



Strengthening the Scientific Foundation of Water Quality Programs

Project Number: **LIFE08 ENV /CY / 000460**

Deliverable Number: **D1.1**

Deliverable Name: **Basins Modelling System Software and Hardware**

Dissemination Level		
PU	Public	X
PP	Restricted to other program participants (including the Commission Services)	
CO	Confidential, only for members of the Consortium (including Commission Services)	

With the beginning of the project all necessary software and equipment described in the proposal were purchased and installed. For this purpose, the minimum hardware specifications for the BASINS model were considered. In addition, the DoE provided a series of requirements to ensure functionality and compatibility with existing hardware. The equipment includes the project workstation along with a UPS protection system and one laptop dedicated for the purposes of the project. It was deemed necessary to use a laptop because the project involves frequent data transfers between the partners and especially between ACC and the DoE as well as frequent use of the Model in various locations. It was thus considered useful that the model is installed on a laptop in addition to the workstation to provide the necessary mobility. The laptop replaced the data logger that was initially foreseen since the laptop can also take on the role of the data logger. The hardware was purchased in May 2010.

The BASINS software system including “Map Window GIS” was successfully installed on the workstation and the laptop in May of 2010. Map Windows is a stand alone GIS software which is currently embedded in the BASINS system. It is noted that Map Windows was not integrated in BASINS at the time the ‘WATER’ proposal was prepared. During the testing of the Basins system it was concluded that MapWindows offers sufficient functionality for the purposes of the project and an ArcGIS license is therefore not necessary.

The same software configuration was also made on a computer permanently located at ACC along with a pre-existing ArcGIS licence.

Software

For a more detailed procedure you can read the modified User's Manual.

Installing BASINS 4 (May 2010 version)

The BASINS installation program copies BASINS system files, tools, and models, and it also sets up BASINS icons automatically.

1. Download the "BASINS Installation" file from http://water.epa.gov/scitech/datait/models/basins/BASINS4_index.cfm and continue to download Basins 4, May 2010 version, which is the latest one.
2. Run the installation program.
3. Follow the instructions on the screen.

Installing BASINS (October 10, 2010 update)

After installing the software you will need to download an update from the website of Aqua Terra. Aqua Terra is one of the companies that developed the software.

1. Install the update 2010-10-10 from <http://www.aquaterra.com/basins4/>
2. After downloading the file rename it from BASINS4.0-2010-10-10NLDAUpdate.exx to BASINS4.0-2010-10-10NLDAUpdate.exe
3. After the second step run the installation program,
4. Follow the instructions on the screen.

Hardware

The following hardware has been purchased

1. HP XW4600 workstation
2. HP 19inch monitor
3. Tripplite 750VA UPS
4. Acer Aspire Laptop
5. Leica DISTO D5 Distance meter
6. Flow probe FP111

Theirs specifications and pictures can be seen on the following pages

HP Workstation xw4600 - Core 2 Quad Q6600 2.4 GHz specifications

• General

- **Type** Workstation
- **Product Form Factor** Convertible mini tower
- **Built-in Devices** Speaker
- **Embedded Security** Trusted Platform Module (TPM 1.2) Security Chip
- **Width** 6.6 in
- **Depth** 18.0 in
- **Height** 17.7 in
- **Weight** 30.0 lbs
- **Color** Alloy metallic
- **Localization** English / United States

• Processor

- **Type** Intel Core 2 Quad Q6600 / 2.4 GHz
- **Multi-Core Technology** Quad-Core
- **64-bit Computing** Yes
- **Installed Qty** 1.0
- **Max Supported Qty** 1.0

• Mainboard

- **Chipset type** Intel X38 Express
- **Data bus speed** 1066.0 MHz

• Cache Memory

- **Type** L2 cache
- **Installed Size** 8.0 MB
- **Cache Per Processor** 8 MB

• RAM

- **Installed Size** 2.0 GB / 8.0 GB (max)
- **Technology** DDR2 SDRAM - ECC
- **Memory Speed** 800.0 MHz
- **Memory Specification Compliance** PC2-6400
- **Form Factor** DIMM 240-pin
- **Features** Unbuffered
- **Configuration Features** 2 x 1 GB

• Storage Controller

- **Type** 1.0 x RAID - Integrated
- **Controller Interface Type** Serial ATA-300
- **Channel Qty** 6.0
- **RAID Level** RAID 10 , RAID 0 , RAID 5 , RAID 1

• Storage

- **Floppy Drive** None
- **Hard Drive** 1.0 x 250.0 GB - Standard - Serial ATA-300 - 7200.0 rpm - Native Command Queuing (NCQ)
- **Hard Drive (2nd)** 1 x 250.0 GB - Standard - Serial ATA-300

• Optical Storage

- **Type** DVD±RW (±R DL) / DVD-RAM - Serial ATA
- **Read Speed** 48x (CD) / 16x (DVD)
- **Write Speed** 48x (CD) / 16x (DVD±R) / 4x (DVD-R DL) / 8x (DVD+R DL)
- **Rewrite Speed** 32x (CD) / 6x (DVD-RW) / 8x (DVD+RW) / 12x (DVD-RAM)

- **Disc Labeling Technology** LightScribe Technology
- **Optical Storage (2nd)**
- **Type** None
- **Storage Removable**
- **Type** None
- **Monitor**
- **Monitor Type** none.
- **Graphics Controller**
- **Graphics Processor / Vendor** ATI FireGL V5600
- **Video Memory** 512.0 MB
- **Audio Output**
- **Type** Sound card - Integrated
- **Sound Output Mode** Stereo
- **Max Sample Rate** 192.0 KHz
- **Compliant Standards** DirectMusic , Sound Blaster , High Definition Audio , DLS Level 1 , General MIDI
- **Speaker(s)** None
- **Keyboard**
- **Keyboard name** HP Standard Keyboard
- **Keyboard interface** USB
- **Input Device**
- **Type** Mouse , Keyboard
- **Mouse**
- **Mouse technology** Optical
- **Mouse interface** USB
- **Mouse features** Scroll
- **Audio Input**
- **Type** None
- **Telecom**
- **Modem** None
- **Networking**
- **Networking** Network adapter - PCI Express x1 - Integrated
- **Ethernet Controller(s)** Broadcom BCM5755
- **Data Link Protocol** Fast Ethernet , Ethernet , Gigabit Ethernet
- **Features** Wake on LAN (WoL)
- **Compliant Standards** IEEE 802.3u , IEEE 802.3x , WfM 2.0 , IEEE 802.3ab , IEEE 802.3
- **Printer**
- **Type** None
- **Expansion / Connectivity**
- **Expansion Bays** 3.0 (total) / 1.0 (free) x Front accessible - 3.5" x 1/3H , 2.0 (total) / 2.0 (free) x Internal - 3.5" x 1/3H , 1.0 (total) / 1.0 (free) x Front accessible - 5.25" x 1/2H
- **Expansion Slot(s)** 3.0 (total) / 2.0 (free) x PCI Express x8 - Full-length, full-height (x4 mode) , 2.0 (total) / 1.0 (free) x PCI - DIMM 240-pin , 1.0 (total) / 0.0 (free) x PCI Express x16 , 1.0 (total) / 1.0 (free) x PCI Express x1 , 1.0 (total) / 3.0 (free) x Memory , 4.0 (total) / 2.0 (free) x Processor
- **Interfaces** 1.0 x Microphone - Generic - 25 pin D-Sub (DB-25) (1 in front) , 1.0 x Parallel - RS-232 - Mini-phone stereo 3.5 mm (2 in front) , 2.0 x Mouse - Line-out - RJ-45 (1 in front) , 1.0 x Storage - Ethernet 10Base-T/100Base-

TX/1000Base-T - 9 pin D-Sub (DB-9) , 2.0 x Audio - Input - 6 pin mini-DIN (PS/2 style) , 1.0 x Network - Generic - 4 pin USB Type A , 1.0 x Hi-Speed USB - eSATA-150 - Mini-phone stereo 3.5 mm , 9.0 x Serial - Line-in - 6 pin mini-DIN (PS/2 style) , 1.0 x Audio - IEEE 1284 (EPP/ECP) - Mini-phone stereo 3.5 mm , 1.0 x Keyboard

- **Miscellaneous**

- **Features** Serial port I/O control , Parallel port I/O control , USB port control , Power Factor Correction (PFC) , Security lock slot (cable lock sold separately) , Remote boot control , Power-on password , Administrator password

- **Compliant Standards** ACPI 2.0

- **Power**

- **Device Type** Power supply
- **Power AC** 120/230 V (50/60 Hz)
- **Power Provided** 475.0 Watt

- **Environmental Standards**

- **EPEAT Compliant** EPEAT Gold
- **ENERGY STAR Qualified** Yes

- **Environmental Parameters**

- **Min operating temperature** 41.0 °F
- **Max operating temperature** 95.0 °F
- **Operating humidity range** 8 - 85%

- **Operating System / Software**

- **OS Provided** Microsoft Windows Vista Business
- **Software** HP Backup and Recovery Manager , HP Performance Tuning Framework

- **Manufacturer Warranty**

- **Service & Support** 3 years warranty
- **Service & Support Details** Limited warranty - Parts and labor - 3 years - On-site



HP LE1901w - System features

Display size (diagonal)	19 in
Resolution	1440 x 900
Display pixel	.2835 mm
Brightness (typical)	250 cd/m ²
Contrast ratio (typical)	1000:1
Viewing angle	160° horizontal; 160° vertical
Response time (typical)	5 ms
Input signal	VGA
Bezel color	Black
Tilt and swivel angle	Tilt: - 5° to + 25°
Display features	Anti-glare Asset Control Anti-static Language selection Plug and Play
Physical security	Kensington Lock-Ready
Dimensions and weight	
Weight	8.96 lb (4.3 kg)
Dimensions (W x D x H)	17.6 x 2.3 x 11.9 in (44.6 x 5.9 x 30.1 cm)

Dimensions with stand (W x D x H)	17.6 x 8.1 x 14.6 in (44.6 x 20.6 x 37.0 cm)
Power and operating requirements	
Power supply	Input power: Auto-sensing 90 to 265 VAC
Power consumption	23 W maximum; 20 W typical
Power consumption (standby)	<2 W
Operating temperature range	-29° to 140° F (-34° to 60° C)
Operating humidity range	20 to 80 %
Energy efficiency	ENERGY STAR® Qualified



Trip Lite 750VA Line Interactive UPS - Specifications

OUTPUT

- Output Capacity 750 VA / 450 Watts
- Output voltage 120VAC
- Outlet quantity / type 10 NEMA 5-15R (Standard 3-prong receptacles)
- 6 Full Backup + Surge outlets, 6 Surge Outlets only

INPUT

- Maximum input amps 12A
- Input connection type NEMA 5-15P (Standard 3-prong plug)

BATTERY

- Full load (450 Watts) runtime 3 minutes
- Half load (225 Watts) runtime 10 minutes
- Battery recharge rate 2-4 hours to 90%

SURGE / NOISE SUPPRESSION

- AC surge suppression 400 joules
- Dataline suppression Tel/DSL
- EMI / RFI AC noise suppression Yes

PHYSICAL

- Unit weight 14.95 lbs. (4.97 Kg.)
- Unit Dimensions (HWD/in) 3.5 x 11.25 x 6.5

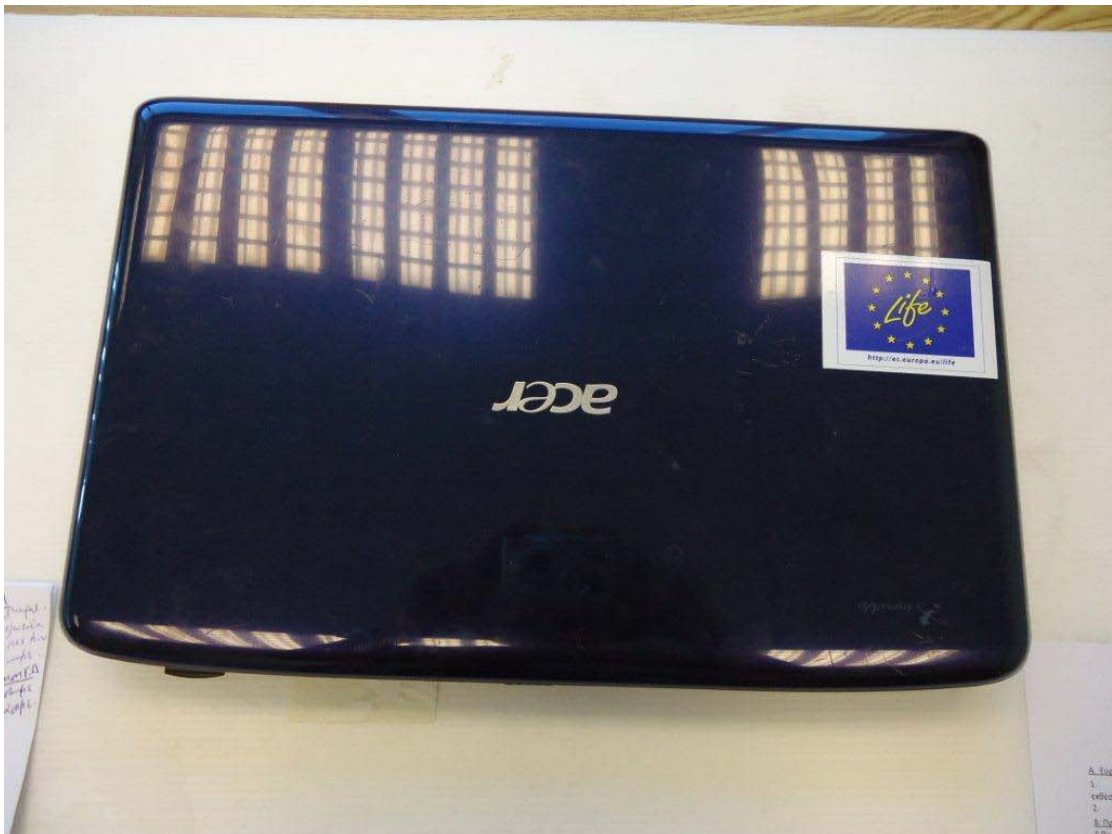
CERTIFICATIONS

- Certifications Tested to UL1778 (USA), CSA C22.2 No. 107.3 (Canada), NOM (Mexico), Class B (Emissions), FCC Part 68 and Industry Canada (Telecommunications)



ACEP Aspire S5738ZG Laptop

- Processor: Intel Pentium Dual Core T4400 (2.2G/1MB/800FSB)
- RAM: 4GB DDR2-667 (2 x 2GB)
- Screen size: 15.6" WXGA (HD) Wide Screen CrystalBrite
- Supplied operating system: Windows 7 Home Premium 64-bit
- Webcam inbuilt: yes
- Wireless networking: 802.11b/g/N
- Graphics card: ATI Mobility Radeon® HD 4570 Graphics (512MB dedicated VRAM)
- Hard drive: 320GB SATA
- Manufacturer's warranty: Global Warranty – 2 Years
- Number of USB ports: 4
- Optical drive: DVD Super Multi (Dual Layer)



Leica Disto D5, Laser Distance Meter

Technical Specifications

Min. / max. measurement	<input checked="" type="checkbox"/>
Continuous measurement	<input checked="" type="checkbox"/>
Addition / subtraction	<input checked="" type="checkbox"/>
Area/volume measurements	<input checked="" type="checkbox"/>
Room calculations	<input checked="" type="checkbox"/>
Indirect measurement by Pythagoras	<input checked="" type="checkbox"/>
Indirect measurement by tilt sensor	<input checked="" type="checkbox"/>
Trapezium function	<input checked="" type="checkbox"/>
Measuring accuracy typ.	±1.5mm/ 1/16"
Range	1.6" to 650ft
Power Range Technology™	<input checked="" type="checkbox"/>
Distance in feet	33', 164', 218'
Ø laser-spot in inches	0.2", 1.8", 2.36"
Tilt sensor - measurement range	±45°
Accuracy to laser beam	±0.3°
Accuracy to housing	±0.3°
Unite in tilt sensor	0.0°, 0.00%, mm/m, in/ft
Digital Pointfinder with 4x zoom	<input checked="" type="checkbox"/>
Store constant value	1
Recall last values	20
Time delay release	<input checked="" type="checkbox"/>
Display illumination	<input checked="" type="checkbox"/>
Measuring units	m, ft, in, yds
Measurements per battery set	up to 5.000
Multifunctional end piece	<input checked="" type="checkbox"/>
Tripod thread	<input checked="" type="checkbox"/>
Batteries	Type AA 2x1.5V
Spray proof / dust protected IP54	<input checked="" type="checkbox"/>
Dimensions in inches	5.65x2.12x1.18
Weight with batteries	6.88 oz.



FP111 Global Water Flow Probe



FEATURES:

- Digital display in ft/sec or m/sec
- Records 30 data sets for later analysis
- Rain-proof digital computer
- Highly accurate easy flow monitoring
- Debris shedding turbo-prop
- Lightweight, rugged, and reliable
- Telescoping handle with staff gauge
- Padded carrying case for easy storage
- CE Certified
- Used by water professionals worldwide since 1990
- Ideal for measuring flows in streams, rivers, canals, stormwater, wastewater and industrial process waters

Flow Probe Product Description

The Global Water Flow Probe is a highly accurate water velocity instrument for measuring flows in open channels and partially filled pipes. The water velocity probe consists of a protected water turbo prop positive displacement sensor coupled with an expandable probe handle ending in a digital readout display. The water flow meter incorporates true velocity averaging for the most accurate flow measurements. The Flow Probe is ideal for storm water runoff studies, sewer flow measurements, measuring flows in rivers and streams, and monitoring water velocity in ditches and canals.

Turbo-Prop Sensor

The Flow Probe incorporates the unique Turbo-Prop propeller sensor, which uses the most accurate positive displacement technique available for velocity sensing. The Turbo-Prop is designed to shed debris and is protected inside a 2 inch diameter housing. The probe housing may be placed directly on the bottom of a pipe or streambed for measuring low flows down to 2 inches in depth. The flow meter propeller rotates freely on its bearing shaft with no mechanical interconnections for minimal friction. Magnetic material in the propeller tip passes a pickup point in the

water velocity meter handle producing electrical impulses that are carried to the readout display by an internal cable. The Turbo-Prop is easily removed for cleaning or replacement. NOTE: Global Water recommends recalibrating the water velocity computer every time the Turbo-Prob sensor is replaced.

Water Velocity Computer

The water velocity computer receives an electrical signal from the propeller, amplifies the signal, and converts the reading to feet per second (or meters per second, depending on programming). The large LCD screen displays average, minimum, and maximum water velocity readings. Up to 30 sets of minimum, maximum, and average data readings can be stored in the water velocity computer. These data points can be reviewed on the computer screen for later analysis. The water velocity computer has a water-resistant housing and incorporates a unique four-button operation for changing functions and resetting the display. The water velocity computer is powered by a non-replaceable battery that will last approximately five years with normal use. Low battery warnings will also display as appropriate.

Flow Probe Handle

The Flow Probe handle can telescope from 3.7 feet to 6 feet in length (FP111), 5.5 feet to 15 feet (FP211), or 2.5 feet to 5.5 feet (FP311). The handle is constructed of anodized aluminum for light weight and long life. The 15 foot length of the FP211, Flow Probe, allows for measuring sewer flows from street level and measuring stream flows from low bridges. While the 2.5 foot collapsed length of the FP311, Flow Probe is ideal for carrying into remote flow monitoring areas. A 3-foot (1.7-foot for the FP311) mylar coated staff gauge (graduated in hundredths of a foot and centimeters) is attached to the lower section of the water velocity probe for instant water depth measurements and accurate propeller positioning.

True Velocity Averaging

The Flow Probe can be used to measure the true average water velocity of a channel's flow. As long as the turbo-prop sensor is in the water flow, the computer will average the water velocity. One reading is taken per second, and a continuous average water velocity is displayed. To obtain the true average velocity the flow probe should be slowly moved throughout the cross sectional area being measured. Once the reading becomes steady, the true average water velocity of the cross sectional area is obtained. This allows for highly accurate flow measurements, which average the differences in velocities that occur throughout a flow's cross-section and with water surges over time. The average water velocity can be saved by pressing the SAVE button and reviewed later.

Optional Swivel Head

The Flow Probe Swivel Head option allows you to rotate the flow probe's turbo prop

to ± 90 degrees from its standard position. This option lets the flow probe take water velocity measurements in hard to measure areas such as vertical pipes on water tanks or swimming pool drainage systems.

Optional Alignment Fin

Significant errors can occur when measuring water flow other than directly parallel to the direction of flow. The Global Water Flow Probe Alignment Fin is designed to help orient the flow probe parallel to flow when the end of the probe can't be seen well due to the depth or cloudiness of the water. To use this accessory, immerse the flow probe and rotate it back and forth until the least amount of resistance is felt due to the water flowing past the alignment fin.

Flow Probe Specifications

Range: 0.3-19.9 FPS (0.1-6.1 MPS)

Accuracy: 0.1 FPS

Averaging: True digital running average. Updated once per second.

Display: LCD, Glare and UV Protected

Control: 4 button

Datalogger: 30 sets, MIN, MAX, and AVG

Features: Timer, Low battery warning

Sensor Type: Protected Turbo-Prop propeller with magnetic pickup.

Weight:

Instrument: 2 lbs. (0.9 kg) (FP111), 3 lbs. (1.4 kg) (FP211), 2.8 lbs. (1.3 kg) (FP311)

Shipping: 13 lbs. (5.9 kg) (FP111), 23 lbs. (10.4 kg) ((FP211), 19 lbs. (8.6 kg) ((FP311)

Expandable Length: 3.7 to 6 ft (1.1 to 1.8 m) (FP111); 5.5 to 15 ft (1.7 to 4.6 m) (FP211); 2.5 to 5.5 ft (0.76 to 1.7 m) (FP311)

Materials:

Probe: PVC and anodized aluminum with stainless steel water bearing

Computer: ABS/Polycarbonate housing with polyester overlay

Power: Internal Lithium Battery, Approx 5 year life with typical use, Non-Replaceable

Operating Temperature: -4° to 158° F (-20° to 70° C)

Storage Temperature: -22° to 176° F (-30° to 80° C)

Carrying Case: The Flow Probe is shipped in a padded carrying case.

Approvals: CE

HANNA HI 9828 Multiparameter

pH

Range 0.00 to 14.00 pH

Resolution 0.01 pH

Accuracy ± 0.02 pH

mV of pH Input

Range ± 600.0 mV

Resolution 0.1 mV

Accuracy ± 0.5 mV

ORP Range ± 2000.0 mV

Resolution 0.1 mV

Accuracy ± 1.0 mV

Dissolved Oxygen

Range 0.0 to 500.0% / 0.00 to 50.00 mg/L

Resolution 0.1% / 0.01 mg/L

Accuracy 0.0 to 300.0%: $\pm 1.5\%$ of reading or $\pm 1.0\%$ whichever is greater; 300.0 to 500.0%: $\pm 3\%$ of reading; 0.00 to 30.00 mg/L: $\pm 1.5\%$ of reading or 0.10 mg/L whichever is greater; 30.00 mg/L to 50.00 mg/L: $\pm 3\%$ of reading

Conductivity

Range 0.000 to 200.000 mS/cm (absolute EC up to 400 mS/cm)

Resolution manual: 1 μ S/cm; 0.001 mS/cm; 0.01 mS/cm; 0.1 mS/cm; 1 mS/cm; automatic: 1 μ S/cm from 0 to 9999 μ S/cm; 0.01 mS/cm from 10.00 to 99.99 mS/cm; 0.1 mS/cm from 100.0 to 400.0 mS/cm; automatic mS/cm: 0.001 mS/cm from 0.000 to 9.999 mS/cm; 0.01 mS/cm from 10.00 to 99.99 mS/cm; 0.1 mS/cm from 100.0 to 400.0 mS/cm

Accuracy $\pm 1\%$ of reading or ± 1 μ S/cm whichever is greater

Resistivity

Range 0 to 999999 $\Omega \cdot \text{cm}$; 0 to 1000.0 $\text{k}\Omega \cdot \text{cm}$; 0 to 1.0000 $\text{M}\Omega \cdot \text{cm}$

Resolution dependent on resistivity reading

TDS

Range 0 to 400000 mg/L or ppm (the maximum value depends on the TDS factor)

Resolution manual: 1 mg/L (ppm); 0.001 g/L (ppt); 0.01 g/L (ppt); 0.1 g/L (ppt); 1 g/L (ppt); autorange scales: 1 mg/L (ppm) from 0 to 9999 mg/L (ppm); 0.01 g/L (ppt) from 10.00 to 99.99 g/L (ppt); 0.1 g/L (ppt) from 100.0 to 400.0 g/L (ppt); autorange g/L (ppt) scales: 0.001 g/L (ppt) from 0.000 to 9.999 g/L (ppt); 0.01 g/L (ppt) from 10.00 to 99.99 g/L (ppt); 0.1 g/L (ppt) from 100.0 to 400.0 g/L (ppt)

Accuracy $\pm 1\%$ of reading or ± 1 mg/L (ppm) whichever is greater

Salinity

Range 0.00 to 70.00 PSU (Extended Practical Salinity Scale)

Resolution 0.01 PSU

Accuracy $\pm 2\%$ of reading or 0.01 PSU whichever is greater

Seawater

Specific Gravity

Range 0.0 to 50.0 σ_t , σ_0 , σ_{15}

Resolution 0.1 s_t , s_0 , s_{15}

Accuracy $\pm 1 \sigma_t$, σ_0 , σ_{15}

Atm. Pressure

Range 450 to 850 mmHg; 17.72 to 33.46 inHg; 600.0 to 1133.2 mbar; 8.702 to 16.436 psi; 0.5921 to 1.1184 atm; 60.00 to 113.32 kPa

Resolution 0.1 mmHg; 0.01 inHg; 0.1 mbar; 0.001 psi; 0.0001 atm; 0.01 kPa

Accuracy ± 3 mmHg within $\pm 15^\circ\text{C}$ from the calibration temperature

Temperature

Range -5.00 to 55.00°C ; 23.00 to 131.00°F ; 268.15 to 328.15K

Resolution 0.01°C ; 0.01°F ; 0.01K **Accuracy** $\pm 0.15^\circ\text{C}$; $\pm 0.27^\circ\text{F}$; $\pm 0.15\text{K}$

Calibration

pH automatic one, two, or three points with five memorized standard buffers (pH 4.01, 6.86, 7.01, 9.18, 10.01) or one custom buffer

ORP automatic at one custom point

Conductivity automatic one point with six memorized standards ($84 \mu\text{S}/\text{cm}$, $1413 \mu\text{S}/\text{cm}$, $5.00 \text{ mS}/\text{cm}$, $12.88 \text{ mS}/\text{cm}$, $80.0 \text{ mS}/\text{cm}$, $111.8 \text{ mS}/\text{cm}$) or custom point

DO automatic one or two points at 0, 100% or one custom point

Resistivity, TDS, σ based on conductivity or salinity calibration

Salinity one custom point

Atm. Pressure, Temperature automatic at one custom point

Temperature Compensation automatic from -5 to 55°C (23 to 131°F)

Logging Memory up to 60,000 samples with 13 measurements each

Logging Interval 1 second to 3 hours

Computer

Interface USB (with HI 929829 software)

Waterproof Protection meter IP67, probe IP68

Environment 0 to 50°C (32 to 122°F); RH 100%

Power Supply 1.5V alkaline C cells (approximately 150 hours of continuous use without backlight) (4) / 1.2V rechargeable C cells (approximately 70 hours of continuous use without backlight) (4)

Dimensions

Meter/Probe 221 x 115 x 55 mm (8.7 x 4.5 x 2.2") / 270 x 46 mm DIA (10.6 x 1.8" DIA)

Weight meter: 750 g (26.5 oz.); probe: 750 g (26.5 oz.)



YSI 9500 Portable Photometer

Accuracy	±0.5% at 4% transmittance; ±0.005 at 0.3 AU
Resolution	0.001 AU
Operating Wavelengths	450, 500, 550, 575, 600 and 650 nm
Display	Graphic, backlit LCD with on-screen instructions
Power	3x AA batteries; the 9500 can also be powered via USB
Size	(WxLxH) 146 x 275 x 75 mm (5.8 x 10.8 x 3 inches)
Weight	975 g (2 lbs)
Test Cells	Automatic adjustment from 12-20 mm diameter

