pHOENIX Instrumentation Ltd

MODEL 501 LOW RANGE TURBIDITY SENSOR

- LASER BASED TECHNOLOGY
- NEPHELOMETRIC PRINCIPLE (90° SCATTER)
- AUTOMATIC CELL AND SENSOR CLEANING
- TWO POINT SECONDARY CALIBRATION STANDARD
- THREE YEARS MINIMUM OPERATION

General

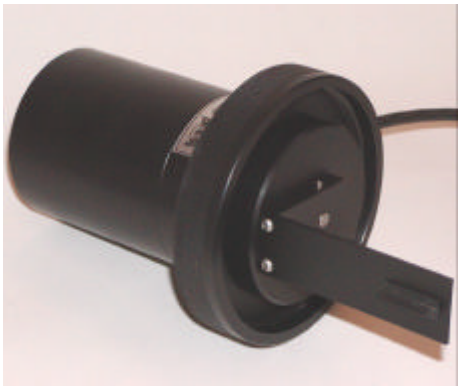
The 501 is the latest development in the Series 500 range of nephelometric turbidity sensors. Primarily designed for use in water treatment applications, this sensor is a continuous in-line device for use in low level turbidity measurements in the range 0-100 NTU.
The sensitivity and discrimination of the 501 is such that it can be ranged full scale 0-1 NTU up to its maximum of 300 NTU. In a flow through configuration where there is a possibility of sample degassing or air bubble formation the outlet flow restrictor serves to create a preventative back pressure, but where the sample is already aerated, a pre-treatment bubble trap can be supplied.

Laser Beam Technology

The 501 employs the very latest development in solid state lasers as the light source, as used in high speed laser printers.
The power, stability and focal precision of the laser allows a greater path length thereby giving greater signal strength with resulting better discrimination. The measuring device is a temperature stabilised photo diode. Both the transmission and receiving modules are free from ageing or temperature effects as a result of component selection and appropriate compensation.

Nephelometric Principle

The 501 employs the approved nephelometric principle (90° scatter) of measurement. The light transmitter and the receiver are each contained in easily removable sealed modules on the outside of the flow cell. Light is transmitted and received through precision glass “windows” incorporated in the radius of the measuring cell.
The smooth internal cell design is free from sediment traps and facilitates easy manual cleaning but an automatic cleaning system is available as an option.



Auto Clean

When working at low levels of turbidity measurement it is imperative having removed ageing and temperature effects to eliminate fouling. Whilst other manufacturers may resort to compensation techniques, pHOENIX have incorporated a simple cell and window cleaning device which is controlled automatically from the host instrument, the frequency and duration of the cleaning being programmed by the operator.
During any cleaning sequence the preceding measured value is “frozen” for alarm and transmission purposes but a second raw signal is available for datalogging.

Secondary Calibration Standard

Each 501 sensor is supplied with a solid secondary standard to validate zero and an NTU value certified against a known formazine standard.
This secondary standard can be used for rapid checking and calibration of the turbidity system but when required the 501 can be calibrated by traditional methods using liquid standards.

Specification C90/501 Combination

Range:	0- 3 NTU, 0-30 NTU and 0-300 NTU
Accuracy:	± 2% of reading or ± 0.02 NTU whichever is greater
Resolution:	± 0.001, ± 0.01 or ± 0.1 NTU dependent upon range selected
Repeatability:	Better than ± 1% of reading
Response Time:	Initial response within 30 seconds. Response time varies with flowrate.
Light Source:	Laser 785nM
Cleaning System:	Automatic
Sample Flow Rate:	250 - 1000 ml/minute (approximately 3.5 - 15 gal/hr)
Calibration:	By primary or secondary standard (supplied)
Storage Temperature:	-20 to 60°C (-4 to 140°F)
Operating Temperature:	0 to 40°C (32 to 104°F)
Operating Humidity:	5 - 95% non condensing
Sample Temperature:	0 to 50°C (32 to 122°F)
Recorder Output:	Dual output 4-20mA programmable over any segment of the displayed range.
Alarms:	Two alarms each equipped with SPCO relays with volt free contacts rated for 5 amp load @ 230v AC or 10 amps @ 110v (4-20mA PID options)
Power Supply:	110/230v AC 50/60 Hz (User selectable @) 40VA
Surge Protection:	Internal, PS1201 power supply, 1000v line to line, 2000v to chassis
Cell Connections:	½” BSP/NPT with flow restrictor on outlet
Drain Fitting:	¼” NPT female with drain tap
Sensor to Instrument Distance:	10m using standard cable. For additional lengths consult pHOENIX
Sensor Dimensions:	W - 200mm, H - 300mm, D - 150mm
Certification:	CE certified by pHOENIX
Immunity:	Certified by pHOENIX to IEC standards
Emissions:	Certified by pHOENIX to IEC standards
Safety:	Meets European standards with regard to power and laser source

All other specifications as per C90 leaflet