

# TC007 Process Turbidimeter

## Benefits:

- Real time in-line turbidity measurement
- No maintenance
- Reliable and robust infrared LED lamp
- Precision fiber optics - suitable for hazardous area use
- ISO 7027:1999(E) compliant

The Kemtrak TC007 is an easy to operate industrial fiber optic turbidimeter designed to accurately measure the concentration of light scattering components. Measurements are real time and in-line.

Long life solid state LED lamps and precision fiber optics are used to provide drift and noise-free measurement at very high precision.

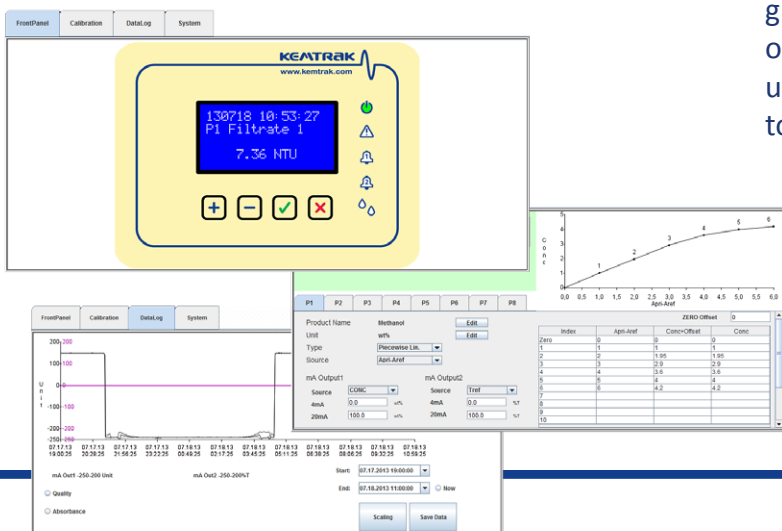
A proprietary algorithm mathematically combines the ratio of attenuated and scattered light to accurately monitor the turbidity of the sample. Automatic compensation of sample color and fouling of the optical windows ensures trouble free operation.

Maintenance free measurement cells with scratch resistant sapphire windows have no electronics or moving parts making the unit suitable for hazardous area use.



Standard features include multiple product switching, signal damping and data logging. A graphical internet based interface allows remote operation, calibration, validation and data trending using a standard web browser eliminating the need to install software.

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



**Housing**

Stainless steel EN 1.4301 (X5CrNi18-10), AISI 304 (V2A)  
 Captive lid screws & external mounting brackets stainless steel  
 224 x 215 x 105 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: 8 Products, 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**

- >23 000 data points (timestamp, average, max. & min.), ring buffer
- Configurable log time interval 1s 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, 15min to 24hr
- 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 - 999 999  
 Integral time: 0.0000 - 999 999s  
 Derivative time: 0.0000 - 999 999s

**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) or Data log control

**Measurement Method**

Attenuated light, scattered light or a combination of both using a nephelometric ratio algorithm  
 ISO7027:1999(E) compliant when measuring scattered light at 90°

**Light Source**

High performance TS AlGaAs Infrared LED lamp  
 Wavelength: 850 nm  
 Typical lamp lifetime: > 100 000 hrs

**Range of Measurement**

RATIO (90°) 0.01 – 1 000 NTU/FNU (0.0025 – 250 EBC)  
 ATTENUATED (0°) 20 – 4 000 NTU/FNU (5 – 1 000 EBC)  
 BACKSCATTER (180°) 100 – >5 000 NTU/FNU (25 – >1 250 EBC)  
 Other units of measurement available e.g. ASBC-FNU, Helms, ppm etc

**Resolution**

0.01 – 10 NTU/FNU 0.01 NTU/FNU (0.0025 EBC)  
 10 – 100 NTU/FNU 0.1 NTU/FNU (0.025 EBC)  
 100 – 1 000 NTU/FNU 1 NTU/FNU (0.25 EBC)  
 1 000 – 10 000 NTU/FNU 10 NTU/FNU (2.5 EBC)

**Repeatability**

Typically <1% of respective measuring range

**Accuracy**

Typically < ±2% at the calibration points

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

**Fail-Safe:**

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

**Network interface (remote communications):**

TCP/IP, 10Base-T and 100Base-TX Link  
 HTML/Java interface using native protocol over TCP/IP  
 Connector: RJ45  
 Software: Web browser with Java version 6 or later

**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 - 240V AC, 50-60Hz, 1A  
 Mains fuse: 1A (type MST), Max breaking capacity 35A

**Power Consumption**

25 VA (max.)

**Certificates**

ISO 9001:2000, CE, ATEX Exd IIB + H2 T6 IP66 Category  II 2 G (option)

**Manifolds**

Standard designs include DIN Flange (DIN EN 1092-1), ANSI (ANSI B 16.5 and B33293) Tri-Clamp® (ISO 2852 & DIN 32676), Straight pipe thread (DIN ISO 228 BSP), NPT tapered pipe thread. Line size up to DN100.

**Materials**

Standard material stainless steel 316L (EN 1.4435 or EN 1.4404)  
 Other materials include Titanium Gr 2, Hastelloy C-276 & C-22, Monel 400, PTFE C25 (TFMC, carbon filled Teflon) & PVDF (Kynar)

**Window**

Sapphire, UV Fused silica

**Surface Finish**

Ra < 0.4 µm (on hygienic measurement cells)

**Elastomers**

FPM (FKM, Viton®, Fluorel®), EPDM (FDA), NBR (nitrile), Silicone, FFKM (Kalrez® Spectrum 6375, Kalrez® 6230 FDA) and others

**Operating Conditions**

Ambient & process temperatures up to 250°C (482°F)  
 Process pressure from 10 mbar to 200 bar (0,14 – 2900 psi)  
 Operating conditions subject to material and design in use  
 Higher temperatures available on request.

**Fibre Optic cable**

Silica core photonic fiber with fully-interlocked flexible stainless steel jacket and Kevlar® reinforcement.  
 Terminated with SMA 905 connectors.  
 Lengths up to 100m (328 foot)

**Operating Temperature**

Normal: -60°C to +125°C (-76°F to +257°F), Autoclave.  
 Higher temperature option: -60°C to 250°C (-76°F to +482°F)

**Protection**

IP66 / EN 60529



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Distributor

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