

UV Process Photometer

Kemtrak DCP007 UV



GECKO

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Benefits:

- **Ultra-low power UV analyzer**
- **High performance UV LED light source**
- **Drift free operation**
- **Zero maintenance measurement cells**
- **Light source and wavelength are 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.

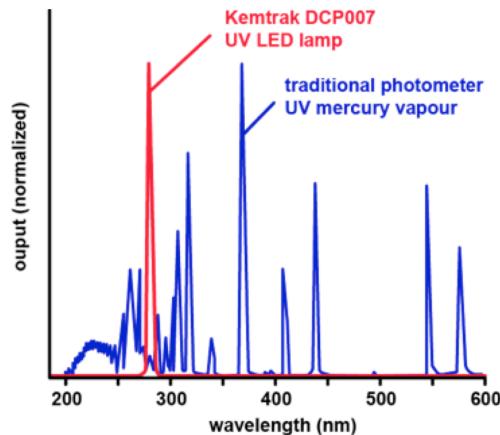
The ultra-low power modulated UV LED light source on the Kemtrak DCP007 UV process analyzer does not destroy the optical filter or sample resulting in a drift free operation.

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.

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. to ensure long life and the highest reliability.





Technical Data

DCP007 UV Kemtrak Process Photometer

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

Temperature Input (optional)

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

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

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

Operation

4 push buttons
Remote HTML/Java interface (TCP/IP connection via Ethernet port)

Linearity

± 0.5% of respective measuring range

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

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

Data Logger

>23 000 data points (timestamp, average, max. & min.), ring buffer
Configurable log time interval 1s to 24hr

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

Event Logger

>16 000 events, ring buffer
Timestamp, alarms, zeroing, cleaning, product change, calibration & system events
(power, system warning & error messages)

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)

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

Power Supply

100 - 240V AC, 50-60Hz, & 22 - 30 VAC/VDC 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*)

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

Light Source

High performance UV & NIR light emitting diodes (LEDs)

Typical lamp lifetime >10 000 hrs

We reserve the right to make changes without previous notice.



Process measurement cell

Manifolds

Standard designs include DIN Flange (DIN EN 1092-1), ANSI (ANSI B 16.5 and BS3293) Tri-Clamp® (ISO 2852 & DIN 32676), Straight pipe thread (DIN ISO 228 BSP), NPT tapered pipe thread. Line size up to DN100.

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.

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)

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)

Window

Sapphire, UV Fused silica

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)

Surface Finish

Ra < 0.4 µm (on hygienic measurement cells)

Protection

IP66 / EN 60529

Elastomers

FPM (FKM, Viton®, Fluorel®), EPDM (FDA), NBR (nitrile), Silicone, FFKM (Kalrez® Spectrum 6375, Kalrez® 6230 FDA) and others



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