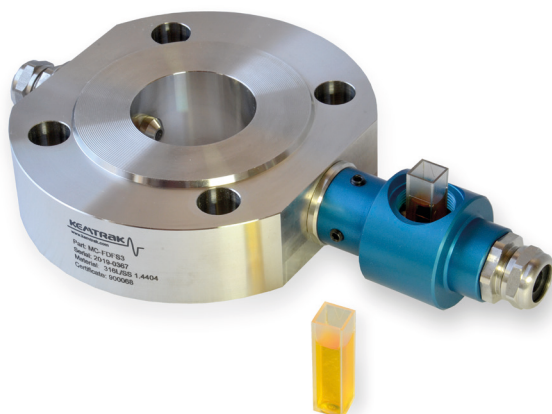


# DCP007-NIR Industrial Photometer

## FEATURES

- High performance NIR LED light photometer
- Real time inline measurement
- Maintenance free measurement cell
- Dual wavelength drift free operation
- Alarm, 4-20 mA and Modbus TCP communications
- Reagent free alternative to Karl Fischer titration



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

The Kemtrak NIR analyzer utilizes environmentally friendly, mercury-free LED light technology, providing exceptional stability and consistency over time. Measurement drift and the need for periodic recalibration is eliminated. The analyzer simultaneously measures at two optical wavelengths, ensuring accurate and reliable readings unaffected by window fouling or entrained particulates and suspended solids.

Kemtrak industrial-grade measurement cells with scratch-resistant sapphire windows contain no electronics or moving parts, making them ideal for both ordinary and hazardous area use. A verification and calibration accessory, traceable to NIST standards, is available to ensure measurement confidence while saving valuable time and resources.



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

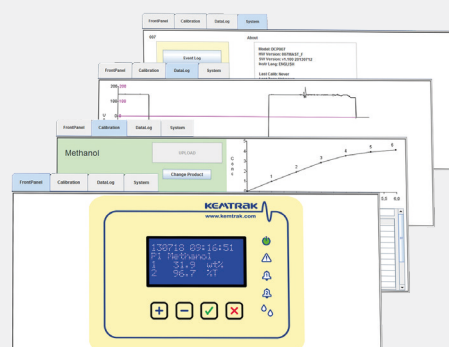
1. **NIR-L:** 0.1 – 100 % concentration with a resolution of  $\pm 0.05$  %
2. **NIR-H:** 100 – 20000 ppm trace water with a resolution of  $\pm 10$  ppm

Standard features include remote zeroing, automatic cleaning cycle operation and advanced signal filtering. An on-board graphical internet based configuration utility allows remote operation, calibration, validation, and data trending using a standard PC.

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.

## TYPICAL APPLICATIONS:

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





# DCP007-NIR Industrial Photometer

DISTRIBUTOR



e: sales@southforkinstruments.com  
t: +1 (925) 461-5059  
w: www.southforkinstruments.com

## TECHNICAL DATA

### HOUSING

Stainless steel EN 1.4301 (X5CrNi18-10), AISI 304 (V2A)  
Cam lock with double bit insert & external mounting brackets  
224 x 215 x 125 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

Menu based with 4 operator buttons  
Remote HTML/Java interface (TCP/IP connection via Ethernet port)

### SOFTWARE FEATURES

Auto gain: Fully automatic signal gain controller  
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

>17 000 data points (timestamp, average, max. & min.), ring buffer  
Configurable log time interval 1 s to 24 hr

### 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, 15 min to 2 months  
Configurable cleaning duration from 0 to 9999 s  
Auto-zero after clean option  
Hold value during clean 0 to 9999 s  
Hold value after clean (to equilibrate) 0 to 9999 s

### PID CONTROLLER

Control method: Pulse width modulated relay output or  
0/4-20mA 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 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-H)  
Wavelength range: NIR-L 850 - 1550 nm  
NIR-H 850 - 2000 nm  
Full Width-Half Maximum (FWHM): 15 nm  
Central Wavelength (CWL) Accuracy:  $\pm 1$  nm  
Typical LED lifetime: >20 000 hrs

## PHOTOMETRIC RANGE

0.000 - 5.0 AU at 1450 nm, 10 mm OPL  
0.000 - 4.0 AU at 1900 nm, 10 mm OPL

## PHOTOMETRIC ACCURACY

$\pm 0.001$  AU at 1 AU

## PHOTOMETRIC NOISE

$\pm 0.0001$  AU at 1 AU, 1450 nm  
 $\pm 0.0005$  AU at 1 AU, 1900 nm

## LINEARITY

$\pm 0.5\%$  of respective measuring range

## mA OUTPUT

1 x selectable 0 - 20 mA / 4 - 20 mA  
NAMUR NE43 compliant  
Galvanically isolated, 500 VDC  
Accuracy: <0.1 %  
Resolution: 0.025 %  
Load: 0 - 600 Ohm  
Optional second mA output

## 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, 1A 240 VAC  
mA output value used to signal a system fault  
mA outputs compliant to NAMUR NE43

## NETWORK INTERFACE (REMOTE COMMUNICATIONS)

TCP/IP, 10Base-T and 100Base-TX Link  
Connector: RJ45  
Protocol:  
1. HTML interface using native protocol over TCP/IP  
Java® version 8 update 202 or later required  
2. MODBUS 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 35 A

## POWER CONSUMPTION

25 VA (max.)

## CERTIFICATES

CE & RoHS compliant

## PROCESS MEASUREMENT CELL

### PROCESS CONNECTION

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 hose.  
Line size up to DN200 / 8".

### MATERIALS

Wetted surfaces in stainless steel EN 1.4435  
or EN 1.4404 (316L). 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

Fine machine (smooth).  
Ra <0.38  $\mu$ m (electropolished) wetted  
surfaces on hygienic measurement cells.

### ELASTOMERS

FPM (FKM/Viton®, FDA), 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. Higher pressures &  
temperatures on request.

### FIBER 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).

### PROTECTION

IP66 / EN 60529

Kemtrak is the leading manufacturer of  
high performance LED based industrial  
photometers 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.