

# Moisture in Methanol

## Kemtrak DCP007-NIR

### Main features:

- 0-100 ± 0.1 % / 0-10 ± 0.01 % moisture in methanol (water in methanol)
- Real time, in-line measurement
- Fiber optics - all electronics in one box & intrinsically safe operation
- Automatic compensation for fouling & turbidity
- Robust measurement cell - no electronics, moving parts or heat
- Alarm signals for data and system failures
- Data and event log for quality control and validation

The Kemtrak DCP007 is a state of the art industrial NIR photometer designed to accurately measure the concentration of moisture in methanol.

New NIR-LED lamp technology is utilized, providing substantial benefits over traditional halogen lamps. Besides long lifetimes, the optical output of NIR LED lamps are very stable and consistent over time which substantially reduces drift and eliminates the need for re-calibration.

Thanks to a proprietary dual wavelength four channel measurement technique and advanced digital electronics design, a high measurement precision can be achieved. The primary "absorbing" wavelength measures any changes in the moisture (water) content



of the process medium, while a second reference wavelength, which is not absorbed by the process medium, compensates for turbidity and/or fouling of the optical windows.

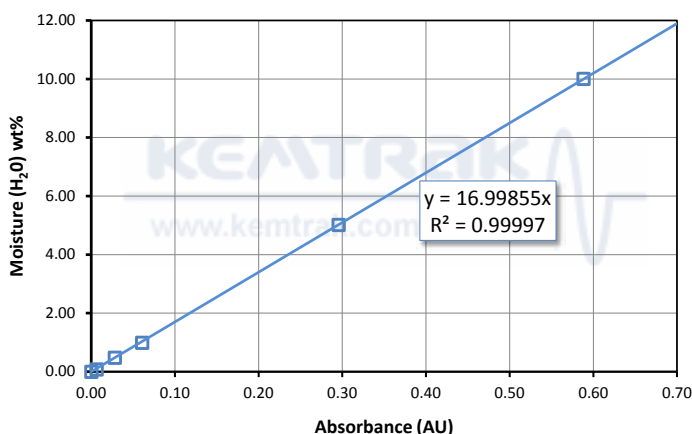
## KEATRAK

### Typical Applications

- Chromatography control - solvent mixing
- Solvent recovery
- Residual moisture concentration
- Replace Karl-Fischer titration

Since optic fibers are used to pipe light to the measurement point and back, the measurement cell contains no electronics, moving parts or sources of heat. Kemtrak fiber optic measurement cells are perfectly suited for hazardous industrial environments. Standard measurement cells are machined in sanitary grade stainless steel with sapphire windows for superior resistance to abrasive and corrosive media.

All Kemtrak's products are made from the highest quality materials and are designed to the most demanding specifications to ensure long life and extremely low maintenance.



**Housing**

Glass-fibre reinforced polyester & polyester front panel  
Captive lid screws & wall mounting brackets stainless steel  
220 x 120 x 90 mm (8.66 x 4.72 x 3.54 inch) L x W x D  
IP 65 / EN 60529

**Display**

16 x 2 alphanumeric dot matrix LCD display  
LED background illuminated  
Display update: 0.5 seconds  
Display units: Pt/Co, Hazen, Apha, AU. User configurable.  
LED 1 (green): power on  
LED 2 (red): alarm  
LED 3 (orange): clean

**Operation**

4 push buttons

**Software Features:**

- Auto gain: Gain switching is fully software controlled
- Auto zero: Automatic, local or remote zero
- Calibration: Concentration & mA output
- Damping: from 0 to 9999s with noise (air bubble / particle) filter
- Memory: Non volatile - configuration and data retained upon power failure
- Security: Alphanumeric password protection

**Data Logger**

- 6 900 data points (timestamp, average, max. & min.), ring buffer
- Configurable log time interval 1s to 24hr

**Event Logger**

- 10 000 events
- Alarms, zeroing, cleaning, calibration & system events (power, system failures, high/low system temperature)

**Automatic Cleaning Control**

- Automatic cleaning sequence with 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: 0 - 99s  
Proportional gain: 0.0000 - 999 999  
Integral time: 0.0000 - 999 999s  
Derivative time: 0.0000 - 999 999s

**Light Source**

High performance near infra-red (NIR) light emitting diode (LED)

Wavelength range: 280 - 1550nm  
Full Width-Half Maximum (FWHM): ±5 nm  
Central Wavelength (CWL) Accuracy: ±1nm  
Typical NIR lamp lifetime >100 000 hrs  
*Note: Measurement wavelengths must be factory installed.*

**Photometric Range**

At 1500 nm, 10mm OPL: 0.000 - 5 AU

**Photometric Accuracy**

At 1 AU (NIST 930D filter): ±0.001 AU  
At 2 AU (NIST 1930D filter): ±0.005 AU

**Photometric Noise**

At 1 AU, 25°C, 500nm: ±0.0001 AU

**Linearity**

± 0.5% of respective measuring range

**Remote Input**

- 1 x Digital input (potential free contact) for:
- Auto clean
  - Zero
  - Hold output

**mA Output**

1 x 0/4 - 20 mA galvanically isolated  
Accuracy: <0.2%  
Resolution: < 0.05%  
Load: 0 - 400 Ohm

**Relay Outputs**

2 x 0.5A 240VAC User configurable (alarm, PID, system fault)  
1 x 0.5A 240VAC Automatic cleaning control  
PTC resistor fuses in series with the relays  
LED status indicators flash when relays are active

**Fail-Safe:**

Relay output & 0/4-20mA value

**PC Communications**

USB (mini-USB connector)

**Operating Conditions**

Ambient temperature: -10°C to +50°C (14°F to 122°F)  
Transport: -20°C to +70°C (-4°F to 158°F)

**Power Supply**

115/230V AC selectable, 50-60Hz, 1A

**Power Consumption**

25 VA (max.)

**Certificates**

CE, ISO 9001:2000, EN 61326-1:2006, ATEX I I 2 GD EExd-IB-T5 I (option)

**Manifolds**

Standard designs include DIN Flange (DIN EN 1092-1), Tri-Clamp® (ISO 2852 & DIN 32676), Sanitary Thread SC (DIN 11851), Straight Pipe Thread (DIN ISO 228 BSP). Line size up to DN100.

**Materials**

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

**Window**

Sapphire

**Elastomers**

NBR (nitrile),FKM (FPM, Viton®, Fluorel®), EPDM (FDA), Silicone, Kalrez® (high temperature & FDA) and others

**Operating Conditions**

Ambient & process temperatures up to 250°C (482°F)  
Process pressure from 10 mbar to 200 bar  
*Operating conditions subject to material and design in use*

**Fibre Optic cable**

Silica photonic fiber with fully-interlocked flexible stainless steel jacket and Kevlar® reinforcement.  
Terminated with SMA 905 connectors.  
Operating temperature -20°C to +125°C (-4°F to +257°F), Autoclave.  
Lengths up to 50m (164 foot).  
*Higher temperatures available on request.*

**Protection**

IP66 / EN 60529, ATEX (option)



Kemtrak AB • Box 2940 • SE-187 29 Stockholm • Sweden  
Info@kemtrak.com • www.kemtrak.com

*We reserve the right to make changes without previous notice*

Distributor

*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 pulp and paper, food & beverages, chemical, petrochemical, pharmaceutical and water & environment. With its headquarters in Stockholm, Sweden, Kemtrak has distributors in over 15 countries around the world. The main manufacturing facility in Gothenburg, Sweden is certified according to ISO 9001:2000.*