Water Quality Measurement
HYDROLAB Series 5 – multi-parameter sondes for monitoring water quality in ground and surface waters

HYDROLAB SERIES 5

MS5 / DS5 / DS5X Multi-parameter Sondes

Series 5 multi-parameter water quality instruments are the premier family of Hydrolab sondes that include the DS5X (DataSonde 5X), DS5 (DataSonde 5), and MS5 (MiniSonde 5) for monitoring several water quality parameters simultaneously in situ.

The three platforms allow optimized combinations of sensors and accessories to suit water quality monitoring applications in all environmental water sources, such as rivers, streams, lakes, reservoirs, oceans, bays, estuaries, and groundwater aquifers.

Sensors are available to provide data for temperature, depth, conductivity, salinity, specific conductance, TDS, pH, ORP, dissolved oxygen, turbidity, chlorophyll a, blue-green algae, Rhodamine WT, ammonium, nitrate, chloride, ambient light (PAR), and total dissolved gas.

Qualitative
Hydrology

Series 5 Multi-parameter Sondes

MiniSonde 5 – MS5

- Four built-in expansion ports configured to fit your specific needs
- Measures up to 12 parameters simultaneously
- Compact and lightweight 44 mm (1.75") diameter housing fits into groundwater wells
- Used for attended or unattended monitoring

DataSonde 5 – DS5

- Seven built-in expansion ports configured to fit your specific needs
- Measures up to 16 parameters simultaneously
- Capable of measurements using any of Hydrolab's 15 sensors
- Used for attended or unattended monitoring

DataSonde 5X – DS5X

- Ideal for "X-tended" deployments in environments where fouling and sediment are abundant
- Central cleaning system wipes away fouling from adjacent sensors to reduce the maintenance frequency
- Seven built-in expansion ports configured to fit your specific needs
- Measures up to 16 parameters simultaneously

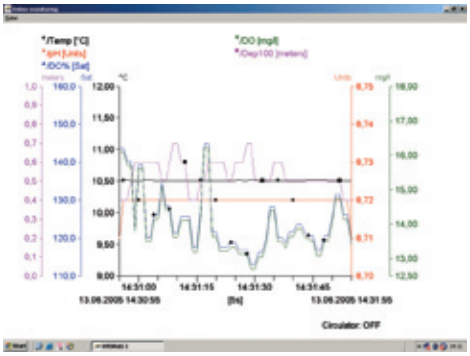
Data Communications

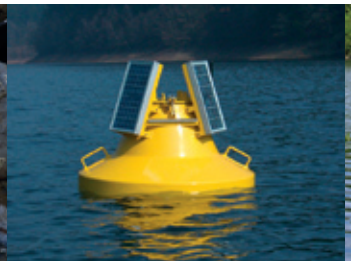
Field Computer TDS Recon

- Extremely robust Pocket PC for use in severe field conditions
- Rugged and water proof design (IP67)
- Less than 500 g including battery
- Sunlight-readable colour TFT display with touchscreen and front light integrated
- In combination with OTT Hydras 3 LT Pocket software ideal for operating HYDROLAB multi-parameter sondes
- Convenient set-up of all operating parameters
- Real time monitoring with graphical or tabular data display
- Integrated easy download possibility
- Available with optional GPS

Operating Software OTT Hydras 3 LT for PC

- Simple, point and click calibration of any parameter
- Real-time, multi-parameter time series graphing and vertical profiling
- One-click download for field data collection
- User-programmable stability check on each sensor
- Included free with every Series 5 sonde





Sensor Overview

Hach LDO® (Dissolved Oxygen)

- Longest lasting calibrations
- Features the best accuracy available for DO measurement
- No membranes so maintenance is simple
- Clark cell also available

Conductivity

- Open cell allows reliable measurements in any environmental condition – sediment passes the water let-through and falls to the bottom, bubbles rise to the top

pH

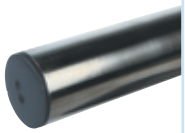
- Reference electrode is easily refilled in seconds, independent of the pH sensor

- pH sensor does not need replacement when reference electrode is depleted – simply refill the reference

Turbidity: Self-Cleaning*

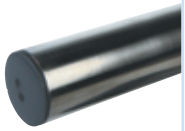
- User-programmable self-cleaning system can perform up to 10 cleaning cycles before each reading
- 0 to 3000 NTU range allows Turbidity tracking even during rain storms or other events that could cause abnormally high readings

Chlorophyll a*



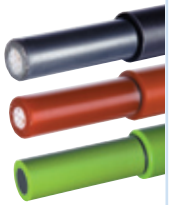
- Ultra-compact size designed specifically for integration into Hydrolab sondes
- Provides the most accurate measurement of chlorophyll a because of electronic filtration of ambient light, efficient optical coupling, and quality optical components.

Blue-Green Algae*



- Real-time measurement identifies potential algal blooms before they become problematic, allowing time for corrective action
- Ultra-compact size designed specifically for integration into Hydrolab sondes
- Provides the most accurate measurement of phycocyanin or phycoerythrin because of electronic filtration of ambient light, efficient optical coupling and quality optical components

Ion-Selective Electrodes



- Available for monitoring ammonium, nitrate, or chloride

ORP

- Uses a simple platinum band that donates or accepts electrons to monitor chemical reactions, quantify ion activity, or determine the oxidizing or reducing properties of a solution

Total Dissolved Gas

- Real-time measurement indicates water supersaturated with atmospheric gases, which can cause gas bubble gill disease in aquatic organisms

Rhodamine WT*

- Ultra-compact size designed specifically for integration into Hydrolab sondes
- Provides the most accurate measurement of Rhodamine WT because of electronic filtration of ambient light, efficient optical coupling, and quality optical components

PAR

- Provides a real-time measurement of sunlight intensity, which influences biota that rely on photosynthesis for nutrition

Temperature

- Provides critical compensation for dissolved oxygen, conductivity, pH, and nutrient sensors
- Included with every sonde

Depth

- Optimized for depths down to 10 m, 25 m, 100 m, or 200 m

**Available corrosion-resistant housings must be used in saline water.*

Specifications

Sondes

Size
- *DataSonde*
  Outer diameter: 89 mm
  Length: 584 mm
- *MiniSonde*
  Outer diameter: 44 mm
  Length: 749 mm
  (with battery pack)

Weight
- *DataSonde*
  3.35 kg (typical)
- *MiniSonde*
  1.3 kg
  (typical with battery pack)

Communication Interface
RS-232, SDI-12, RS-485

Memory
Up to 120,000 measurements

Battery Supply
- *DataSonde:* 8 C batteries
- *MiniSonde:* 8 AA batteries

Operating Temperature
-5 to 50 °C

Maximum Depth
200 m

Operating Software
Available languages: English, German, French, Spanish, Russian

Sensors

	Range	Accuracy	Resolution
Dissolved Oxygen (Hach LDO™)	0 to 60* mg/l *Exceeds maximum natural concentrations	± 0.1 mg/l @ ≤ 8 mg/l ± 0.2 mg/l @ > 8 mg/l ≤ 20 mg/l ± 10% reading @ > 20 mg/l	0.01 mg/l
Dissolved Oxygen (Clark cell)	0 to 50 mg/l	± 0.2 mg/l @ ≤ 20 mg/l ± 0.6 mg/l @ > 20 mg/l	0.01 mg/l
Conductivity	0 to 100 mS/cm	± (0.5% of reading + 0.001 mS/cm)	0.0001 units
Salinity	0 to 70 ppt	± 0.2 ppt	0.01 ppt
pH	0 to 14 pH units	± 0.2 pH units	0.01 pH units
Turbidity, Self-Cleaning	0 to 3000 NTU	*Compared to StablCal* ± 1% up to 100 NTU ± 3% from 100-400 NTU ± 5% from 400-3000 NTU	0.1 NTU from 0-400 NTU; 1 NTU for > 400 NTU
Depth	0 to 10 m (Vented Level) 0 to 25 m 0 to 100 m 0 to 200 m	± 0.003 meters ± 0.05 meters ± 0.05 meters ± 0.1 meters	0.001 meters 0.01 meters 0.01 meters 0.1 meters
Chlorophyll a	*Dynamic Range* Low sensitivity: 0.03-500 µg/l Med. sensitivity: 0.03-50 µg/l High sensitivity: 0.03-5 µg/l	± 3% using Rhodamine WT dye as a standard at ≥ 400 ppb	0.01 µg/l
Blue-Green Algae (fresh water or marine)	*Dynamic Range* Low sensitivity: 150-2,000,000 cells/ml Med. sensitivity: 150-200,000 cells/ml High sensitivity: 150-20,000 cells/ml	± 3% using Rhodamine WT dye as a standard at ≥ 400 ppb	20 cells/ml
Rhodamine WT	*Dynamic Range* Low sensitivity: 0.04-1000 ppb Med. sensitivity: 0.04-100 ppb High sensitivity: 0.04-10 ppb	± 3% for 1 ppb Rhodamine WT or higher	0.01 ppb
Ion Selective Electrodes *Ammonia** *Nitrate** *Chloride** *Max Depth: 15 meters	 0 to 100 mg/l-N 0 to 100 mg/l-N 0.5 to 18000 mg/l	 Greater of ± 5% of reading, or ± 2 mg/l-N Greater of ± 5% of reading, or ± 2 mg/l-N Greater of ± 5% of reading, or ± 2 mg/l	 0.01 mg/l-N 0.01 mg/l-N 4 digits
TDG (Total Dissolved Gas)	533 to 1,866 mbar	± 1.9 mbar	1.3 mbar
ORP	-999 to 999 mV	± 20 mV	1 mV
PAR	0 to 10,000 µmol $s^{-1}m^{-2}$	± 5% of reading	1 µmol $s^{-1}m^{-2}$
Temperature	-5 to 50°C	± 0.1°C	0.01°C

Germany
OTT Hydromet GmbH
Ludwigstrasse 16 · 87437 Kempten
Phone +49 831 5617-0 · Fax -209
info@ott.com · www.ott.com