



## ANALITE NEP5000 Turbidity Sensor

The ANALITE NEP5000 series of digital turbidity probes is designed for monitoring and process applications. The series offers a large number of options and variations, giving the user the flexibility of a custom solution at the price of a standard product. Another outstanding feature of the series, is the excellent stability at extremely low NTU values. This stability is unprecedented in industry. At the same time, the multi-range concepts allows one and the same probe to measure from extremely low NTU values to 5000 NTU!

### Customization

ANALITE NEP5000 is a completely customizable turbidity probe. It can be ordered in several custom variations:

- With or without integrated wiper.
- Several outer case material options.
- Glanded Cable or Marine Connector.
- ISO7027 90° optics, or 180° backscatter for High NTU (30,000 NTU) applications.
- Integrated temperature and/or pressure sensor.
- Available outputs are: RS422/RS485, SDI-12, RS232 and USB. Analog voltage and current output are optional.

### Anti-fouling

The ANALITE NEP5000 wiping probes are designed for applications where bio-fouling is likely to obscure the optics, such as in long monitoring deployment or placement in warm bio-active waters. The integrated wiper automatically removes sediment and bio-fouling from the optics of the sensor. The optional copper case prevents bio-fouling from building up on the housing.

### Depth rating

The standard Delrin housing may be submerged to a depth of 100 meters. The various metal housings have a depth rating of 100 meter with wiper and 200 meter without wiper

# ANALITE



- *Monitoring of streams, rivers, and water storage*
- *Hydrological run off studies*
- *Ground and bore water analysis*



- *Intermediate and final effluent treatment monitoring*
- *Drinking water filtration efficiency*
- *Industrial process monitoring*
- *Sludge and dredge monitoring*

# ANALITE NEP5000

## NTU ranges

The ANALITE NEP5000 series offers a new concept in range setting and range selection. Each probe has 3 ranges that can be calibrated independently. The user can select which range to use (see 'configuration' below) or the probe can be set to automatic range selection ('range hopping'). The lowest possible full range is only 5 NTU, with excellent resolution and stability till below 1 NTU! The highest possible range for the 90° probe is 5000 NTU. For the 180° probe this maximum is 30,000 NTU.

At the factory, the probe is calibrated at one of the three ranges only (the user can choose which range to calibrate). Additional ranges can be calibrated on request. All ranges can be (re-)calibrated by the user.

## Configuration

The probes are delivered with a free to use software tool (for a Windows PC) for easy configuration and calibration. This requires the use of a *calibration module* as shown in the picture on the right. This module is connected to the probe and by USB to the PC. The tool allows for:

- Fast and accurate calibration.
- Compensation tools.
- Setting Adjustable Slew Rates.
- Selecting between the range settings (low, medium, and high).
- Selecting Range Hopping.
- Setting Wiper behaviour.
- Selection of many digital and analog outputs.

Calibration data is stored in the probe.

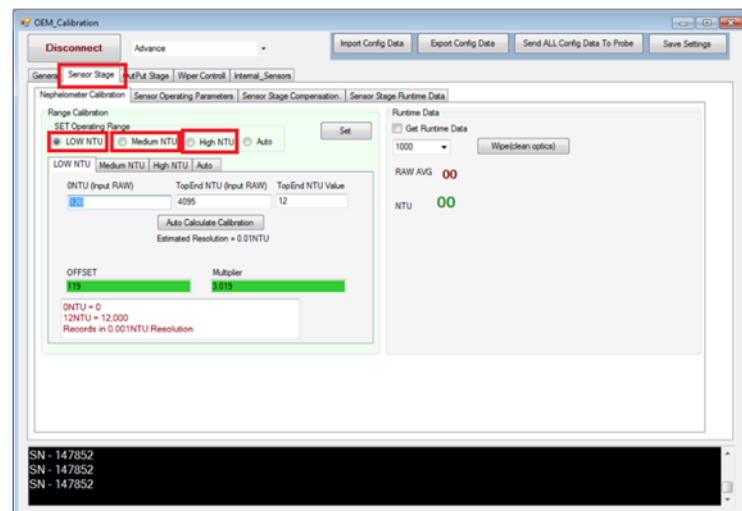
## Applications

The applications suited to the ANALITE NEP5000 probes are so extensive and too numerous to elaborate on but generally they include:

- Monitoring of streams, rivers and water storage
- Intermediate and final effluent treatment monitoring
- Hydrological run-off studies
- Ground and bore water analysis
- Drinking water filtration efficiency
- Industrial process monitoring
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Calibration module. Interfaces the probe to a USB port on a PC for calibration & configuration.



Screenshot of the configuration tool.

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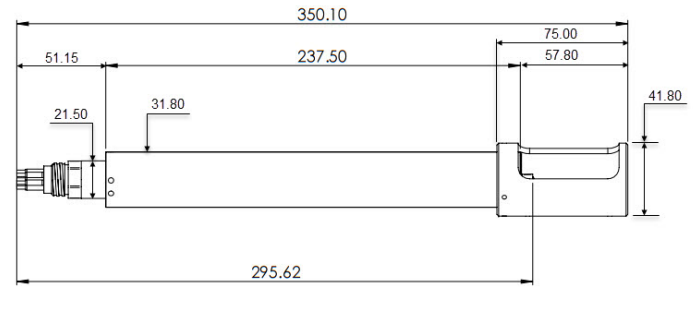
## The NEP5000 ordering code

The code of a standard probe is:

WY-	90-	D-	R42-	NO-	GC-	V1-	TN-	PN
1	2	3	4	5	6	7	8	9

The table below shows how the ordering code is composed. Deviations from the above standard incur additional cost, with two exceptions: WN is cheaper than WY; V1-V3 have the same price.

#	Values	Meaning	Comments	
1	WY	Wiper Yes	Indicates if there is a wiper or not.	
	WN	Wiper No		
2	90	90 degree optics (ISO7027)		
	18	180 degree optics (back-scatter)		
3	D	Delrin Housing	Lowest cost	
	C	Copper alloy Housing	Anti-fouling	
	S	Stainless Steel housing	Strong, rugged	
	T	Titanium Housing	Anti-corrosion	
4	R42	RS422/485 (Modbus)	Max 1000 meter	
	S12	SDI-12	Max 70 meter	
	R23	RS-232	Max 10 meter	
	USB	USB	Max 5 meter	
5	NO	No cur or vol/output		
	CUR	Current output 4-20 mA. Only for NTU (not for pressure or temperature)		Max 100 meter, no auto NTU range selection
	VOL	Voltage output over 5V range. 0 to 5 V or -2.5 to +2.5V. Only for NTU (not for pressure or temperature)		Max 10 meter, no auto NTU range selection
6	GC	Glanded Cable	Not in combination with pressure option	
	SM	Subcon connector, male	Recommended	
	SF	Subcon connector, female		
7	V1	NTU ranges: 10, 400, 1000	Note that the factory calibration of <b>one</b> range is included in the price.	
	V2	NTU ranges: 10, 400, 5000		
	V3	NTU ranges: 100, 1000, 5000		
	V4	NTU ranges: User specified		
8	TN	Temperature No	Water temperature sensor in optic block yes/no	
	TY	Temperature Yes		
9	PN	Pressure No	Pressure sensor in the housing yes/no	
	PY	Pressure Yes		



Dimensions.



NEP5000 with wiper in copper (top) and Delrin (bottom) housing.



Detail of the 180° back scatter probe with deflector cone.

# SPECIFICATIONS

## TURBIDITY SECTION

Technique	90° modulated infra-red (ISO7027) or 180° backscatter.	
Ranges	The 90° probe is available in four versions: - V1 NTU ranges: 10, 400, 1000 - V2 NTU ranges: 10, 400, 5000 - V3 NTU ranges: 100, 1000, 5000 - V4 NTU ranges: User specified: Minimum range 0-5NTU Maximum range 0-5000NTU  Automatic range selection is supported.	
Resolution	<b>Range</b>	<b>Resolution</b>
	10 NTU	±0.01 NTU
	100 NTU	±0.03 NTU
	400 NTU	±0.1 NTU
	1,000NTU	±0.3 NTU
	5,000NTU	±1.7NTU
Accuracy	±1% at 25°C up to 400NTU ±2% at 25°C up to 1,000NTU	
Linearity	Better than 0.5% for 0 to 20NTU Better than 1.0% for 0 to 400NTU Better than 2.0% for 0 to 3,000NTU	
Temp. Coefficient	Better than ±0.05%/°C	
Zero Drift	Less than ±0.2NTU	
Calibration	Factory calibrated using non-toxic AEPA polymer solutions	
Settling Time	< 1 second after application of power to 99%	
Wiping	Wiping is configurable through the PC configuration tool. During a wipe, the output remains within ±1% full scale of the turbidity value just prior to the wipe	
Wipe Time	8 seconds nominal	

## PRESSURE SECTION (optional)

Type	Piezoresistive, absolute gauge, low power demand
Range	0 to 100 meters depth
Accuracy	±0.2% of Full Scale

## TEMPERATURE SECTION (optional)

Type	Resistance temperature detector (RTD)
Range	-5°C to +50°C
Accuracy	± 1 °C

## MECHANICALS

Weight	NEP5000 Delrin models 300 g NEP5000 Metal models 770 g Optional connector: 100 g Cable: 70 g per meter
Construction	Delrin Composite or 316 Stainless Steel or titanium or anti-bio-fouling Copper / Nickel
Cable	6 core + shield, 6mm nominal dia. PUR sheath Conductor resistance 45 ohms per km
Depth Rating	200m (660ft) Non-wiping in metal housing 100m (330ft) with wiping or in Delrin housing

## MISCELLANEOUS

Outputs	RS232 streaming or polled RS422 / RS485 streaming or polled SDI-12 Analog 4 - 20mA and 0 ±5.0V or variations
Power	9.6 - 28V dc, 15mA on. 40mA reading and 70mA when wiping
Temp.	-10°C to 40°C operating -20°C to 50°C storage
Included	PC configuration and calibration software Calibration of one user selectable range
Accessories	<b>NEPSILWIPE</b> - Wiper replacement kit <b>NEP-USB-CONN</b> - USB adapter NEP-CBL - Cable, per meter Protective shrouds in several materials Configuration kits Additional calibrations And more, ask Observer