us/product/rch-0">https://www.gigahertz-optik.com/en-us/product/rch-0</a>                           |
| RCH-102                 |  | Detector head for high intensity irradiation in UV or blue light curing processes. Features: Separate light integrator and detector with rigid fiber coupling, (320-460)nm UVABLU responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.            | <a href="https://www.gigahertz-optik.com/en-us/product/rch-1">https://www.gigahertz-optik.com/en-us/product/rch-1</a>                           |

## Purchasing information

| Article-Nr      | Modell          | Description  |
|-----------------|-----------------|--|
| <b>Product</b>  |                 |  |
| 15295243        | TR-9600-1       | Meter, with power supply, software and manual  |
| 15295277        | TR-9600-2       | Meter, with power supply software and manual   |
| <b>Options</b>  |                 |  |
| -               | Light Detectors | Please check the light detector datasheets or the tab configurable with for specification and purchasing information |
| <b>Software</b> |                 |  |
| 15298648        | S-SDK-TR9600    | Software Development Kit for the implementation of the TR9600 or variants into custom made software                  |
| 15298646        | S-TR9600        | User software for TR9600 and variants.   |

| <b>Article-Nr</b>  | <b>Modell</b> | <b>Description</b>                  |
|--------------------|---------------|-------------------------------------|
| <b>Accessories</b> |               |                                     |
| 15295220           | BHO-02        | Hard case for meter and accessories |