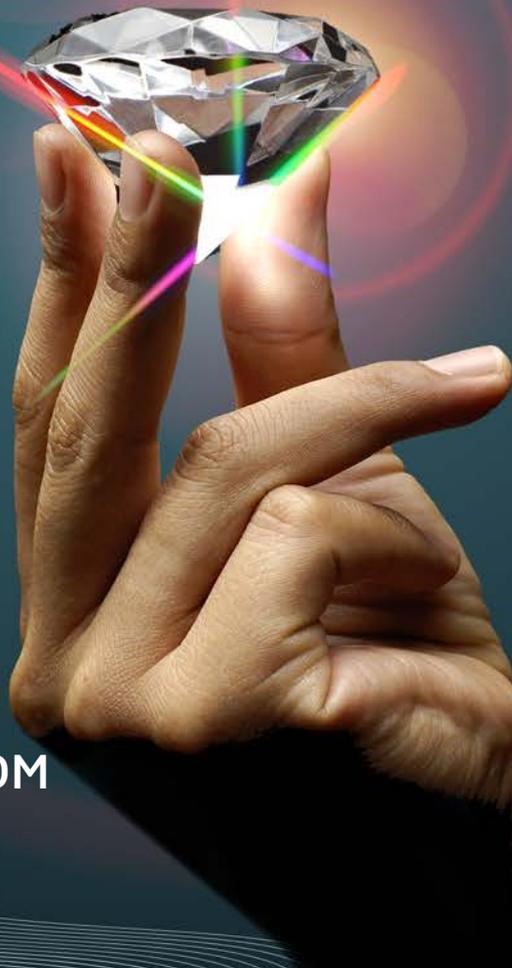


AVASPEC

Affordable Performance Instruments

STARLINE

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AvaSpec StarLine

The AvaSpec StarLine family of instruments are high performance spectrometers which exceed the demands of most general spectroscopy applications. The StarLine includes high speed instruments for process control (AvaSpec-ULS2048CL-EVO (USB3/ETH) and AvaSpec fast-series), high resolution instruments for demanding measurements like atomic emission (AvaSpec-ULS3648) and versatile instruments for common applications such as irradiance and absorbance chemistry (AvaSpec-ULS2048(L)). This instrument line offers an array of solutions for various applications.



The AvaSpec-ULS2048/2048L and AvaSpec-ULS3648 are based on front illuminated linear CCD arrays and thanks to Avantes DUV coating can measure wavelengths from 200-1100 nm. The AvaSpec-ULS2048CL-EVO and

FAST series of instruments are especially suited for high speed acquisitions such as pulsed light source and laser measurements.

Instruments in the AvaSpec StarLine family are designed to perform in a variety of applications such as:

- ▶ Reflection and transmission measurements for optics, coatings, color measurement
- ▶ Irradiance and emission measurements for environmental, light characterization, and optical emission spectroscopy
- ▶ High speed measurements for process control, LIBS or laser/pulsed source characterization
- ▶ Absorbance chemistry

The Starline instruments are based on innovative ultra-low stray light (ULS) optical bench (75 mm) for superior straylight rejection.

They are equipped either with or AS-5216 or our latest AS-7010 electronics board. Premium options like irradiance/ intensity calibration and non-linearity calibration are available.



AvaSpec StarLine Instruments

Standard Features

- ▶ Ultra Low Stray Light (ULS) optical bench
- ▶ Digital & Analog I/O ports
- ▶ USB 2.0 – 16 bit A/D & RS-232 or USB 3.0 / ETH – 16 bit A/D (EVO)
- ▶ On board spectral storage to RAM
- ▶ AvaSoft Basic software

Premium Options

- ▶ Dual and Multi-channel (4 & 10-channel) housings
- ▶ Replaceable slit

Models

AvaSpec-ULS2048CL-EVO (USB3/ETH)

- ▶ High speed communication (10 x faster compared to USB2)
- ▶ Gigabit Ethernet for integration in your company network
- ▶ Fast microprocessor
- ▶ 50 times more memory to store onboard spectra (compared to USB2)
- ▶ Future proof CMOS technology
- ▶ Short integration times, fast sampling

AvaSpec-ULS2048-USB2

- ▶ Fast integration time (1.1 ms)
- ▶ 200-1100 nm (<360 requires DUV coating)
- ▶ High resolution: up to 0.04 nm (FWHM)
- ▶ 16 grating options
- ▶ Fast triggering capabilities
- ▶ Ideal for general spectroscopy, irradiance

AvaSpec-ULS2048L-USB2 and -EVO

- ▶ Fast integration time (1.1 ms)
- ▶ Improved sensitivity
- ▶ 200-1100 nm (<360 requires DUV coating)
- ▶ 16 grating options
- ▶ High resolution up to 0.04 nm (FWHM)
- ▶ Ideal for general spectroscopy, irradiance
- ▶ High speed communication (10 x faster compared to USB2*)
- ▶ Gigabit Ethernet for integration in your company network*
- ▶ Fast microprocessor*
- ▶ Ideal for high speed multichannels systems, perfectly suited for most industrial applications*

*Only for AvaSpec-ULS2048L-EVO (USB3/ETH)

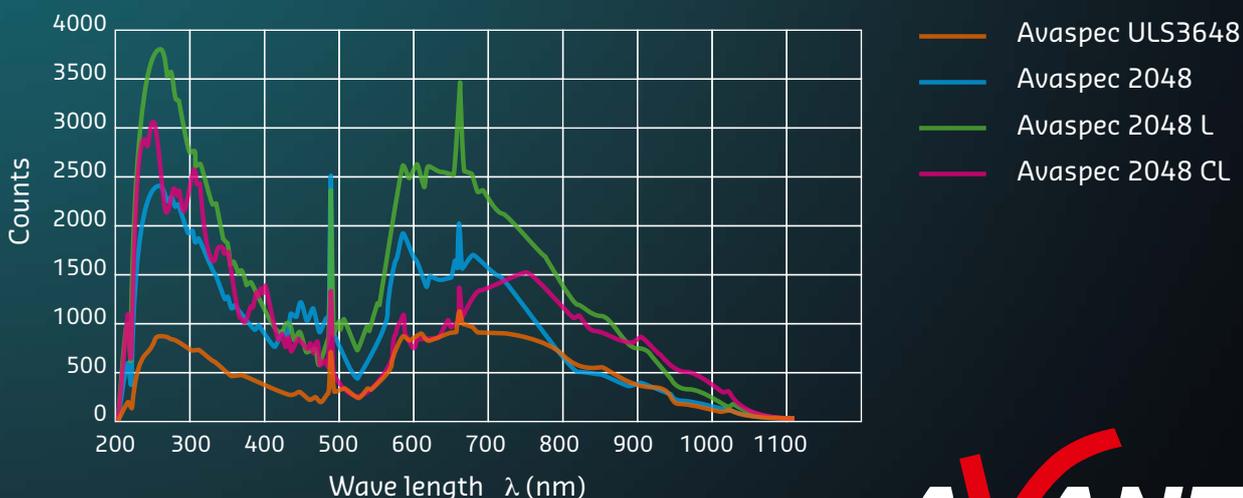
AvaSpec-ULS3648-USB2

- ▶ Fast integration time (0.01 ms with electronic shutter)
- ▶ 200-1100 nm (<360 requires DUV coating)
- ▶ Ultra-high resolution (up to 0.025 nm FWHM)
- ▶ 6 grating options
- ▶ Ideal for general spectroscopy, atomic emission spectroscopy

AvaSpec-FAST Series (350F, 950F, 1350F, 1950F)

- ▶ Ultrafast data storage: Stores up to 5000 spectra per second, real time, in on board RAM
- ▶ Fast integration times (0.2 ms for 350F)
- ▶ Ideal for laser, pulsed light source measurements

Relative sensitivity StarLine family



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enlightening spectroscopy

AvaSpec StarLine

Specification	AvaSpec- ULS2048CL- EVO	AvaSpec- ULS2048L- EVO	AvaSpec- ULS2048L- USB2	AvaSpec- ULS2048- USB2	AvaSpec- ULS3648- USB2	AvaSpec- FAST Series
Optical bench	ULS-Symmetrical Czerny-Turner, 75 mm focal length					
Wavelength Range	200-1100 nm	200-1100 nm (<360 requires DUV coating)				
Resolution (Slit & Grating dependent)	0.06-20 nm	0.06-20 nm	0.06-20 nm	0.05-20 nm	0.04-20 nm	0.04-20 nm
Sensitivity*	375,000	470,000	470,000	310,000	160,000	470,000
Detector	CMOS, 2048 pixels 14X200 um	CCD linear array, 2048 pixels 14X200 um	CCD linear array, 2048 pixels 14X200 um	CCD linear array, 2048 pixels 14X56 um	CCD linear array, 3648 pixels 8X200 um	CCD linear array, 350, 950, 1350 or 1650 pixels 14X56 um / 14x200 um
Signal/Noise	300:1	300:1	300:1	200:1	350:1	200:1 / 350:1
Integration Time Minimum	0.03 ms	1.11ms	1.11 ms	1.05 ms	0.01 ms	0.2 ms
AD Converter	16 bit, 6MHz	16 bit, 2MHz	16 bit, 2MHz	16 bit, 2MHz	16 bit, 1MHz	16 bit, 2MHz
OEM Module	Avabench-75- ULS2848CL- U3 & AS7010	Avabench-75- ULS2848L- U3 & AS7010	Avabench-75- ULS2848L-U2 & AS5216	Avabench75- ULS2048-U2 & AS5216	Avabench-75- ULS3648-U2 & AS5216	on request

* Halogen source, 8 um fiber in counts/uW per ms integration time



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For more information contact us at:

info@avantes.com
infousa@avantes.com
info@avantes.com.cn
infoUK@avantes.com
www.avantes.com