

NEW

High-end modular spectroradiometer

# GL SPECTIS 4.0 M

Customizable device for variety of applications.



GL Optic devices are manufactured in the EU, sold and serviced world wide.

**High-precision modular spectroradiometer with CCD Back-Thinned cooled (or thermally stabilized) sensor is delivering high resolution and increased sensitivity. Based on the customizable design and available accessories it can be used for variety of applications, both in laboratory and industrial settings.**

#### APPLICATION:

- laboratory and industrial measurements
- daily quality control of LED production
- UV and photobiological safety assessment
- development of new designs of lighting fixtures



The project is co-financed by the European Union through the European Regional Development Fund under the Smart Growth Operational Programme.

**GL SPECTIS 4.0 M** is a high-precision measuring instrument ready to fulfil every customer need thanks to its modular design and wide range of available probes and filters.

### Reduced uncertainty in UV-VIS-NIR

The thermal stabilization of the detector used in the device reduces signal noise and the level of dark current, which allows for measurements with low signal levels, especially in the ultraviolet range (e.g. LED UV-C). This solution additionally ensures independence from the ambient temperature. Temperature stabilization directly on the detector allows for the reduction of water vapor in the cooling process. It also reduces measurement uncertainty in the ultraviolet, visible and infrared ranges.

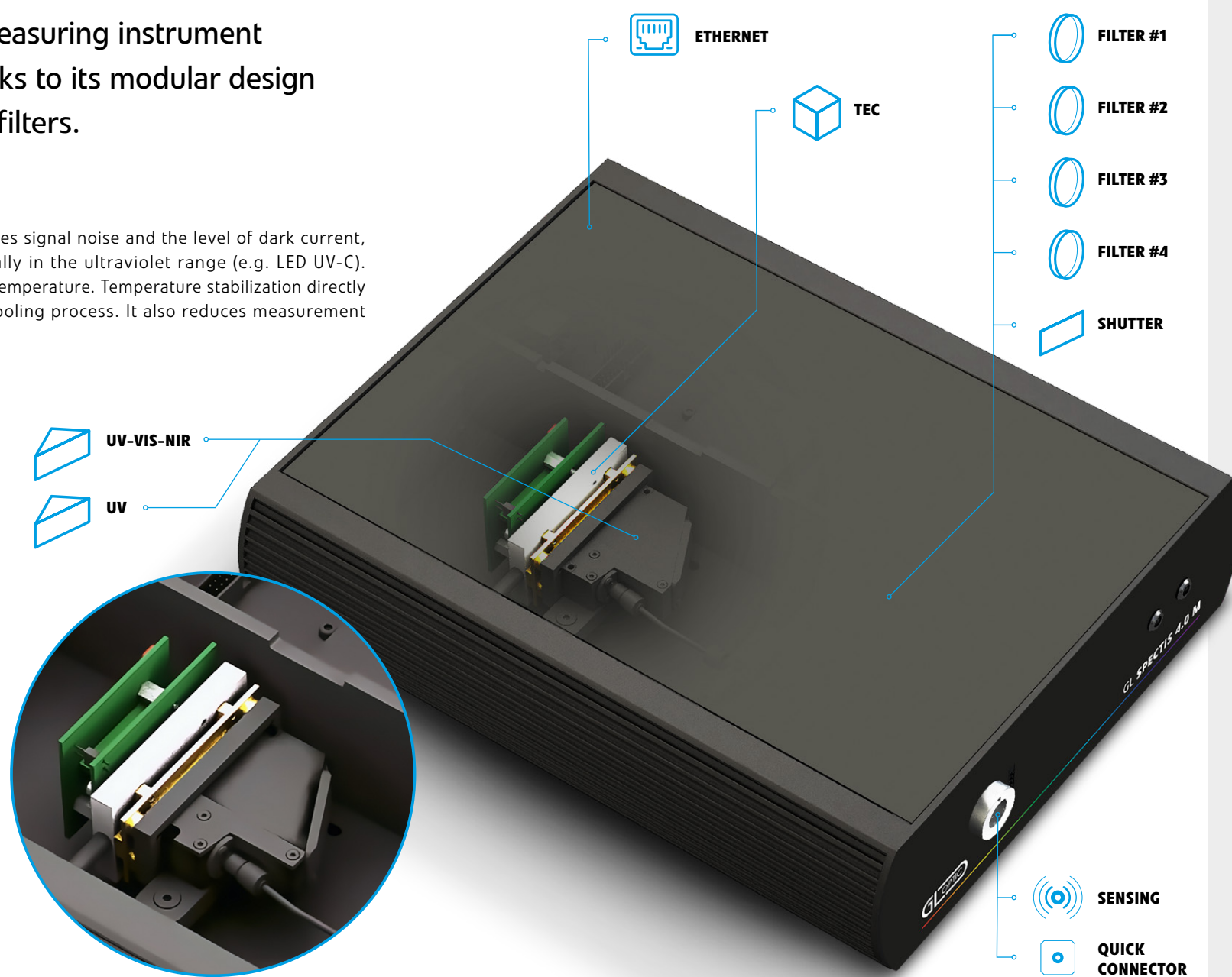
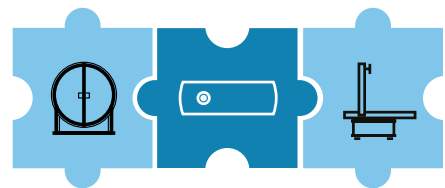
### From lowest to very high signal levels

Depending on the nature of the measured signal, the variable optical path allows for flexible adjustment of the optical properties by changing the diaphragm, filters and lenses. This solution allows for quick adaptation of the device to the specific measurement needs without the need for swapping the measurement probe. The possibility of using 4 additional filters increases the dynamic range of the device up to 10 times, all while maintaining calibration parameters for all optical path configurations.

For ultraviolet measurements, **GL SPECTIS 4.0 M** is available in a dedicated version equipped with a module for measurements of UV radiation. The UV spectroradiometer is perfect for measurements where a slight shift in wavelength at the maximum value of the signal has a direct impact on the effectiveness of disinfection, medical applications and other actinic interactions, thanks to high optical resolution. Limiting the spectral range of the module to ultraviolet allows for higher optical resolution of 0.5 nm. **GL SPECTIS 4.0 M UV** is a high grade device that allows you to precisely determine the suitability and necessary dose of radiation for a given application according to EN 62471:2010 and EN 60601-2-41.

**It is also a perfect tool for photobiological safety assessment.**

**GL SPECTIS 4.0 M** can work as a standalone device, but is also compatible with GL OPTIC's integrating spheres and gonio systems.

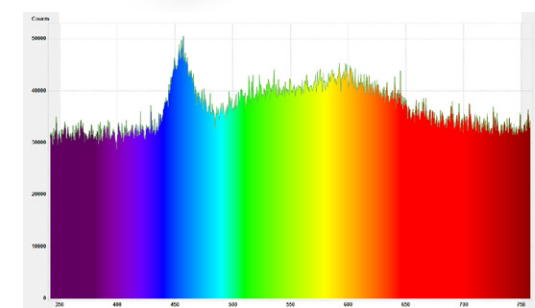


### KEY FEATURES

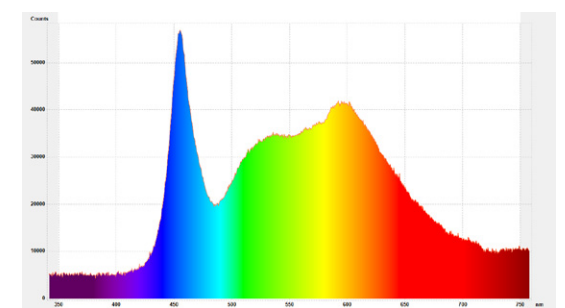
- ✓ Spectral range from 200 nm to 1050 nm
- ✓ Measurement uncertainties of only  $\pm 0.0015$  for standard chromaticity coordinates
- ✓ Integration times from 10 ms to 60 s
- ✓ Measurements illuminance levels of 1 lx feasible
- ✓ Dynamic range of the device is increased towards lower signal levels
- ✓ Cooled back-thinned detector to minimize dark current & noise levels
- ✓ Variable optical path for specific applications
- ✓ Shutter – for automatic dark current compensation
- ✓ Additional probes with quick connector and automatic detection
- ✓ Ethernet connection
- ✓ Dedicated GL AUTOMATION 4.0 M software for spectral analysis
- ✓ Optional filters on demand
- ✓ Rack housing available
- ✓ Increasing the dynamic range can be increased towards higher signal levels using advanced filters

### DETECTOR COOLING - MEASUREMENTS

The same signal measured without (left) and with the detector cooling (-5°C - right) → the same exposure time for the non-cooled detector results in 30% higher reading of illuminance.



Non-cooled detector, exposure time = 10 s



Detector at -5°C, exposure time = 10 s

# GL SPECTIS 4.0 M

## CONFIGURATIONS

	GL SPECTIS 4.0 M UV-VIS-NIR	GL SPECTIS 4.0 M UV-VIS-NIR TEC	GL SPECTIS 4.0 M UV
Spectral range	200 nm – 1050 nm	200 nm – 1050 nm	200 nm – 400 nm
Optical resolution / FWHM	2.5 nm	3 nm	0.5 nm
Wavelength accuracy	0.5 nm	0.2 nm	0.2 nm
Datapoint interval	~0.5 nm	~0.5 nm	~0.1 nm
Integration time	10 ms – 10 s	10 ms – 65 s	10 ms – 10 s
Radiometric accuracy:	7% within range 200 – 220 nm	6% within range 200 – 220 nm	4% within range 200 – 400 nm
	5% within range 220 – 500 nm	4% within range 220 – 500 nm	
	4% within range 500 – 1050 nm	3% within range 500 – 1050 nm	
Stray light (for LED)	2E-4	2E-4	2E-4
Non-linearity	0,5%	0,5%	0,5%
Sensor	back-thinned CCD	back-thinned TEC CCD	back-thinned CCD
Number of pixels	2048	2048	2048
A/D converter	16 bit	16 bit	16 bit
Signal to Noise Ratio	1000:1	1000:1	500:1
Flicker compensation	✓	✓	✓
Temperature sensor and dark current compensation	compensation	Temperature stabilization (cooling -5°C) + compensation	Temperature stabilization (optional)* + compensation
Uncertainty of color coordinates	± 0.0015	± 0.0015	N/A
Automatic accessory detection	✓	✓	✓
Automatic shutter	N/A	✓ (optional)	N/A
Automatic filter wheel (4 customized filter slots for density filters available)	N/A	✓ (optional)	N/A
<b>INTERFACE</b>			
PC connection	Ethernet	Ethernet	Ethernet
Trigger	terminal block 4 pin	terminal block 4 pin	terminal block 4 pin
Data format	XML	XML	XML
Fiber optic connector	quick release	quick release	quick release
<b>SOFTWARE</b>			
Software	GL SPECTROSOFT M	GL SPECTROSOFT M	GL SPECTROSOFT M
Development kit	DLL driver (SDK)	DLL driver (SDK)	DLL driver (SDK)
<b>GENERAL PROPERTIES</b>			
Ambient temperature range	5 – 35°C	5 – 35°C	5 – 35°C
Dimensions [H x W x D]	70 x 250 x 300 mm	70 x 250 x 300 mm	70 x 250 x 300 mm
Rack adapter	2U 19" (optional)	2U 19" (optional)	2U 19" (optional)
Weight	5 kg	5 kg	5 kg
Power requirements	5 V / 5 A DC	5 V / 5 A DC	5 V / 5 A DC

\* Temperature stabilization at +15°C

**Note:** Instrument, firmware and software specification are subject to change without prior notice. All information included in GL OPTIC datasheets and product information available in any form are carefully prepared and included information believed to be true. Please note that discrepancies may occur due to text and/or other errors or changes in the available technology. We advise to contact GL Optic before the use of the product to obtain the latest product specification.

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