

NYLIS

High-resolution UV/VIS spectrometer

Key Features

- Resolutions down to 0.06 nm (FWHM)
- Wavelengths between 380 and 1100 nm
- Focal length $f = 120$ mm
- Customizable wavelength ranges



The Nylis spectrometer is the first compact Czerny-Turner array spectrometer offering resolutions down to 0.06 nm (FWHM).

Based on the popular Aris spectrometer, the Nylis features a larger focal length of 120 mm in a longer housing. This enables better optical imaging as well as smaller wavelength ranges. Both result in spectral resolutions that are unprecedented at this size.

The Nylis is available in 10 standard wavelength ranges that can be customized for the requirements of individual applications. It features a default 10 μ m entrance slit and a 4096 pixel CMOS sensor.

Due to the longer focal length and the smaller entrance slit, the Nylis has a lower sensitivity than the Aris spectrometer. It is primarily intended for applications that require high resolution, but no high sensitivity, for example measuring laser radiation. If your application requires high sensitivity as well as resolution, please contact us to find the best solution.

Image Sensor

The Nylis uses the Hamamatsu S13496 image sensor. With its 4096 pixels it is the best choice for optimum resolution.

	Hamamatsu S13496
Sensor type	CMOS
Number of pixels	4096
Exposure times	54 μ s – 35 min
SNR *	550
Dynamic Range **	5500 : 1
Readout noise ***	11 counts
Trigger jitter	≤ 1 μ s

* Maximum Signal-to-Noise Ratio without averaging

** Without averaging, for a single pixel

*** Typical RMS value for a single exposure, scaled to 16 bit

Wavelength ranges and resolutions

The Nylis is available in the following standard configurations. Contact us for customized wavelength range.

Wavelength range	Resolution (FWHM)	
	typ.	max.
380 – 750 nm	0.19 nm	0.23 nm
750 - 1100 nm	0.20 nm	0.24 nm
380 - 540 nm	0.09 nm	0.11 nm
470 - 630 nm	0.09 nm	0.11 nm
580 - 740 nm	0.09 nm	0.11 nm
400 - 500 nm	0.06 nm	0.07 nm
500 - 600 nm	0.06 nm	0.07 nm
620 - 700 nm	0.06 nm	0.07 nm
740 - 810 nm	0.06 nm	0.07 nm
800 - 860 nm	0.06 nm	0.07 nm

Resolutions are given for the default 10 μ m entrance slit. A larger entrance slit typically increases both the resolution and the sensitivity proportional to its width. The wavelength accuracy is typically 1/3 of the resolution.

Optics

Optical design	Symmetrical Czerny-Turner
Focal length	120 mm
Numerical aperture	0.07 (equivalent area)
Stray light	0.3 %
Detector lens	Included
Order sorting filter	Included (if required)
Optical interface	SMA connector (other interfaces on request)

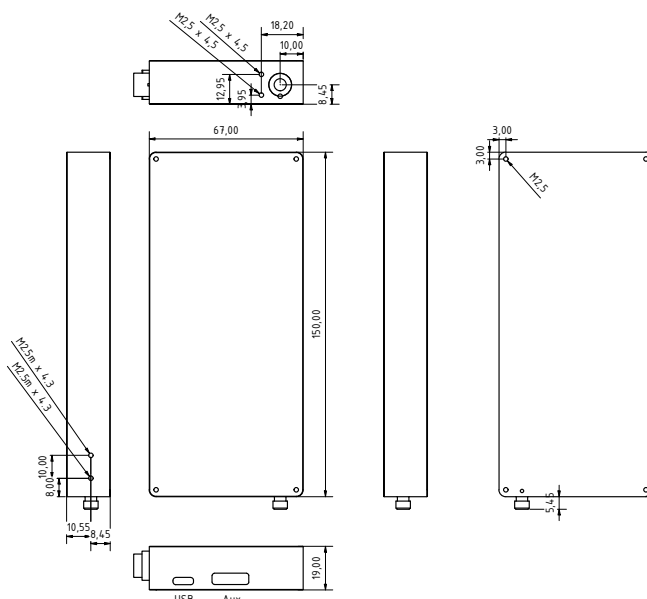
Electronics

Power supply	5 V via USB or Aux connector
Supply voltage range	4.4 – 5.5 V
Power consumption	≤ 70 mA
A/D converter	16 bit, 2 MHz
Non-linearity	< 1 %
Spectrum buffer size	31 spectra
Auto exposure	On-board during measurement (exposure time and averaging)
Fastest repetition time	4.4 ms
Transfer time to host PC via USB (32 bit)	20 ms
Transfer time to host PC via USB (16 bit)	10 ms
On-board processing	Averaging, buffering and spectrum processing (offset, non-linearity, dark and reference spectrum)
Digital interfaces	USB 2.0 full speed, UART On request: SPI, I ² C
I/O connections	Trigger in, Trigger out, Analog in, Analog out. On request: programmable I/O pins (GPIO), Pulse generator for flash lamps
Connectors	USB Type-C 16-pin Aux connector (IDC)

Absolute maximum ratings

	Minimum	Maximum (power on)	Maximum (power off)
Supply voltage	-0.3 V	5.5 V	
Analog input pins	-0.3 V	4.0 V	3.6 V
Digital input pins	-0.3 V	6.0 V	3.6 V
Output pins	do not apply any voltage		
Temperature	-40 °C	70 °C	70 °C

Technical Drawing



All information is subject to change. The most recent version of this datasheet can be found on our website.

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Mechanics and environmental conditions

Dimensions	67.0 × 150.0 × 19.0 mm *
Weight	178 g
Storage temperature	-40 to 70 °C
Operating temperature	-20 to 60 °C
Humidity	0 to 90 % non-condensing

* Without optical interface, see technical drawing below.

Included accessories

- USB cable
- USB memory stick with software and documentation
- Quick start guide
- Calibration and test report

Optional accessories

- Larger entrance slits (user-replaceable)
Available slit sizes: 10, 20, 50, 75, 100, 150, 200, 300 μm
- Fiber-optical patch cables
- Cosine corrector
- SMA collimator
- Direct-attach collimator

Custom options

- Custom wavelength ranges and blaze wavelengths
- Different image sensors
- Additional optical filters
- Application-specific processing and evaluation

Included software

- Application software (Windows 7 and later)
- Software Development Kit (SDK) with Demo code, drivers and protocol documentation

Compliance

The Nylis complies with the relevant EU regulations and standards concerning electromagnetic compatibility (2014/30/ EU), RoHS (Restriction of Hazardous Substances) SVHC (Substances Of Very High Concern) as well as the U.S. Congo Conflict Minerals Act. Details can be found in the user manual.

Ordering Information

Part number: NYLIS-AAA-BBB-CC

AAA: Start wavelength in nm

BBB: End wavelength in nm

CC: Entrance slit width in μm

Contact

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