ACTIVE SPECTRUM

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Micro-ESR™ Oil Condition Sensor

Active Spectrum's on-line Micro-ESR™ sensor is the world's first industrial process monitoring instrument that provides real-time, embedded, nondestructive measurement of free radicals and transition metals.

Active Spectrum's on-line Micro-ESR sensor uses the principle of Electron Spin Resonance (ESR/EPR) spectroscopy to measure the composition and concentration of free radicals in any fluid or solid sample.

APPLICATIONS

- Asphaltene and Vanadium in Crude Oil
- Thermal Breakdown of Lubricants
- Soot and carbon in exhaust gases and oil
- Catalyst coking
- Chemical additive concentration
- Transition metals: Mn, V, Fe, Cr, Co, Cu and others
- Combustion, oxidation, polymerization and coking processes

Magnetic resonance spectroscopy is unaffected by sample density or opacity. This makes Micro-ESR ideal for analyzing emulsions, opaque liquids and non-metallic solids that cannot be analyzed in other ways.

SPECIFICATIONS

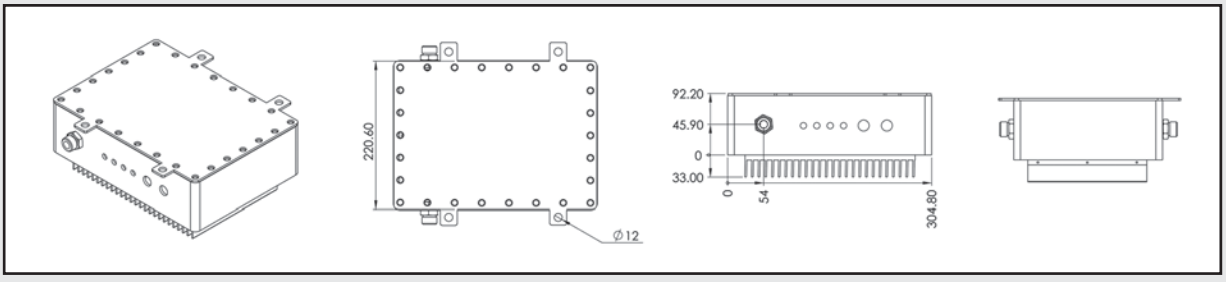
Active Spectrum's Micro-ESR™ Oil Condition Sensor uses a microwave resonance signal to measure free radicals in crude oil, lubricants and catalysts.

Parameter	S-band (3.5 GHz)	X-band (9.5 GHz)
Sensitivity	0.5 µM (aq)	0.1 µM
Minimum sample volume	25 µL	100 µL
Magnet Assembly	1180 ± 135 Gauss	3480 ± 200 Gauss
Magnetic Field Uniformity	0.25 Gauss	0.25 Gauss
Supply Voltage	15 VDC / 6.7A (120V/240V Wall Adapter Included)	
Data Interfaces	Ethernet and USB	
Temperature Controller	N/A	Available
Dimensions	6" x 6" x 4"H	6"x10"x6"H[1]
Internal Bore Diameter	Ø1.9 mm	ø5.0 mm
Maximum Pressure	100 psi	100 psi[2]
Fluid Fittings	1/8" NPT	¼" NPT
Maximum Oil Inlet Temperature	160°C	160°C[3]
Operating Temperature Range	-30°C to +85°C	-30°C to +85°C
Supply Voltage	12-32 VDC / 2.5A	
Data Interfaces	USB, Ethernet, CANBUS[4]	

Application	S-band Micro-ESR (3.4 GHz)	X-band Micro-ESR (9.5 GHz)
Crude Oil Analysis- Vanadium and Asphaltene	✓	✓
Online process monitoring	✓	✓
Catalyst coking	✓	✓
Chemical additives analysis	✓	✓
Marine Fuel Dilution of Lube Oil	✓	✓
Soot and Water in Lube Oil	✓	✓
Oxidation of Lube Oil		✓
Oxidation of Hydraulic Oil		✓
Thermal Coking of Gearbox and Turbine Oils		✓
Educational Uses	✓	✓

[1]Not including optional sample temperature controller.
[2]High pressure version available.
[3]High temperature and low temperature options available.
[4]Special order, available upon request.

OUTLINE DRAWING



Perspective Top Front Side

AVAILABILITY

Please contact our sales department at +1 650-212-2625 or sales@activespectrum.com to discuss your application in more detail.

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