

ClearView® db Dual-Beam Photometer

GUIDED WAVE'S ClearView db photometer is the first commercially available true dual-beam filter photometer. A primary attraction of any photometric analyzer is its low cost. The compromise is usually performance. By adding the dual-beam feature, the performance drop in comparison to scanning spectrometers is lessened.

Though inexpensive, this photometer has a flexible configuration that meets many online analysis requirements for liquid and gas process streams.

Typical Applications

- Color — ASTM or saybolt in fuels
- OH number for polymer reaction end point
- Water content in solvents
- Haze in diesel fuel
- NaOH in water

ClearView db Benefits

- Stable dual-beam design decreases drift due to lamp aging —yielding long-term performance
- Several enclosure options means lowest installation costs
- Six filter positions make multi-parameter analysis a possibility
- Optional second sample channel for lower cost per sample point
- Compatible with a wide range of flow cells and insertion probes
- Low maintenance
- 5000 hour lamp (~7months)
- Dual-beam performance lengthens time between required probe cleanings

ClearView db Enclosure Options



Z-purge Unit
Class I, Division 2

ExProof Unit
Class I, Division 1,
ICEx, ATEX

General
Purpose Unit

Principle of Operation

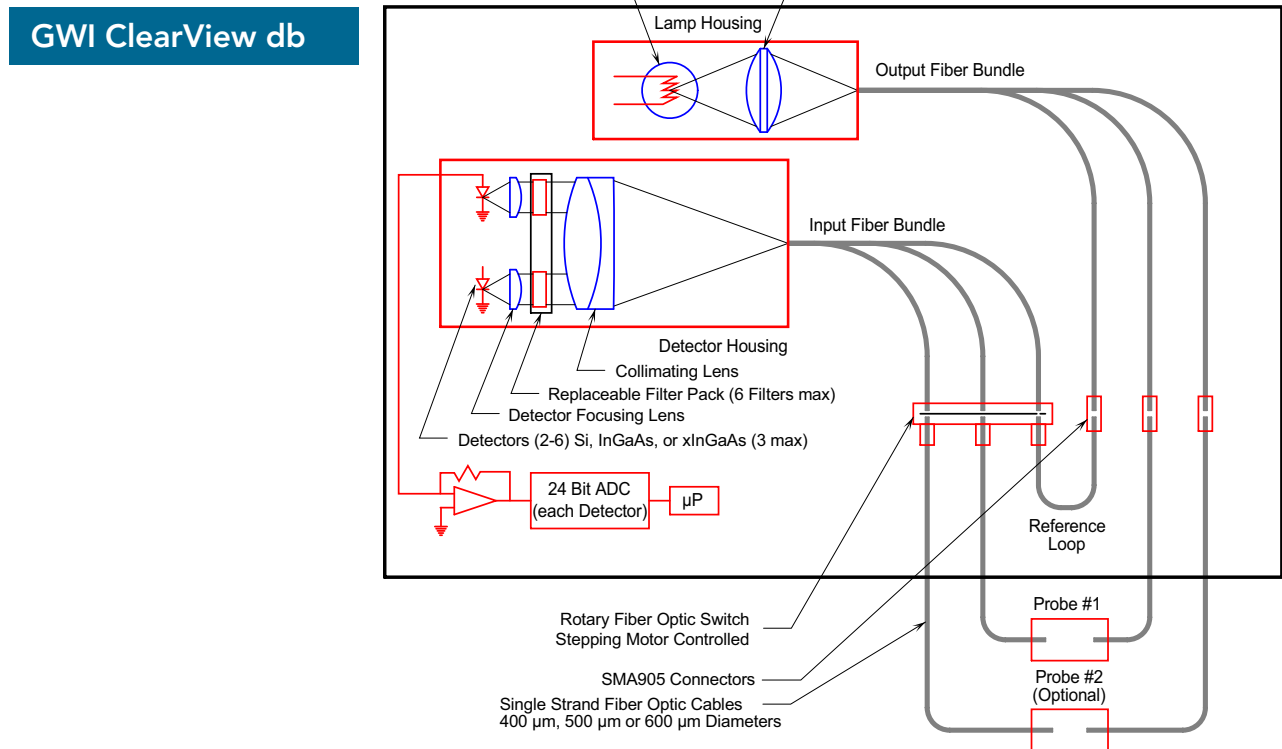
Photometry is fundamentally the measurement of the intensity of light. Observable on many levels, changes in light intensity occur as a result of interactions with different materials. Further, the Beer-Lambert Law describes a useful relationship between light and matter. Matter absorbs light in measurable amounts at specific wavelengths. The degree of absorption correlates to the concentration of matter that is exposed to the light across a known optical distance, or pathlength. Thus, chemical concentrations and physical characteristics of a process stream sample can be accurately analyzed. Effective analyzer design permits this principle to be taken online powerfully exploiting the science and achieving a high level of process control.

Each successful ClearView db application is defined by the calibration. The calibration consists of absorption data corresponding to analytical values that describe the state of the process stream. Wavelengths specified for the application are represented by filters installed in the photometer. If and when changes occur in the process, the ClearView db measurements reflect this instantaneously.

The ClearView db is a complete analytical system comprised of three main components: 1) the photometer, 2) the fiber optic cables, and 3) the sample interface. The photometer both transmits the source light and quantifies the light that was not absorbed by the sample (*Figure 1, page 2*). Optical grade fiber cables are used to carry the light from the photometer to the sample and back. Using high performance fiber cables permits the sample interface to be located up to 100 meters from the photometer. Often the success of an analyzer hinges on the proper selection of the sample interface. The ClearView db is compatible with the large selection of Guided Wave rugged and efficient sample interfaces. Hence, photometry is now an option in even the harshest environments.

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Figure 1



Specifications

Design	Fiber Optic Dual-Beam Photometer	Fiber Connectors	SMA 905
No. of Channels	1 Sample Channel plus optional 2nd Sample Channel	Outputs (analog)	Up to 6 for a 1 Channel Unit Up to 4 per Channel for a 2 Channel Unit 4 – 20 ma, customer powered
Number of Detectors/Filters	2 – 6, any combination of detector types except 3 xInGaAs max	Outputs (discreet)	Up to 6 for a 1 Channel Unit Up to 4 per Channel for a 2 Channel Unit Contact closures
Filters	As per customer requirements, replaceable filter pack, max 6 individual filters	Inputs (analog)	4 (optional) 4 – 20 ma, isolated grounds
Detector Types	Si (450 nm – 1050 nm) InGaAs (800 - 1650 nm) xInGaAs (1000 - 2150 nm, TE cooled), max 3	Local Display	LCD Touch Screen, QVGA, B&W or color
Lamp	Tungsten-Halogen, >5000 hrs	Communications	Ethernet (TCP modbus) standard
Spectral Range	450 nm to 2150 nm	Enclosures	General Purpose NEMA 4 Class I Division 2, Z-Purge, NEMA 4x Class I Division 1, ICEEx, ATEX
Photometric Noise	<10 μAU 450-2100 nm 1 minute rms	Power	24 Vdc, 3 A
Photometric Drift	<500 μAU rms/ °C	Environmental	0 – 45°C, sun shaded, 0 – 90%, non-condensing
Wavelength Drift	Property of Filter	Dimensions (H x W x D)	GP – 14" x 12" x 6" [35.5 cm x 30.5 cm x 15.2 cm] CID2 – 16" x 20" x 6" [41 cm x 51 cm x 15.2 cm] Explosion proof – 16" x 17" x 10" [41 cm x 43 cm x 25.5 cm]
Response Time	1 second, minimum. User settable		
Fiber Size	400, 500, or 600 μm diameter, single strand		
Fiber Type Fused Silica	Ultra Low-OH (optimum range: 450 nm - 2150 nm)		