



Ultrasonics



Fluorescence



Spectroscopy

X-One-FS / X-One-FP

Laser Induced Fluorescence Oil in Water Analyser
Side-Stream and/or Inline, for Hazardous Areas

The Advanced Sensors X-One is the next generation of our incredibly successful EX range of analysers for Oil in Water measurement.

The analysers comprise a central controller with up to two measurement modules. The measurement modules are available in side stream and inline configurations for placement in a process by-pass loop (X-One-FS) or directly in a process pipe (X-One-FP) respectively. The X-One-FP and X-One-FS use Laser Induced Fluorescence (LIF) to provide continuous accurate measurements of oil concentrations in water across a wide range of oil types. Reliable real-time data enables operators to record accurate discharge measurements, react to process changes and improve process efficiency thus enabling cost reductions. The X-One additionally facilitates interconnection of 3rd party sensors to the controller via Modbus and 4-20mA inputs.

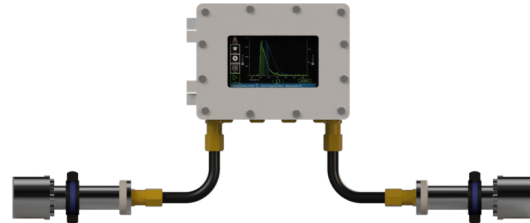
Applications

Applications include Oil in Water measurement in discharge management, process improvement, cooling water, waste-water treatment and oil leak detection. Please follow up with ASL to determine the optimum configuration for your specific application.

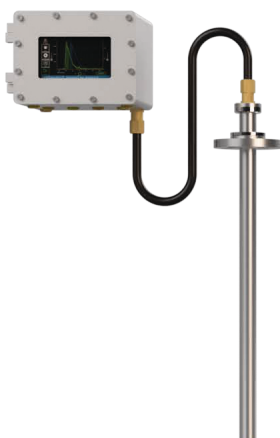
The analyser is available in 5 model configurations.



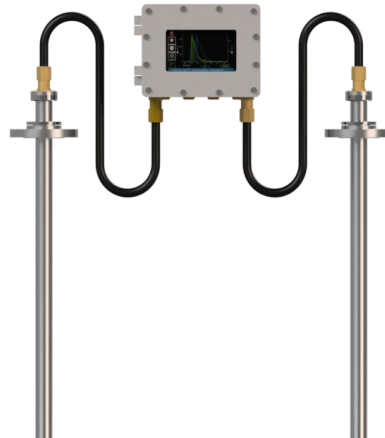
X-One-FS
Side-Stream Analyser
with one measurement cell



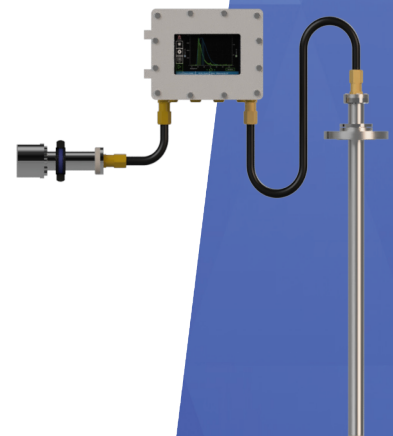
X-One-FS-FS
Dual Side-Stream Analyser
with two measurement cells



X-One-FP
Inline Analyser
with one measurement probe



X-One-FP-FP
Dual Inline Analyser
with two measurement probes



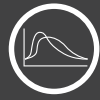
X-One-FS-FP
Side-Stream and Inline Analyser
with one measurement cell and probe



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X-One-FS / X-One-FP

Laser Induced Fluorescence Oil in Water Analyser
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BENEFITS

- Compact, lightweight design
- Low cost of ownership
- Independent controller acts as a hub for 3rd party and for future Advanced Sensors measurement devices
- No user required maintenance, artificial intelligence (AI) enhanced ultrasonic cleaning removes fouling build up
- Consistent accurate performance
- No sample conditioning system required
- Laser lifetime of 36 months. (Factor of 2 extension over previous generation model)
- No re-calibration required and no degradation of signal over the 36 month period
- Same sample used for analyser and lab measurement for better accuracy
- Remote control of the analyser
- Analyser outputs accessible remotely via HART, Modbus, Ethernet and 4-20mA
- Visibility of process changes provided via spectral fingerprint

FEATURES

- AI Enhanced Ultrasonic Cleaning
- Laser Induced Fluorescence [LIF]
- Dual measurement options
- Remote management and diagnostics
- Easy to install
- Spectral representation of the fluorescence signal
- Ability to connect 3rd party devices to the controller via Modbus and 4-20mA
- Database storage of all data
- Export of historical data via .PDF and .CSV files
- Optional integrated laboratory sample point



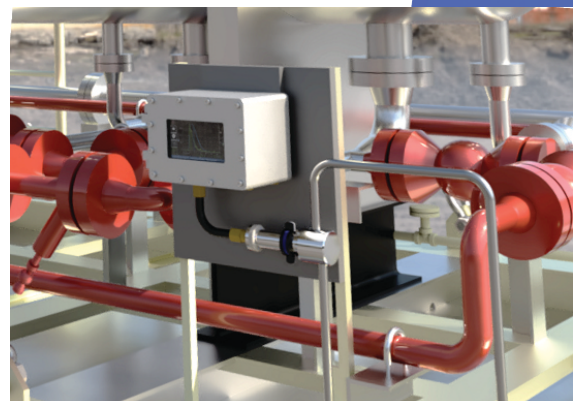
Additional for Inline/ Probe






- Hot insertion/extraction

For pressures in the range 3-5 bar_a a low pressure extraction tool is recommended. For pressures above 5 bar_a a high pressure extraction tool is required

Additional for Measurement Cell/Side-Stream

- Optional automatic compensation for oil droplet size variation (i.e. homogenisation)
- Optional flexibility of measurement cell location



Measurement Performance	
Measurement principle	Laser Induced Fluorescence (LIF)
Cleaning principle	AI Enhanced Ultrasonic Cleaning (automatic)
Range	0-20,000 ppm ↗
Repeatability	±1% of measurement range Ⓢ
Accuracy	±1% of measurement range Ⓢ
Measurement frequency	1 Second intervals, continuous results Ⓢ
Operating Conditions	
Process temperature	Up to 200°C
Operating pressure	Up to 104 bar _a
Design pressure	Up to 312 bar _a
Process velocity with Probe	Nominal 10 m/s Ⓢ
Process flow with Measurement Cell	Up to 25 l/m Ⓢ
Ambient Conditions	
Ambient temperature for operation	-20°C to +60°C
Spectrometer Specification	
Measurement wavelength range	475-1,050 nm
Pixel resolution	0.24 nm
Utilities	
Power supply	100 to 240 VAC
Power frequency	50 or 60 Hz
Power consumption	25W normal, 150W peak
Certification	
Ingress protection	IP rated for both IP66 and IP68
Enclosure classification	NEMA 4X
USA + Canada Controller	 Class 1 Div 2 Groups C,D, T6 Ta=-20°C to +60°C
USA+Canada (Probe or Cell)	 Class 1 Div 2 Groups C,D, T5 Ta=-20°C to +60°C Max. Liquid Temperature -100oC Or Class 1 Div 2 Groups C,D, T3 Ta=-20°C to +60°C Max. Liquid Temperature -200oC
IECEX Controller	 II 2 G Ex db [op is IIC T4 Gb] IIB T6 Gb Ta = -20°C to +60°C
IECEX Cell or Probe	 II 2G Ex db [op is IIC T4 Gb] IIB T5 Gb Ta = -20°C to +60°C Max. Liquid temperature 100°C or II 2G Ex db [op is IIC T4 Gb] IIB T3 Gb Ta = -20°C to +60°C Max. liquid temperature 200°C
Brazil	Inmetro
UK	UKCA
CE compliant	
Communications, Storage & Access	
2 x 4-20 mA Output	Can be configured as passive or active at the factory Configurable measurement reporting
1 x 4-20 mA Input	Readings from external measurement device displayed at the controller interface
Up to 4 x Digital Inputs Up to 3 x Digital Outputs (Dry contacts)	Start/Stop cycle control Configurable as alarm contacts
Remote access	Windows Remote Desktop
Internal data storage	>10 years
User passwords	3 level password protection

Weight & Dimensions		
Weight	Controller	24 Kg
	Measurement Probe	6 Kg
	Measurement Cell	3.5Kg
Dimensions	Controller	L 280 mm x H 200 mm x D 195 mm
	Measurement Probe	Up to 1m Length with 38mm Diameter Longer probe lengths on request
	Measurement Cell	L 225 mm Diameter 76.5mm (Max)
Optional Communications		
HART	Hart version 7	
Modbus RTU output	Modbus tables provided on request	
Modbus RTU input	Enables connection of an external measurement device ✱	
Extended Ethernet	2 wire connection, capable of up to 1.3km	
Additional Information		
Cable entries	8 x M20	
Wetted components	Stainless Steel 316L, 25 Cr Duplex, 22 Cr Duplex, Hastelloy C-276, Monel 400, Inconel 625, Incoloy 825 and other options available on request	
Controller material	Stainless Steel 316L	
Conduit length	Up to 30m	
Dual Cell X-One-FS-FS Probe and cell X-One-FS-FP Dual Probe X-One-FP-FP	Allows dual simultaneous measurement	
Analyser Stand	Optional	
Additional Information Cell		
Process connection	½" NPT Connection (additional optional connections available e.g. flanged connections)	
Optional ultrasonic homogenisation	Facilitated via an optional flow valve	
Additional Information Probe		
Hot insertion/extraction	Up to 104 bar _g	
Flange fitting	2" ASME RF 150#, 300#, 600# (various other flange ratings and sizes available upon request)	

Laser Radiation. Avoid direct eye exposure. Class 3R Laser product

⌚ Dependent on sample matrix & instrument configuration. User may select any desired measurement from 0-10 ppm, 0-100 ppm [...] up to 20,000 ppm

⊕ Under ideal conditions, with a homogenised sample.

Note: Lab calibration with potable water and following ASL standards preparation method can achieve accuracy and repeatability of +/-1% of calibrated range.

⌚ Option to extend the interval via software

⌚ For Higher flow rates contact Advanced Sensors

✱ Contact ASL for assistance with device integration

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