

NEW IN THIS CATALOG

Avantes is proud to announce the latest additions to our extensive line of products. The highlights are:

Avalight-LDxE

For maximum brightness in the 170-1100 nm range, the Avalight-LDxE is the perfect light source.

page 101



AvaGigE

Remotely controlling your spectrometer has never been easier. Connect any AvaSpec series spectrometer to your network and perform measurements as if you were sitting next to it.

page 136



Direct-attach accessories

An extensive line of direct-attach accessories are now available. Attenuators, cuvette holders and filter holders make measurements easier.

page 139



AvaSpec-RS

Finally a replaceable slit. Choose freely between 25, 50, 100 and 200 μ m slit sizes, optimizing the resolution and sensitivity within seconds.

page 58

AvaSpec-ULS2048XL

Higher sensitivity, faster measurements, also in the UV and NIR-range are now possible.

page 40



AvaSpec-HS1024x58/122

Very high pixels mean very high sensitivity, dynamic range and signal to noise ratio.

page 43



Spectrometers

6

Introduction	6
Optical Bench Design	8
How to configure a spectrometer for your application?	8
How to choose the right grating?	11
How to select the optimal Optical Resolution?	15
Detector arrays	16
Sensitivity	17
Stray-light and second order effects	22
Spectrometer platforms	23

AvaSpec-128 StarLine Ultrafast Fiber-optic Spectrometer	28
AvaSpec-ULS2048 StarLine Versatile Fiber-optic Spectrometer	30
AvaSpec-ULS3648 StarLine High-resolution Fiber-optic Spectrometer	33
AvaSpec-ULS2048L StarLine Versatile Fiber-optic Spectrometer	36
AvaSpec-Fast StarLine Ultra-fast Spectrometer for High-speed Applications	39
AvaSpec-ULS2048XL SensLine High UV- and NIR-sensitivity back-thinned CCD Spectrometer	40
AvaSpec-HSi024x58/122 SensLine High-UV- and NIR-sensitivity TE-cooled CCD Spectrometer	43
AvaSpec-ULS2048TEC SensLine Thermo-Electric Cooled Fiber-optic Spectrometer	45
AvaSpec-ULS3648TEC SensLine Thermo-Electric Cooled Fiber-optic Spectrometer	47
AvaSpec-NIR256/512-1.7(TEC) NIRLine Near-Infrared Fiber-optic Spectrometer	49
AvaSpec-NIR256/512-2.0/2.2/2.5TEC NIRLine Near-Infrared Fiber-optic Spectrometer	51
AvaSpec Dual-Channel Fiber-optic Spectrometer	53
AvaSpec Multi-Channel Spectrometer	54
AvaRaman Fiber-optic Raman System	55
AvaLIBS - an alternative method of configuring a LIBS system	57
AvaSpec-RS Replaceable-Slit Spectrometer	58
AvaSpec Spectrometer Interface Cables	59
AvaSpec Services and Calibrations	60
OEM Spectrometer: AS-5216 Microprocessor board	61
OEM Spectrometer: ASM-5216 Microprocessor board	62
AvaSpec Stand-alone Fiber-optic Spectrometer	63
OEM Spectrometer: AvaBench Optical Bench	64
OEM Spectrometer: AvaBench NIR Optical Bench	66
OEM Spectrometer: Enclosure	67

Software

68

Introduction	68
AvaSoft-Basic Software	70
AvaSoft-Full and AvaSoft-All	71
AvaSoft - Color	72
AvaSoft - Irradiance	73
AvaSoft - Chemometry	74
Exporting in Real-time to Excel with AvaSoft	75
AvaSoft - Process Control	76
Fiber-optic Multiplexer Control Software	76
Raman Spectroscopy Software	77
ThinFilm Metrology	78
ThinFilm Multi-Layer Measurement Software	79
Panorama Spectroscopy Software	80
Specline analytical Software	81
Interface Packages and Libraries for Windows and Linux	82

Light Sources

84

Introduction	84
AvaLight-DHc Full range compact Light Source	86
AvaLight-HAL Tungsten Halogen Light Source	88
AvaLight-DH-S Deuterium-Halogen Light Source	90
AvaLight-DH-S-BAL Balanced Power	92
Avalight-XE Pulsed Xenon	94
AvaLight-HAL-CAL and AvaLight-DH-CAL Calibrated Light Sources	95
AvaLight-CAL Spectral Calibration Source	97
Avalight-LED Light Source for fluorescence applications	100
Avalight-LDxE: very high brightness	101

Fiber-optics

102

Introduction	102
Fiber-optic Design	104
Solarization Resistant Fibers for Deep-UV applications	106
Fiber-optic Jacketing	108
Fiber-optic Probe properties	109
Fiber-optic Connectors	111
Fiber-optic Cables	112
Multi-furcated Fiber-optic Cables	113
Reflection Probes (standard)	114

Reflection Probes with multiple legs	115
Reflection Probes with Reference.....	116
Reflection Probes with Small Tips	117
Reflection Probes for Powders and Thick Fluids.....	118
1/2" Industrial Reflection Probes for Powders and Thick Fluids	119
1/2" Industrial Fluorescence Probes.....	120
Micro Transmission Dip Probes	121
Mini Transmission Dip Probes	122
Transmission Dip Probes	123
Transmission Dip Probes with Variable Path Length	124
Special Fiber Assemblies and Probes.....	125
Collimating lens	126
Cosine correctors	127
Vacuum Feedthrough.....	128
Fiber-optic Homogenizer.....	129
Fiber Microscope Adapters.....	129
Reflection Probe Holders.....	130
Transmission and Reflection Stage	131
Flexible work stands for fiber-optics	132
Fiber Interconnects	133

Accessories 134

Introduction	134
AvaGigE: use your spectrometer on the network	136
Cuvette Sample Holders	137
Temperature Controlled Cuvette Holders	138
Direct-attach Accessories	139
Direct-attach variable In-Line Filter Holder	140
CUV Direct-attach Cuvette Holders	141
Direct-attach Fiber-optic Attenuator.....	142
Cuvette holder with attenuator and filter holder.....	143
Variable In-Line Filter Holder	144
In-line Fiber-optic Attenuator	145
Variable Pathlength Cuvette Holder	145
Integrating Spheres	146
Integrating Sphere with internal halogen light source.....	148
Large Integrating Spheres.....	149
Variable Collimating Lens Holder.....	150
Optical Post Mount.....	150
AvaTripod	151
AvaTrigger External trigger box	151
Fiber-optic Switch (FOS)	152
Fiber-optic Multiplexer (FOM)	153
Fiber-optic Process Flow Cells	154
In-Line Flow Cells	155
Micro Flow Cell	156
LPC series Long Path Flow Cells.....	157
Reference Tiles	158
12 and 24 volts power adapters for spectrometer and light sources.....	160
Battery packs for portability of Avantes spectrometers and light sources	161

Applications 164

Introduction	164
Finding fires with AvaSpec	166
Fast sorting of LEDs	166
Bird research on the Falkland Islands	167
Non-invasively determining risk for cardiovascular diseases made easy	167
Monitoring fertilizer concentration on the go.....	168
The MAYAs use Avantes spectrometers	168
High Dynamic-Range Time Intensity Measurement of Intense Femtosecond Laser Pulses	169
OPTIX Helps Fight Terrorism.....	170
AvaAbsorb	171
Plasma-Surface Interaction Measured by Avantes	172
Color measurements	173
UV/VIS absorbance measurements.....	174
Irradiance measurements.....	176
LED measurements	178
Thin Film Metrology	180
Monitoring Coating Processes in Vacuum Chambers	182
Botanical/Horticulture/Agriculture measurements.....	183
Gemology measurements	184
Fluorescence measurements	186
Biomedical applications	188

Distributors 190

Index 196