FL007
Oil in Water Monitor

Features

- **Simultaneous UV fluorescence and turbidity**
- **Hygenic Ø12 mm PG 13.5 immersion probe**
- **Real time in-line measurement**
- **Calibration for 16 different oil types**
- **Suitable for hazardous area use**
- **Alarm, 4-20mA and Modbus communications**

Typical Applications:

- **Trace oil in water**
- **Leak detection**
- **Cooling water & condensate return**
- **Drinking water**
- **Wastewater monitoring**
- **Environmental monitoring**

The Kemtrak FL007 is a fiber optic probe based oil in water monitor. A state-of-the-art combined fluorescence and turbidity measurement assures reliable continuous monitoring of oil and hydrocarbon contamination in water.

Mineral oils rich in aromatic content will fluoresce when illuminated with ultraviolet light. The intensity of this fluorescence is dependent upon the polyaromatic hydrocarbon (PAH) content of the oil. Typical oils that fluoresce include fuel oil, crude oil, hydraulic oil and transformer oil.

Each oil has its own unique fluorescence intensity resulting from its specific PAH content. The combined fluorescence from both dissolved and dispersed oil in water can be measured and correlated to the oil content. Entrained gas and solids present in the stream will not fluoresce and therefore do not affect the measurement.

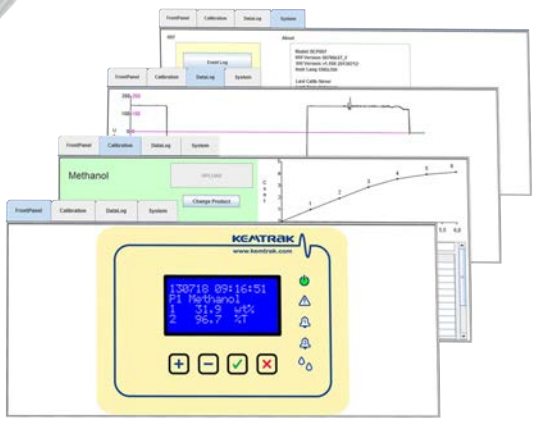
However, non-mineral oils or hydrocarbons low in aromatic content may not fluoresce. Hydrocarbons and oils with a low water solubility will result in a turbid solution that can easily be detected using the dual turbidity measurement instantly informing the operator of leaks or contamination resulting in a high measurement confidence.

The immersion probe has the same dimensions as industry standard Ø12 mm PG 13.5 pH sensors allowing a range of standard fittings and retractable probe holders to be used.

Standard features include 16 linearization tables for multiple product switching, remote zeroing, automatic cleaning cycle and signal filtering. The robust industrial

fiber optic probe with scratch resistant sapphire optics, no electronics and no moving parts are well suited for both ordinary and hazardous area installation. A free graphical internet based configuration utility is included which allows remote operation, calibration, validation and data trending.

All Kemtrak products are designed to meet the most demanding application specifications and are made from the highest quality materials to ensure exceptionally long life and the highest reliability possible.



KEMTRAK

www.kemtrak.com

Technical Data
FL007 Process Oil in Water Analyzer

Housing
Stainless steel EN 1.4301 (X5CrNi18-10), AISI 304 (V2A)
Captive lid screws & external mounting brackets stainless steel
224 x 215 x 125 mm (L x W x D)
IP 65 / EN 60529

Display
16 x 4 alphanumeric white on blue dot matrix LCD display
LED background illuminated
Measurement updates every second

LED 1 (green):	Power on
LED 2 (red):	System fault
LED 3 & 4 (orange):	Alarm 1 & Alarm 2
LED 5 (blue):	Clean / Hold

Operation
4 push buttons
Remote HTML/Java interface (TCP/IP connection via Ethernet port)

Software Features:
- Auto gain: Fully automatic photometer gain switching
- Auto zero: Automatically, locally or remotely activated zero
- Calibration: 16 linearization tables for concentration & mA output
- Damping: From 0 to 9999 s with noise (air bubble / particle) filter
- Memory: Nonvolatile - all data retained upon power failure
- Security: Alphanumeric password protection

Data Logger
- >17000 data points (timestamp, average, max. & min.), ring buffer
- Configurable log time interval 1 s to 24 hr

Event Logger
- >16000 events, ring buffer
- Timestamp, alarms, zeroing, cleaning, product change, calibration & system events (power, system warning & error messages)

Automatic Cleaning Control
- Automatic cleaning sequence, triggering dedicated relay output
- Manual trigger or external trigger via digital input
- Configurable automatic cleaning interval, 15 min to 2 months
- Configurable cleaning duration from 0 to 9999 s
- Auto-zero after clean option
- Hold value after clean (to equilibrate) 0 to 9999 s

PID Controller

Control method:	Pulse width modulated relay output or 0/4-20 mA output
Control period:	2 - 99 s
Proportional gain:	0.0000 - 999999
Integral time:	0.0000 - 999999 s
Derivative time:	0.0000 - 999999 s

Remote Input
5 x Digital input (potential free contact) for:
- Input 1-3: Product/range selection
- Input 4: Zero, instant zero, clean or clean & Zero
- input 5: Hold (freeze output), data log control or light source control

Light Source
High performance UV light emitting diodes (LEDs)
Typical lamp lifetime >10 000 hrs

Fluorescence

Measuring principle:	UV fluorescence	
	Excitation:	280nm
	Detection:	360nm
Nominal Range:	0 – 5 000	µg/L PAH_{phe}
ca.	0 – 200	ppm oil in water*
Detection limit:	1	µg/L PAH_{phe}

Turbidity

Measuring principle:	Backscatter turbidity	
Nominal Range:	0 – 10 000	FTU
ca.	0 – 20 000	ppm oil in water*
Resolution:	Typically < ± 0.5 FTU	

** Oil in water response is dependent on oil type*
Up to 16 oils can be customer calibrated

Accuracy
Typically <±2% of reading

mA Output
1 x selectable 0 – 20 mA / 4 - 20 mA (NAMUR, max 21.6mA)
Optional second mA output
Galvanically isolated, tested during final inspection to 500 VDC

Accuracy:	<0.1%
Resolution:	0.025%
Load:	0 – 600 Ohm

Relay Outputs
1 x 1 A 240 VAC Failsafe output (active when system is ok)
2 x 1 A 240 VAC User configurable (alarm, PID)
1 x 1 A 240 VAC Automatic cleaning control
Fuses: 4 x 1 A (type: MXT), max 100 A breaking capacity
LED status indicators flash when relays are active

Fail-Safe:
Dedicated relay output, 1 A 240 VAC
mA output value used to signal a system fault (NAMUR <3.6 mA or >21.0 mA)

Network interface (remote communications):
TCP/IP, 10Base-T and 100Base-TX Link
Connector: RJ45
Protocol:
1) HTML interface using native protocol over TCP/IP
Java® version 8 update 202 or later required
2) MODBUS server (slave) over TCP/IP (V1.1b3 compliant)
Functions: (0x03, 0x04, 0x2B/0x0E - conformity 0x01)

Operating Conditions

Ambient temperature:	0 °C to +50 °C (32 °F to 122 °F)
Transport:	-20 °C to +70 °C (-4 °F to 158 °F)

Power Supply
100-240 VAC, 50-60 Hz & 22 - 30 VAC/VDC
Mains fuse: 1 A (type MST), Max breaking capacity 35A

Power Consumption
25 VA (max.)

Certificates
CE, ISO 9001:2015

Process measurement probe

Process Connection
Compatible with industrial pH sensor dimensions
DIN 19263:2007-05, Ø 12 mm, PG 13.5
Standard probe length 120±2 mm, 225 mm, 325 mm & 425 mm
Custom lengths available on request

Materials
Stainless EN 1.4435 / 316L *or*
Hastelloy C-22

Window
Sapphire

Surface Finish
Ra <0.38 µm (polished)

Elastomers
FPM (FKM/Viton®), FFKM (Chemraz®/Kalrez®, FDA), EPDM (FDA)

Operating Conditions
Ambient & process temperatures up to 200 °C (392 °F)
Process pressure from 10 mbar to 50 bar (0,14 – 725 psi)
Operating conditions subject to material and design in use

Fibre Optic cable
Silica core photonic fiber with Kevlar® reinforced flexible
LZSH coated stainless steel jacket
Fully-interlocked stainless steel conduit for use above 85 °C (185 °F)
Terminated with SMA 905 connectors.
Lengths up to 5m (16 foot)

Protection
IP66 / EN 60529

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We reserve the right to make changes without prior notice

Distributor

Kemtrak is a leading manufacturer of fiber optic measuring and automation products for the process engineering industry.
Kemtrak provides tailor made solutions to meet the needs of a wide range of industries including chemical, petrochemical & offshore, biotech, pharmaceutical, food & beverage, pulp and paper and water & environment.
Kemtrak has trained representatives and support personnel globally and is certified according to ISO 9001:2015.