

# FL007

## Oil in Water Monitor

### Features

- Simultaneous UV fluorescence and turbidity
- Hygienic 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

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

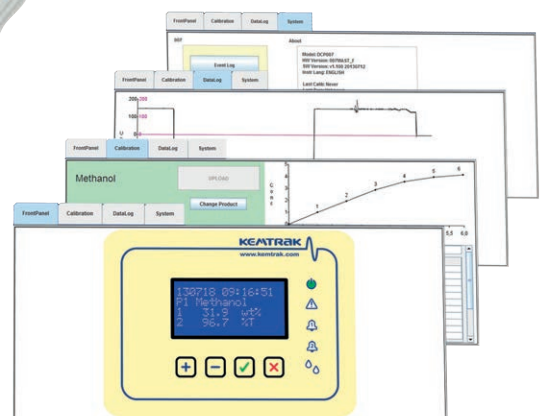


### Typical Applications:

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

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 built-in graphical internet based interface allows remote operation, calibration, validation and data trending using a standard web browser.

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

**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 9999s with noise (air bubble / particle) filter
- Memory: Nonvolatile - all data retained upon power failure
- Security: Alphanumeric password protection

**Data Logger**

- > 17 000 data points (timestamp, average, max. & min.), ring buffer
- Configurable log time interval 1 s to 24hr

**Event Logger**

- > 16 000 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 9999s
- Auto-zero after clean option
- Hold value after clean (to equilibrate) 0 to 9999s

**PID Controller**

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

**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 000hrs

**Fluorescence**

Measuring principle: UV fluorescence  
 Excitation: 280nm  
 Detection: 360nm  
 Nominal Range: 0 - 5 000 µg/L PAH<sub>phe</sub>  
 ca. 0 - 200 ppm oil in water\*  
 Detection limit: 1 µg/L PAH<sub>phe</sub>

**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 < 3.6mA or > 21.0mA)

**Network interface (remote communications):**

TCP/IP, 10Base-T and 100Base-TX Link  
 Connector: RJ45  
 Protocol:  
 1) HTML/Java interface using native protocol over TCP/IP  
 Software: Web browser with Java version 6 or later  
 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, 50-60Hz & 22 - 30 VAC/VDC  
 Mains fuse: 1 A (type MST), Max breaking capacity 35A

**Power Consumption**

25 VA (max.)

**Certificates**

CE, ISO 9001:2015, IECEx,  
 ATEX Ex d IIB + H2 T5 IP66 Category Ex II 2 G,  
 UL Class I Division I & II Gas Groups B,C,D,  
 UL Class II Groups E,F,G and Class III,  
 NEMA 479

**Process Connection**

Compatible with industrial pH sensor dimensions  
 DIN 19263:2007-05, Ø 12mm, PG 13.5  
 Standard probe length 120 ± 2mm, 225mm, 325mm & 425mm  
 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 10mbar to 50bar (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.*