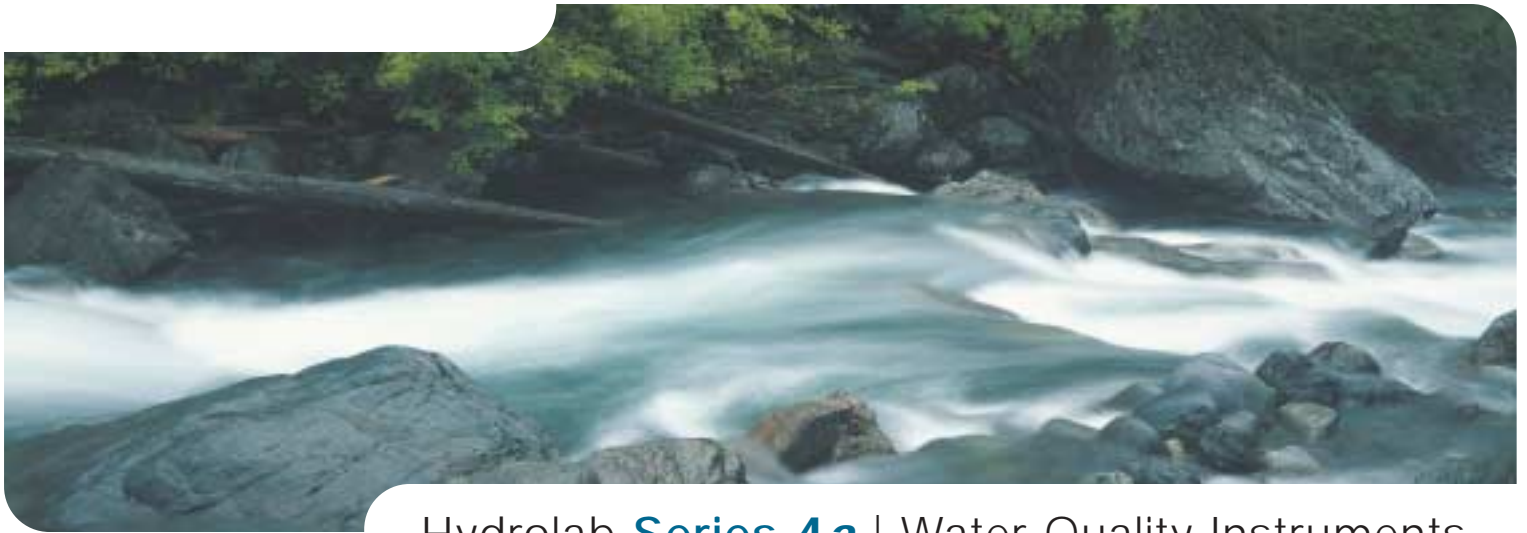


THE WORLD LEADER IN MULTI-PARAMETER WATER QUALITY MONITORING INSTRUMENTATION
> Superior sensor technology > Unsurpassed reliability > Best warranty in the industry

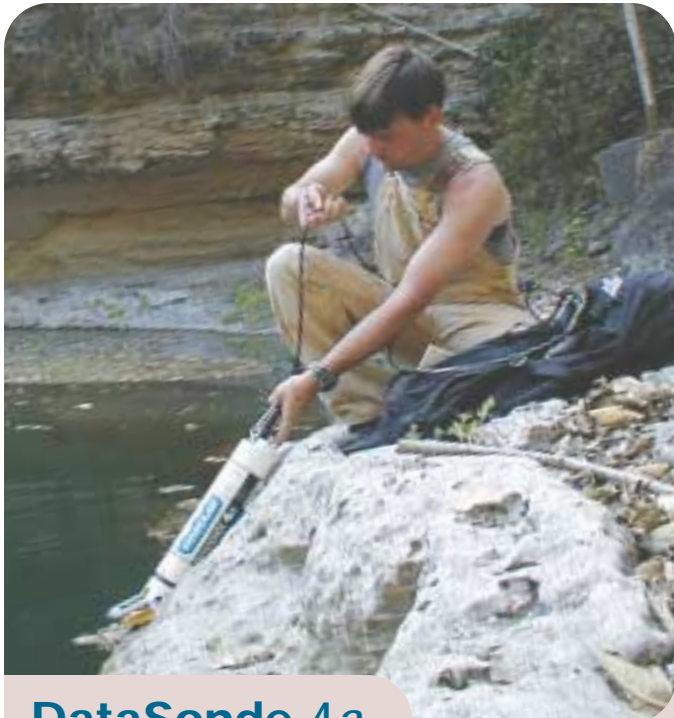


Hydrolab **Series 4a** | Water Quality Instruments

Helping you preserve the world's water

Hydrolab **Series 4a** | Water Quality Instruments

- > For over 40 years Hydrolab has been known for manufacturing reliable water quality instruments.
- > The Series 4a continues that tradition with several enhancements that provide you with even greater value.
- > Now, as part of Hach Company, you can expect continuous innovation from Hydrolab, now and into the future!



DataSonde 4a

- > Seven built-in expansion ports
- > Designed for in-situ and flow-through applications
- > Measures up to 15 parameters
- > Excellent long-term deployment capability

Both the **DataSonde 4a** and the **MiniSonde 4a** are well suited for profiling and spot-checking applications, and are available with battery packs and memory to use for long-term monitoring. Data can be downloaded to the **Surveyor 4a** or a PC.

MiniSonde 4a

- > Four built-in expansion ports
- > 1.75" diameter housing – ideal for ground water monitoring, portability, and limited space environments
- > Measures up to 10 parameters



Series **4a** water quality instruments provide the best long-term value: > Easy to use and maintain

Surveyor 4a

- > Rugged, waterproof (NEMA 6) case with hand strap
- > Displays parameters in real-time or stores data automatically (up to 375,000 measurements)
- > Data presented in real-time graphical form or tabular format
- > Optional GPS and barometric pressure



Superior Sensor Technology

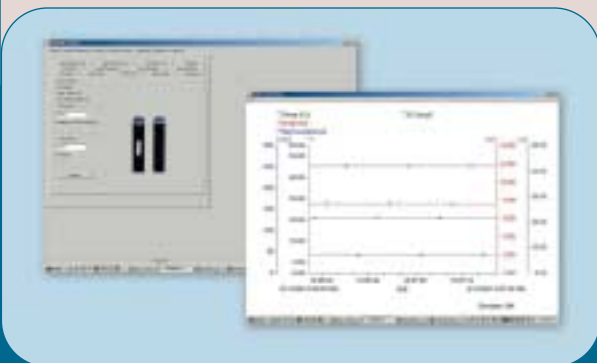
At the heart of the Series 4a instruments is Hydrolab's superior sensor technology. Advanced design and sensor technology make these instruments the most reliable in the field. The Series 4a features watertight sensors based on superior technology to produce instruments that are longer lasting, more reliable, less expensive, and easier to maintain. This means lower operating costs in the long run, and better value for you.

*The **DataSonde 4a** and **MiniSonde 4a** system, proven during years of field testing, provides the following advantages:*

- > *Sensor connection is protected from the environment*
- > *Fewer components for smoother, glitch-free operation*
- > *Sensors cannot become loose or trap water or debris*

Hydras3 LT

- > Easy-to-use GUI
- > Real-time multiparameter time series graphs and vertical profiling
- > Simple calibration of any parameter
- > Set-up data logging runs in a snap
- > One click download for field data collection
- > Simultaneous, multiple probe download capability
- > Available for free download at www.hydrolab.com



> Superior sensor technology > Unsurpassed reliability > Guaranteed after-sale support



Engineered for dependable performance and durability in the field, Series 4a water quality instruments by Hydrolab can measure up to 15 parameters at once. These rugged instruments offer the highest long-term value, providing you years of reliable water quality data.

The three components of Hydrolab's Series 4a product line are the **DataSonde 4a**, **MiniSonde 4a** and **Surveyor 4a**. These instruments come with a two-year warranty – the best you'll find in the industry.



- > Configured to fit your specific need
- > Profiling or long-term deployment
- > Surface or ground water
- > Remote or attended monitoring



Hydrolab Series 4a: DataSonde 4a | MiniSonde 4a | Surveyor 4a

Temperature
Conductivity
Dissolved Oxygen
Rebuildable pH
ORP
4-Beam Turbidity
Self-Cleaning Turbidity
Level & Depth
Chlorophyll a
Blue-Green Algae
Rhodamine WT
Li-Cor® Ambient Light
Ammonium/Ammonia
Nitrate
Chloride
GPS
Barometric Pressure
Transmissivity
Total Dissolved Gas



Hydrolab
5600 Lindbergh Drive
Loveland, CO 80539
(800) 949-3766
(970) 669-3050
fax (970) 461-3921
hydrolab.com

TYPICAL PERFORMANCE SPECIFICATIONS

	RANGE	ACCURACY	RESOLUTION	AVAILABLE INSTRUMENT *	
Temperature	-5 to 50° C	±0.10° C	0.01° C	D, M	
Specific Conductance	0 to 100 mS/cm	±1% of reading; ±0.001 mS/cm	4 digits	D, M	
pH	0 to 14 units	±0.2 units	0.01 units	D, M	
Dissolved Oxygen	0 to 50 mg/L	±0.2 mg/L at ≤ 20 mg/L ±0.6 mg/L at > 20 mg/L	0.01 mg/L	D, M	
ORP	-999 to 999 mV	±20 mV	1 mV	D, M	
Depth	Vented Level	0 to 10 m	±0.003 m	0.001 m	D, M
	0-25 m	0 to 25 m	±0.05 m	0.01 m	D, M
	0-100 m	0 to 100 m	±0.05 m	0.01 m	D, M
	0-200 m	0 to 200 m	±0.1 m	0.1 m	D, M
Salinity	0 to 70 ppt	±0.2 ppt	0.01 ppt	D, M	
4-Beam Turbidity	0 to 1000 NTU	±5% of reading; ±1 NTU	0.1 NTU (<100 NTU) 1 NTU (≥100 NTU)	D	
Self-Cleaning Turbidity	0 to 3000 NTU	±1%, up to 100 NTU ±3%, 100-400 NTU ±5%, 400-3000 NTU	0.1, up to 400 NTU 1.0, 400-3000 NTU	D, M	
Ammonium/Ammonia	0 to 100 mg/L-N	Greater of ±5% of reading or ±2 mg/L-N (typical)	0.01 mg/L-N	D, M	
Nitrate	0 to 100 mg/L-N	Greater of ±5% of reading or ±2 mg/L-N (typical)	0.01 mg/L-N	D, M	
Chloride	0.5 to 18,000 mg/L	Greater of ±5% of reading or ±2 mg/L (typical)	4 digits	D, M	
Total Dissolved Gas	400 to 1300 mmHg	±0.1% of span	1.0 mmHg	D, M	
Ambient Light	0 to 10,000 μmol s ⁻¹ m ⁻²	±5% of reading or ±1 μmol s ⁻¹ m ⁻²	1 μmol s ⁻¹ m ⁻²	D	
Chlorophyll a	0 to 500 μg/L	±3% for signal level equivalents of 1ppb Rhodamine WT dye	0.01 μg/L	D, M	
	0 to 50 μg/L				
	0 to 5 μg/L				
Rhodamine WT	0 to 1000 ppb	±3% for signal level equivalents of 1ppb Rhodamine WT dye	0.01 ppb	D, M	
	0 to 100 ppb				
	0 to 10 ppb				
Blue-Green Algae	100 to 2,000,000 cells/mL	±3% for signal level equivalents of 1ppb Rhodamine WT dye	0.01 cells/mL	D, M	
	100 to 200,000				
	100 to 20,000				
Barometric Pressure	500 to 850 mmHg	±10 mmHg	0.1 mmHg	S	
Global Positioning System	-90 to 90° Latitude -18 to 180° Longitude	25 m CEP (50%) without SA and DGPS 2 m CEP (50%) with DGPS	0.1"	S	

* D = DataSonde 4a M = MiniSonde 4a S = Surveyor 4a

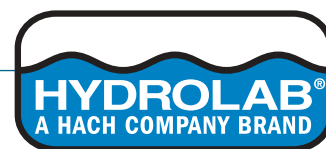
INSTRUMENT SPECIFICATIONS

Computer Interface	RS-232, SDI-12
Memory	DataSonde 4a – 120,000 measurements MiniSonde 4a – 120,000 measurements Surveyor 4a – 375,000 measurements
Battery Supply	DataSonde 4a – 8 C batteries MiniSonde 4a – 8 AA batteries Surveyor 4a – rechargeable nickel metal hydride
Typical Battery Life (1-hour intervals)	DataSonde 4a – 313 days MiniSonde 4a – 114 days Surveyor 4a – 12-16 hours
Operating Temperature	-5 to 50° C
Maximum Depth	DataSonde 4a & MiniSonde 4a – 225 m
Size	DataSonde 4a: Outer diameter – 3.5"/8.9 cm; Length – 23"/58.4 cm; Weight – 7.4 lbs/3.35 kg MiniSonde 4a: Outer diameter – 1.75"/4.4 cm; Length – 21"/53.3 cm; Weight – 2.2 lbs/1.0 kg with extended battery pack: 29.5"/74.9 cm, Weight – 2.9 lbs/1.3 kg Surveyor 4a: 11x4x5"/27.9x10.2x3.8 cm, Weight – 2 lbs/0.9 kg



Hydrolab

5600 Lindbergh Drive
Loveland, CO 80539
(800) 949-3766
(970) 669-3050
fax (970) 461-3921
hydrolab.com



BENEFITS & SPECIFICATIONS

- > Uses a pH glass sensor
- > Both feature a single refillable, flowing junction reference electrode OR optional low ionic strength electrode
- > Standard reference electrode is more reliable, lasts longer, is easily maintained, and refills in seconds
- > Reference electrode is maintained and refilled independently of pH and/or ORP
- > Two-year warranty

pH SENSOR

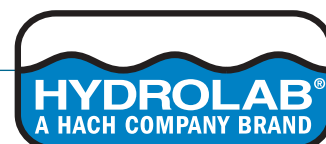
Range	0 to 14 pH units
Accuracy	±0.2 units
Resolution	0.01 units

ORP SENSOR

Range	-999 to 999 mV
Accuracy	±20 mV
Resolution	1 mV

**Hydrolab**

5600 Lindbergh Drive
Loveland, CO 80539
(800) 949-3766
(970) 669-3050
fax (970) 461-3921
hydrolab.com



BENEFITS & SPECIFICATIONS

DISSOLVED OXYGEN SENSOR

- > Uses field-proven Clark Cell technology
- > Provides a continuous steady-state reading
- > Low maintenance – no need to recondition the sensor
- > Two-year warranty

Range	0 to 50 mg/L
Accuracy	±0.2 mg/L for 20 mg/L or less ±0.6 mg/L for over 20 mg/L
Resolution	0.01 mg/L

SPECIFIC CONDUCTANCE SENSOR

- > Hydrolab uses the four graphite electrode cell methodology:
 - Increases sample exchange
 - Open cell design provides more reliable data
 - Reduces measurement error due to fouling and air bubbles (bubbles rise above the electrodes out of the way and debris and sediment fall below)
 - Easily maintained without damaging electrodes
 - Resists corrosion
- > Also measures salinity, resistivity, and TDS
- > Two-year warranty

Range	0 to 100 mS/cm
Accuracy	±1% of reading, ±0.001 mS/cm
Resolution	4 digits

SAMPLE CIRCULATOR

Only Hydrolab offers a sample circulator for more reliable readings. The DataSonde 4a and MiniSonde 4a integrated sample circulator facilitates fast, accurate, steady-state dissolved oxygen measurements. Other sensors receive similar benefits.

- > Creates a flow of water past the sensors
- > Provides “sufficient sample flow across membrane surface” in accordance with Standard Methods Article 4500-OG
- > Reduces response time – important to detect moving contaminant plumes or movement within water column
- > Reduces sensor fouling – sweeps away inert debris and biological growth
- > Allows deployment in any environment, even in poorly mixed areas



Hydrolab

5600 Lindbergh Drive
 Loveland, CO 80539
 (800) 949-3766
 (970) 669-3050
 fax (970) 461-3921
hydrolab.com



BENEFITS & SPECIFICATIONS

Hydrolab offers high-stability, custom made pressures sensors with four range options, available on both the DataSonde 4a and MiniSonde 4a.

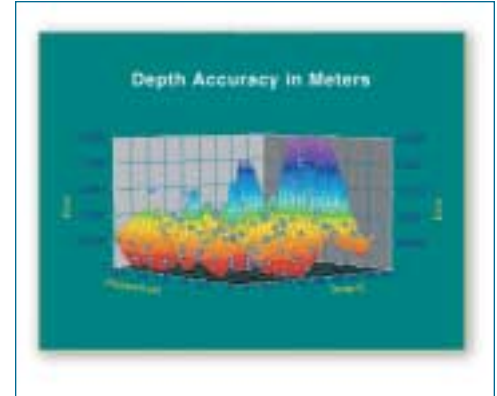
- > Exceptional accuracy for 10m, 25m, 100m, and 200m
- > Two-year warranty

0 to 10 meters Vented Level
Range 0 to 10 meters
Accuracy ± 0.003 meters
Resolution 0.001 meters

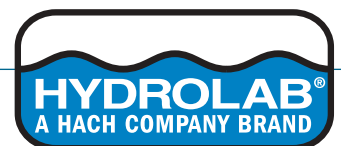
0 to 25 meters
Range 0 to 25 meters
Accuracy ± 0.05 meters
Resolution 0.01 meters

0 to 100 meters
Range 0 to 100 meters
Accuracy ± 0.05 meters
Resolution 0.01 meters

0 to 200 meters
Range 0 to 200 meters
Accuracy ± 0.1 meters
Resolution 0.1 meters

**Hydrolab**

5600 Lindbergh Drive
Loveland, CO 80539
(800) 949-3766
(970) 669-3050
fax (970) 461-3921
hydrolab.com



BENEFITS & SPECIFICATIONS

Hydrolab's self-cleaning turbidity offers several benefits for operators:

- > ISO 7027 compliant
- > Extended range with exceptional resolution
- > Utilizes small aperture technique to reduce false readings from particulates and other debris
- > Fixed parking position to ensure consistent data collection after each cleaning cycle
- > Excellent performance in low NTU environments due to enhanced noise cancelling technique
- > Two-year warranty

Range	0 to 3000 NTU
Accuracy	±1% up to 100 NTU; ±3% from 100-400 NTU; ±5% from 400-3000 NTU using StabiCal®
Resolution	0.1 NTU from 0-400 NTU; 1 NTU for >400 NTU
Linearity	±1% from 0-100 NTU; ±3% from 100-400 NTU; ±5% from 400-3000 NTU
Temperature Coefficient	±0.05%/°C

**Hydrolab**

5600 Lindbergh Drive
Loveland, CO 80539
(800) 949-3766
(970) 669-3050
fax (970) 461-3921
hydrolab.com



BENEFITS & SPECIFICATIONS

- > Ultra-compact size designed by Turner Designs specifically for integration into the DataSonde and MiniSonde
- > Turner's industry leading measurement capabilities have not been compromised – this is the highest performance submersible fluorometer available!
- > Excellent turbidity rejection ensures superior detection limits in a wide range of environmental conditions
- > Three auto-selected gain ranges provide a wide measurement range of 0.03 to 500 µg/L for Chlorophyll *a*, 100 to 2,000,000 cells/mL for Blue-Green Algae, and 0.04 to 1000 ppb for Rhodamine WT
- > Turner's unique Secondary Standards to provide a quick and simple method to verify the sensor's stability over time
- > The Secondary Standard can also be adjusted to correlate to a known chlorophyll or dye concentration
- > Cost optimized for affordable price and excellent value!

OPTICAL CHARACTERISTICS:

Light Source	Light Emitting Diode
Detector	Photodiode
Excitation Wavelength	Chl 460 nm BGA (FR) 590 nm BGA (MAR) 525 nm RWT 550 nm
Emission Wavelength	Chl 685 nm BGA (FR) 650 nm BGA (MAR) 570 nm RWT 600 nm

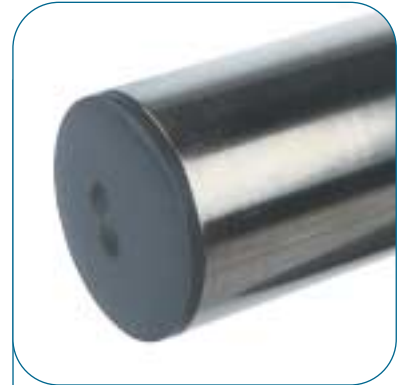
SPECIFICATIONS:

Minimum Detection Limit

Chlorophyll <i>a</i> :	0.03 µg/L
Blue-Green Algae:	100 cells/mL
Rhodamine WT:	0.04 ppb

Dynamic Range

Chlorophyll <i>a</i>:	
• Low sensitivity:	0-500 µg/L
• Medium sensitivity:	0-50 µg/L
• High sensitivity:	0-5 µg/L
Blue-Green Algae:	
• Low sensitivity:	100-2,000,000 cells/mL
• Medium sensitivity:	100-200,000 cells/mL
• High sensitivity:	100-20,000 cells/mL
Rhodamine WT:	
• Low sensitivity:	0-1000 ppb
• Medium sensitivity:	0-100 ppb
• High sensitivity:	0-10 ppb



Hydrolab

5600 Lindbergh Drive
 Loveland, CO 80539
 (800) 949-3766
 (970) 669-3050
 fax (970) 461-3921
 hydrolab.com

