

ICUMSA Color

Kemtrak DCP007

Main features:

- Real time, in-line measurement
- High performance long life LED lamps
- Robust fiber optic measurement cell - no electronics, moving parts or heat
- Automatic compensation for particulates
- Alarm signals for data and system failures
- ICUMSA Color Index (ICUMSA GS 1-7, ICUMSA GS 2/3-9, ICUMSA GS 2/3-10)

The Kemtrak DCP007 is an industrial fiber optic photometer designed to accurately measure the color of sugar suspensions.

The Kemtrak DCP007 uses a combination of long life, solid state LED lamps with fiber optics that provide a measurement with very high precision. Thanks to a proprietary dichromatic four channel measurement technique, particulates in the sample can be compensated for in real time providing an accurate measure of color without the need for filtration. A

primary "absorbing" wavelength measures any changes in the process medium, while the second reference wavelength, which is not absorbed by the process medium, compensates for particulates and/or fouling of the optical windows.

Since optic fibers are used to pipe light to the measurement point and back, the measurement cell contains no electronics, moving parts or sources of heat that result in condensation on the optical surfaces. Standard measurement cells are machined in sanitary grade stainless steel with sapphire windows.

All Kemtrak's products are made from the highest quality materials and are designed to the most demanding specifications to ensure long life and extremely low maintenance.

KEATRAK

ICUMSA Color Scale

The International Commission for Uniform Methods of Sugar Analysis (ICUMSA) describe a number of methods for the colorimetric determination of filtered sugar suspensions at known concentration (Brix value). White and light colored sugar is measured at 420nm, darker sugars at 560nm.

The Kemtrak DCP007 utilizes a proprietary dichromatic measurement technique that compensates for particulates, allowing accurate color measurement without the need for filtration. By combining the color measurement from a Kemtrak DCP007 with a Process Refractometer to measure the Brix value, an in-line and real time reading in ICUMSA color units is achieved.



Technical Data DCP007 Control Unit

Housing

Glass-fibre reinforced polyester & polyester front panel
Captive lid screws & wall mounting brackets stainless steel
220 x 120 x 90 mm (8.66 x 4.72 x 3.54 inch) L x W x D
IP 65 / EN 60529

Display

16 x 2 alphanumeric dot matrix LCD display
LED background illuminated
Display update: 0.5 seconds
Display units: Pt/Co, Hazen, Apha, AU. User configurable.
LED 1 (green): power on
LED 2 (red): alarm
LED 3 (red): clean

Operation

4 push buttons

Software Features:

- Auto gain: Gain switching is fully software controlled
- Auto zero: Automatic, local or remote zero
- Calibration: Concentration & mA output
- Damping: from 0 to 9999s with noise (air bubble / particle) filter
- Memory: Non volatile - configuration and data retained upon power failure
- Security: Alphanumeric password protection

Data Logger

- 6 900 data points (timestamp, average, max. & min.), ring buffer
- Configurable log time interval 1s to 24hr

Event Logger

- 10 000 events
- Alarms, zeroing, cleaning, calibration & system events (power, system failures, high/low system temperature)

Automatic Cleaning Control

- Automatic cleaning sequence with 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: 0 - 99s
Proportional gain: 0.0000 - 999 999
Integral time: 0.0000 - 999 999s
Derivative time: 0.0000 - 999 999s

Light Source

High performance light emitting diode (LED)

Wavelength range: 280 - 1 050nm
Full Width-Half Maximum (FWHM): 5 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 (NIST 930D filter): ±0.001 AU
At 2AU (NIST 1930D filter): ±0.005 AU

Photometric Noise

At 1AU, 25°C, 500nm: ±0.0001 AU

Linearity

± 0.5% of respective measuring range

Remote Input

1 x Digital input (potential free contact) for:

- Auto clean
- Zero
- Hold output

mA Output

1 x 0/4 - 20 mA galvanically isolated
Accuracy: <0.2%
Resolution: < 0.05%
Load: 0 - 400 Ohm

Relay Outputs

2 x 0.5A 240VAC User configurable (alarm, PID, system fault)
1 x 0.5A 240VAC Automatic cleaning control
PTC resistor fuses in series with the relays
LED status indicators flash when relays are active

Fail-Safe:

Relay output & 0/4-20mA value

PC Communications

USB (mini-USB connector)

Operating Conditions

Ambient temperature: -10°C to +50°C (14°F to 122°F)
Transport: -20°C to +70°C (-4°F to 158°F)

Power Supply

115/230V AC selectable, 50-60Hz, 1A

Power Consumption

25 VA (max.)

Certificates

ISO 9001:2000, CE, ATEX I / 2 GD EExd-IB-T5 I (option)

Process Flowcell

Manifolds

Standard designs include DIN Flange (DIN 2633), Tri-Clamp® (ISO 2852 & DIN 32676), Sanitary Thread SC (DIN 11851), Straight Pipe Thread (DIN ISO 228 BSP). Line size up to DN100.

Materials

Standard material stainless steel EN 1.4435 / 316L.
Other materials include Titanium, Hastelloy C-276, PEEK, TFMC (TFM 25% Carbon), PCTFE, PVC-C, PVDF

Window

Sapphire

Elastomers

NBR (nitrile),FKM (FPM, Viton®, Fluorel®), EPDM, Silicone, Neoprene (CR) and others

Operating Conditions

Ambient & process temperatures up to 200°C (392°F)
Process pressure from 10 mbar to 100 bar
Operating conditions subject to material and design in use

Fibre Optic cable

Hard clad silica with fully-interlocked flexible stainless steel jacket or Kevlar® reinforced PVC jacketing.
Terminated with SMA 905 connectors.
Operating temperature -20°C to +125°C (-4°F to +257°F), Autoclave.
Lengths up to 50m (164 foot).
Higher temperatures available on request.

Protection

IP66 / EN 60529, ATEX (option)



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*We reserve the right to make changes
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Distributor

Kemtrak is a leading manufacturer of fiber optic measuring and automation products for the process engineering industry. The Company provides tailor made solutions to meet the needs of a wide range of industries including pulp and paper, food & beverages, chemical, petrochemical, pharmaceutical and water & environment. With its headquarters in Stockholm, Sweden, Kemtrak has distributors in 15 countries around the world. The main manufacturing facility in Gothenburg, Sweden is certified according to ISO 9001:2000.