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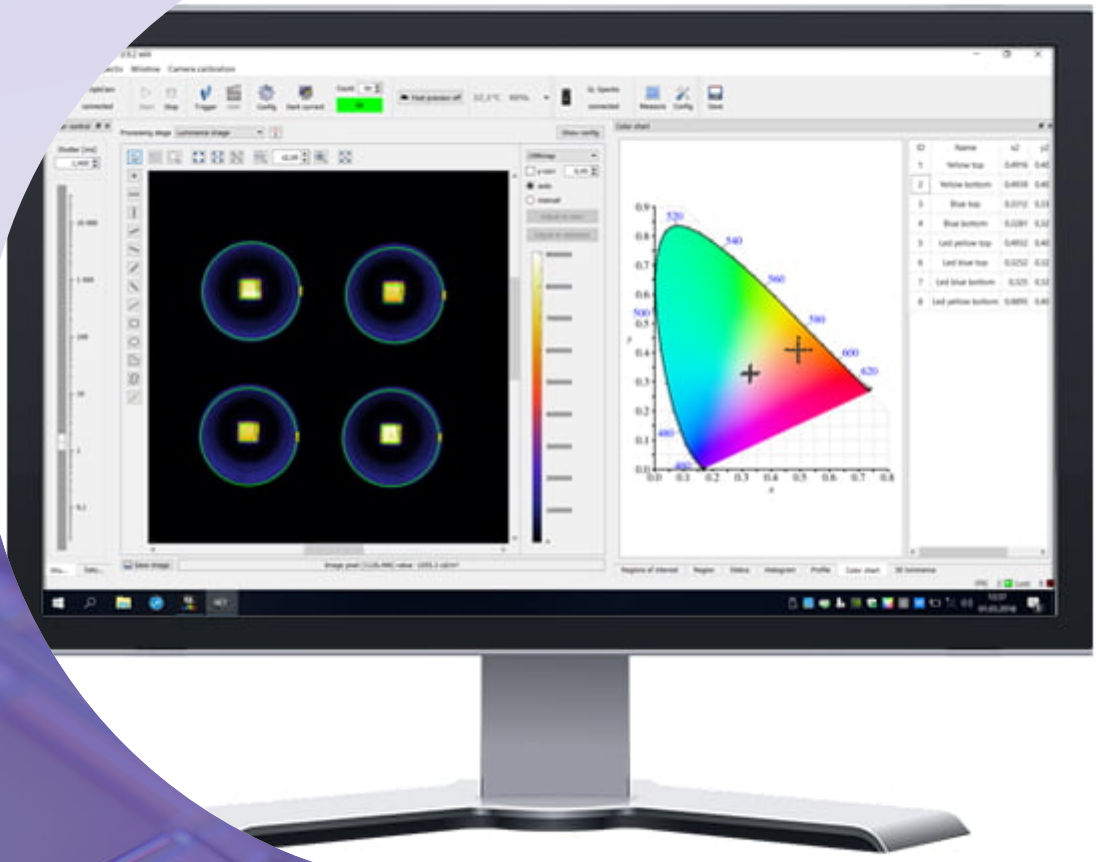


PHOTONICS

Table of contents

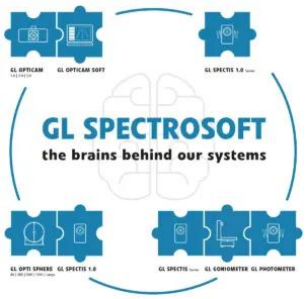
GL Optic is a Polish-German manufacturer specializing in advanced light measurement systems for photonics and precision optics applications. Their comprehensive portfolio includes spectroradiometers, photometers, integrating spheres, goniometers, and luminance cameras, all designed to deliver accurate and reliable measurements across a broad spectrum of light sources.

Product offering

GL EPREL PRODUCT REGISTRATION SPECTROSOFT ADD-ON

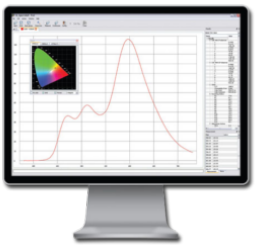
GL AUTOMATION – SPECTROSOFT ADD-ON

GL SPECTROSOFT M



GL Spectrosoft Automation – GL Optic

GL Spectrosoft – GL Optic



GL EPREL PRODUCT REGISTRATION SPECTROSOFT ADD-ON

ECODESIGN requirements for lighting

The European Union put certain criteria on lighting product importers and producers in 2019 with the introduction of Directive 2009/125/EC, also referred to as ECODESIGN. These requirements must be fulfilled for items to be sold in the EU. Reducing the number of subpar products available in the EU is the project's primary objective.
A new product needs to be registered in the EPREL database before it can be made available for purchase. A matching energy-efficiency label is created and needs to be prominently displayed for the client and put on the package.

Easier entry of products into the EPREL database

Even after the EPREL database has been up and running for a while, product registration issues persist. The required tests must be completed and the results imported into an.xml file in a format that is rigorously defined in order to register a product. The EPREL database is currently difficult to use and requires a lot of time to enter data.
In response to the demands of lighting producers and importers, we have developed a GL SPECTROSOFT software add-on that expedites the introduction of products for sale. The measurement results will be automatically saved by GL EPREL ADD-ON in the appropriate format and exported to a file that can be imported into the EPREL database. Don't waste time; outfit your lab with the EPREL add-on.

Measurements in accordance with the requirements European standards

The GL SPECTROSOFT software add-on has been designed in compliance with the EU Directive 2019/125/EC criteria. The application saves all data as a suitable report in the.xml format and automatically determines the values of every parameter required to register the product in the EPREL database.

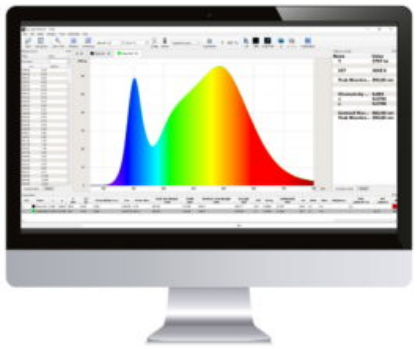
Importing to EPREL is as easy as never before

Thus far, the EPREL database's product registration procedure has necessitated laborious and intricate manual labor. All it takes to create a comprehensive report that is ready for import into the EPREL database is one click with the EPREL Product Registration Add-On. Really, registering your product in the EPREL database will only take a few minutes.

Define, quantify, import, store, and execute.

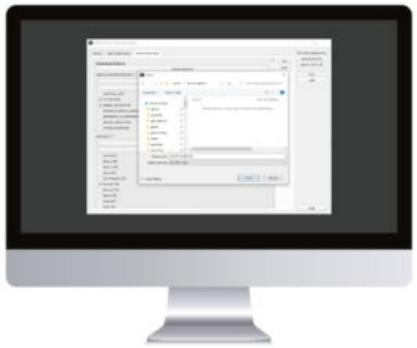
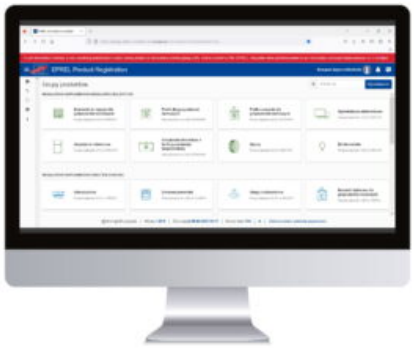
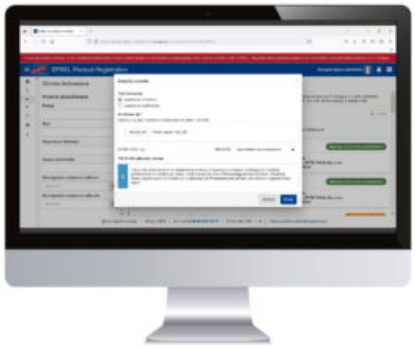
Compatible with existing GL OPTIC systems

Test stands for GL EPREL Product Registration ADD-ON can be readily modified by laboratories with GL OPTIC measurement equipment to enable completely ECODESIGN-compliant measurements. Assemble the measuring tools your lab needs and take advantage of the opportunities the EPREL ADD-ON add-on presents.







A guide in the process of registering light sources in the EPREL database

The program for the GL EPREL Product Registration Add-On is highly user-friendly. It walks the user through the process of creating a comprehensive report step-by-step and saves the measurement findings as a compressed.zip bundle.
The add-on can be used without the need for specialized knowledge. The entire procedure consists of completing a form with the tested source’s technical specifications, which must be entered in compliance with ECODESIGN guidelines. The application makes measurements and does additional computations in order to produce a report that is ready to be saved.

GL AUTOMATION – SPECTROSOFT ADD-ON

Minimize errors and maximize efficiency

LED light measurement is becoming more diverse than only optical testing; reporting and measurement are now needed for thermal conditions, current, and power levels. The GL Spectrosoft Automation add-on reduces mistakes brought on by misalignment of the equipment, automates complex tasks, and speeds up and supplements measurements of other data (such as temperature, luminous efficacy, etc.).
This revolutionary supplementary software communicates with and runs all linked devices, eliminating the need to set up parameters for each one separately. It is the ideal instrument for both commercial applications and laboratories with intricate procedures.

Set operation sequences

Using programmable peripheral devices, it is simple to setup an entire sequence of operations, including cooling temperature, current, and voltage, before a measurement. Select the appropriate measurement options from the available operations list and write a measurement script that the software will run automatically.

Data fusion

Gather information from other sources and compile all of your important data into a measurement report. Just specify parameters, determine whether temperature or current have an impact on how well your lighting product works, and produce a thorough analysis summary.

Automate complex operations

Temperature controllers, multimeters, current sources, and programmable power supplies are all supported by the GL AUTOMATION add-on. The automation script editor can now be used to monitor and measure various current levels or temperature conditions. To have your own device’s custom integrations developed, choose from a list of supported devices.

GL AUTOMATION add-on Usage

Other factors that have a big impact on LED performance are given a lot of attention in the most recent industry standards and guidelines for accurate LED measuring. These are mostly used to monitor electrical properties like voltage and current, as well as thermal performance. For this reason, in addition to temperature and stable, monitored power parameters, current LED testing now incorporates optical measurements. Spectrosoft Automation was designed with the express purpose of managing these intricate testing processes and facilitating communication with various instruments, all while offering the operator a single interface and report interface.

Write your script and go

Building a custom measurement script only requires using the drag-and-drop interface and choosing the logical sequence from the list of available commands in the automation editor window once all of the devices that are supported by the automation software have been connected. These scripts could configure your lamp's power supply's beginning parameters, your spectrometer's measurement parameters, and readings from an independent power meter, among other things.

Change the current and test

You can use various current levels and test the optical output of your lighting goods under various circumstances while conducting performance tests and measurements. Your measurement sequence will be built with the software's assistance, and all data will be stored in easily navigable, personalized reports.

Simulate different temperatures

Automation is compatible with Peltier-controlled LED mounts (TEC), which are needed by CIE standards and are capable of stabilizing the LED module at a specific temperature, such as 25 °C. Additionally, it can replicate greater "working" temperatures, which are necessary for LED module tests and measurements according to IES LM requirements. It's as easy as entering the parameters and steps list into the editor. This PC interface allows you to control, switch, and measure a variety of parameters without the need to be a programmer.

GL AUTOMATION add-on Specifications

Devices supported by GL AUTOMATION add-on

Temperature Control

- Arroyo TEC Source controllers.

Tested with Arroyo 5300-08-24 8A / 24V TEC Source

Digital thermometer

- Digital thermometers for GL Opti Sphere

Power meter

- Gossen MetraHit Energy multimeter

GL Sphere Controller

- GL Optic Sphere controller box.

Power supply

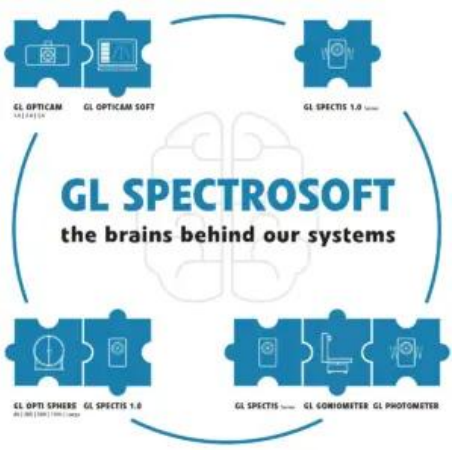
- HEIDEN ACS AC power supply
- ITECH IT6333b DC power supply
- ITECH IT7321 AC power supply
- IT7322 AC power supply
- IT7324 AC power supply
- IT7326 AC power supply
- Manson SDP is a simple DC power supply
- Manson SSP is a simple DC power supply
- TDK Lambda DC power supply family, including TDK Lambda Genesys, TDK Lambda Z+, and TDK Lambda ZUP

Note: Integration of new devices is available upon request.

GL SPECTROSOFT M

Upgradable software for quick & reliable spectral analysis

A modular PC-based analysis program called GL SPECTROSOFT M is intended for use in field operations, laboratories, production quality control, and general light assessment. GL SPECTROSOFT M gives your GL SpecTROMETER more strength, speed, and efficiency with a variety of potent add-ons. Whether comparing lighting settings, reviewing field measurements, or assisting with production quality control, this adaptable software platform offers instant access to all pertinent data.



Powerful light assessment software

GL SPECTROSOFT M, specifically designed light measuring software for GL Optic's measurement device, is "the key" to all of the spectrometers' advanced features. It transforms unprocessed device data into insightful knowledge. The program presents data in both graphical charts that are simple to understand and well-presented, customisable windows (tables). To make the presentation and sharing of data easier, advanced capabilities include structured reporting formats and adjustable pass/fail criteria. All systems come with Spectrosoft Connect; other versions are optional.

Every metric

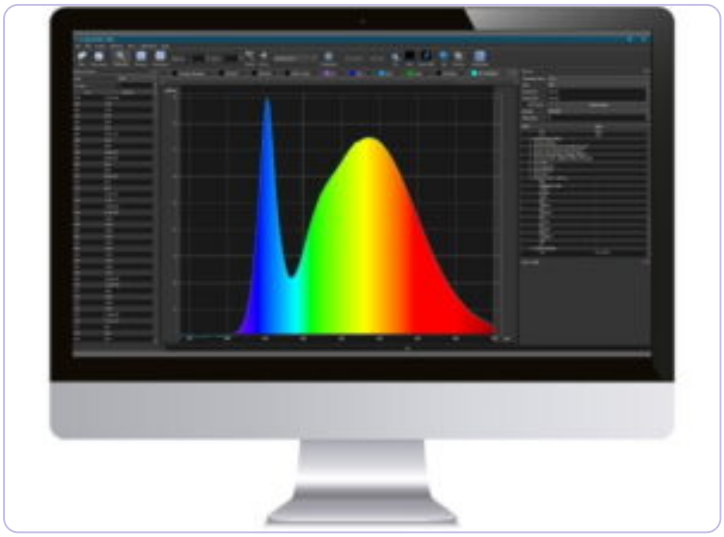
Parameters like CCT, chromaticity error, peak wavelength, dominant wavelength, CRI, color coordinate values in accordance with CIE standards, ISO, metamerism index, PAR, PPF, PPFD, photobiological safety, binning, MacAdam ellipses, and many more should be calculated, assessed, presented, or reported.

Expanded capabilities

The days of exporting data to Excel and using it for data crunching are over thanks to a wide selection of analysis, automation, and reporting applications. The features, which include color mixing, pass/fail, relative comparisons, and more, go beyond "standard" spectrum analysis. Even better, it interacts with CAD to make field audits easier.

Stay up-to-date

Even though the best-in-class analysis and automation capabilities of the GL SPECTROSOFT M light measuring software are already provided, we continue to add new features and tools on a regular basis. We provide the measurements and resources lighting professionals require while also adapting to the ever-changing market.



GL SPECTROSOFT M Usage

Multi-purpose

Parameters like CCT, chromaticity error, peak wavelength, dominant wavelength, CRI, color coordinate values in accordance with CIE standards, ISO, Metamerism Index, PAR, PPF, PPFD, photobiological safety, binning, MacAdam ellipses, and much more can be computed, evaluated, presented, or reported using GL SPECTROSOFT M.

Experiments

With the help of this light measurement software, a user can experiment with the data they have collected. They can test the data (PAS/FAIL, for example), analyze it using CIE, ISO, and other international standards, compare it to other data (reference window), and perform calculations using various parameters (e.g., counting luminous intensity values).

One platform, all devices

With GL SPECTROSOFT M, integrating sphere or goniometer systems is as simple as plugging in and using any of our spectrometers. Our products are made to grow with your company and do away with the needless learning curves that come with switching software.

GL SPECTROSOFT M Features

OS behind our spectrometers, optical spheres and probes

The user can be confident that the program is displaying absolute values because GL SPECTROSOFT consistently uses the appropriate calibration file for the instruments (the software detects a unique coded

system held in the measurement adapters) (e.g., the measurement made with the sets GL SPECTIS 1.0 and GL OPTI SPHERE shows values of luminous flux in lumens).

Flexible

Our robust light measurement software has a great deal of configurable options that can be tailored to the needs of the customer. For example, you can build your own report template, choose from a variety of parameters that are always available in the quick window “selected results,” or customize the layout to suit your needs.

Data storage

Every measurement value is kept on file and is always accessible for comparison with fresh measurements. To share files with your team or clients, save them locally in our file format or export them to Word or Excel.

Constantly improving

The LED market and its standards are always evolving, so why shouldn’t the equipment you use? We continue to make significant investments in our development and uphold strong ties with the standards and market committees in order to provide our clients with comprehensive light measuring solutions.

GL SPECTROSOFT M Calculations

Spectral and color

- New color rendering metrics: IES TM-30-15 and new CIE 224:2017 Color Fidelity Index Rf
- Human-centric lighting evaluation metrics: EML (Equivalent Melanopic Lux) and M/P Ratio (Melanopic Photopic Ratio)
- Colorimetric values: xy chromaticity, peak wavelength, dominant wavelength, purity, color rendering, correlated color temperature, CRI index, MacAdam Ellipses and Metamerism Index.
- Photosynthetic active radiation PAR 400–700 [µmol], PPF [µmol/s], PPFD [µmol/m2/s] and PBAR 350–800 nm
- Photobiological safety includes risk groups assessment wizard and detailed values, including irradiance EB, EBK, ES, EUVA, EUV, EIR Eskin and effective radiance values like LB, LIRA and LVISIRA.
- Radiometric values: irradiance [W/m2 nm], radiance [W/cm2 sr nm], radiant power [W/nm] and radiant intensity [W/sr nm]
- Photometric values: luminance [cd/m2], illuminance [lux], luminous intensity [cd] and luminous flux [lm]

And optical flicker metrics like:

- Flicker frequency,
- Flicker index
- Flicker ratio
- SVM (Stroboscopic Visibility Measure)
- Flicker graph and FFT graphs are available

Plus many more! Contact us for a full list of calculations.

GL Spectrosoft Automation – GL Optic

GL SPECTROSOFT AUTOMATION it is new software and an intelligent tool which communicates with and manages peripheral devices.
Instead of the need for setting up parameters in each plugged in device separately, this smart additional software cooperates with and runs all of them. Thanks to this, in one program on your computer, you can set sequences of operations such as: cooling temperature, current and voltage before a measurement. GL SPECTROSOFT AUTOMATION can collect data from external devices and link them together with measurement results.

GL SPECTROSOFT AUTOMATION automates complex operations, supplements and accelerates measurements of additional information (eg. the luminous efficacy, temperature, etc.) and minimizes errors caused by misalignment of the equipment. It is a novelty on the market and a revolutionary solution in light measurement.

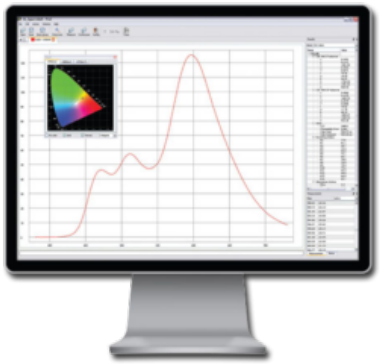
This is perfect tool for laboratories, where there is the need for complex operations. The AUTOMATION supports programmable: power supplies, current sources, multimeters and temperature controllers. Automation software can communicate with peripheral devices using a custom-made plug-in.

GL SPECTROSOFT AUTOMATION features

- an intelligent tool which communicates with and manages peripheral devices
- absolute or relative measurements
- you can set up many values such as: temperature, current and voltage before a measurement
- a novelty on the market

GL Spectrosoft – GL Optic

GL Spectrosoft is well conceived, intelligent software written for GL Optic's measurement instruments. The software is "the key" for all the advanced features of the spectrometers. It turns raw data from devices into powerful information. The software provides data in well presented and described windows (tables) and also in an easy to interpret graphical schematic view.
Depending on the purchased license level (Basic, PRO or Lab) GL Spectrosoft can calculate, evaluate, present or report such parameters as: CCT, chromaticity error, peak wavelength, dominant wavelength, CRI, color coordinate values according to CIE standards, ISO, Metamerism Index, PAR, PPF, PPFD, photobiological safety, binning, MacAdam ellipses and much more.



The software gives a user the opportunity to experiment using collected data: to test them (e.g. PAS/FAIL), to analyse them according to international standards (CIE, ISO etc.), compare them with other data (reference window) and make calculations using different parameters (e.g. counting luminous intensity values).

GL Spectrosoft calculates:

- radiometric values: irradiance , radiance , radiant power and radiant intensity
- photometric values: luminance , illuminance , luminous intensity and luminous flux
- colorimetric values: cxy chromacity, peak wavelenght, dominant wavelength, purity, color rendering, collerated color temperature, CRI index and Metamerism Index.
- photosynthetic active radiation 400-700 , PPF and PPFD
- photobiological safety

GL Spectrosoft features

- measurement of LEDs compliant with CIE 127:2007
- absolute or relative measurements
- flexible data interpretation
- helpful tools for easy analysis and interpretation of measured spectra

GL Spectrosoft is a smart tool, which operates with all GL Optic spectrometers, optical spheres and probes. The program always uses the right calibration file for the instruments (the software recognises a special coded system held in the measurement adapters) so the user is always sure that the program is showing absolute values (e.g. The measurement made with the set GL Spectis 1.0 and GL Opti Sphere, shows values of luminous flux in lumens) GL Spectrosoft could be configured and adapted to client needs (e.g. you can choose some parameters always available in quick window "selected results", you can built your own template of reports or create your own layout according to the customer's needs). The system stores all the measurement data which can be used in the future for comparison with new measurements values. GL Spectrosoft is always developing and our support

team constantly adds new features. The program works with operating systems such as Windows (also Windows 10) and Mac.

Contact one of our product specialists.