



opdo

Optical Dissolved
Oxygen Meter

HANNA[®]
instruments

HI764113 Rugged Optical Dissolved Oxygen Probe for Fresh and Saltwater Applications

- Digital probe
- No membranes
- No electrolytes
- No oxygen consumption
- No flow dependence or minimum flow rate
- Fast and stable readings
- Not affected by sunlight
- Factory calibrated "Smart Cap"
- Smart Caps last one year
- Minimal maintenance



HI764113 optical DO probe
The IP68 rated waterproof ABS probe contains circuit, photodetector, and excitation and reference LEDs.

Alignment key

Smart Cap

Stainless steel protective guard

HI764113 Specifications

Probe Body	ABS
Smart Cap	polypropylene
Cable Jacket	PVC
Probe Guard	316 stainless steel
Temperature	thermistor
Probe Dimensions (with Guard)	174 X 25 mm (6.8 X 1")
Response Time (t95)	45 seconds
Ingress Protection	IP68

Smart Cap



RFID tag

Smart Cap with RFID communication stores factory calibration coefficients.

The domed surface helps repel surface bubbles and provides increased luminophore surface area for better measurement sensitivity.



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 display with multifunction virtual keys
- Dedicated HELP key

Technical Features

- Percent saturation or concentration measurements (mg/L)
- 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
- Calibration timeout
 - Flags when calibration is due at a specified interval
- 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)
- Data logging capability
 - Continuous data logging (with selectable intervals), log on demand, or stability
- GLP
 - GLP data provides calibration data including date, time, pressure, calibrated value, temperature and salinity value of the last five calibrations
- PC connectivity via opto-isolated USB Type-C
- Displays temperature in °C or °F
- Approximately 200 hours of continuous use using 4 AA batteries

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.

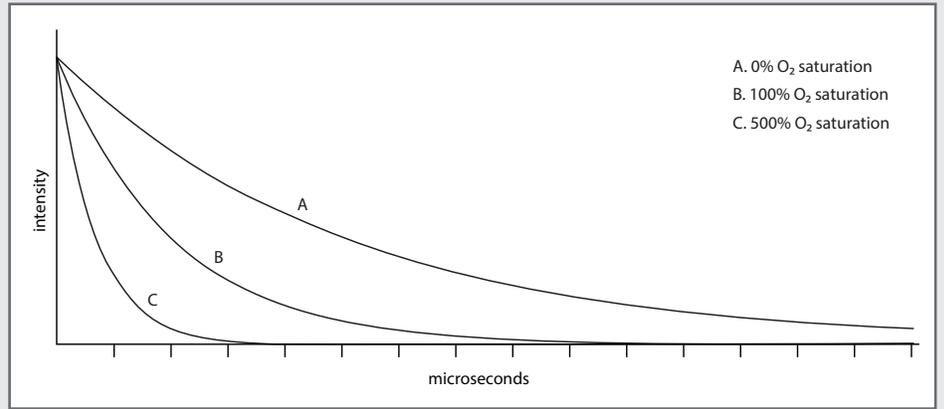
AutoEnd

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

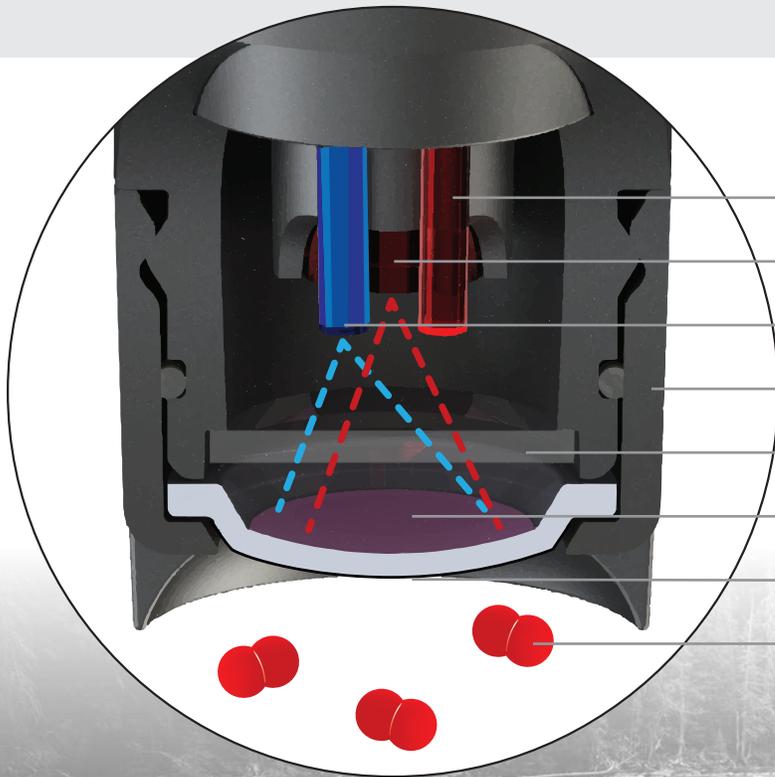
Theory

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. 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.

The major components of the probe include a blue LED for excitation, a red LED used as a reference light, and a photodetector. The Smart Cap is locked in place on the optical probe and includes the immobilized O₂ sensitive luminophore and a rugged insoluble black oxygen permeable protective layer.



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



Sensor

- Red light: reference source
- Photodetector
- Blue light: excitation source
- Smart Cap
- Optical window
- Fluorescent luminophore
- Black protective layer
- Oxygen molecules



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Supplied complete in a rugged, custom carrying case.

Specifications

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% of reading ±1 digit (0-20 mg/L); ±5% of reading (>20 mg/L)
	Calibration	automatic one or two point at 100 % (8.26 mg/L) and 0 % (0 mg/L); manual one point using a value entered by the user in % saturation or mg/L
Atmospheric Pressure	Range	420 to 850 mmHg
	Resolution	1 mmHg
	Accuracy (@25°C/77°F)	±3 mmHg within ±15% from the calibration point
	Calibration	one-point at any in range pressure value
Temperature	Range	-5.0 to 50.0°C; -4.0 to 248.0°F
	Resolution	0.1°C; 0.1°F
	Accuracy (@25°C/77°F)	±0.3°C; ±0.4°F (probe + meter)
	Calibration	one-point at any in range temperature value
Additional Specifications	Measurement Modes	direct DO; BOD (biochemical oxygen demand); OUR (oxygen uptake rate); SOUR (specific oxygen uptake rate)
	Barometric Compensation	automatic from 420 to 850 mmHg
	Salinity Compensation	automatic from 0 to 70 PSU
	Temperature Compensation	automatic from -5.0 to 50.0 °C (23.0 to 122.0 °F)
	Probe	HI764113 optical DO probe with stainless steel protective sleeve, internal temperature sensor, 7-pin DIN connector and 4m (13') cable (included)
	Logging	interval logging selectable in 1 second to 1 hour intervals, 10,000 records max; log-on-demand up to 400 samples
	PC Connectivity	opto-isolated USB Type-C
	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
	Environment	0 to 50°C (32 to 122°F); RH 100% IP67
	Dimensions	185 x 93 x 35.2 mm (7.3 x 3.6 x 1.4")
	Weight	400 g (14.2 oz.)
Ordering Information	HI98198 is supplied with HI764113 optical DO probe with protective sleeve, HI7040 bi-component zero oxygen solution (230 mL + 30 mL), 100 mL plastic beaker (2), 1.8 m USB Type-C cable, 1.5V AA batteries (4), quality certificate, and instruction manual in a rugged carrying case with custom insert. MSRP: \$1450	
Accessories	HI764113 optical DO probe with protective sleeve. MSRP: \$750	
	HI764113A Smart Cap (1). MSRP: \$100	