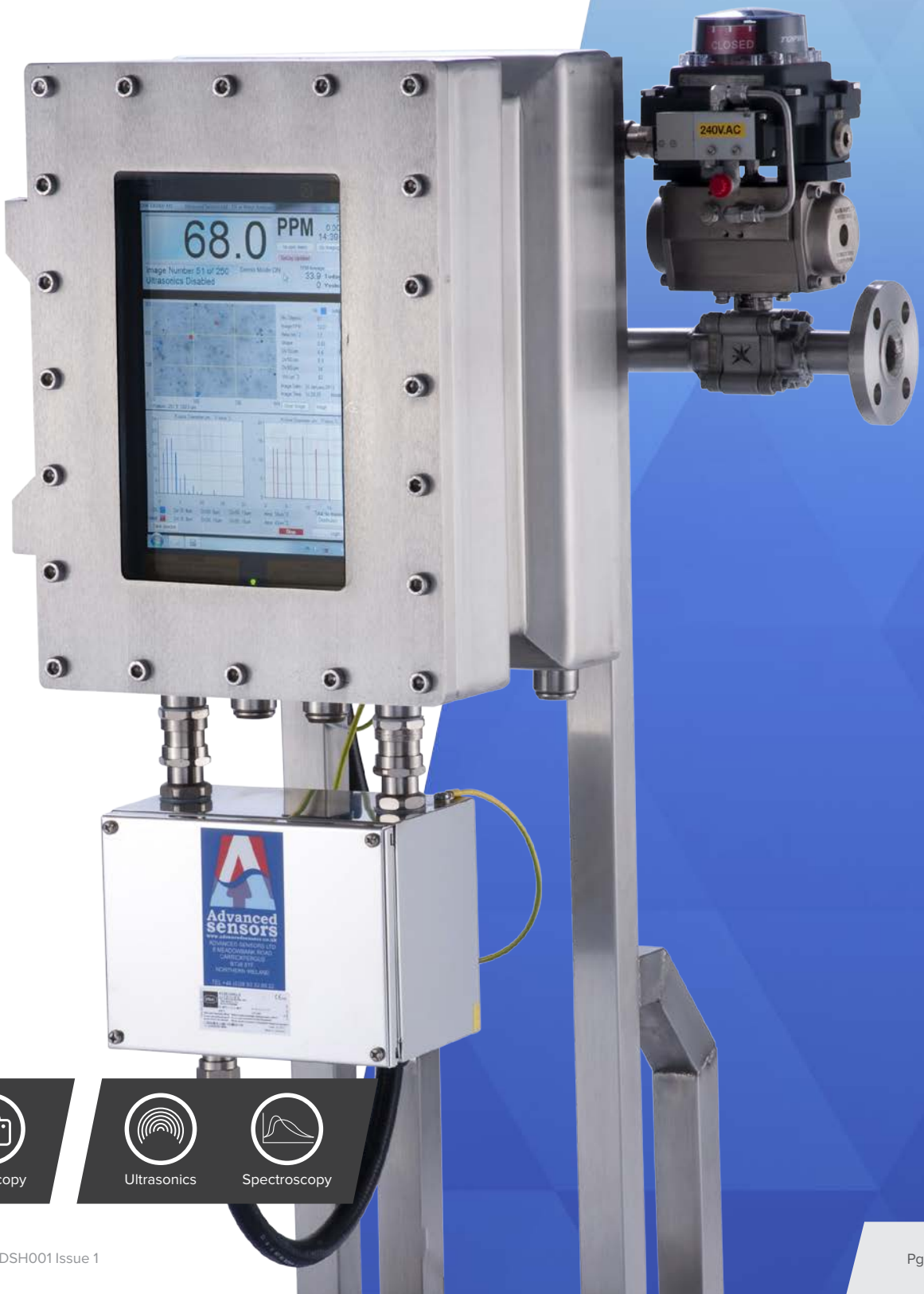
Advanced sensors

Oil in Water Analytical Experts

EX-100M/1000M

SIDE STREAM OIL/PARTICULATE IN WATER ANALYZER



Fluorescence | Microscopy | Ultrasonics | Spectroscopy

EX-100M/1000M

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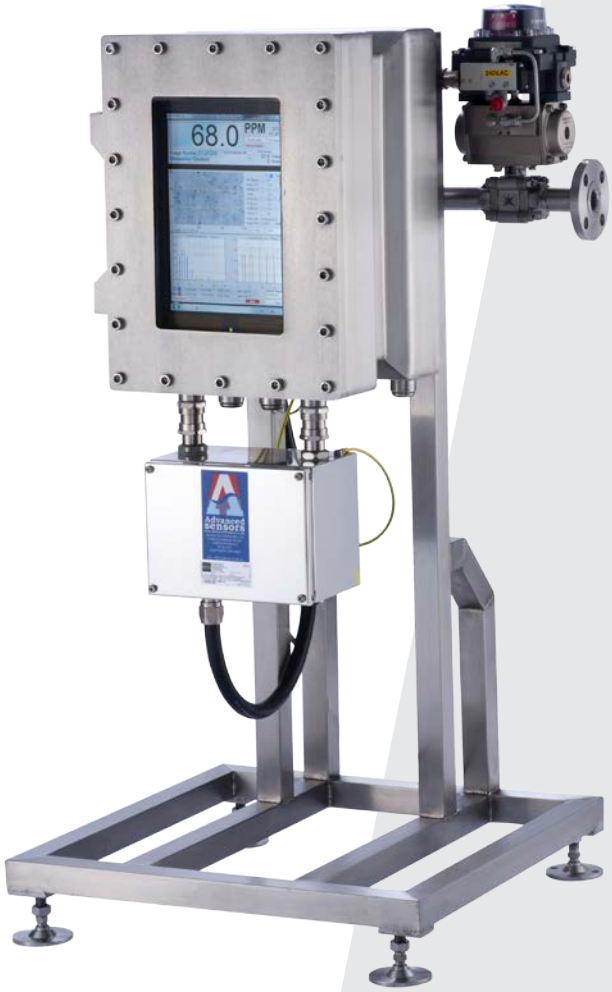
FLUORESCENCE MICROSCOPY

SIDE STREAM
OIL / PARTICULATE IN WATER ANALYZER

The EX-100M is a side stream oil / particulate in water analyzer that combines video microscopy measurement for particle size analysis with the highly accurate Laser Induced Fluorescence oil content measurement technique. This allows measurement of Total Suspended Solids (TSS), oil droplet size and gas bubble size whilst still accurately measuring concentration of oil in water.

In addition to the EX-100M features, the EX-1000M model offers spectral analysis.



FEATURES

- Patented ultrasonic cleaning
- Combination of Laser Induced Fluorescence (LIF) and video microscopy measurement
- Periodic homogenisation of sample
- Sample access point
- Various microscopy measurement ranges configurable
- Measurement repeatability ±1% of full scale range (fluorescence and microscopy)
- Particle and droplet size information e.g. Dv10, Dv50 and Dv90 data
- Immediate on-screen results
- Remote management and diagnosis
- Easy to install (no sample conditioning required)
- Multiple communications options - 4-20mA, HART, Modbus, Extended Ethernet
- Integrated spectrometer
- Automatic PDF report generation
- Turbidity detection enables user to identify process upsets

BENEFITS

- Easy to use
- Ability to measure and distinguish between oil, solids and gas particles
- Low Cost Of Ownership (COO) with no routine maintenance
- No degradation of signal or recalibration required
- Droplet size compensation with homogenized samples
- Sample point facilitates laboratory correlation
- Remote control and monitoring (suitable for un-manned locations and remote process monitoring)

Fluorescence Specification	
Measurement principle	Laser Induced Fluorescence (LIF)
Range	0-20,000 ppm*
* Dependent on sample matrix and instrument configuration	
Repeatability	±1% of measurement range
Response time	1 Second, continuous results
Spectrometer Specification (1000 models only)	
Emission Wavelength Range	400-1,100 nm
Resolution	0.5 nm
Microscopy Specification	
Measurement principle	CCD Camera 2D Image
Image resolution	2 Million Pixels
Illumination	Controlled LED
Number of images per dataset	1-500 Images (User Configurable)
Time between each image	1 to 10 Seconds (User Configurable)
Imaging modes	Flowing and static modes
Microscopy Image Processing	
Advanced Sensors Image Processing Engine (no 3rd party Algorithms)	
Shape and object matching used to classify objects in the image	
No need to change parameters for different turbidity samples, due to automatic exposure time and multi-level image threshold algorithms	
Microscopy Measured Items	
Content (ppm)	Hydrocarbon droplets, Suspended Solids, Gas Bubbles
Size distribution	Hydrocarbons droplets, Suspended Solids, Gas Bubbles
Turbidity	Measurements in AU
Microscopy ppm	
Range	0-500 ppm / 100-1000 ppm*
Calibration	4 parameter curve fit with gain correction
Repeatability	±1% of full scale range
Microscopy Measured Parameters	
ppm, % Concentration, High sensitivity circularity, Convexity, Size, Diameter ped (circle of equal perimeter), Length, width, Turbidity, No. of Objects Per Image, Aspect Ratio, Elongation, Dv10, Dv50, Dv90, Dn10, Dn50, Dn90, Configurable Object Sharpness, Volume, Area	
Microscopy Size Range	
Dimensional range	1-450 um‡
Repeatability	±4% of full scale range
Calibration	Particle size calibrated with standardized beads
Microscopy Turbidity	
Range	0-1,500 AU Light
Optional Turbidity high alarm	Reports high ppm and Out of Range
Measurement timeline	Every Image Cycle
Data Storage	
Image storage	30-60 days depending on schedule
Data of every particle measured	120 days storage
Operating Conditions	
Process temperature	Up to 200°C
Process pressure	Up to 100 barg
Process flow	5-15 l/m
Operational ambient temperature	-20°C to 55°C
Cleaning	Ultrasonic (automatic)

* dependent on sample matrix & instrument configuration. Please contact Advanced sensors applications team for confirmation.
‡ Theoretical, based on CCD array size

EX-100M/1000M

TECHNICAL SPECIFICATION

Utilities		
Power supply	110 or 230 VAC (Pre-configured)	
Power Frequency	50 or 60Hz	
Power consumption	60W normal, 300W peak	
Instrument air	5.5-7 barg (for pneumatic valve; electric valve optional) (air must be filtered to <= 5um)	
Weight & Dimensions (for shipping)		
Weight (including stand, standard pneumatic Stainless Steel valve assembly, termination box and isolation switch)	195Kg	
Dimensions	L 92 cm x W 83 cm x H 148 cm	
Communications		
4-20 mA (1)	Passive, Configurable for measurement readings/temperature	
Digital Input (1) Digital Output (s)	Start/Stop cycle control Configurable as alarm contacts	
Remote access	Windows Remote Desktop	
System data storage	>10 years	
Security	2 level password protection	
Optional Communications		
Second 4-20mA	Passive, Configurable for measurement readings/temperature	
HART	Yes	
Modbus RTU	Implemented via HART to Modbus converter	
Extended Ethernet	2 wire connection, capable of 1.6Km distance	
Additional Information		
Flange fitting	1" ANSI RF (optional flange sizes and types available)	
Wetted parts	316L SS (other material available upon request)	
Manual sample take off point	Integral to analyzer	
Viewing window	Provided as standard	
Ultrasonic Homogenisation	Automatic oil droplet size compensation	
Automatic Oil Droplet Size compensation	Standard	
Ingress protection	IP66	
Enclosure material	316L SS	
Analyzer	ATEX / IECEx:	EXII 2G d/de IIB T3/T4 Gb
	Canada + USA:	Class 1 Division 1 Groups C & D T3/T4 Class 1 Division 2 Groups A, B, C, D, T3/ T4 Class 1 Zone 2 AEx d/de IIB T3/T4

Size calibration of objects conforms to ASTM E1951 standard guide for calibrating reticles and light microscope magnifications