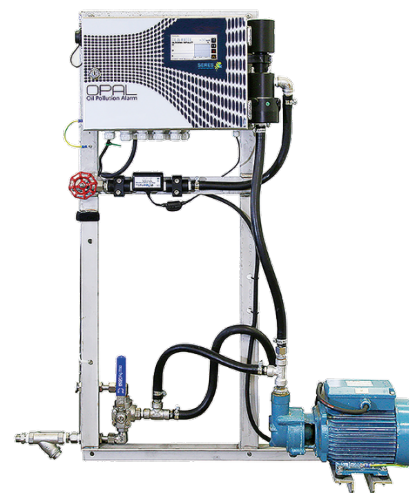


Complete monitoring system for the automatic, continuous detection of suspended hydrocarbon in water. Suitable for early detection of oil in various applications (water steam cycles, industrial water, industrial and urban wastewater), onshore and offshore.

## Detector Opal (Oil Pollution Alarm)

- Available configurations for specific measuring ranges as in the table below.
- Complete system including measurement and control electronics, measuring unit and flow indicator.
- Reagent-free infrared light scattering beam measurement. Automatic compensation for Iron oxide per IMO MEPC.107(49). (Opal Detector Marine only.)
- Instantaneous response from online analyzer.
- Programmable alarms for high/low thresholds, flow and analyzer failure.
- Automatic and periodic wiper jack cell cleaning.
- Available ex-proof (ATEX, IECEx, GOST)
- Available for marine applications (IMO resolution MEPC.107 (49))



Opal Standard

<b>Analyzer</b>	<b>Opal Detector Standard (assembled on frame)</b>		<b>SOL-59.211.000</b>	
<b>Analyzer</b>	<b>Opal Detector Russia (GOST ATEX)</b>		<b>SOL-59.211.100</b>	
<b>Analyzer</b>	<b>Opal Detector in ATEX/IECEx Enclosure</b>		<b>SOL-59.211.200</b>	
<b>Analyzer</b>	<b>Opal Detector Marine (IMO MEPC.107 (49)) (assembled on frame)</b>		<b>SOL-59.211.300</b>	
<b>Range Selection*</b>	0-10 ppm	SOL-97.022.510	0-250 ppm	SOL-97.022.550
	0-30 ppm	SOL-97.022.520	0-500 ppm	SOL-97.022.560
	0-50 ppm	SOL-97.022.530	0-1000 ppm	SOL-97.022.570
	0-120 ppm	SOL-97.022.540	*not applicable for Opal Marine – always 0-30 ppm	
<b>Power Supply Selection</b>	110 VAC / 50 Hz	SOL-89.820.060	230 VAC / 50 Hz	SOL-89.820.040
	110 VAC / 60 Hz	SOL-89.820.070	230 VAC / 60 Hz	SOL-89.820.050
<b>Configuration</b>	Sampling probe for process pipe (Pipe nominal diameter (DN): 350 mm or 650 mm; BSP or NPT)		SOL-83.710.010 Consult Sales	
<b>Configuration</b>	Sample Cooler for Liquid (if sample < 90°C) – for ATEX/IECEx version only		SOL-82.330.010	
<b>Configuration</b>	Automatic backflush filter cleaning		SOL-82.810.010	
<b>Configuration</b>	HART converter module – for ATEX/IECEx, 4-20 mA version only		SOL-81.430.010	
<b>Configuration</b>	RS485 RTU Modbus/JBUS		SOL-84.430.020	
<b>Configuration</b>	Self-priming pump – for 230 VAC power supply version only		SOL-82.340.020	
<b>Option</b>	1-Year Spare Part Package		SOL-84.110.030	

## Hydrocarbon Detection

### Infrared light scattering beam measurement:

The quantity of energy thus emitted is proportional to the number of particles and is converted into hydrocarbon ppm.

Cycle time Instantaneous, T90% < 3 sec.

### Sensors/Measurement Equipment

Detection wavelength 850 nm  
Photodiode detection

### Detector Measuring range

<b>Opal Detector</b>	<b>0-1000 ppm</b> (selectable, pre-defined)
Limit of Detection	1 ppm (For range up to 120 ppm)
Repeatability	± 2-3 % FS
Accuracy	± 2-3 % FS

Zero calibration: On clean, fresh water

## Specifications and Functionality

Pump type Emulsifier pump  
Pump quantity 1

### Power supply

Voltage: 110 or 230 VAC (selection pre-defined)  
Frequency: 50 or 60 Hz (selection pre-defined)  
Power consumption: 700 VA (with pump)

### Operation

Display: Color and graphic LCD, 4.3", touch-screen

Display of process value, alarm status and graphic.

Smart and intuitive interface based on separate menu sections: "Measurement", "Maintenance" and "Settings".

User menus in English and French. Password protection and storage of data records. Storage and graphical display of measurement history.

### Alarm Relays

1 summary alarm for "analyzer failure"

Maximum load: 1A / 24V

### Relay Outputs

2 potential-free contacts programmable as limit switches for measuring values (high/low thresholds)

1 sample flow alarm.

1 output for indication of the active sample stream.

Rated load: 1A / 24V

## Opal Models



Opal Standard



Opal Russia



Opal in ATEX Enclosure



Opal Marine

## Inputs

1 input for "Standby".

1 input for "Zero" (on request).

## Signal outputs

1 programmable signal outputs for measured values (freely scalable, linear).

Current loop: 0-4 - 20 mA

## Communication interface

RS485 interface (galvanically separated) with JBUS RTU protocol

1 sealed USB connection for transfer on key

HART converter module for ATEX version (configuration).

## Opal explosion proof

### For installation of equipment in hazardous area zone 1 or 2, group IIC, T4:

Pressurized cabinet, air purge unit (ATEX), air control unit, integration work, certification, cabinet cooler.

### Type

ATEX: LCIE 12 ATEX 3078  
II 2 G  
Ex pxb IIC T4 Gb

IECEX: IECEX LCIE 17.0036  
II 2 G  
Ex pxb IIC T4 Gb

GOST: Metrologic and TC-RU (2ExpIIIT4/T3) for hazardous areas

## Opal Marine

### IMO Resolution MEPC.107 (49)

Measuring range 0-30 ppm  
Bilge alarm 15 ppm

## Analyzer Data

(The following data refers to the Opal Detector Standard on frame. Other version's dimensions, weight etc. vary depending on the chosen configuration.)

### Sample conditions

Flow rate: min 100 l/h  
optimum 200 l/h  
Temperature: 5 to 50 °C  
Inlet pressure<sub>Abs.</sub> (25 °C): 0.5 up to 3.0 bar max.  
Outlet pressure: pressure-free  
Particle size: 400 µm filter included (<400µm)

### Ambient Conditions

Temperature: 5 to 45°C  
Humidity 10 to 90% rel.

### Sample connections

Sample inlet: 1/2" BSP F  
Sample outlet waste: 1/2" BSP F  
Clean water inlet: connection for tube Ø10 x 12 (200l/h - 0.5 up to 3.0 bar max – Consumption about approximately 100L/month)

### Analyzer measures

Dimensions: 1055 x 800 x 250 mm

### Materials

Wall skid: SS 304  
Vessel: Delrin & PVC  
Hydraulic circuit: flexible thermoplastic piping  
Total weight (basic model on wall skid): 30 kg  
Protection degree (cabinet): IP 65  
Installation in safe and sheltered area, away from dust and corrosive atmospheres

Interferences: Turbidity, bubbles