

# Multiparameter Photometer with COD for Water and Wastewater

with Digital pH Electrode Input

HI83399 benchtop photometer measures 40 different key water and wastewater quality parameters using 77 different methods that allow for multiple ranges and variations in chemistry for specific applications. The Chemical Oxygen Demand (COD) parameter is included for industrial and municipal wastewater treatment. The Phosphorous and Nitrogen parameters included are beneficial to municipal wastewater treatment customers that need to monitor their biological and chemical nutrient removal process. This photometer features an innovative optical system that uses LEDs, narrow band interference filters, focusing lens and both a silicon photodetector for absorbance measurement and a reference detector to maintain a consistent light source ensures accurate and repeatable photometric readings every time.

To save valuable laboratory benchtop space, the HI83399 doubles as a professional pH meter with its digital pH/temperature electrode input. Now one meter can be used for both photometric and pH measurements.

- **Water and wastewater treatment digestion parameters**
  - Allows measurement of COD, Total Nitrogen and Total Phosphorus
- **Advanced optical system**
  - Innovative optical design that utilizes a reference detector and focusing lens to eliminate errors from changes in the light source and from imperfections in the glass cuvette.
- **Backlit 128 x 64 Pixel Graphic LCD Display**
  - Backlit graphic display allows for easy viewing in low light conditions
  - The 128 x 64 Pixel LCD allows for a simplified user interface with virtual keys and on-screen help to guide the user through use of the meter
- **Built-in Reaction Timer for Photometric Measurements**
  - The measurement is taken after the countdown timer expires.



#### COUNTDOWN TIMER ENSURES THAT ALL

readings are taken at the appropriate reaction intervals regardless of user for better consistency in measurements

#### PICAL CHECK DETS USE TO POTENTIAL

problems during the calibration process

- Space saving having a pH meter and photometer built into one meter
- **Absorbance mode**
  - Hanna's exclusive CAL Check cuvettes for validation of light source and detector
  - Allows for the user to plot concentration versus absorbance for a specific wavelength for use with user supplied chemistry or for teaching principles of photometry
- **Units of Measure**
  - Appropriate unit of measure along with chemical form is displayed along with reading
- **Result Conversion**
  - Automatically convert readings to other chemical forms with the touch of a button
- **Cuvette Cover**
  - Aids in preventing stray light from affecting measurements
- **Digital pH Electrode Input**
  - Measure pH and temperature with a single probe
  - Good Laboratory Practice (GLP) to track calibration information including date, time, buffers used, offset and slope for traceability
- **Data Logging**
  - Up to 1000 photometric and pH readings can be stored by simply pressing the dedicated LOG button. Logged readings are just as easily recalled by pressing the RCL button
  - Sample ID and User ID information can be added to a logged reading using alphanumeric keypad
- **Connectivity**
  - Logged readings can be quickly and easily transferred to a flash drive using the USB-A host port or to a computer using the micro USB-B port
  - Data is exported as a .CSV file for use with common spreadsheet programs
- **Rechargeable Battery**
  - Li-polymer rechargeable battery lasts for 500 measurements or 50 hours of pH measurement
- **Battery Status Indicator**
  - Indicates the amount of battery life left
- **Error Messages**
  - Photometric error messages
  - pH calibration messages include clean electrode, check buffer and check probe

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### Digestion Vial Methods

Compatible with COD (EPA, ISO, and mercury free methods), Nitrogen and Phosphorous reagents packaged in 16 mm digestion vial. Reagents are sold separately.



### COD Reactor for Digestion Vials

A COD reactor is used to heat the digestion vials. The digestion vials must be heated to a specific temperature for a period time making the HI839800 an important accessory required to have a complete wastewater treatment monitoring system. HI839800 sold separately.

## Connectivity



### ① pH Connectivity

Any of our digital pH electrodes can be connected to the HI83399 family by a 3.5 mm input. Plugging in an electrode has never been easier; there are no alignment issues or broken pins. Simply connect the electrode and start taking measurements.

### ② Dual Power Supply

The HI83399 is equipped with a rechargeable lithium ion battery that lasts up to 500

photometer measurements or 50 hours of continuous pH measurements. A power supply can also be plugged into the micro USB port at the back of the meter.

### ③ USB Connectivity

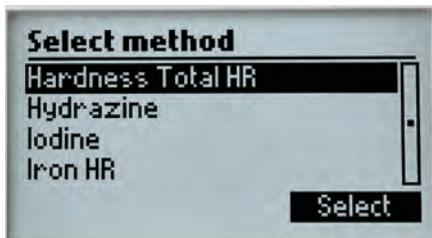
Both a USB and micro USB port are located on the HI83399. Each of these ports can be used to transfer data via flash drive or direct connection to a PC or MAC. Data is transferred as CSV files for easy processing and widespread compatibility.

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## Photometer Capabilities



### Concentration Measurement Function

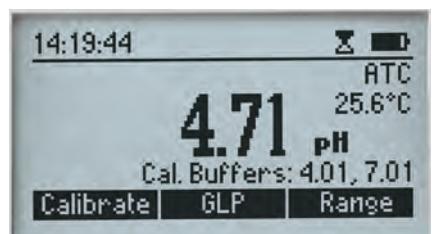
Users can access the menu of measurement methods with the simple press of a button. Low, medium, and high range methods of several parameters are available for users to obtain a high accuracy reading. Each method is assigned a concentration unit of measure. Parameters can be expressed in different chemical forms based on their preference.

### CAL Check Functionality

Hanna's exclusive CAL Check feature allows for performance verification of the independent measuring channels. Our CAL Check standard vials are developed to simulate a specific absorbance value at each wavelength to verify its' accuracy.

### Built-in Reaction Timer

Reaction time is of key importance when performing colorimetric measurements, which is why the built-in timer of the HI83300 is an ideal feature. The countdown timer displays the time remaining until a measurement will be taken, ensuring consistent results between measurements and users.



### pH Measurement

The HI83300 family offers the ability to connect a digital pH electrode. Users can connect any sensor from our extensive line of digital pH electrodes. Whether a user requires a glass or plastic body, a spheric or conic tip shape, or the ability for safe use with food samples, our digital electrode offering is suitable for nearly everyone.



### Large Cuvettes

The sample cell of these meters fits a round, glass cuvette with a 25 mm path length. The relatively long path length of the sample cuvette allows the light to pass through more of the sample solution, ensuring accurate measurements even in low absorbance samples. This cuvette size also provides a larger opening, making it easier for users to dispense ready-made liquid or powder reagents into the sample.

An affixed, light-blocking cover panel closes over the sample cell, reducing stray light from affecting any measurement readings.



### Absorbance Measurement Mode

Users can select to calibrate and measure samples in absorbance mode for each wavelength used by the meter. This mode is a convenient way for users to develop their own calibration curves and measure samples with customized chemistries.



### Data Management

The HI83300 can store up to 1000 photometer and pH electrode readings, which can be logged by pressing the LOG key on the face of the meter. pH readings are logged along with comprehensive GLP (Good Laboratory Practice) information such as date, time, calibration buffers, and electrode offset and slope.

### USB for Data Transfer

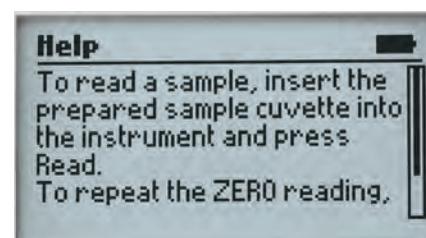
Two USB ports are provided for transferring data. One port allows the data to be transferred to a flash drive while the other USB is used for direct connection to a computer. All data is transferred as a .csv file that can be used with many spreadsheet programs for documentation.

### Display Features



### Backlit Graphic LCD Display

A backlit, graphic LCD display provides an easy to read, user-friendly interface.



### Intuitive Display

With virtual keys, a battery status indicator, and practical error messages, users will find the meter interface intuitive. On-screen guides provide information relating to the current meter operation, and can be used at any stage in the setup or measurement process to show contextual help.

Parameter	Range	Resolution	Accuracy (@ 25°C)	LED (λ nm) with Narrow Band Interference Filter	Method	Reagent Code
Hardness, Magnesium	0.00 to 2.00 mg/L (ppm) (as CaCO <sub>3</sub> )	0.01 mg/L	±0.11 mg/L ±5% of reading	@ 525 nm	EDTA	HI93719-01 100 tests
Hardness, Total LR	0 to 250 mg/L (as CaCO <sub>3</sub> )	1 mg/L	±5 mg/L ±4% of reading	@ 466 nm	EPA 130.1	HI93735-00 100 tests
Hardness, Total MR	200 to 500 mg/L (as CaCO <sub>3</sub> )	1 mg/L	±7 mg/L ±3% of reading	@ 466 nm	EPA 130.1	HI93735-01 100 tests
Hardness, Total HR	400 to 750 mg/L (as CaCO <sub>3</sub> )	1 mg/L	±10 mg/L ±2% of reading	@ 466 nm	EPA 130.1	HI93735-02 100 tests
Hydrazine	0 to 400 µg/L (as N <sub>2</sub> H <sub>4</sub> )	1 µg/L	±4% of full scale reading	@ 466 nm	p-Dimethylaminobenzaldehyde	HI93704-01 100 tests
Iodine	0.0 to 12.5 mg/L (as I <sub>2</sub> )	0.1 mg/L	±0.1 mg/L ±5% of reading	@ 525 nm	DPD	HI93718-01 100 tests
Iron (II) (ferrous)	0.00 to 6.00 mg/L Fe <sup>2+</sup>	0.01 mg/L	±0.10 mg/L ±2% of reading	@ 525 nm	phenanthroline	HI96776-01 100 tests
Iron (II)/(III) (ferrous and ferric)	0.00 to 6.00 mg/L Fe	0.01 mg/L	±0.10 mg/L ±2% of reading	@ 525 nm	phenanthroline	HI96777-01 100 tests
Iron LR	0.000 to 1.600 mg/L (as Fe)	0.001 mg/L	±0.010 mg/L ±8% of reading	@ 575 nm	TPTZ	HI93746-01 50 tests
Iron HR	0.00 to 5.00 mg/L (as Fe)	0.01 mg/L	±0.04 mg/L ±2% of reading	@ 525 nm	phenanthroline	HI93721-01 100 tests
Iron, Total (16 mm vial)	0.00 to 7.00 mg/L (as Fe)	0.01 mg/L	±0.20 mg/L or ± 3%, whichever is greater	@ 525 nm	phenanthroline	HI96778-25 25 tests
Magnesium	0 to 150 mg/L (as Mg <sup>2+</sup> )	1 mg/L	±5 mg/L ±3% of reading	@ 466 nm	calmagite	HI937520-01 50 tests
Manganese LR	0 to 300 µg/L (as Mn)	1 µg/L	±10 µg/L ±3% of reading	@ 575 nm	PAN	HI93748-01 50 tests
Manganese HR	0.0 to 20.0 mg/L (as Mn)	0.1 mg/L	±0.2 mg/L ±3% of reading	@ 525 nm	periodate	HI93709-01 100 tests
Molybdenum	0.0 to 40.0 mg/L (as Mo <sup>6+</sup> )	0.1 mg/L	±0.3 mg/L ±5% of reading	@ 420 nm	mercaptoacetic acid	HI93730-01 100 tests
Nickel LR	0.000 to 1.000 mg/L (as Ni)	0.001 mg/L	±0.010 mg/L ±7% of reading	@ 575 nm	PAN	HI93740-01 50 tests
Nickel HR	0.00 to 7.00 g/L (as Ni)	0.01 g/L	±0.07g/L ±4% of reading	@ 575 nm	photometric	HI93726-01 100 tests
Nitrate	0.0 to 30.0 mg/L (as NO <sub>3</sub> <sup>-</sup> N)	0.1 mg/L	±0.5 mg/L ±10% of reading	@ 525 nm	cadmium reduction	HI93728-01 100 tests
Nitrate (16 mm vial)	0.0 to 30.0 mg/L Nitrate (as NO <sub>3</sub> <sup>-</sup> N)	0.1 mg/L	±1.0 mg/L or ±3% of reading, whichever is greater	@ 420 nm	chromotropic acid	HI93766-50 50 tests
Nitrite ULR, Marine	0 to 200 µg/L (as NO <sub>2</sub> <sup>-</sup> N)	1 µg/L	±10 µg/L ±4% of reading	@ 466 nm	diazotization	HI764-25 25 tests
Nitrite LR	0 to 600 µg/L (as NO <sub>2</sub> <sup>-</sup> N)	1 µg/L	±20 µg/L ±4% of reading	@ 466 nm	diazotization	HI93707-01 100 tests
Nitrite LR (16 mm vial)	0 to 600 ug/L (as NO <sub>2</sub> <sup>-</sup> N)	1 µg/L	±10 µg/L ±3% of reading	@ 525 nm	diazotization	HI96783-25 49 tests
Nitrite MR (16 mm vial)	0.0 to 6.00 mg/L (as NO <sub>2</sub> <sup>-</sup> N)	0.01 mg/L	±0.10 mg/L ±3% of reading	@ 525 nm	diazotization	HI96784-25 49 tests
Nitrite HR	0 to 150 mg/L (as NO <sub>2</sub> <sup>-</sup> N)	1 mg/L	±4 mg/L ±4% of reading	@ 575 nm	ferrous sulfate	HI93708-01 100 tests
Nitrogen, Total LR (16 mm vial)	0.0 to 25.0 mg/L (as NO <sub>3</sub> <sup>-</sup> N)	0.1 mg/L	±1.0 mg/L or ±5% of reading, whichever is greater	@ 420 nm	chromotropic acid	HI93767A-50 50 tests
Nitrogen, Total HR (16 mm vial)	0 to 150 mg/L (as N)	1 mg/L	±3 mg/L or ±4% of reading, whichever is greater	@ 420 nm	chromotropic acid	HI93767B-50 50 tests
Oxygen, Dissolved	0.0 to 10.0 mg/L (as O <sub>2</sub> )	0.1 mg/L	±0.4 mg/L ±3% of reading	@ 420 nm	Winkler	HI93732-01 100 tests
Oxygen Scavengers	0.00 to 1.50 mg/L (as Carbohydrazide)	0.01 mg/L	±0.02 mg/L ±3% of reading	@ 575 nm	iron reduction	HI96773-01 100 tests
Oxygen Scavengers	0 to 1000 µg/L (as DEHA)	1 µg/L	±5 µg/L ±5% of reading	@ 575 nm	iron reduction	HI96773-01 100 tests
Oxygen Scavengers	0.00 to 2.50 mg/L (as Hydroquinone)	0.01 mg/L	±0.04 µg/L ±3% of reading	@ 575 nm	iron reduction	HI96773-01 100 tests
Oxygen Scavengers	0.00 to 4.50 mg/L (as Iso-ascorbic acid)	0.01 mg/L	±0.03 µg/L ±3% of reading	@ 575 nm	iron reduction	HI96773-01 100 tests
Ozone	0.00 to 2.00 mg/L (as O <sub>3</sub> )	0.01 mg/L	±0.02 mg/L ±3% of reading	@ 525 nm	DPD	HI93757-01 100 tests
pH	6.5 to 8.5 pH	0.1 pH	±0.1 pH	@ 525 nm	phenol red	HI93710-01 100 tests
Phosphate ULR, Marine	0 to 200 µg/L (as P)	1 µg/L	±5 µg/L ±5% of reading	@ 610 nm	ascorbic acid	HI774-25 25 tests
Phosphate LR	0.00 to 2.50 mg/L (ppm)	0.01 mg/L	±0.04 mg/L ±4% of reading	@ 610 nm	ascorbic acid	HI93713-01 100 tests
Phosphate HR	0.0 to 30.0 mg/L (as PO <sub>4</sub> <sup>3-</sup> )	0.1 mg/L	±1 mg/L ±4% of reading	@ 525 nm	amino acid	HI93717-01 100 tests
Phosphorus Reactive LR (16 mm vial)	0.00 to 1.60 mg/L (as P)	0.01 mg/L	±0.05 mg/L or ±4% of reading, whichever is greater	@ 610 nm	ascorbic acid	HI93758A-50 50 tests
Phosphorus Reactive HR (16 mm vial)	0.0 to 32.6 mg/L (as P)	0.1 mg/L	±0.5 mg/L or ±4% of reading, whichever is greater	@ 420 nm	vanadomolybdophosphoric acid	HI93763A-50 49 tests
Phosphorus Acid Hydrolyzable (16 mm vial)	0 to 1.6 mg/L (ppm) (as P)	0.1 mg/L	±0.05 mg/L or ±5% of reading, whichever is greater	@ 610 nm	ascorbic acid	HI93758B-50 50 tests
Phosphorus, Total LR (16 mm vial)	0.00 to 1.15 mg/L (as P)	0.01 mg/L	±0.05 mg/L or ±6% of reading, whichever is greater	@ 610 nm	ascorbic acid	HI93758C-50 50 tests
Phosphorus, Total HR (16 mm vial)	0.0 to 32.6 mg/L (as P)	0.1 mg/L	±0.5 mg/L or ±5% of reading, whichever is greater	@ 420 nm	vanadomolybdophosphoric acid	HI93763B-50 49 tests
Potassium	0.0 to 20.0 mg/L (as K)	0.1 mg/L	±3.0 mg/L ±7% of reading	@ 466 nm	turbidimetric tetraphenylborate	HI93750-01 100 tests
Silica LR	0.00 to 2.00 mg/L (as SiO <sub>2</sub> )	0.01 mg/L	±0.03 mg/L ±3% of reading	@ 610 nm	heteropoly blue	HI93705-01 100 tests
Silica HR	0 to 200 mg/L (as SiO <sub>2</sub> )	1 mg/L	±1 mg/L ±5% of reading	@ 466 nm	molybdsilicate	HI96770-01 100 tests
Silver	0.000 to 1.000 mg/L (as Ag)	0.001 mg/L	±0.020 mg/L ±5% of reading	@ 575 nm	PAN	HI93737-01 50 tests
Sulfate	0 to 150 mg/L (as SO <sub>4</sub> <sup>2-</sup> )	1 mg/L	±5 mg/L ±3% of reading	@ 466 nm	turbidimetric	HI93751-01 100 tests
Surfactants, Anionic	0.00 to 3.50 mg/L (as SDSBS)	0.01 mg/L	±0.04 mg/L ±3% of reading	@ 610 nm	methylene blue	HI95769-01 100 tests
Surfactants Anionic (16 mm vial)	0.00 to 3.50 mg/L (as SDSBS)	0.01 mg/L	±0.10 mg/L ±5% of reading	@ 610 nm	methylene blue	HI96782-25 25 tests
Surfactants Nonionic (16 mm vial)	0.00 to 6.00 mg/L (as TRITON X-100)	0.01 mg/L	±0.10 mg/L ±5% of reading	@ 610 nm	TBPE	HI96780-25 24 tests
Zinc	0.00 to 3.00 mg/L (as Zn)	0.01 mg/L	±0.03 mg/L ±3% of reading	@ 575 nm	zincon	HI93731-01 100 tests
<b>Ordering Information</b>	<b>HI83399-01</b> (115V) and <b>HI83399-02</b> (230V) is supplied with sample cuvettes and caps (4 ea.), digestion vials (6), vial adapter, cloth for wiping cuvettes, USB to micro USB cable connector, power adapter, instrument quality certificate, and instruction manual.					
<b>Standards</b>	<b>HI83399-11</b> CAL Check Cuvette Kit for HI83399					

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