



ClearView db® Dual-Beam Photometer

Guided Wave's ClearView db® photometer is the first commercially available true dual-beam filter photometer. A major 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. Improvement can be attributed to:

- The impact of lamp aging is minimized thereby sustaining superior performance even with changes in intensity and color temperature.
- The detector noise is compensated for, independent of the measured sample, thus more of the signal represents the absorbance of the sample.

Though inexpensive, this photometer has a flexible configuration that meets most single-point analysis needs for liquid and gas process streams.

ClearView db® Offers These Customer Benefits:

- Stable Dual-Beam Design Yields Long Term Performance
- Several Enclosure Options Means Lowest Installation Costs
- Six Filter Positions Make Multi-Parameter Analysis a Possibility
- Completely Compatible with Our Wide Range of Flow Cells and Insertion Probes
- Low Maintenance
 - 5000 Hour Lamp (~7months)
 - Dual Beam Extends Time Between Required Probe Cleaning

Typical Applications

The ClearView db® photometer is ideal for many common applications found in chemical plants.

- Color - ASTM or Saybolt in Fuels
- OH Number for Polymer End Point
- Water Content in Solvents - >100 ppm
- Haze in Diesel
- NaOH in Water

ClearView db® Photos ▶

- Zpurge Unit Class 1 Div II
- ExProof Unit Class 1 Div I, ATEX
- General Purpose Unit



Zpurge Unit



ExProof Unit: 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 measureable amounts and at precise wavelengths relative to the concentration of matter that is exposed to the light at a fixed optical path. 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.

The ClearView db operating schematic is shown in Figure 1 (page two). 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 section both transmits the source light and quantifies the light that was not absorbed by the sample. 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. The process sample interface must be rugged and efficient. 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 sample interfaces in the Guided Wave catalog. Hence, photometry is now an option in even the harshest environments.

Each successful ClearView db application is defined by the calibration. The calibration consists of absorption data measured at specific wavelengths 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. Transmission of the analyzer data may be accomplished over a variety of common platforms including 4-20mA and Modbus.

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Literature: 1033-11-06

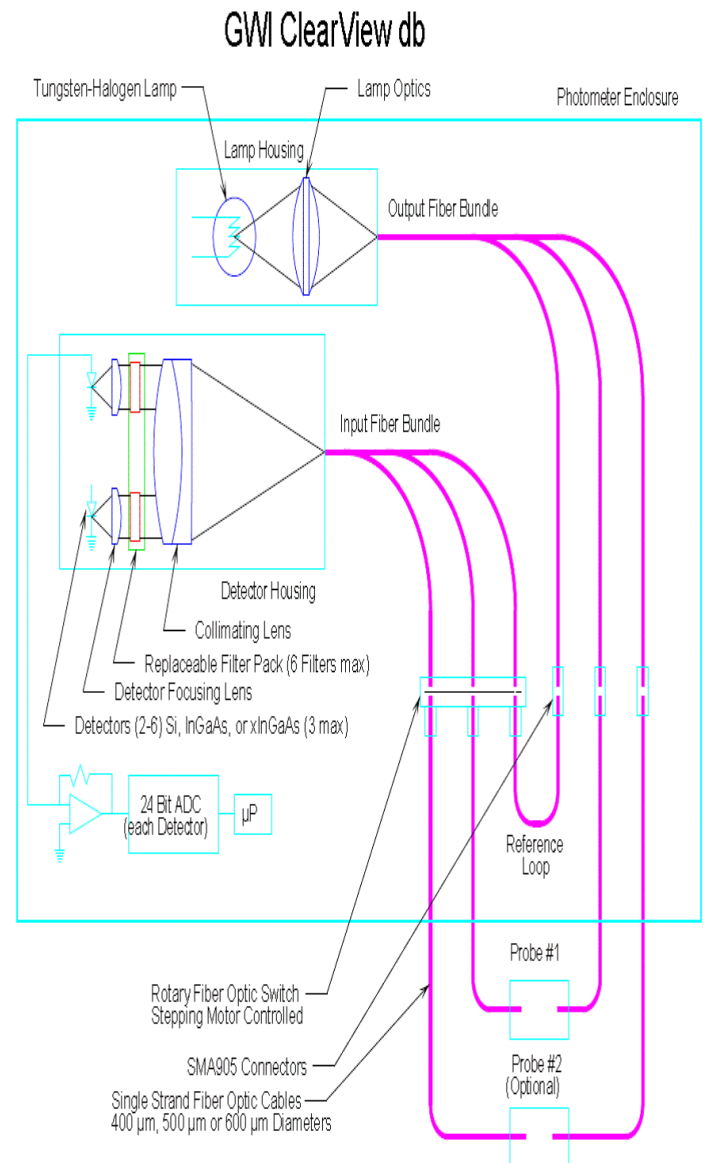
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ClearView db® Dual-Beam Photometer

Specifications

Design	Fiber Optic Dual Beam Photometer
No. of Channels	1 Sample plus optional 2 nd Sample
Number of Detectors/ Filters	2 – 6, any combination of detector types except 3 xInGaAs max
Filters	As per customer requirements, replaceable filter pack, max 6
Detector Types	Si (400 nm – 1050 nm) InGaAs (800 - 1650 nm) xInGaAs (1000 - 2150 nm, TE cooled), max 3
Lamp	Tungsten-Halogen, >5000 hrs
Spectral Range	400 nm to 2150 nm
Photometric Noise 1 min rms	0.250 mAU 400 to 600 nm 0.050 mAU 600 nm to 1650 nm 0.100 mAU 1650 to 2100 nm
Photometric Drift 24 hr rms	2x Noise over 10° to 45°C temperature range 5x Noise over -10° to 50°C
Wavelength Drift	Property of Filter
Response Time	1 s min., user settable
Fiber Size	400, 500, or 600 µm diameter, single strand
Fiber Type Fused Silica	Ultra Low-OH (optimum range: 500 nm - 2150 nm) High-OH, (optimum range: 400 nm – 700 nm)
Fiber Connectors	SMA 905
Outputs (analog)	4 or 8, 4 – 20 ma, customer powered, common ground
Outputs (discreet)	4 or 8, contact closures, common ground
Inputs (analog)	4, optional, 4 – 20 ma (isolated grounds)
Inputs (discreet)	3, common ground
Local Display	LCD Touch Screen, QVGA, B&W
Communications	Ethernet Serial (RS485 or RS422)
Enclosures	General Purpose NEMA 4 Class I Division II, Z-Purge, NEMA 4x Class I Division I, ATEX, explosion proof
Power	24 Vdc, 3 A
Environmental	0 – 45°C, sun shaded, 0 – 90%, non-condensing
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] ATEX – 16" x 17" x 10" [41 cm x 43 cm x 25.5 cm]

Figure 1



ClearView db® Dual-Beam Photometer

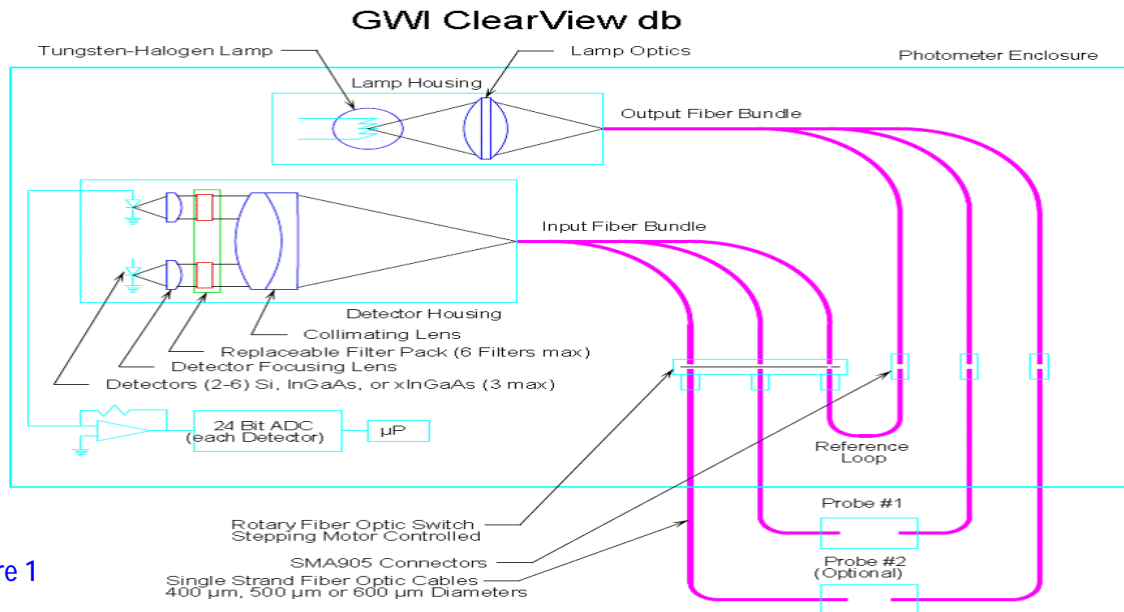


Figure 1

Specifications

Design	Fiber Optic Dual Beam Photometer	Fiber Size	400, 500, or 600 µm diameter, single strand
No. of Channels	1 Sample plus optional 2 nd Sample	Fiber Type	Ultra Low-OH (optimum range: 500 nm - 2150 nm)
Number of Detectors/Filters	2 – 6, any combination of detector types except 3 xInGaAs max	Fused Silica	High-OH, (optimum range: 400 nm – 700 nm)
Filters	As per customer requirements, replaceable filter pack, max 6	Fiber Connectors	SMA 905
Detector Types	Si (400 nm – 1050 nm) InGaAs (800 - 1650 nm) xInGaAs (1000 - 2150 nm, TE cooled), max 3	Outputs (discreet)	4 or 8, 4 – 20 ma, customer powered, common ground
Lamp	Tungsten-Halogen, >5000 hrs	Inputs (discreet)	4 or 8, contact closures, common ground
Spectral Range	400 nm to 2150 nm	Local Display	4, optional, 4 – 20 ma (isolated grounds)
Photometric Noise 1 min rms	0.250 mAU 400 to 600 nm 0.050 mAU 600 nm to 1650 nm 0.100 mAU 1650 to 2100 nm	Communications	3, common ground
Photometric Noise 1 min rms	2x Noise over 10° to 45°C temperature range 5x Noise over -10° to 50°C	Enclosures	LCD Touch Screen, QVGA, B&W
Wavelength Drift	Property of Filter	Power	Ethernet Serial (RS485 or RS422)
Response Time	1 s min., user settable	Environmental	General Purpose NEMA 4 Class I Division 2, Z-Purge, NEMA 4x Class I Division 1, ATEX, explosion proof
		Dimensions (H x W x D)	24 Vdc, 3 A

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