

PLL-1701

<https://www.gigahertz-optik.com/en-us/product/pll-1701/>

Product tags: VIS , NIR



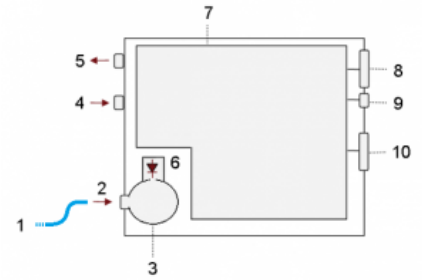
Description

High Speed transimpedance amplifier and digital data sampler

The PLL-1701 optometer is designed for two different types of fast optical measurements with two different amplifier modes (linear or logarithmic).

The device incorporates a small integrating sphere and detector for the measurement of optical power from fibers (FC connector) in W over the wavelength range 400 nm to 1550 nm. The measurement results can be output either directly as an analogue voltage (BNC) or as digital data via USB or RS422 interface. The pure analogue measurement conversion (transimpedance) to the BNC is with a speed of 200000 Samples/s suitable for very fast measurement purposes. The digital measurement is only limited by the transmission speed of USB and RS422 (100kHz). Instead of the integrating sphere measurement, an external detector can be used with the provided BNC current-input.

The device itself can be configured by the two remote interfaces.



schematic drawing: 1 = optical fiber (user), 2 = FC connector, 3 = integrating sphere, 4 = Current in (external detector), 5 = Voltage Out, 6 = Photodiode, 7 = electronic board, 8 = Power supply, 9 = USB, 10 = I/O interface

Flicker measurements

The fast sampling rate enables flicker evaluation of lighting products when used in conjunction with an external photometric detector such as the [VL-3701-1](#). The standard flicker metrics P_{st} , SVM, M_p , Flicker frequency, Flicker index and Flicker percent are all implemented in the available software.

16 μ s or 500 μ s rise time linear amplifier

The PLL-1701 linear signal amplifier offers fixed rise times of either 16 μ s or 500 μ s for all gain ranges which can be set by remote commands. The total gain range of the current to voltage amplifier is divided in nine ranges in order to achieve an optimal signal to noise ratio.

logarithmic amplifier

The PLL-1701 also offers a logarithmic amplifier which covers the whole dynamic range with one amplifier gain range. Hence no switching of gains is needed which would otherwise take some time and thereby limit some high speed applications.

AA, ADC and DAC mode

In addition to the traditional measurement functions of an optometer (AA - analogue to analogue (transimpedance) and ADC – analog to digital converter) the PLL-1701 incorporates a digital to analog converter able to transfer 16-bit digital data to the analogue electrical output (BNC); signal generator functionality (-5V to +5V).

Software



PLL-1701



Front View



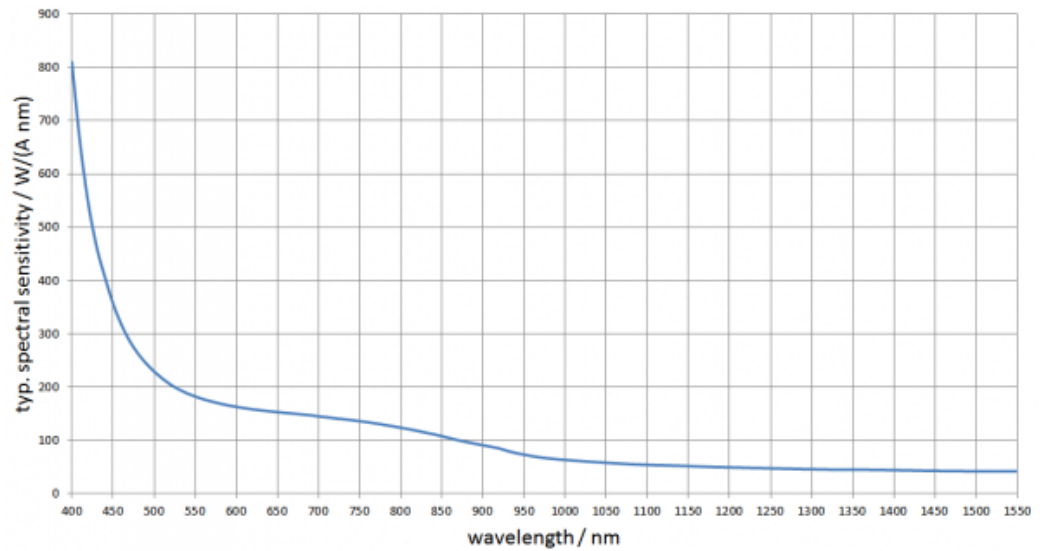
Rear View

Windows based software is supplied with the PLL-1701 which provides all common functions to do remote control measurements and analysis via USB and RS422. Optionally an S-SDK-PLL1701 is available to implement the meter by the user's own software.

Specifications

General																																				
Short description	High-speed transimpedance amplifier, digital data sampler and function generator for versatile applications with implemented integrating sphere for radiant power (W) measurement of optical fibers. The PLL-1701 stand out with two integrated amplifiers, a linear amplifier with nine gain ranges and logarithmic amplifier with one high dynamic range without need for range switching.																																			
Main features	Optical FC input for fast measurement of optical fibers, BNC electrical current input for external detector heads, linear and logarithmic current amplifiers																																			
Measurement range	linear and logarithmic amplifier, radiant power measurement (W) with the integrating sphere calibrated from 400 nm to 1550 nm																																			
Typical applications	Fast measurement of optical fibers, fast measurement with detector heads, AA, ADC and DAC measurements, flicker measurements																																			
Calibration	Factory calibration. Traceable to international calibration standards																																			
Product																																				
Input Interfaces	BNC-Connector (electrical) FC-Connector (optical)																																			
Output Interfaces	BNC-Connector, Output Voltage: ± 5V USB																																			
ADC	16 bit																																			
DAC	16 bit																																			
Measurement range	Linear amplifier: <table><thead><tr><th>range</th><th>rise time</th><th>rise time extended</th></tr><tr><th>max.</th><th>(10 - 90)%</th><th>(10 - 90)%</th></tr></thead><tbody><tr><td>± 1.17 mA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>± 545 μA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>± 254 μA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>±117 μA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>± 54 μA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>± 25.4 μA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>± 11.7 μA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>± 5.45 μA</td><td>16 μs</td><td>500 μs</td></tr><tr><td>± 2.54 μA</td><td>16 μs</td><td>500 μs</td></tr></tbody></table> Log amplifier: max. current: +1 mA (analog output voltage: +4.8 V) min. current: +100 pA (analog output voltage: -1.8 V) (cut-off frequency current depending, e.g.: 10nA □ 20kHz, 1nA □ 5Khz)			range	rise time	rise time extended	max.	(10 - 90)%	(10 - 90)%	± 1.17 mA	16 μs	500 μs	± 545 μA	16 μs	500 μs	± 254 μA	16 μs	500 μs	±117 μA	16 μs	500 μs	± 54 μA	16 μs	500 μs	± 25.4 μA	16 μs	500 μs	± 11.7 μA	16 μs	500 μs	± 5.45 μA	16 μs	500 μs	± 2.54 μA	16 μs	500 μs
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Spectral responsivity



Calibration uncertainty

λ	$u(k=2)$
(400 - 800) nm:	$\pm 5 \%$
(810 - 900) nm:	$\pm 6 \%$
(910 - 1070) nm:	$\pm 6.5 \%$
(1080 - 1100) nm:	$\pm 7 \%$
(1110 - 1550) nm:	$\pm 7.5 \%$

Spectral radiant intensity responsivity (400 - 1550) nm

Function generator

The PLL-1701 is able to provide electrical Signals on the BNC Output (function generator):

-5 V to +5 V, max. 10000 Values, clock speed 3 μ s – 900 μ s

Miscellaneous

Power Supply

(9-24) VDC
200 mA bei 12 V

Sampling rate

100.000 SPS (samplings/s) with continuous data transmittance

Interface

USB V2.0 (Full Speed, HID Device)
RS422 (based on LVDS)
*Limitation: Only one device can be connected by RS422.
Max. interfaces transmission speed: 100 kHz*

Weight

550 g

Dimensions

173.3 mm x 36.2 mm x 124.4 mm

Trigger

External signal: Low active, Trigger Level ca. 1V, Delay: Rise Time (16 μ s) + digitalization (15 μ s), Pre-Triggering possible
Internal digital trigger: Delay 2 μ s $\pm$ 200ns.

Temperature range

Storage: (-10 to 50) °C
Operation: (10 to 30) °C

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. Temperature difference relative to the calibration temperature can increase the measurement uncertainty.

Configurable with

Product Name	Product Image	Description	Go to product
S-SDK-PLL1701		Software Development Kit for the PLL-1701 devices for device control and implementation in own software.	https://www.gigahertz-optik.com/en-us/product/s-sdk-pll1701/
S-PLL1701		Application software for PLL-1701 and variants.	https://www.gigahertz-optik.com/en-us/product/s-pll1701/
LPS-CH-500		Signal Generator for example for testing of flicker properties of lamps and luminaires according to IEC TR 61547-1:2017	https://www.gigahertz-optik.com/en-us/product/lps-ch-500-with-s-t-flicker/

Purchasing information

Article-Nr	Modell	Description
Product		
15307746	PLL-1701	PLL-1701 Optometer
Calibration		
15309151	K-PLL1701	Calibration of the PLL-1701 in W in the wavelength range from 400 nm to 1550 nm including current calibration of the logarithmic and linear amplifier.
Options		
15295230	VL-3701-1	Photometric detector with –1 connector, protective cap, calibration certificate
Software		
15309839	S-PLL1701	End-user software for PLL-1701.
15309838	S-SDK-PLL1701	Software development kit for the PLL-1701

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[Send us your inquiry](#) or contact us by phone or e-mail. We would welcome your feedback too or review us on [Google](#).

Gigahertz Optik GmbH (Headquarter)

Tel.: +49 (0)8193-93700-0
Fax: +49 (0)8193-93700-50
info@gigahertz-optik.de

An der Kaelberweide 12
82299 Tuerkenfeld, Germany

Gigahertz-Optik, Inc. (US office)

Phone: +1-978-462-1818
info-us@gigahertz-optik.com

Boston North Technology Park
Bldg B - Ste 205
Amesbury, MA 01913 USA