

EPA Compliant Turbidity Meters

EPA Compliant Portables that Feature HANNA's Exclusive Fast Tracker™ (T.I.S.) Technology

Fast Tracker™ Tag Identification System (T.I.S.)

HANNA's exclusive Fast Tracker™ — Tag Identification System simplifies test logging while retaining the management versatility users need to search, filter and export data. The system, designed for scientific and industrial applications, helps verify that samples have truly been taken at pre-established locations during safety audits and inspections.

Fast Tracker™ is easy to install and operate. Just place the iButton® tags near your sampling sites that need to be regularly checked. These meters identify and authenticate logged data by storing the iButton® serial number, time and date stamp by simply touching the iButton® with the matching connector on the instruments. The number of tags that can be installed is unlimited and each tag has a unique identification code.

With our HI 92000 Windows® compatible application software, users can sort or filter all collected test data using different criteria such as specific sampling location, parameter, date and time intervals or fixed range to filter measured values. The data can be plotted in a graph, exported to other common Windows® applications or printed for reporting purposes. It is easy to add new tags later on to increase an already existing database.

The HANNA
Fast Tracker™ system
is a new revolution in simple and
organized data management.



FastTracker™
A new revolution in organized data management

HI 93414, HI 98703 and HI 98713 Turbidity Meters: Principal of Operation

Turbidity of the water is an optical property that causes light to be scattered and absorbed, rather than transmitted. The scattering of the light that passes through a liquid is primarily caused by the suspended solids. The higher the turbidity, the greater the amount of scattered light. Because even the molecules in a very pure fluid scatter light to a certain degree, no solution will have zero turbidity.

The USEPA Method 180.1 specifies the key parameters for the optical system to measure turbidity for drinking, saline and surface water in a 0 to 40 NTU range, using the nephelometric method. The HI 93414 and HI 98703 Portable Turbidimeter is designed to meet or exceed the criteria specified by the USEPA Method 180.1 and Standard Method 2130 B.

The ISO 7027 standard specifies the key parameters for the optical system to measure turbidity for drinking and surface water, using the formazin based metric method. The HI 98713 Portable Turbidimeter is designed to meet or exceed the criteria specified by the ISO 7027 standard.

The light beam that passes through the sample is scattered in all directions. The intensity and pattern of the scattered light is affected by many variables like wavelength of the incident light, particle size, shape, refractive index and color.

The HANNA's HI 98703, HI 93414 and HI 98713 are based on a state-of-the-art optical system that guarantee both high performance and reliable results.

HI 93414 and HI 98703's optical system includes a tungsten filament lamp, a scattered light detector (90°) and a transmitted light detector (180°). For the colorimeter range the optical system is based on the turbidimeter tungsten lamp and a separate detector with a narrow band interference filter @ 525 nm to guarantee both high performance and reliable results for colorimetric measurements.

HI 98713's optical system includes an infrared LED, a scattered light detector (90°) and a transmitted light detector (180°). By using an effective algorithm, the instrument's microprocessor calculates the FTU value from the signals that reach the two detectors. This algorithm corrects and compensates for interferences of color, making the HI 98713 turbidimeter color-compensated.

The optical system and measuring technique allow the compensation of lamp intensity (HI 98703, HI 93414) or LED intensity (HI 98713) fluctuations, minimizing the need of frequent calibration.

The lower detection limit of a turbidimeter is determined by the so called "stray light". Stray light is the light detected by the sensors that is not caused by light scattering from suspended particles.

The optical system of HI 98713 turbidimeter is designed to have very low stray light, providing accurate results for low turbidity samples when special care is taken.



HI 98713

ISO Turbidity Meter

Features HANNA's Exclusive Fast Tracker™ (T.I.S.)

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TURBIDITY

Designed for Low Turbidity Water Quality Measurements

The HI 98713 measures the turbidity of a sample in the 0.00 to 1000 FNU range. An effective algorithm calculates and converts the detectors output in FNU. Depending on the needed accuracy, normal measurement, continuous measurement, or signal averaging measurement can be selected.

The optical system—The Infrared Method (ISO 7027), consists of a infrared LED and two detectors (scattered and transmitted light), that assures long term stability and minimizes stray light and color interferences. It also compensates for variations in intensity of the LED, minimizing the need for frequent calibration.

The 25 mm round cuvetts made from special optical glass guarantee the repeatability and consistency of the measurements.

HI 98713 has complete GLP (Good Laboratory Practice) functions that allow traceability of the calibration conditions. Last calibration points, time and date can be checked at any time by a single touch.

HI 98713 has a very user-friendly interface, with a backlit, easy to read, large LCD (Liquid Crystal Display). The display codes guide the user step by step with routine operation and calibration.

With the HI 98713's logging function, up to 200 measurements can be stored in the internal memory and consulted at any time. Data can be downloaded to a PC for storing or further analysis through one of the two available ports: RS232 or USB.

For advanced field applications, the HI 98713 turbidimeter is equipped with Fast Tracker™—Tag Identification System (T.I.S.) that makes data collecting and management simpler than ever.



- Exclusive Fast Tracker™
- 2, 3 or 4 point calibration
- USB and RS 232 PC connectivity
- Backlit LCD
- GLP capability
- User friendly display with guidance codes
- Battery percentage on display
- Continuous current time on display



SPECIFICATIONS

Range	0.00 to 9.99; 10.0 to 99.9 and 100 to 1000 FNU
Range Selection	Automatic
Resolution	0.01 FNU from 0.00 to 9.99 FNU; 0.1 FNU from 10.0 to 99.9 FNU; 1 FNU from 100 to 1000 FNU
Accuracy	±2% of reading plus 0.1 FNU
Repeatability	±1% of reading or 0.1 FNU, whichever is greater
Stray Light	< 0.1 FNU
Typical EMC Deviation	±0.05 FNU
IR Detector	Silicon Photocell
Light Source	860 nm infrared LED
Lamp life	Greater than 100,000 readings
Method	Adaptation of ISO 7027, ratio method with 90° and 180° detector.
Turbidity Standards	<0.1, 15, 100 and 750 FNU
Calibration	Two, three or four-point calibration
LOG Memory	200 records
Serial Interface	USB or RS 232
Environment	Up to 50°C (122°F); max 95% RH non-condensing
Power Supply	(4) 1.5V AA alkaline batteries or AC adapter; Auto-off after 15 minutes of non-use
Dimensions / Weight	224 x 87 x 77 mm (8.8 x 3.4 x 3.0") / 512 g (18 oz.)

ORDERING INFORMATION

HI 98713-01 (115V) and **HI 98713-02** (230V) are supplied with (5) sample cuvetts and caps, HI 98713-11 calibration cuvetts, HI 93703-58 silicone oil, cuvet wiping tissue, (4) batteries, AC adapter, instruction manual and rugged carrying case.

SOLUTIONS

- HI 98703-11** Turbidity standards kit
- HI 93703-50** Cuvet cleaning solution, 250 mL

ACCESSORIES

- HI 920005** Tag holders with tags (5)
- HI 98703-58** Silicone oil (15 mL)
- HI 93703-60** Caps for cuvetts (4)
- HI 731318** Tissue for wiping cuvetts (4)
- HI 731331** Glass cuvetts (4)
- HI 92000** Windows® compatible software
- HI 920011** 5 to 9 pin RS232 connection cable
- HI 920013** USB cable for PC connection



HI 920005 iButton® Tags