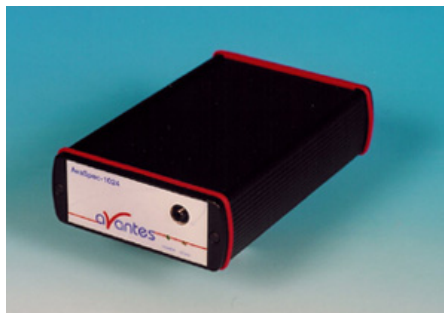


AvaSpec-1024 Fiber Optic Spectrometer



The **AvaSpec-1024 Fiber Optic Spectrometer** is based on the AvaBench-75 symmetrical Czerny-Turner design with 1024 pixel CMOS Detector Array. The spectrometer has a fiber optic entrance connector (Standard SMA, others possible), collimating and focusing mirror and diffractive grating. A choice of 15 different gratings with different dispersion and blaze angles enable applications in the 200-1100nm range.

The **AvaSpec-1024** can be delivered with 2 platforms of electronics with 14 bit AD converter; either with USB1.1 or the new USB2.0 interface.

The **AvaSpec-1024** is specially suitable for low noise applications with good resolution. Digital IO ports enable external triggering and control of shutter and pulsed light sources from the Avantes line of instruments.

The **AvaSpec-1024** is also available as dual channel or multiple channel instrument (up to 8 channels), where all spectra are taken simultaneously.

The **AvaSpec-1024** comes with AvaSoft-basic, a complete manual, USB interface cable and a PS-12V/1.0A power supply. AvaSoft-full and application software can be ordered separately.

Alternatively the **AvaSpec-1024-SPU** is available as an option to run on USB power and does not need an additional power supply.

The new **AvaSpec1024-USB2** has a USB2 interface with ultrafast datasampling of 450 spectra per second and datatransfer in 2.2msec and supports analog in-and outputs as well. Optional Bluetooth® (-BT) communication and an SDRAM card for on-board saving of spectra can be added. The **AvaSpec-1024-USB2** runs on USB power and comes with AvaSoft-basic, a complete manual and USB interface cable. Multiple (up to 127) USB2 spectrometers with different detector types can be externally coupled (see section multi-channel spectrometers).

Technical Specifications

| Spectrometer Platform | AvaSpec-1024 | AvaSpec-1024-USB2 |
|---|--|--|
| Optical Bench | Symmetrical Czerny-Turner, 75 mm focal length | |
| Wavelength range | 200-1100 nm | |
| Resolution | 0.07 –20 nm, depending on configuration (see table) | |
| Stray light | < 0.1% | |
| Sensitivity (AvaLight-HAL, 8 µm fiber) | 30 counts/µW -per ms integration time | |
| Detector | CMOS linear array, 1024 pixels | |
| Signal/Noise | 2000:1 | |
| AD converter | 14 bit, 330 kHz | 14 bit, 500 kHz |
| Integration time | 4 msec – 60 sec | 2.2 msec - 10 minutes |
| Interface | USB version 1.1, 12 Mbps RS-232, 115.200 bps | USB version 2.0, 480 Mbps RS-232, 115.200 bps |
| Sample speed with on-board averaging | 12 msec / scan | 2.2 msec / scan |
| Data transfer speed | 12-20 ms / scan (depending on # pixels transferred) | 2.2 msec / scan |
| Digital IO | DB-15 connector, 2 Digital in, 12 Digital out | HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, sync. |
| Power supply | 12 VDC, reverse polarity protection, 160 mA (PS-12V/1.0A) or 5VDC USB power | Default USB power, 440 mA. Or with SPU2 external 12VDC, 440 mA |
| Dimensions, weight | 175 x 110 x 44 mm (1 channel), 716 gr. 175 x 165 x 85 mm (2 channels), 1700 gr. | 175 x 110 x 44 mm(1 channel), 716 grams |

Grating Selection table for AvaSpec-1024

| Use | Useable range | Spectral range (nm) | Lines/mm | Blaze (nm) | Order code |
|------------|---------------|---------------------|----------|------------|------------|
| UV/VIS/NIR | 200-1100* | 900* | 300 | 300 | UA |
| UV/VIS | 200-850 | 450 | 600 | 250 | UB |
| UV | 200-750 | 220 | 1200 | 250 | UC |
| UV | 200-650 | 160 | 1800 | 250 | UD |
| UV | 200-580 | 100 | 2400 | 250 | UE |
| UV | 220-400 | 50 | 3600 | 250 | UF |
| UV/VIS | 250-850 | 450 | 600 | 370 | BB |
| VIS/NIR | 300-1100* | 800* | 300 | 500 | VA |
| VIS | 360-1000 | 450 | 600 | 500 | VB |
| VIS | 300-800 | 220 | 1200 | 500 | VC |
| VIS | 350-750 | 160 | 1800 | 500 | VD |
| NIR | 500-1050 | 450 | 600 | 750 | NB |
| NIR | 500-1000 | 200 | 1200 | 750 | NC |
| NIR | 600-1100* | 500* | 300 | 1000 | IA |
| NIR | 600-1100 | 450 | 600 | 1000 | IB |

* please note that not all 1024 pixels will be used for the useable range

Resolution Table (FWHM) for AvaSpec-1024

| Grating (lines/mm) | Slit size (µm) | | | | |
|--------------------|----------------|------|-----|-----|------|
| | 25 | 50 | 100 | 200 | 500 |
| 300 | 1.2 | 2.4 | 4.3 | 8.0 | 20.0 |
| 600 | 0.8 | 1.2 | 2.1 | 4.1 | 10.0 |
| 1200 | 0.4 | 0.5 | 1.0 | 2.0 | 5.0 |
| 1800 | 0.3 | 0.4 | 0.8 | 1.4 | 3.5 |
| 2400 | 0.2 | 0.25 | 0.5 | 1.0 | 2.5 |
| 3600 | 0.15 | 0.20 | 0.4 | 0.6 | 1.5 |