

APPLICATION NOTE

No. 9.01 WATER & ENVIRONMENT

WATER COLOR

- Platinum-Cobalt (Pt-Co) / Hazen / APHA color scale according to ASTM D 1209, BS 5339:76 (1993), DIN 53409 and ISO 6271-1:2004(E)
- Direct real time measurement of water color
- High resolution measurement
- Automatic cleaning
- No maintenance

The Platinum-Cobalt (Pt-Co) color scale measures the “*yellowness*” of a liquid and is well suited for quality control and contamination detection.

The Pt-Co scale is used to evaluate pollution levels in waste water and for drinking water quality control and regulation. The Pt-Co scale can also be used to measure and control the concentration of iron in groundwater.

APPLICATION

The [Kemtrak DCP007](#) is an industrial UV-VIS-NIR photometer designed to accurately measure the color of liquids. Real time measurement results are displayed in units of PCU (Pt/Co), Hazen or APHA.

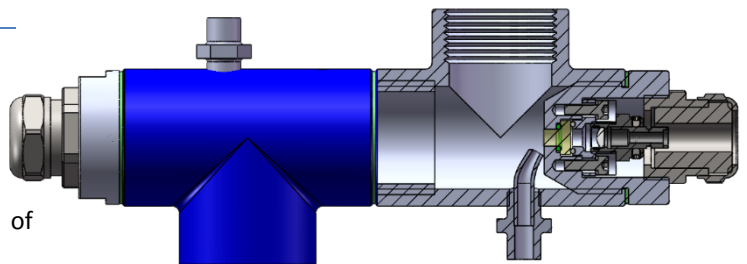
The [Kemtrak DCP007](#) uses a high performance long life LED light source with robust industrial fiber optics to provide a measurement with very high

precision. A proprietary dual wavelength four channel measurement technology allows accurate measurement of both highly colored and trace color levels. The primary “absorbing” UV-VIS wavelength accurately measures water color, while the second reference NIR wavelength, which is not influenced by the water color, compensates for turbidity 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.

Standard measurement cells are manufactured in robust sanitary grade stainless steel and use sapphire windows to provide a long and maintenance free operation.

Calibration is simplified using an automated QuickCal one point calibration. Measurement drift from LED light or filter aging is negligible and instrument recalibration is not required.



Kemtrak stainless steel long pass (OPL = 100mm) G 1" (DN 25) pipe thread measurement cell with optional G 1/8" (DN 6) sapphire window cleaning nozzles.





Measurement range

0-50	± 0,01	PCU
0-100	± 0,02	PCU
0-500	± 0,1	PCU
0-1000	± 0,2	PCU
0-5000	± 1	PCU

PCU = Pt-Co / Platinum Cobalt color Unit

INSTALLATION

The measurement wavelength is typically between 380 - 500nm depending upon the sample color. Highly colored samples (> 500 PCU) require a short optical path-length (OPL) while slightly colored samples (<100 PCU) require a long OPL, typically 200mm. A reference wavelength of 650nm or 850nm is used to compensate for turbidity and window fouling. For optimum selection of wavelength and OPL, please contact Kemtrak.

A [Kemtrak DCP007](#) VIS photometer with standard VIS fibers optics are suitable. The most common measurement cell for drinking water applications is a long pass stainless steel G 1" (BSP) pipe thread, as shown below with optional cleaning nozzles. The cleaning sequence can be fully automated using the inbuilt DCP007 controller software.

Waste water monitoring is typically higher colored samples and a shorter OPL measurement cell is required. A typical measurement cell for this application is a 1" NPT type cell as shown above left.

Above left: Kemtrak stainless steel NPT 1" tapered pipe thread measurement cell with sapphire measurement window.

Below: Kemtrak DCP007 photometer system complete with stainless steel long pass (OPL = 200mm) measurement cell.

