

HI98198

# Optical Dissolved Oxygen Meter

Professional dissolved oxygen measurement with digital optical probe



## Design Features

- Digital optical probe with Quick Connect
- IP67 rated waterproof, rugged enclosure
- Clear, dot matrix, back-lit display with multifunction virtual keys
- A dedicated HELP key for assistance anytime.

## Technical Features

- Percent saturation or concentration measurements (mg/L)
- One or two-point calibration at 0 or/and 100% saturation (with auto recognition).
- Automatic temperature compensation with one-point temperature calibration
- Salinity compensation
  - Salinity compensation allows for direct determination of dissolved oxygen in saline waters.
  - Users can set the salinity value
- A user selectable "Calibration due" warning.
- Built-in calculations
  - Biochemical Oxygen Demand (BOD), Oxygen Uptake Rate (OUR) and Specific Oxygen Uptake Rate (SOUR) modes
- Built-in barometer
  - Automatic barometric pressure compensation with 1 point calibration
  - Displays pressure in user-selectable units (mmHg, inHg, atm, psi, kPa, mbar)
- Log on demand with 4000 records capability.
- AutoEnd freezes the next stable measurement value on the display.
- GLP
  - A dedicated GLP key that includes at last 5 calibrations with time, date, calibration points as well as barometric pressure, temperature and salinity setting.
- USB-C port for easy data transfer to memory stick, PC or other compatible device
- Displays temperature in °C or °F
- Approximately 200 hours of continuous use using 4 AA batteries



The HI98198 opdo™ meter is a rugged, portable dedicated dissolved oxygen (DO) meter designed for fresh and saltwater measurements of dissolved oxygen. This professional, waterproof meter complies with IP67 standards and measures DO, barometric pressure, and temperature. The HI98198 is supplied with a HI764113 digital optical dissolved oxygen probe in a custom thermoformed durable carrying case with accessories. It is compact and ergonomically designed to provide ready access to the materials required for routine sampling.

The HI98198 opdo meter is only compatible with the Hanna HI764113 digital dissolved oxygen probe.

Concentration measurements are automatically compensated for barometric pressure, temperature and salinity. Barometric pressure and temperature are automatically measured and compensated. Salinity is automatically compensated by setting manually the salinity concentration of the water being measured. The meter also has a built in application to measure and calculate BOD (Biological Oxygen Demand), OUR (Oxygen uptake rate), and SOUR (Specific Oxygen Update Rate).

## Features in Detail



### Backlit graphic LCD display

The HI98198 features a backlit graphic LCD with on-screen help and battery life indicator. Dissolved oxygen, barometric pressure, and temperature readings can be displayed in user preferred units. The graphic display allows the use of virtual keys to enhance the intuitive user interface. The meter also displays a text reminder when a scheduled calibration is due.

### Waterproof protection

The meter is enclosed in an IP67 rated waterproof casing and can withstand immersion in water at a depth of 1m for up to 30 minutes.



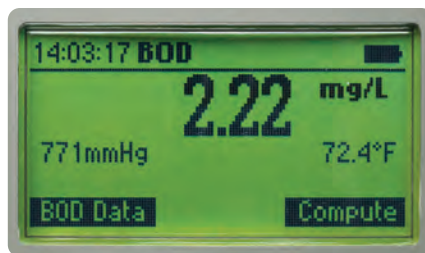
### Quick connections to probes

The HI98198 meter is compatible with the HI764113 Optical dissolved oxygen probe. Connections are facilitated by the Quick Connect 7-pin DIN connector which makes attaching and removing the probe quick and easy. The meter automatically detects the connected probe.



### Measurement

The HI98198 automatically compensates dissolved oxygen concentrations. Temperature and atmospheric pressure compensations are automatically made. Salinity compensation can be manually entered.



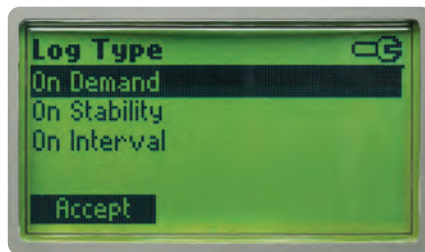
### BOD, OUR and SOUR

Dedicated measurement programs are available by using the Mode selection key.

### Built-in barometer

With the internal barometer, the HI98198 is able to compensate for changes in barometric pressure so there is no need for charts, altitude information or external barometric pressure information.

Pressure compensation with the meter's built-in barometer can be validated against a reference barometer, and if needed, can be recalibrated in user-selectable units (mmHg, inHg, atm, psi, kPa, mbar).



### Data logging

Log on demand or stability (400 samples); interval logging (selectable 1s to 1 hour) with storage of up to 10,000 records in up to 100 files with 1,000 data points each.



### GLP

The last five sets of Calibration data are available by pressing the dedicated GLP key. Calibration values with time and date stamp are captured as well as pressure, salinity and temperature values at the time of calibration. GLP data is available on logged data.



### Data transfer

USB Type-C port for easy data transfer to memory stick, PC, or other compatible devices.



### Intuitive keypad

The fitted rubber keypad has dedicated keys for power, backlight, up/down arrows and help. The meter also features two virtual soft keys that navigate the user through the configuration, meter setup, and logging of data. The interface is intuitive for any user's level of experience.

### Dedicated help key

Access help at any time via the Help button and view content specific information based on the screen that is currently being viewed.

### AutoEnd

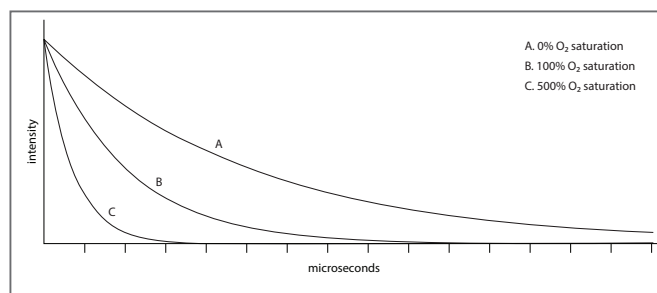
Press AutoEnd during measurement to hold the first stable reading on the display automatically.

## Theory

The Hanna HI764113 optical DO sensing probe is based on the principle of fluorescence quenching. The sensing method features an immobilized Pt based luminophore that is excited by the light of a blue LED and emits a red light. Dissolved oxygen quenches this excitation. When there is no oxygen present, the lifetime of the signal is the greatest; as oxygen hits the sensing surface, the lifetime becomes shorter. The intensity and lifetime are inversely proportional to the amount of oxygen present; as oxygen interacts with the luminophore it reduces the intensity and lifetime of the luminescence. The lifetime of the luminescence is measured by a photodetector, and is used to calculate the dissolved oxygen concentration. This is in turn reported by the meter as a % saturation or mg/L reading of Dissolved Oxygen.

The major components of the probe include a blue LED for excitation, a red LED that is used as a reference light, and a photodetector. The Smart Cap™ is locked in place on the optical probe and includes the immobilized O<sub>2</sub> sensitive luminophore with rugged insoluble black oxygen permeable protective layer.

Over time, the sensor's optical components can age but are compensated for by using the reference signal to compensate the measuring path. As a result, the sensor provides accurate DO measurements over long periods of time without the need for frequent calibration.



Luminophore emissions of three oxygen measurements after pulsed blue light excitation.

Specifications	HI98198	
Dissolved Oxygen	Range	0.00 to 50 mg/L (ppm); 0.0 to 500.0% saturation
	Resolution	0.01 mg/L (ppm); 0.1% saturation
	Accuracy (@25°C/77°F)	1.5% of reading ± 0.01mg/L for 0.00-20.00mg/L; 5% of reading for 20.00-50.00mg/L; 1.5% of reading ±0.1% for 00-200.0%; 5% of reading for 200.0-500.0%
	Calibration	one or two points automatic calibration at 100% (8.26 mg/L) and 0% (0 mg/L); Single point manual using a value entered by the user in % saturation or mg/L
Barometric Pressure	Range	420 to 850 mmHg
	Resolution	1 mmHg
	Accuracy (@25°C/77°F)	±3 mmHg within ±15% from the calibration point
	Calibration	single point anywhere within pressure range
Temperature	Range	-5.0 to 50.0°C (23 to 122°F)
	Resolution	0.1°C (0.1°F)
	Accuracy (@25°C/77°F)	±0.3°C (±0.4°F)
	Calibration	single point anywhere within temperature range
Additional Specifications	Temperature Compensation	automatic from -5.0 to 50.0°C (23.0 to 122.0°F)
	Pressure Compensation	automatic from 420 to 850 mmHg
	Salinity Compensation	automatic from 0 to 70 PSU (manually set)
	Probe	HI764113 optical DO probe with stainless steel, weighted protective sleeve, internal temperature sensor, 7-pin DIN connector and 4m (13') cable (included)
	Logging	On demand with 4000 records capability
	Battery Type / Life	1.5V (4) AA batteries / approximately 200 hours of continuous use without backlight (50 hours with backlight)
	Auto-off	user-selectable: 5, 10, 30, 60 min or disabled
	PC Connectivity	USB Type-C
	Dimensions	185 x 93 x 35.2 mm (7.3 x 3.6 x 1.4")
	Weight (with batteries)	450 g (15.9 oz.)
Case Ingress Protection Rating	IP67	
Environment	0 to 50 °C (32 to 122 °F) max. RH 100%	
Ordering Information	<b>HI98198</b> is supplied with HI764113 Optical DO probe with built-in temperature sensor, protective shield and 4 m (13') cable, HI764113-1 Smart Cap™ with o-ring, HI7040 Bicomponent Zero Oxygen Solution, Calibration/storage vessel, 100 mL plastic beaker (2), 1 syringe with silicon grease, 1 lens wipe, 1.5V AA batteries (4), Instruction manual, meter quality certificate, probe quality certificate, cap quality certificate, HI920016 USB Type A to C cable in a rugged carrying case.	
Accessories	<b>HI710034</b> orange protective rubber boot	



- Optional shockproof silicon rubber boot
  - Specially designed to protect your instrument from damage or impact

**HI710034** Orange



## Rugged custom carrying case

The HI98198 meter, probe, and all accessories are supplied in a rugged carrying case designed to provide years of use. The inside compartment of the carrying case is thermoformed to securely hold and protect all of the components.