

AvaSpec-ULS2048 StarLine

Versatile Fiber-optic Spectrometer

AvaSpec-ULS2048



Options include deep-UV detector coating for better performance in the deep-UV-range, a detector collection lens to enhance sensitivity in the 200-1100 nm range and order-sorting filters to reduce 2nd order effects. Furthermore, the AvaSpec-ULS2048 is available with a wide range of slit sizes, gratings and fiber-optic entrance connectors.

The AvaSpec-ULS2048 is also available in dual or multi-channel versions (up to 10 spectrometers in a 19" rack), where all spectra are taken simultaneously.

The workhorse of our spectrometer line-up, the AvaSpec-ULS2048. Used in many applications in the UV/VIS-range, it is particularly useful in time-critical situations thanks to its exceptional response speed. Priced affordably, the AvaSpec-ULS2048 is the choice of many of our most demanding customers.

Connection with your PC is done via USB2-connection, delivering a scan every 1.8 milliseconds. Integration time can be as short as 1.05 milliseconds up to a maximum of 10 minutes. It comes complete with AvaSoft-Basic software, USB cable and an extensive manual, including a quick start guide in four languages.

Technical Data

| | |
|---------------------------------------|--|
| Optical Bench | ULS Symmetrical Czerny-Turner, 75 mm focal length |
| Wavelength range | 200-1100 nm |
| Resolution | 0.05 -20 nm, depending on configuration (see table) |
| Stray-light | 0.06-0.19%, depending on the grating |
| Sensitivity | 310,000 counts/ μ W per ms integration time |
| Detector | CCD linear array, 2048 pixels |
| Signal/Noise | 200:1 |
| AD converter | 16-bit, 2 MHz |
| Integration time | 1.05 ms - 10 minutes |
| Interface | USB 2.0 high-speed, 480 Mbps RS-232, 115.200 bps |
| Sample speed with store to RAM | 1.05 ms /scan |
| Data transfer speed | 1.8 ms /scan (USB2) 430 ms/scan (RS-232) |
| Digital IO | HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, sync. |
| Power supply | Default USB power, 350 mA Or with SPU2 external 12VDC, 150 mA |
| Dimensions, weight | 175 x 110 x 44 mm (1 channel), 716 grams |

Pre-configured spectrometers can be shipped within 24 hours

Grating selection table for AvaSpec-ULS2048

| Use | Useable range (nm) | Spectral range (nm) | Lines/mm | Blaze (nm) | Order code |
|------------|--------------------|---------------------|----------|------------|------------|
| UV/VIS/NIR | 200-1100** | 900** | 300 | 350 | UA |
| UV/VIS/NIR | 200-1100** | 900** | 300 | 300/1000 | UNA-DB |
| UV/VIS | 200-850 | 520 | 600 | 300 | UB |
| UV | 200-750 | 250-220* | 1200 | 250 | UC |
| UV | 200-650 | 165-145* | 1800 | UV | UD |
| UV | 200-580 | 115-70* | 2400 | UV | UE |
| UV | 200-400 | 70-45* | 3600 | UV | UF |
| UV/VIS | 250-850 | 520 | 600 | 400 | BB |
| VIS/NIR | 300-1100** | 800** | 300 | 500 | VA |
| VIS | 360-1000 | 500 | 600 | 500 | VB |
| VIS | 300-800 | 250-200* | 1200 | 500 | VC |
| VIS | 350-750 | 145-90* | 1800 | 500 | VD |
| VIS | 350-610 | 75-50* | 2400 | VIS | VE |
| NIR | 500-1050 | 500 | 600 | 750 | NB |
| NIR | 500-1050 | 220-150* | 1200 | 750 | NC |
| NIR | 600-1100 | 350-300 | 830 | 800 | SI |
| NIR | 600-1100** | 500** | 300 | 1000 | IA |
| NIR | 600-1100 | 500 | 600 | 1000 | IB |

* depends on the starting wavelength of the grating; the higher the wavelength, the bigger the dispersion and the smaller the range to select.

** please note that not all 2048 pixels will be used for the useable range

Resolution table (FWHM in nm) for AvaSpec-ULS2048

| Grating (lines/mm) | Slit size (μm) | | | | | |
|--------------------|----------------|--------------|------------|------|------|------|
| | 10 | 25 | 50 | 100 | 200 | 500 |
| 300 | 0.80 - 0.90* | 1.10-1.20* | 2.30 | 4.60 | 9.00 | 20.0 |
| 600 | 0.40 - 0.50* | 0.63 | 1.15 | 2.31 | 4.50 | 10.0 |
| 830 | 0.28 | 0.40 | 0.80 | 1.60 | 3.20 | 8.0 |
| 1200 | 0.18 - 0.22* | 0.29 | 0.61 | 1.18 | 2.20 | 5.4 |
| 1800 | 0.10 - 0.16* | 0.19 | 0.35-0.42* | 0.80 | 1.60 | 3.6 |
| 2400 | 0.08 - 0.11* | 0.10 - 0.15* | 0.28 | 0.55 | 1.10 | 2.7 |
| 3600 | 0.05 - 0.08* | 0.10 | 0.18 | 0.38 | 0.75 | 1.8 |

* depends on the starting wavelength of the grating; the higher the wavelength, the bigger the dispersion and the better the resolution

Ordering Information

AvaSpec-ULS2048-USB2

- Fiber-optic Spectrometer, 75 mm AvaBench, 2048 pixel CCD detector, USB powered, high-speed USB2 interface, incl. AvaSoft-Basic, USB interface cable. Specify grating, wavelength range and options

Options

| | |
|------------------------|---|
| -SPU2 | • incl. switch for USB powered USB2 or external power for RS-232 |
| -RS | • Replaceable slit, see page 41 |
| DUV | • Deep-UV detector coating >150 nm |
| DCL-UV/VIS | • Detector Collection Lens to enhance sensitivity, Quartz, 200-1100 nm |
| SLIT-XX | • Slit size, please specify XX = 5, 10, 25, 50, 100, 200 or 500 μm |
| SLIT-XX-RS | • Replaceable slit with SMA connector, specify slit size XX=25, 50, 100 or 200 μm . Only in combination with AvaSpec-ULS2048-USB2-RS |
| SLIT-XX-RS-FCPC | • as SLIT-XX-RS, but with FC/PC connector |
| OSF-YYY | • Order-sorting filter for reduction of 2 nd order effects please specify YYY= 305, 395, 475, 515, 550 or 600 nm |
| OSC | • Order-sorting coating with 600 nm long-pass filter for VA, BB (>350 nm) and VB gratings in AvaSpec-ULS2048 |
| OSC-UA | • Order-sorting coating with 350 and 600 nm long-pass filter for UA gratings in AvaSpec-ULS2048 |
| OSC-UB | • Order-sorting coating with 350 and 600 nm long-pass filter for UB or BB (<350 nm) gratings in AvaSpec-ULS2048 |
| -FCPC | • FC/PC fiber-optic connector |

To calibrate your spectrometer, take a look at the AvaLight-CAL calibration light source. Alternatively Avantes has in-house calibration possibilities. Contact an application specialist for more information.