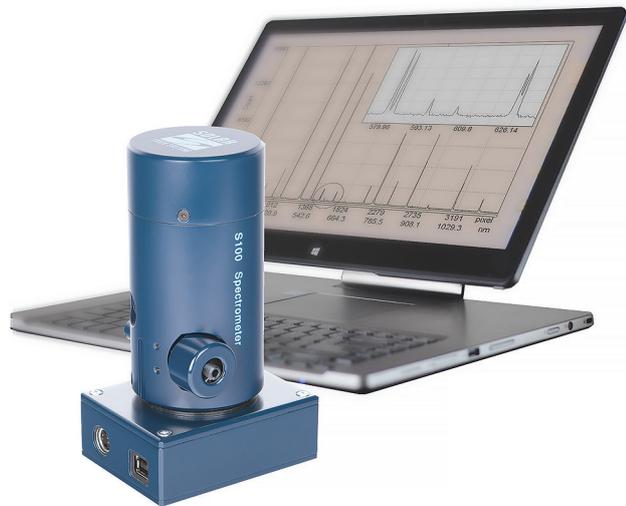


COMPACT WIDE-RANGE SPECTROMETER

S100

The S100 is a basic wide-range spectrometer that is hard to manage without in any scientific laboratory, for spectroscopy education at colleges and universities, and even in field conditions.



FEATURES

- Extremely wide range – 190 to 1100 nm – covered with the use of one diffraction grating
- Combination of compact design and high resolution
- Friendly interface compatible with Windows XP/7/8/10
- No external power requirements

The use of original concave diffraction grating makes the S100 a unique device that **provides high resolution of 1nm within extremely wide spectral range from 190 to 1100 nm.**

The S100 spectrometer is convenient and easy to use: it is calibrated by the manufacturer, does not contain any movable parts, is controlled and powered from the computer via the Full-Speed USB interface. The S100 can be triggered from your light source with standard TTL

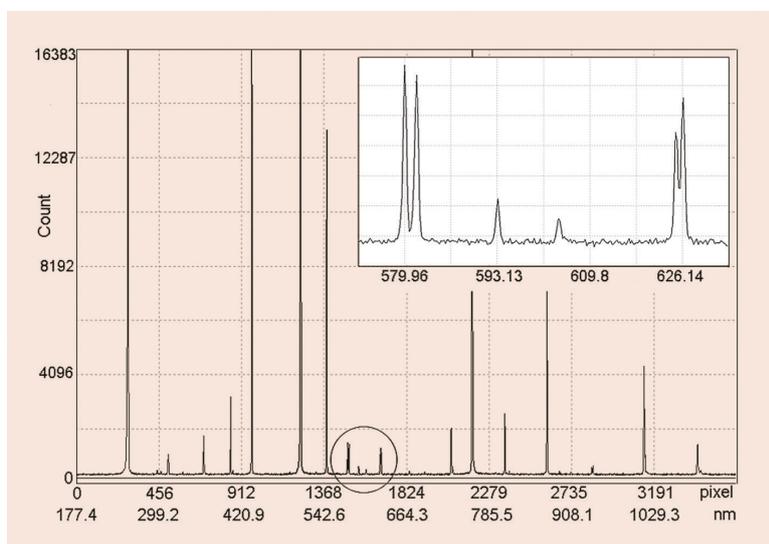
APPLICATION

- Laser wavelength control
- Plasma control
- Analysis of any light source within 190-1100 nm spectral range
- For spectroscopy education
- Implementation of measuring layouts

trigger pulses via the BNC-58 connector. The S100 is also able to produce TTL trigger pulses.

The S100 complete set contains a USB control cable, direct and reverse synchronization cables and UV optical fiber.

The spectrometer is able to operate without the optical fiber with analyzed light directly steered to its input slit.



Mercury spectrum acquired with the S100-3648T (order separating filter not installed).

Specific features of the S100 spectrometer depend on the type of the selected detection system.

Toshiba linear image sensors TCD 1304 and TCD 1205 installed in the S100-3648T and S100-2048T feature high sensitivity; large quantity of relatively narrow pixels ensures high resolution and accurate wavelength determination. However, when recording wide-band spectra with the S100-3648T and S100-2048T, spectrum modulation is observed, thus limiting to some extent their application in spectrometry.

The software allows the user to perform calibration of the S100 spectral sensitivity in a selected spectral range. Factory calibration of the S100 spectral sensitivity is not provided.

The S13496-4096 and S11639 -2048 sensors installed in the S100 demonstrate excellent linearity, wide dynamic range and absence of spectrum modulation.

S100 SPECIFICATIONS

Spectrometer model	S100-3648T	S100-2048T	S100-4096H	S100-2048H
Grating, lines/mm (average)	300			
Reciprocal dispersion (average), nm/mm	33.28			
F/Number	1 : 6			
Focal Length, mm	99			
Spectral range, nm	190 - 1100	200 - 1100	190 - 1000	200 - 1000
Spectral Resolution (average), nm	1.0	1.5	1.0	1.5
LINEAR IMAGE SENSOR	CCD TCD1304 Toshiba 3648 pixels	CCD TCD1205 Toshiba 2048 pixels	CMOS S13496 Hamamatsu 4096 pixels	CMOS S11639 Hamamatsu 2048 pixels
Pixel size, μm	8 x 200	14 x 200	7 x 200	14 x 200
Active area, mm	29.184	28.672	28.672	28.672
Minimal exposure time, ms	7.4	4.2	0.018	0.018
Maximal exposure time, not less, s ¹⁾	3	4	90	90
Antiblooming ²⁾	NO	Yes	Yes	Yes
Photo response non-uniformity, % ³⁾	$\pm 2\%$	$\pm 2\%$	$\pm 5\%$	$\pm 5\%$
Dynamic Range	2000 : 1	1100 : 1	5000:1	5000:1
Photo sensitivity, V/lx*s	160	80	650	1300
Mean-square reading noise, counts	<8	<14	< 4	< 4
Data rate (max), kHz	500	500	3000	3000
ADC Resolution	14 bit, 16384 counts			
Triggering	internal / external			
Requirements to external trigger pulse	BNC-58 connector, positive polarity, 3-15 VDC amplitude, 5-20 μs pulse duration FWHM			
Parameters of the S100 trigger pulses	positive polarity, 4-5 VDC amplitude, 10 μs pulse duration FWHM			
Computer interface	Full-Speed USB			
Optical Input	- Direct input through the S100 input slit - Optical Fiber : 0.6 (0.4)mm diameter, 1m length, SMA-905 connector			
Overall Size, mm	66 x 86 x 146			
Weight, kg	0.75			

¹⁾ max. exposure time is the time when the dark signal constitutes 25% of the dynamic range at +250C ambient.

²⁾ antiblooming is a sensor feature eliminating charge overflow from exposed pixels to surrounding pixels.

³⁾ signal level reaches 50% of dynamic range.

The standard S100 package set includes: control USB-cable, direct and reverse triggering cables, VUV silica optical fiber. Due to input slit presence the S100 allows operation with or without optical fiber.

Upon your request, the S100 may be supplied with **an order-sorting filter separating high spectrum orders**. We recommend this filter for operation with broadband spectra.