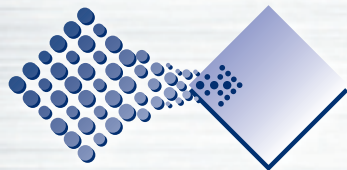


Monitoring Proteins On-Line

Model 53T Series Photonic Transmitter



CST offers a low cost fiber optic based photometric transmitter and sample interface for monitoring the amount of protein from an HPLC semi-preparative or preparative HPLC column. The system incorporates state of the art electronics connected to fiber optic based insitu probes or extractive flow cells. The system operates continuously with no moving parts and can be integrated into bench top or process environments. The UV unit can be supplied to operate in *absorbance* or *fluorescence mode*.

Defining the Problem

Typical protein determination is done with a full spectrum instrument or a fixed filter based photometer. Direct protein absorbance at either 220 or 280nm are the wavelengths most commonly employed for this application. Unlike other UV monitors the CS&T unit can measure the absorbance or fluorescence of the protein and place the flow cell or probe at the exit of any column with the use of fiber optic cables, thus avoiding any peak broadening and fraction overlap.

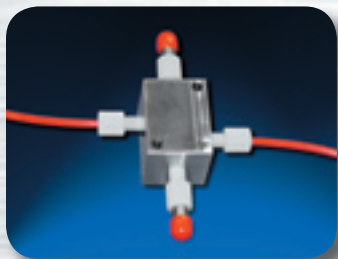
The CST Sample Interface

CS&T offers both insitu probes and an extractive flow cell for this measurement. Both the insitu and extractive fiber optic accessory separates the sample from the electronics via safe, nonconductive fiber optic cables. All components in contact with the sample are 316SS, sapphire, and FDA approved materials.

Right, sanitary Tri-clamp sight glass with optics mounted on hubs



Left, extractive flow cell for semi-prep work, PTFE tubing and Upchurch fittings



Right, sanitary insitu flow cell with 0.1mm pathlength



The CST Solution

The Custom Sensors & Technology photonic transmitter displays and retransmits a 4-20mA signal that is proportional to the amount of absorbance or fluorescence in a sample. This reading is based on the amount of optical attenuation or fluorescence as compared to a reference signal. The absorbance unit is supplied with a window fouling circuit and a manual or automatic span filter which allows the user important diagnostic information about the transmitter. The span filter allows the user to employ a calibration by standard addition technique without mixing solutions or running samples to a lab. All span/calibration filters are calibrated against a primary reference filter.



Applications for Protein Measurement

- Fermentation reactors
- Protein purification
- Mammalian cell growth
- End of Column analysis
- Pharmaceutical plants
- Yeast plants
- Filter breakthrough
- Prep column analysis

Note: There are many approaches to measuring proteins and each application can be different, please consult our application engineering group for assistance.

Product Specifications

Transmitter

Measured parameter	Protein (Absorbance or Fluorescence)
Resolution	Depending on fiber accessory
Temperature Range	-10°C to +50°C
Response time	< 5 sec
Maximum Zero shift	<0.020AU (over +50°C)
Long term output drift	<2% signal loss/year
Repeatability	1% of range
Range	Depending on fiber accessory and measure mode (fluorescence or absorbance)
Source	Xenon flash lamp (guaranteed 3 year life, minimum)

User Display & control

Type of display	LED display
Display numerical format	3-1/2 digits in user defined engineering units

Electrical

Power requirement	24VDC (9-32VDC)
Power consumption	350mA @24VDC
Analog outputs	4-20mA isolated
Analog loop resistance	500 Ohms, maximum @ 24V
Certification	CE (Available upon request)

Mechanical

Analyzer weight	1.5 lbs.
Enclosure construction	Extruded Aluminum, Nema 4X, Optional 8" x 3-7/8" x 1.5" (HWD")

Probe/Flow Cell

Materials	316,SS, other material available, please consult factory
Temperature rating	315.5°C (600°F)
Pressure rating	5,000psig
Expected probe life	25 years

Probe options:

1. 6, 12, or 24" in length
2. Automatic retractor for cleaning
3. Welded flange for standard 25mm or 19mm Ingold fittings

Custom Sensors & Technology is a full service provider. We also supply photometric transmitters, fiber optic probes & flow cells, O₂ transmitters, sample handling systems, and services including: application engineering, commissioning & start-ups, product validation, factory acceptance testing, process stream GAP Analysis, and in-house repair.