OEM Spectrometer:
AS-5216 Microprocessor board

The AS-5216 microprocessor board provides both flexibility and ease of integration. It features high-speed USB 2.0 communication and can be used in combination with the following detectors:
- Sony ILX554B and ILX511B
- TAOS 1401
- Toshiba 1304
- Hamamatsu S11155/S7031 and G92xx series with/without TEC
- Sensors Unlimited 256 and 512

The board is equipped with an HD26 digital I/O connector with 13 programmable I/O port (3 digital in, 10 digital out), 2 analog out ports and 2 analog in ports. One digital out port is generally used to control the flash rate of an AvaLight-XE pulsed Xenon light source, another digital out it used to control external TTL-shutter devices and a third is reserved for external control for flashing a laser source in LIBS applications. A digital in may be used for external hardware triggering.

A maximum of 127 AS-5216s can be coupled and synchronized through the USB 2.0 interface. This means easy and simultaneous sampling of 2-127 channels. The AS-5216 board can be synchronized with other AS-5216 boards to control the simultaneous data-sampling of multiple channels, all connected to USB2.0 high-speed interface. On-board signal processing allows data reduction to speed up scan transfer time. Data reduction can be achieved by defining a start and stop pixel and On-Board Averaging.

This board is compatible with the extensive AS-5216-DLL software development kit, enabling full control over the spectrometer in customer-designed software.

Technical specifications AS5216

Microprocessor	Coldfire® 5216, 32-bit, 64 MHz
Memory	512 KB Flash Memory, 64KB RAM
A/D converter	16-bit, 2 channels for video signal
Integration time	2 µs – 10 minutes (detector dependent)
Data Transfer speed	1.8 ms/scan for Sony ILX554 2048 pixels, 2 MHz 1.8 ms /scan for Sony ILX511 2048 pixels, 2 MHz 1.1 ms/scan for TAOS 1401 2 MHz 3.7 ms /scan for Toshiba TCD1304, 1 MHz 2.09 ms/scan for Hamamatsu S11155, 1 MHz 5.22 ms/scan for Hamamatsu S7031, 250 kHz 1.56 ms/scan for Hamamatsu 92XX, 500 kHz 1.0 ms/scan for Sensors Unlimited NIR, 2.4 MHz
USB interface	2.0 high-speed, 480 Mbps
RS-232 interface	Baudrate 115200 bps, HD-26 female connector
Digital IO	HD-26 connector, 2 Analog in, 2 Analog out, 3 Digital in, 12 Digital out, trigger, synchronization
Power supply	Default USB power, 350 mA 12 VDC, reverse polarity protection, 150 mA
Temperature range	0- 55 ºC
Dimensions, weight	162,5 x 100 mm, 97 grams

Ordering Information

AS-5216	• Microprocessor board 16-bit AD and USB2.0/RS-232 interface. Specify detector type, see below

For all boards, specify detector type

- ILX	for Sony ILX554B detectors (AvaSpec-ULS2048-USB2)
-ILX511	for Sony ILX511B detectors (AvaSpec-ULS2048L-USB2)
- TAOS128	for TAOS 1401 detectors (AvaSpec-128-USB2)
- TOS3648	for Toshiba 1304 detectors (AvaSpec-3648-USB2)
- HAM2048XL	for Hamamatsu S11155 detectors (AvaSpec-ULS2048XL-USB2), extra pcb incl.
HAM1024x58/122	for Hamamatsu S7031 detectors (AvaSpec-HS1024x58/122-USB2), extra pcb incl.
- NIR256	Hamamatsu G92xx series InGaAs NIR detectors (AvaSpec-NIR256-1.7)
- NIR256TEC	Hamamatsu G92xx series with TEC InGaAs NIR detectors (AvaSpec-NIR256-2.0/2.5TEC), extra pcb incl.
-NIRSU256	Sensors Unlimited 256 InGaAs NIR detectors (AvaSpec-NIR256-1.7/2.2TEC)
-NIRSU512	Sensors Unlimited 512 InGaAs NIR detectors (AvaSpec-NIR512-1.7/2.2TEC)

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OEM Spectrometer:
ASM-5216 Microprocessor board

The ASM-5216 is the smaller version of our AS-5216 board with more than 25% reduction in size and a lower price. The board also provides additional interfaces for optimal coupling with other devices. The ASM-5216 supports all Avantes USB2 optical Benches with a wide range of new detectors and high-speed (USB2.0) communication. The ASM-5216 board is based on a powerful 5216 Coldfire® processor, running at 64 Mhz, 16-bit AD converter and USB2.0/RS232-interface. Different detector types can be connected to the electronics board, such as TAOS Photo-Diode Arrays

(TSL1401), Sony CCD detectors (ILX511, ILX554B), Toshiba CCD detectors (TCD-1304), Hamamatsu back-thinned CCD detectors (C11155, S7031), Hamamatsu (G92xx series) and Sensors Unlimited InGaAs NIR detectors. For the Hamamatsu back-thinned detector a separate power converter board is needed, and for the detectors with TE cooling a separate TE controller board is required.

The board is equipped with a Samtec 60-pin Card edge connector with 12 programmable IO ports (3 DI, 9 DO), 2 analog

out ports and 2 analog in ports. One digital out port is used for controlling the flash rate of an external Xenon strobe (AvaLight-XE), one digital out port is used to control external TTL-shutter devices, one digital output is reserved for external control for flashing a laser source in LIBS applications. One digital in is used for external hardware triggering.

The ASM-5216 board can be synchronized with other ASM-5216 boards to control the simultaneous data sampling of multiple channels, all connected to USB2.0 high-speed interface.

On-board signal processing allows data reduction to speed up scan transfer time. Data reduction can be achieved by defining a start and stop pixel and On-Board Averaging. The board can be operated by the extensive AS-5216-DLL software development kit with many functions to control the electronics board and data sampling parameters (see software section).

Technical specifications ASM-5216

Microprocessor	Coldfire® 5216, 32-bit, 64 MHz
Memory	512 KB Flash Memory, 64KB RAM
A/D converter	16-bit, 2 channels for video signal
Integration time	10 µs – 10 minutes (detector dependent)
Data Transfer speed	Detector dependent 1-5 ms
USB interface	2.0 high-speed, 480 Mbps
RS-232 interface	Baudrate 115200 bps,
Digital IO	60 pole Samtec connector, 2 Analog in, 2 Analog out, 3 Digital in, 9 Digital out, trigger, synchronization
Power supply	Default USB power, 350 mA 12 VDC, reverse polarity protection, 350 mA
Temperature range	0 - 55 ºC
Dimensions, weight	119.5 x 100 mm, 90 grams

Ordering Information

ASM-5216	• Microprocessor board 16-bit AD and USB2.0/RS-232 interface. Specify detector type, see AS-5216
IC-USB2-ASM5216	• Interface cable ASM-5216 to USB2, shielded

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