

News Letter 1/2005



SMS10s SYSTEM PHOTOMETER VV10dsp DIGITAL PREAMPLIFIER

*World Standard
in Light Measurement since 1968*





SMS10s Control and Photometer Unit with SNT10 DC Power Supply

SMS10S / Vv10 dsp

The OPTRONIK SMS10s measuring system has been originally designed for fast goniophotometric measurement in conjunction with the well established family of Optronik goniometers SMS10.

However, it is also available as a standalone unit for various applications for high precision laboratory measurement of state-of-the-art light sources, such as pulse width modulated light sources (neon, LEDs).

Up to 6 vv10dsp preamplifiers can be connected, each disposing of an individual calibration available in lx, cd, or cd/m².

The precision photometer head, with V(λ) filter, is thermo-stabilized. It can be delivered with OPTRO-NIK test report or optionally with PTB (Federal Institute for Physics and Technology) test and calibration report.

Options include the measurement of flash sources or rotating beacons.

Standard: DIN 5032, CIE 69, Class L (highest accuracy)

Applications:

High performance precision photometer used for measurements in laboratory environments. Goniometer control unit.

Characteristics:

- 8 measurement ranges
- Display range 0.0001 lx (last digit) to 500,000 lx or 1 mcd to 5000 kcd (in 3.162 m)
- Display: 4 or 5 decimal digits (selectable)
- Graphical LCD display: full textual display of value and measurement unit (lx, cd, cd/m²) and other information (e.g., in conjunction with goniometer)
- V.24-(RS 232-) interface and CAN bus
- Adaptive auto-ranging
- Sampling rate (single points): 5 ms
- Sampling rate (scan mode): < 200 ms (up to 5000 measurements/s in scan mode with goniometer)
- Display refresh time: < 0.8 s
- Rated voltage: 90-250V
- Power consumption: < 50 VA
- Rated frequency: 45 Hz to 65 Hz
- Operating temperature: 10 to 50°C
- Different photometer heads FE10 available 10x10, 30 mm diameter light sensitive surface (see separate list)
- Superb V(λ) approximation according to DIN5032, CIE 69, class L
- Thermostatic stabilization 35°
- Calibration, traceable to PTB standard, with X-Rite Optronik calibration certificate
- Individual test report for V(λ) approximation class A and L acc. to DIN 5032 part 7
- 19" housing, three height units, prepared for integration into control racks
- Control of the manual measuring system independently from PC via front panel keys or directly via PC-program LightCon
- Normally, the measurement of test objects is supported by the LightCon s software with PC operation, but most of the functions can be controlled manually by the SMS10s unit (if manual mode is activated).
- Indication of error messages



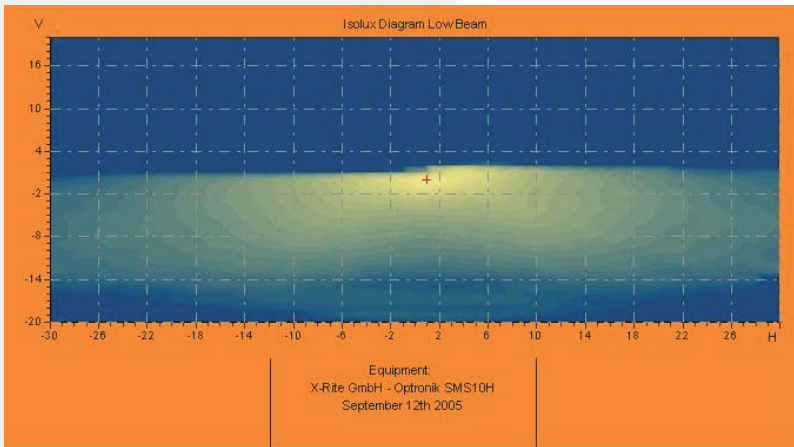
New Vv10dsp Preamplifier

SMS10M Goniophotometer with PWM Lamp



Options

- Additional measurement distances (e.g. 3.162, 5, 10, 15, 25 m)
- Tube for stray light reduction
- Tripod
- Separate 19" bench top housing
- Flash measurement
- LightCon software for light measurement, data processing, evaluation, and graphical representation in different formats



Low Beam Isolux Diagram

Features vv10dsp (in combination with SMS10 goniometer)

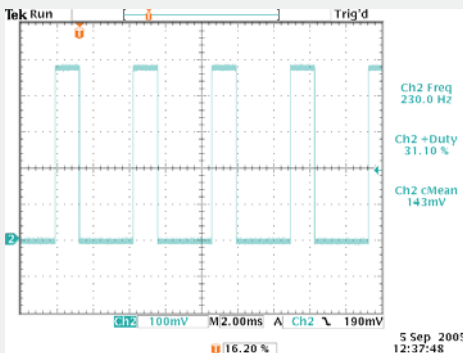
OPTRONIK's new vv10dsp is used as a photometric front-end in conjunction with the well established SMS10 goniophotometer system.

It utilizes an unique combination of traditional analog amplifier technology and state-of-the-art-digital signal processing to measure illuminance with a $V(\lambda)$ -matched silicon photo cell.

The measured value passes a digital, auto-adaptive filter to remove all modulation and interference from the signal, depending on the type of light source under test.

By monitoring the signal, the filter characteristics are continuously optimized. This is all performed by an ultra-fast digital signal processor, assuring excellent stability and reproducibility.

Optionally, the vv10dsp can be used as a standalone photometer unit.



Typical Pulse Width Modulation of LED Source

Measurement principle

- A precision $V(\lambda)$ - (photopic) matched photometer head produces a photocurrent that is proportional to the illuminance on the light sensitive surface.
- This photocurrent is fed to the vv10dsp, where it is converted into a proportional voltage by a gain-controlled amplifier with a wide dynamic Range.
- After digitizing this voltage by a high-speed A-to-D converter, the signal is processed by a digital, auto-adaptive filter to remove all modulation and interference.
- The signal and its frequency composition are monitored continuously to determine the applicable filter strategy and filter characteristics.
- The resulting, filtered signal represents the average value of the illuminance.
- Using an integrated, high-speed, digital field bus interface (optoCAN), the vv10dsp transmits the processed data to the SMS10s control unit and to the PC.

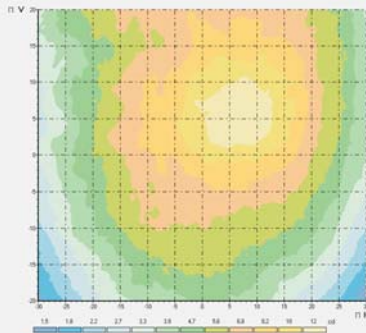
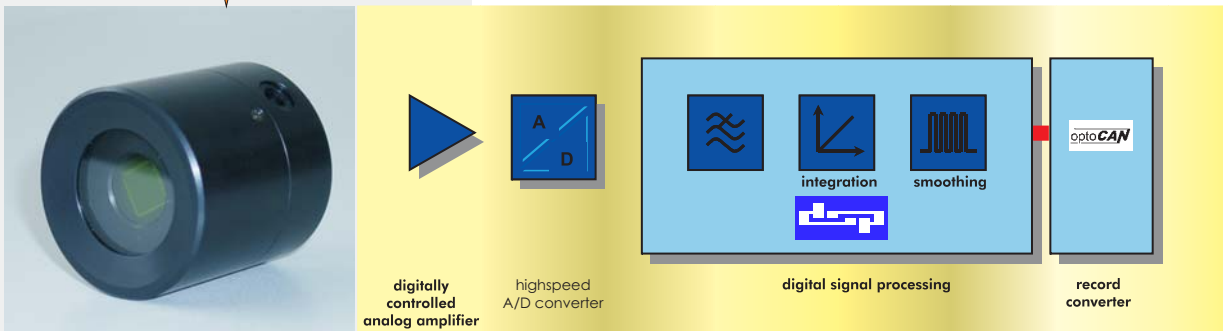


VW Phaeton PWM Rear Lamp

Measurement Modes:

Single-point measurement: In this mode, the current illuminance value is transmitted on request. The goniometer is motionless during measurement.

Scan measurement: Measurements are acquired and transmitted "on the fly" while the light source is being moved by the goniometer in horizontal or vertical direction. Because the signal is monitored by the vv10dsp continuously, the system is capable of controlling the speed of movement in a way that ensures shortest possible scanning times while maintaining the full accuracy of measurement.



Isocandela Plot of PWM LED Source



Special Features



Vv10dsp with Strazlight Tube and Tripod

- Integrated display: graphic LCD with 120 x 32 pixel resolution, variable backlight illumination
- A backlit graphic LCD at the front panel displays the current measurement value as well as status information. Six buttons are used for manual operation, calibration, set-up, and testing.
- Free selection of measured quantity
- The measured value can be displayed in lx, cd, lm, cd/m², or cd/lx to handle all common photometer heads.
- Integrated calibration unit
- An integrated, microprocessor controlled current source can be connected internally to the amplifier's input, allowing easy and error-free calibration and testing of the analog circuitry.
- Integrated power supply
- The integrated switch-mode power supply generates all necessary operating voltages and also supplies the thermo-stabilization/compensation of the photometer head.



Control Rack for Goniophotometer

Signal Monitoring

- Continuous overrange/underrange check with adaptive switch-over timing and automatic range control
- Fast-Fourier transformation based analysis of frequency composition
Automatic detection of measured light source (incandescent/PWM-LED/neon/xenon) with suitable filter strategy selected accordingly

Filtering

- FIR (finite impulse response) filter on sampled data
- Filter coefficients are automatically set according to the measured fundamental frequency
- Optimized coefficient sets for different light sources

Calibration

- Via RS232/CAN Bus / Integrated calibration source



SMS10H high Speed scanning Goniophotometer equipped with Vv10dsp Preamplifiers



Vv10dsp -First Class Innovation

X-Rite -Optronik - World Class in Light Measurement since 1968



X-Rite Optronik Services

X-Rite Optronik is more than a manufacturer of photometer and goniophotometer systems and accessories. The company also offers a range of services to support customers who purchase Optronik products, as well as customers who outsource manufacturing, test, and calibration services.

Customer service reflects a legacy of expertise in photometry technology and applications. No other manufacturer offers the knowledge base or the range of products developed by X-Rite Optronik, and no other goniophotometer series can be compared with the performance in both accuracy and speed of the OPTRONIK SMS10 series.

Get assistance with all your test and measurement needs at:

service@optronik.de

Custom Development

X-Rite Optronik welcomes inquiries for the design and manufacture of custom optical radiation measurement and test systems. Experienced research and development engineers work closely with our customers to provide the highest level of product development, applications and technical support. Customer focus, quality, innovation and excellence drive our culture.

You are welcome to visit our R&D and production plant in Berlin.

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