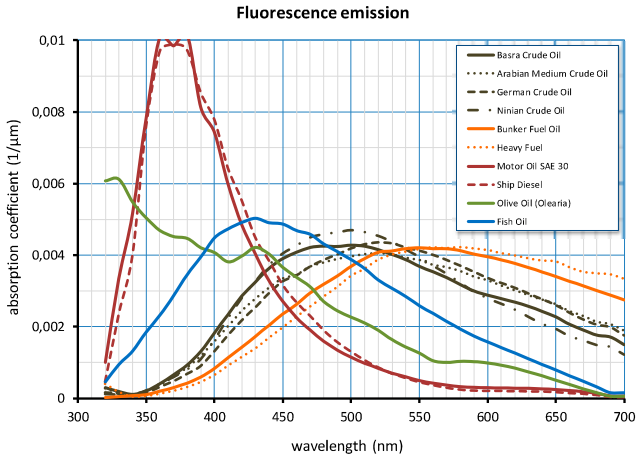
FL007
Oil in Water Monitor

Benefits:

- **UV fluorescence measurement of trace oil in water**
- **Real time in-line measurement**
- **Precision fiber optics**
- **Calibration for 16 different oil types**
- **Suitable for hazardous area use**
- **Alarm, 4-20mA and Modbus communications**

The Kemtrak FL007 analyzer is a new generation fiber optic probe based oil in water monitor. A state-of-the-art fluorescence measurement technique assures reliable continuous trace 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 oil content.



Fluorescence emission spectra of typical fluorescing oils

Entrained solids and gas present in the process stream will not fluoresce and therefore will not affect the measurement, eliminating the risk of false alarms.

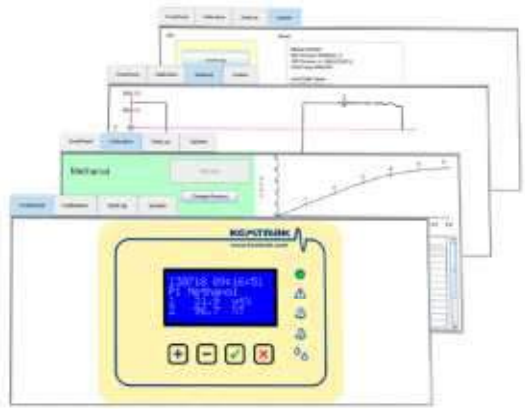
The immersion probe has the same dimensions as industry standard Ø12 mm PG 13.5 pH sensors allowing a range of standard fittings and retractable probe holders to be used.

Typical Applications:

- **Leak detection**
- **Cooling water**
- **Condensate return**
- **Drinking water**
- **Wastewater monitoring**
- **Environmental protection**

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 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

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 - 999 999
Integral time:	0.0000 - 999 999 s
Derivative time:	0.0000 - 999 999 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 pulsed Xenon UV light source
Typical lamp lifetime > 10 000 hrs

Fluorescence

Measuring principle:		UV fluorescence	
Nominal Range:		0 – 100	FLU
	ca.	0 – 1000	ppm oil in water
Resolution:		0.01	FLU
	ca.	0.5 – 5	ppm (dependent upon oil type)

1 FLU = 1 mg/L quinine sulfate reference calibration solution
Important: Turbidity must be less than 100 NTU/FNU for correct operation!

Linearity
±0.5% of respective measuring range

Accuracy
Typically <±2% of reading

mA Output
1 x selectable 0 – 20 mA / 4 - 20 mA (NAMUR, max 21.6 mA)
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/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, 50-60 Hz, & 22 - 30 VAC/VDC
Mains fuse: 1 A (type MST), Max breaking capacity 35A

Power Consumption
25 VA (max.)

Certificates
ISO 9001:2008, CE, ATEX Exd IIB + H2 T6 IP66 Category ⟨Ex⟩ II 2 G *(option)*

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 (electropolishing available on hygienic measurement cells)

Elastomers
FPM (FKM, Viton®), EPDM (FDA), FFKM (Kalrez® Spectrum 6375)

Operating Conditions
Ambient & process temperatures up to 275°C (527°F)
Process pressure from 10 mbar to 100 bar (0,14 – 1450 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 10 m (33 foot)

Protection
IP66 / EN 60529

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We reserve the right to make changes without previous notice

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Kemtrak is a leading manufacturer of fiber optic measuring and automation products for the process engineering industry. The Company provides tailor made solutions to meet the needs of a wide range of industries including chemical, petrochemical & offshore, pharmaceutical, food & beverage, pulp and paper and water & environment. With its headquarters in Stockholm Sweden, Kemtrak has trained representatives and support personnel globally. The main manufacturing facility in Gothenburg, Sweden is certified according to ISO 9001:2008.