

NBP007 Process Photometer

Typical Applications:

- Concentration measurement
- Interface detection
- Cell & biomass density
- Crystallization control
- Control & optimize CIP cycles
- Product differentiation & identification

The Kemtrak NBP007 is a high resolution backscatter photometer that revolutionizes the measurement of high concentration suspended solids.

Traditional turbidity based optical measurement instruments lack resolution and stop working at approximately 1% suspended solids due to the extremely high optical density. This limitation is overcome with the NBP007 and for the first time the operator can monitor and have complete control over their process.

By knowing exactly what is happening at all times, process changes can be quickly implemented that result in substantial cost savings.



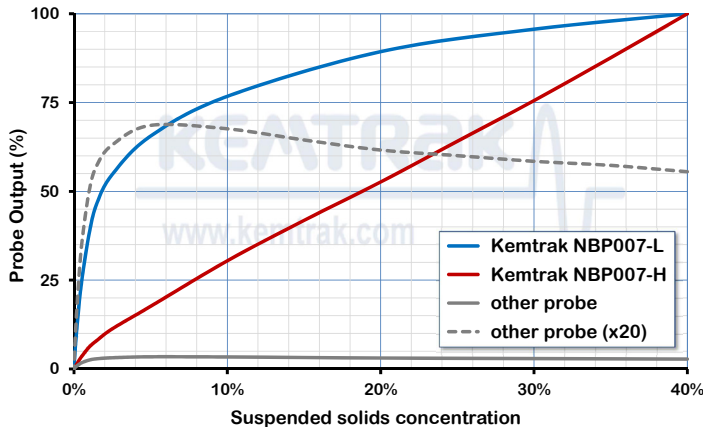
Benefits:

- **0.001% (10 NTU) - 100% suspended solids**
- **Real time in-line measurement**
- **Zero maintenance**
- **For use with DN25/1" TriClamp probe or Ø 12 mm PG 13.5 immersion probe**

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 and can withstand high temperature process streams or sterilization cycles. 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.





A unique benefit of the Kemtrak backscatter probe is that it does not go blind at high sample concentration

Other probes will stop working at 4000 NTU/FNU (< 1 wt% solids) after which the signal will decrease resulting in an erroneous and misleading output. The output of a Kemtrak backscatter probe will continue to increase with sample concentration ensuring a reliable measurement.

Measurement Principle

Proprietary NIR backscatter photometric technique for fiber optic backscatter probes

Measurement Range

LOW 0.001% (ca. 10 NTU) ... 10% total suspended solids
HIGH 0.001% (ca. 10 NTU) ... 100% total suspended solids
Measurement range is factory configured

Repeatability

Typically <± 1% of respective measuring range

Accuracy

Typically <± 2% at the calibration points

In-line Hygienic Fiber Optic Measurement Probe

Process connection: Tri-Clamp® (ISO 2852 & DIN 32676) or Ø 12mm PG 13.5 (DIN 19263:2007-05) DN50 (2") and above & tanks/reactors
Line size: DN50 (2") and above & tanks/reactors
Materials: Stainless steel EN 1.4435 (316L), Hastelloy C-22
Window: Sapphire
Surface Finish: Ra < 0.38 µm
Temperature: Ambient & process temperatures up to 275°C (527°F)
Pressure: 10mbar to 100 bar (0,14 – 1450 psi)
Cable length: 5m standard (16.4 foot)
Lengths up to 50m (164 foot)

Light Source

High performance near infra-red (NIR) light emitting diode
Typical NIR lamp lifetime: > 100,000 hrs

Photometer Housing

Stainless steel EN 1.4301 (X5CrNi18-10), AISI 304 (V2A)
Captive lid screws & external mounting brackets stainless steel
244 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: 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 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 2months
- Configurable cleaning duration from 0 to 9999s
- Auto-zero after clean option
- Hold value after clean (to equilibrate) 0 to 9999s

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

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 100A 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, 50-60Hz & 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 Ⓢ 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



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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. 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.