

# DCP007-UV Process Photometer

## Benefits:

- Ultra-low power UV analyzer
- High performance UV LED
- Dual wavelength drift free operation
- Maintenance free measurement cell
- Light source & wavelength easy to change
- NIST validation accessory

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

Unlike traditional UV process analyzers that use hot, powerful UV mercury vapor lamps to generate light energy, the DCP007-UV analyzer uses a cold wavelength specific light source. Mercury lamps quickly deplete over time while simultaneously

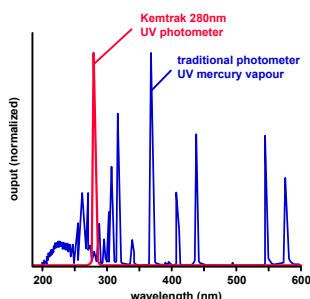
eroding bandpass filters required to limit light energy to the measurement wavelength required, resulting in drift and a continual need for maintenance, a problem not experienced with Kemtrak instruments. Furthermore, mercury vapor lamp instruments continuously expose the process stream to high intensity broad spectrum UV radiation, with the potential for product destruction and loss. The Kemtrak DCP007-UV process analyzer emits ultra-low power cold light exposing the sample to the exact wavelength required for measurement. Kemtrak DCP007-UV analyzers provide safe, drift free operation that maximize process yield and quality.

Mercury vapor lamps have a distinct set of wavelength peaks predominantly in the UV. These peaks limit the availability of wavelengths for measurement use. In contrast, a Kemtrak DCP007-UV process analyzer can be configured to measure from 190 nm to 1050 nm.

The proprietary dual wavelength, four channel measurement technique used in the DCP007-UV analyzer provides deep absorbance measurement to 5 AU using a 1 cm optical path-length. A range of shorter optical path-lengths allow for even deeper absorbance and optical density measurements.



*left: Optical filter used on a Kemtrak DCP007-UV photometer  
right: Eroded optical filter from a traditional hot mercury vapor lamp photometer*



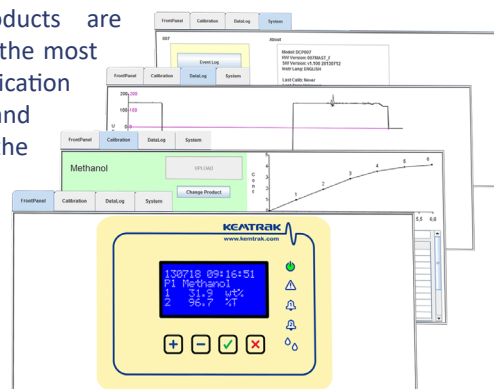
The convenient range of small-footprint, zero dead-volume hygienic measurement cells that contain no electronics or moving parts are well suited for both ordinary and hazardous area installation. Standard NIST-traceable validation filters can be used to verify analyzer performance without process interruption.



*Integrated NIST validation accessory*

Standard features include multiple product switching, remote zeroing 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.



#### 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

- >17000 data points (timestamp, average, max. & min.), ring buffer
- Configurable log time interval 1s to 24hr

#### 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, 15min to 2months
- 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 - 999999  
Integral time: 0.0000 - 999999s  
Derivative time: 0.0000 - 999999s

#### 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

#### Analogue Input (optional)

mA or 3-wire PT100  
Range: -20 to 200°C (-4 to 392°F)  
Resolution: 0.07°C (0.126°F)

#### Light Source

High performance light emitting diode (LED)  
Wavelength range: 250 - 1050nm

Full Width-Half Maximum (FWHM): 10nm  
Central Wavelength (CWL) Accuracy:  $\pm 1$  nm  
Typical light source lifetime: > 20000 hrs @ 280nm  
>100000 hrs @ 500nm

Note: Measurement wavelengths must be factory installed.

#### Photometric Range

0.000 - 4.5 AU @ 280nm, 10mm OPL  
0.000 - 5.0 AU @ 500nm, 10mm OPL

#### Photometric Accuracy

$\pm 0.001$  AU at 1 AU

#### Photometric Noise

$\pm 0.0001$  AU at 1 AU

#### Linearity

$\pm 0.5\%$  of respective measuring range

#### mA Output

1 x selectable 0 - 20mA / 4 - 20mA (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 240VAC Failsafe output (active when system is ok)  
2 x 1 A 240VAC User configurable (alarm, PID)  
1 x 1 A 240VAC 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 <3.6mA or >21.0mA)

#### 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

100-240VAC, 50-60Hz & 22 - 30VAC/VDC  
Mains fuse: 1 A (type MST), Max breaking capacity 35A

#### Power Consumption

25VA (max.)

#### Certificates

CE, ISO 9001:2015, IECEx,  
ATEX Ex d IIB + H2 T5 IP66 Category  $\text{Ex}$  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

#### 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 <0.38µm (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 10mbar to 200 bar (0.14 - 2900psi)  
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 100m (328foot)

#### NIST-Traceability

NIST-traceable validation accessory (option)

#### 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.  
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.*