DCP007-NIR
Process Photometer

Benefits:

- **High performance NIR LED light photometer**
- **Dual wavelength drift free operation**
- **Maintenance free measurement cell**
- **Light source & wavelength easy to change**
- **Modbus TCP Ethernet data communication**

The Kemtrak DCP007-NIR process analyzer is a high performance fiber optic coupled near-infrared (NIR) photometer for high resolution, real time, in-line concentration measurement.

The Kemtrak DCP007-NIR utilizes high performance long life LED light sources to ensure outstanding performance and reliability. Industrial grade maintenance free measurement cells with scratch resistant sapphire windows, contain no electronics or moving parts making them ideal for both ordinary and hazardous area use. A validation & calibration accessory traceable to NIST standards is available to assure measurement confidence while saving valuable time and resources.

Integrated NIST validation accessory

The analyzer is connected to the measurement cell using robust industrial fiber optic cables that protect the sensitive electronic and optical components from process temperatures and vibrations which ensures drift and trouble free operation.

Two versions of the Kemtrak DCP007-NIR photometer are available:

- **NIR-N (850 – 1550 nm)** for measurement of 0 - 100% water and solvent gradients.
- **NIR-L (850 – 2000 nm)** for trace water and hydrocarbon detection. This model incorporates multiple stage peltier cooled and temperature regulated photodiodes and NIR LED light source for the very best in stability and performance.

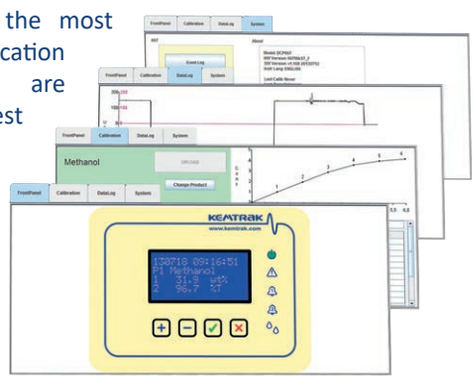
Typical Applications:

- **Water / solvent mixtures (ppm - 100%)**
- **Alcohol concentration**
- **Solvent gradient monitoring**
- **Solvent recovery**
- **Polymer reaction end point**
- **Caustic (NaOH) in water**

Dual wavelength operation automatically compensates for sample turbidity and/or fouling of the optical windows. For applications that are susceptible to sample temperature variations an optional temperature sensor input is available to provide temperature compensation through a built in algorithm feature.

Standard features include 16 linearization tables for multiple product switching, remote zeroing, automatic cell cleaning cycle and signal filtering. 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
DCP007 NIR Process 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 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 - 999999
Integral time:	0.0000 - 999999 s
Derivative time:	0.0000 - 999999 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

Temperature Input
mA or 3-wire PT100
Range: -20 to 200°C (-4 to 392°F)
Resolution: 0.07°C (0.126°F)
Temperature sensor not included

Light Source & Detector
High performance NIR light emitting diode (LED)
with InGaAs 2-stage peltier TE cooled photodiode (NIR-L)

Wavelength range - NIR-N:	850 - 1550 nm
NIR-L:	850 - 2000 nm
Full Width-Half Maximum (FWHM):	15 nm
Central Wavelength (CWL) Accuracy:	±1 nm
Typical lamp lifetime:	>20000 hrs

Note: Measurement wavelengths must be factory installed.

Photometric Range
0.000 - 5.0 AU @ 1450 nm, 10mm OPL
0.000 - 4.0 AU @ 1900 nm, 10mm OPL

Photometric Accuracy
±0.001 AU @ 1 AU

Photometric Noise
±0.0001 AU @ 1 AU, 1450 nm
±0.0005 AU @ 1 AU, 1900 nm

Linearity
±0.5% of respective measuring range

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 <3.6 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
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 measurement cell

Flow Cells and Process Connections
Standard designs include DIN Flange (DIN 2633), ANSI (ASME B16.5), Tri-Clamp® (ISO 2852 & DIN 32676), Straight pipe thread (DIN ISO 228 BSP), NPT tapered pipe thread (ANSI B 1.20.1), single use barbed
Line size up to DN200 / 8"

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®), PPSU

Window
Sapphire, UV fused silica

Surface Finish
Ra <0.38 µm (electropolishing available on hygienic measurement cells)

Elastomers
FPM (FKM/Viton®), FFKM (Chemraz®/Kalrez®, FDA), EPDM (FDA)

Operating Conditions
Ambient & process temperatures up to 275°C (527°F)
Process pressure from 10 mbar to 200 bar (0,14 – 2900 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 100 m (328 foot)

NIST-Traceability
NIST-traceable validation accessory (option)

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.
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Kemtrak has trained representatives and support personnel globally and is certified according to ISO 9001:2015.