

# DCP007 UV Process Photometer

## Benefits:

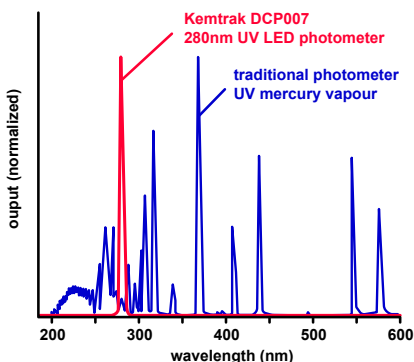
- Ultra-low power UV analyzer
- High performance UV LED light source
- Drift free operation
- Zero maintenance measurement cells
- Light source & wavelength easy to change

The Kemtrak DCP007 UV process analyzer uses ultra-low power cold light at the exact wavelength required for the analysis, exposing the sample to thousands of times less energy than a traditional UV photometer. This is achieved from a state of the art digital photometer design using a modulated high performance UV LED light source with precision fiber optics.

Traditional UV photometers use mercury vapor lamps that continuously expose the process stream to high intensity broad spectrum UV radiation and heat generated by the lamp. This results in destruction of the valuable product and produces unknown and potentially hazardous breakdown products.

Traditional UV photometers also suffer from drift and require constant recalibration due to optical filter destruction from erosion caused by the high intensity UV radiation and heat generated by the lamp. Mercury lamp instruments also experience systematic drift caused by the UV lamp output changing with age. The ultra-low power modulated UV LED light source on the Kemtrak DCP007 UV process analyzer does not destroy the optical filter or sample resulting in a drift free operation.

Mercury vapor UV lamps have distinct wavelength peaks with a limited number of measurement wavelengths which are



predominantly in the UV. A Kemtrak DCP007 UV LED process analyzer can be configured to measure any discrete wavelength from 255nm to 1050nm.



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



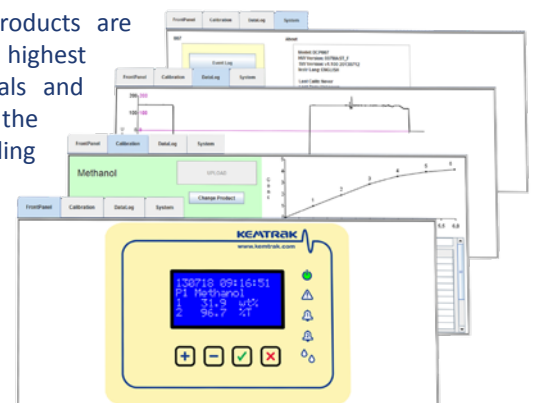
A proprietary dual wavelength four channel measurement technique and advanced digital electronics design allows deep absorbance measurement to 5 AU using a 1cm optical path-length. A range of shorter optical path-lengths allow for even deeper absorbance measurements.

Convenient zero dead-volume hygienic measurement cells contain no electronics or moving parts and are well suited for hazardous environments. NIST-traceable validation filters are available to verify analyzer performance without process interruption.

It is simple to change the light source on a Kemtrak DCP007 photometer and the unit can easily be reconfigured to analyze at different wavelengths.

Standard features include multiple product switching, remote zeroing and signal damping. 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

**Temperature Input (optional)**

3-wire PT100 input.  
 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: 255 - 1 050 nm  
 Full Width-Half Maximum (FWHM): 10 nm  
 Central Wavelength (CWL) Accuracy: ±1nm  
 Typical lamp lifetime >100 000 hrs  
 Note: Measurement wavelengths must be factory installed.  
 Typical specifications provided for 500nm

**Photometric Range**

At 500nm, 10mm OPL: 0.000 - 5 AU

**Photometric Accuracy**

At 1AU : ±0.001 AU  
 At 2AU : ±0.005 AU

**Photometric Noise**

At 1AU, 25°C, 500nm: ±0.0001 AU

**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 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  
 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 - 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 B53293) 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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