Suitable for monitoring water quality – food processing – waste treatment – dredging operations

Datasheet

Analite NEP-5000 Turbidity Sensor

Multiple Output Auto-Ranging

The Analite NEP-5000 ISO7027 90°series of digital turbidity probes are designed for monitoring and process applications where ultimate sensor flexibility is a consideration. This probe offers a multitude of physical sensor variations, with the further benefit of a PC interface that allows the user to easily calibrate, modify range modes, and adjust sensor output modes and data characterisation.

The Analite NEP-5000 is a completely customisable turbidity probe that can be ordered to the end user's particular needs. It has all the benefits of a custom solution at a very competitive price.

Available outputs, included, are analog voltage or current loop (4 to 20 mA), RS422/RS485, SDI-12, RS232, USB and digital TTL.

The standard NEP-5000 can be ordered in several custom variations:

- Wiping and non-wiping
- Several outer case material options
- Glanded cable or marine connector / cable
- 90° or 180° backscatter for high NTU applications
- With temperature and/or pressure

The Analite PC configurator allows:

- Fast accurate calibration
- Compensation tools
- Adjustable Slew Rates
- Three range settings (low, medium, and high)
- Range hopping between three ranges
- Wiper behaviour settings
- Selection of many digital and analog outputs

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Field, process & lab application

The Analite NEP-5000 wiping probes are specifically designed for applications where bio-fouling build up occurs obscuring the optics. Such environments include, long monitoring deployment or places in warm bio-active waters.

The Analite integral wiper assembly and optional copper case is designed for operations where severe bio-fouling or sedimentation build up is likely, including:

- 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
- Sludge and dredge monitoring

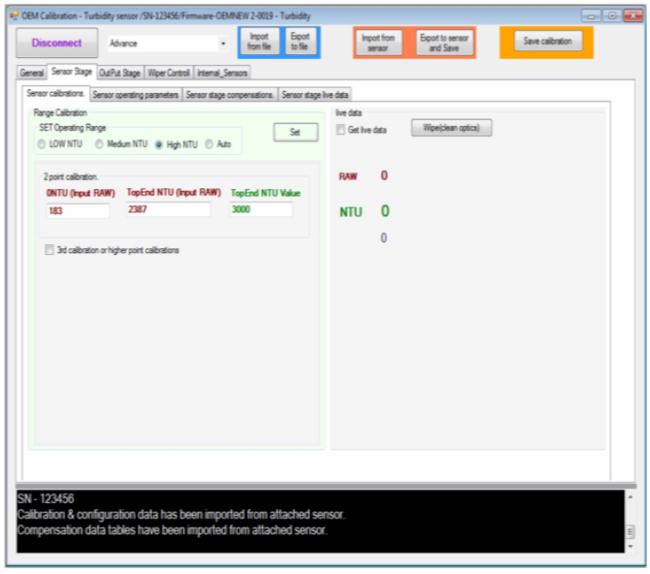
NEP-5000 range set concept

The Analite NEP-5000 series turbidity probes offers a multiple range concept. in settings and selection. Calibrations can be made for three different levels of usage (Low, Medium and High)*.

These 3 levels of usage are offered as versions to simplify range selection and order placement. The versions are as follows:

- V1 NTU ranges: 10, 400, 1000
- V2 NTU ranges: 10, 400, 5000
- V3 NTU ranges: 100, 1000, 5000
- V4 NTU ranges: user specified

Calibration costing rules do apply. One calibration for the 3 ranges is included in the purchase price. Additional range calibrations are an extra cost. Different ranges are available for the 90° sensor, but they must be specified at time of order and they may attract further costs.



The three range calibrations allow for three types of usage modes and linearity from low range to high range in the auto-ranging mode**. This is applicable to event-based sediment studies where NTU readings are prone to peaks above a set range.

90-degree versions provide extremely accurate and stable results at very low NTU values. This sensor can be used in conditions that require high resolution readings at near zero NTU.
Whatever the requirement, the NEP-5000 series probe is the most flexible choice. It can be ordered and configured to a multitude of applications.

Add parameters, modify ranges and refine calibrations. This can all be done on the PC interface and saved to configuration files. These configuration files can be saved and read back into the sensor to restore the settings.

* Please refer to Observator NEP-5000 ordering guide document for correct ordering codes.

** One factory calibrated range in the list price.

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Turbidity specifications

Technique	Standard: 90° modulated infra-red (ISO7027) Optional: 180° backscatter
Ranges	3 preset range groups: • Low (example 0-10NTU) • Medium (example 0-400NTU) • High (example 0-1,000NTU) Recommended range versions: • V1 NTU ranges: 10, 400, 1000 • V2 NTU ranges: 10, 400, 5000 • V3 NTU ranges: 100, 1000, 5000 • V4 NTU ranges: user specified Custom ranges available Range hopping capable

Resolution

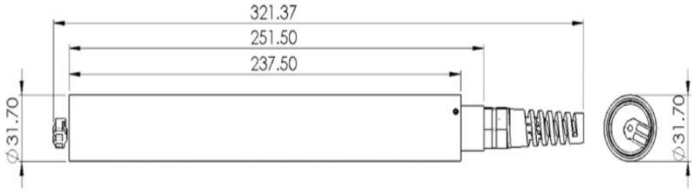
Range	Resolution
Up to 100NTU	±0.01NTU
Up to 400NTU	±0.1NTU
Up to 1,000NTU	±1.0NTU
Up to 5,000NTU	±2.0NTU

Accuracy	±1% at 25°C, up to 5,000NTU
Linearity	Better than 1% for 0 to 3,000NTU Better than 2% for 0 to 5,000NTU
Temperature coefficient	Better than ±0.05%/°C
Outputs	Digital 3.6V TTL (streaming or polled) RS422/RS485 (streaming or polled) SDI-12 RS232 USB Analog 4-20mA. Analog -2.5V to +2.5V (or variations)
Zero drift	Less than ±0.2NTU
Calibration	Factory calibrated using non-toxic AEPA polymer solutions
Power	8-30V DC, 15mA on 40mA reading and 60mA wiping

Settling time	<1 second after application of power to 99%
Wiping	Wiping configuration through the PC configuration tool. Wipe directions or alternate settings and timeouts will prolong probe life. During a wipe, the output remains within ±1% full scale of the turbidity value just prior to the wipe.
Wipe time	8 seconds nominal

Mechanics

Weight	NEP-5000 Delrin models 300 grams (probe only*) NEP-5000 metal models 770 grams (probe only*) *100 grams connector plus 70 grams per meter of cable
Construction	• Delrin composite casing is standard • 316 stainless steel • Titanium • Anti-biofoul CW352H 70/30% copper/nickel
Cable	6 core + shield, 6mm nominal dia. PUR sheath Conductor resistance 45 Ohms/km. Weight – 70 grams per meter
Cable length	Standard Glanded cable length to be specified at time of order. Per meter price applies.
Depth rating	200m (660ft) non-wiping 100m (300ft) wiping
Operating temp.	-10°C to 40°C
Storage temp.	-20°C to 50°C



The NEP-5000 code explained

When ordering a NEP-5000 sensor, you are kindly asked to specify the full code as explained below. This to make sure you order the correct sensor. The full code also directs you to the right items from the pricelist, as shown in the table below. This is an example of the ordering code which is explained below, with reference to the items in the price list:

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

#	Values	Meaning	Price list	Comments
1	**WY**	Wiper Yes	- (Standard)	Indicates if there is a wiper or not.
	WN	Wiper No	NEP-NOWIPER (Negative value)	
2	**90**	90-degree optics (ISO7027)	- (Standard)	
	180	180-degree optics (back-scatter)	NEP-180	
3	**D**	Delrin housing	- (Standard)	Lowest cost
	C	Copper alloy housing	NEP-CUC	Anti-fouling
	S	Stainless steel housing	NEP-SSC	Strong, rugged
	T	Titanium housing	NEP-TTC	Anti-corrosion
4	**R42**	RS422/485	- (Standard)	
	S12	SDI-12	NEP-SDI12	
	R23	RS-232	NEP-RS232	Max 10 meter
	USB	USB	NEP-USB	Max 5 meter
5	**NO**	No current or voltage output	- (Standard)	
	CUR	Current output 4-20 mA. Only for NTU (not for pressure or temperature)	NEP-CUR	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)	NEP-VOL	Max 10 meter, no auto NTU range selection
6	**GC**	Glanded cable	- (Standard)	
	SM	Subcon connector, male	CON34MCBH6MSS	Recommended
	SF	Subcon connector, female	CON34MCBH6FSS	
7	**V1**	NTU ranges: 10, 400, 1,000	NEP5000-V1	Note that the factory calibration of one range is included in the price.
	V2	NTU ranges: 10, 400, 5,000	NEP5000-V2	
	V3	NTU ranges: 100, 1000, 5,000	NEP5000-V3	
	V4	NTU ranges: user specified	NEP5000-V4	
8	**TN**	Temperature No	- (Standard)	Water temperature sensor in optic block yes/no
	TY	Temperature Yes	NEP-TEMP	
9	**PN**	Pressure No	- (Standard)	Pressure sensor in the housing yes/no
	PY	Pressure Yes	NEP-PRES	

For example, to order WY-90-D-R42-NO-GC-V1-TN-PN, you would only need to order NEP-5000-V1, because the rest is standard. However, if you want the same sensor to come in a copper housing and with a male Subconn connector, the order code would be: WY-90-C-R42-NO-SM-V1-TN-PN, and you would have to order: NEP-5000-V1; NEP-CUC; CON34MCBH6MSS.

Notes

- The maximum allowable cable lengths for SDI-12 and RS422/485 are expected to be over 1,000 meters.
- The voltage and current output options only refer to the turbidity and not to other (optional) parameters like pressure and temperature. You lose the option of automatic range switching.
- If you chose a sensor with a connector, you obviously require a cable with a mating connector. Thus, when ordering the cable, please also order the mating connector.
- Without the temperature option (TY), you can still get a temperature reading from the sensor, but this is the internal and uncalibrated temperature.
- The pressure sensor is unvented, hence requires external barometric compensation.

Accessories

The standard Analite NEP-5000 series of probes, with its Delrin composite housing, may be submerged to a depth of 100 meters. A metal housing is available for applications where a greater depth rating is required. Maximum depth rating is 200 meters (non-wiping with metal case).

NEP-CFG	PC interface and communication module and PC configuration and calibration software.
NEP-WIPER-KIT	Wiper replacement kit comprising of 4 silicon wipers and a hex fastening key.
NEP-SHRD-D	Delrin protective shroud
NEP-SHRD-C	Copper protective shroud
NEP-SHRD-S	Stainless protective shroud
NEP-SHRD-T	Titanium protective shroud
NEP-CBL	Probe cable in meters
NEP-CBL-CON	Subconn connector and cable assembly
Options	180° optics Outer case in copper, stainless steel or titanium marine connectors.

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