Global Water
Каталог оборудования

WL16 Water Level Logger
Submersible Pressure Transducer and Datalogger Combination

Description

Global Water's WL16 Water Level Logger is a datalogger and submersible pressure transducer combination designed for remote monitoring and recording of water level or pressure data. The WL16 can record over 81,000 readings and has four unique recording options: programmable interval (1 second to multiple years), fast (10 samples per second), logarithmic, and exception. Multiple depth ranges are available from 0-3' to 0-500' of water level change. A 25' vented cable is standard, and optional cable lengths are available up to 500' (cable length is measured from the top of the datalogger to the bottom of the sensor).

Rugged Sensor Design

The WL16's submersible pressure transducer has exceptional linearity, very low hysteresis, a highly rugged design, and is automatically compensated for barometric pressure. More information about Global Water's Level Sensor and barometric pressure compensation is available on page 6.

Unique Datalogger

The WL16 datalogger is housed in a weather-resistant cylindrical enclosure, which easily slips inside and rests on top of a standard 2" PVC pipe. The WL16 includes two internal 9 VDC alkaline batteries, which can typically power the unit for one year. The data is safely stored in non-volatile flash memory.

Powerful Software

The WL16 includes Windows™-based Global Logger II software that provides many useful features, such as real-time readout, measurement interval and engi-neering unit selection, station ID setting, and sensor calibration. The software makes accessing stored data and setting options easy. Data downloaded from the WL16 can easily be opened in any PC spreadsheet program for analysis and graphic presentation. The WL16 also includes Windows™ CE-based PDA software for simple field data collection and Flow Logger Software for flow monitoring (for more information, see the FL16 on page 24). A Bluetooth communication option is available with the purchase of the AK1500, external Bluetooth adapter.

Flexible Options

Two versions of the WL16 are available: one for computers with a RS-232 serial port (WL16S version), and another for computers with a USB communication port (WL16U version). Purchase of either unit includes the appropriate RS-232 or USB cable for communication between the logger and your computer.

In addition, a variety of options are available to best meet the needs of your application:

- The THO Titanium Option includes a rugged titanium housing for the water level sensor. For best performance in marine environments we recommend using the titanium option.

- The WL-INO Inside Well Option allows the entire logger to fit within a 2" well and includes a chain and hook to secure the WL16 to the well top (less than 100' of cable should be used with this option).

- The Pressure Pipe Option houses the sensor in either a 8" PVC (PRPP) or

Applications
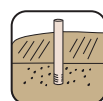
Pumping & Slug Tests
Recharge Analysis
Site Investigations
Supply Monitoring

Flood Analyses
Wetlands & Ponds
Stormwater Run-Off
Agricultural Run-Off

Irrigation Canals
Stream & River Gauging
Lakes & Reservoirs
Tidal Fluctuation

stainless steel (PRPM) pipe with ¾" NPT male thread for monitoring pressure in municipal water systems. The sensor is calibrated for pressure with ranges of 30 psi, 60 psi, 100 psi, and 250 psi available. A 10' cable is standard.

- The WL-T Temperature Output Option monitors temperature as well as level data without decreasing the logger's storage capacity. This option supports a temperature range of 0-50° C and accuracy of 1% of reading.

Specifications

Datalogger

Memory	Non-volatile flash memory
Power	Two 9 VDC alkaline batteries (inc.)
Battery Life	Up to 1 year (depending on recording intervals)
Resolution	12 bit
Moisture Protection	Protective coating (helps prevent damage to electronics from condensation)
Temperature	-40° to +185°F (-40° to +85°C)
Humidity	0-95% non-condensing
Storage Capacity	81,759 time/date stamped data-points (including battery voltage)
Recording Rate	High Speed (10 samples per second), Fixed Interval (program-mable from 1 second to >1 year), Logarithmic, Exception
Data Overwrite	Select memory wrap or unwrap (unwrap will stop logging once memory is full)
Clock	Synchronizes to user's computer; accuracy of 0.0025% or 1 minute in 1 month; format is m/d/yr and hr/min/sec
Enclosure	1-7/8" dia. x 11-1/2" long (4.8 cm dia. x 29.2 cm long) Stainless steel UV protected PVC, vented for barometric pressure compensation
Weight	1.6 lbs, with battery and 25' cable (0.7 kg)
Communication	WL16S: RS-232 4-pin circular connector WL16U: USB Type B Selectable Baud Rates: 9600, 19200, 28800, 38400, 57600, 115200
Certificates	CE Compliance

Global Logger II Software

Compatibility	Microsoft's Windows™ 98, ME, 2000, NT, XP, and Vista
Features	Tabular Display/Printout; data in standard spreadsheet format (CSV); programmable alarm start and stop times; field calibration and help files included

Features

- Highly accurate water level measurements
- Easy to operate and install
- Four sample modes: timed, 10 times per second, logarithmic, and exception
- User-friendly Windows™ and Windows™ CE-based PDA software included
- USB and serial communication options available
- No need to remove sensor for data collection or battery change
- User-programmable start and stop alarms, engineering units, and field calibration setup
- Automatic barometric pressure and temperature compensation

Cable

Conductors	4 each 22 AWG
Material	Marine grade polyether jacket, polyethylene vent tube, full foil shield
Shield	Aluminum Mylar
Outside Diameter	0.306 inch (0.78 cm)
Length	Standard 25' (up to 500' from factory)

Sensor

See specifications for WL400 Water Level Sensor, pg. 6.

Bluetooth Adapter

Format	Bluetooth 2.0 SPP (Serial Port Protocol)
Baud Rate	Auto Detect up to 115K Baud
Power	9V Alkaline. 20 hrs continuous use
Current	30mA Average
Range	20 ft maximum
Operating Temp	-40° to +185°F (-40° to +85°C)
Compatible Software	Global Logger II version 2.1.5 or higher; Global Logger II PDA soft-ware version 2.0.1; Flow Monitor version 2.3.2

Ordering & Options

USB Communications Level Loggers

Order No.	Sensor Range [1]	Cable Length [2]
WL16U-003-025	3'	25'
WL16U-015-025	15'	25'
WL16U-030-050	30'	50'
WL16U-060-100	60'	100'
WL16U-120-150	120'	150'
WL16U-250-300	250'	300'

Serial Communications Level Loggers

Order No.	Sensor Range [1]	Cable Length [2]
WL16S-003-025	3'	25'
WL16S-015-025	15'	25'
WL16S-030-050	30'	50'
WL16S-060-100	60'	100'
WL16S-120-150	120'	150'
WL16S-250-300	250'	300'

Options

Order No.	Description
WLEXC [2]	Extra Sensor Cable (up to 500')
WL16-500	0-500' Sensor Range
THO	Titanium Option
WLINO	Inside Well Option
PRPP [3]	Pressure Pipe Option- PVC
PRPM [3]	Pressure Pipe Option- Stainless Steel
WL-T	Temperature Output Option

Accessories

Order No.	Description
PDAWL16	PDA Package, see page 124
00-897	Locking Well Cap for 2" pipe
AK1500 [4]	External Bluetooth Adapter

1) When ordering, specify the sensor range that will cover the maximum water level change for your application. Sensor ranges include: 3', 15', 30', 60', 120', or 250', and a 0-500' range sensor is available with option WL16-500.

2) When ordering, specify the cable length. WL16 units include lengths as noted, and additional cable lengths are available with option WLEXC up to 500'.

3) When ordering a Pressure Pipe Option, specify the sensor range: 30 psi, 60 psi, 100 psi, and 250 psi. A 10' cable length is standard.

4) Bluetooth adapter requires serial version of water level logger.

DCX-22 Self-Contained Level Logger

Absolute Pressure and Temperature Combination Logger

Description

The DCX-22 Self-Contained Level Logger is a highly accurate, self-contained, battery powered instrument designed to record water depths and temperature over long periods. The sensor, electronics, and battery are housed in a rugged, double sealed 316 stainless steel tube for long term submersible deployment. The DCX-22 requires no external electrical wires and may be suspended with any suitable and secure cable. When it is time to download the unit's recorded data, you can simply retrieve the DCX-22 from the measurement point and remove the double sealed end cap to access the data port. The DCX-22 is available in two level ranges: the DCX-22-2 measures from 0 to 66.9' (2 bar), and the DCX-22-3 measures from 0 to 100.37' (3 bar). When ordering, select the smallest level range that will cover the maximum expected water level change (this is not necessarily the total depth of water).

Accurate Barometric Pressure Correlation

When using the DCX-22 in shallow water depths where the influence of barometric pressure changes should be considered, we recommend that you place the DCX-22 Baro at the water surface to record the atmospheric pressure. Once the data files are downloaded to your PC, the unit's software quickly and accurately subtracts the barometric pressure values from the water pressure values. The DCX-22 Baro is built to the same high quality standards as the DCX-22 Logger.

Easy to Use Software

The DCX-22 includes simple and well structured software that is compatible with Windows™ 2000/NT/XP/ME and 9X. The software allows you to configure and read data from the DCX-22. In particular, you can:

- Set the measuring frequency (from once per second to once every 18 hours)
- Measure data in mWC or any other unit
- Program the date and time to start measuring
- Program an event that will activate the logger (such as an absolute or percent change of water level or exceeding or dropping below a certain pressure)
- View online data and battery condition in real time
- Store data about the measuring station
- Export data for spreadsheet use and graphical representation

Due to the modular structure of the software, customer specific data formats can be implemented on request. In addition, a Windows™ CE-based application for accessing data on a PDA is also available upon request. Please contact Global Water to discuss these options.

Applications
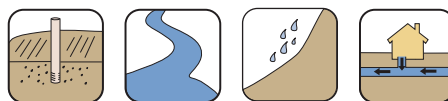
Ideal for groundwater monitoring, stream and river gauging, wetland and estuary monitoring, weirs and flumes, irrigation canals, inflow and infiltration studies, sites with high vandalism opportunity, and more.

Features

- High measuring accuracy, resolution, and robustness

- Completely self-contained water level datalogger

- Rugged 316 stainless steel body with double o-ring seal

- 10 year battery life

- Up to 28,000 readings in non-volatile memory

- High data security due to the use of a non-volatile memory

- Slim 7/8 inch (22mm) diameter body

- Easy to use Windows™-based software

- Event-controlled recording and interval recording

- Record water level (pressure) and water temperature

- Software-based barometric pressure compensation with DCX-22 Baro

Specifications

Power	Lithium battery 3.6V
Battery Life	10 years @ 1 measurement per hour
Communications	RS-485 digital
Logger to PC	USB (optional RS-232)
Performance	Linearity: 0.05% full scale
	Level Accuracy: 0.1% full scale (max. 0.2% full scale)
	Baro Accuracy: 1mbar
	Long Term Stability: 0.5 mbar
	Overload: 2 x nominal range
Temperature Compensation	14° to 104°F (-10° to 40°C)
Temperature Measurement Accuracy	1.8°F (1°C)
Recording Interval	1 second to 18 hours
Shortest Measuring Cycle	1x per second
Memory	16,000 or 28,000 data points (depending on storage method)
Body Material	Stainless steel 316L (DIN 1.4435)
O-Ring Material	Viton®
Dimensions	0.87" dia. x 9.84" long (2.2cm dia. x 28cm long)
Sensor Weight	0.78 lb (355g)
Software Compatibility	Windows™ 2000/NT/XP/ME and 9X

Ordering & Options

Level Loggers

Order No.	Sensor Range
DCX-22-2	0 to 32.8 ft (0-10 m) (2 bar)
DCX-22-3	0 to 65.6 ft (0-20 m) (3 bar)

Barometric Pressure Logger

Order No.	Description
DCX-22 Baro	Barometric Pressure Logger

Data Cables*

Order No.	Description
K-104A	USB Communication Cable
K-103A	RS-232 Communication Cable

* Note: A communication cable is required for operation. Datalogging software is included.

"Nothing on earth is so weak and yielding as water, but for breaking down the firm and strong it has no equal."

– Lao-Tsze, Ancient Chinese Philosopher

WL400 Water Level Sensor

Submersible Pressure Transducer for Monitoring Level and Pressure

Description

Global Water's WL400 Water Level Sensor provides highly accurate water level measurements for a variety of applications, including those in severe environments. The WL400 has a dynamic temperature compensation system, enabling high accuracy measurements over a wide temperature range. The unit is also designed for automatic barometric compensation, described further in the sidebar article on this page.

The WL400 consists of a solid state submersible pressure transducer encapsulated in a stainless steel housing. The level sensor has a molded-on waterproof cable. A 25 feet cable is standard, and optional cable lengths are available up to 500 feet. The WL400 has a two-wire 4-20 mA high level output for easy connection to dataloggers, telemetry, monitoring equipment, and displays. Multiple level sensor ranges are available from 0-3 ft to 0-500 ft.

Rugged Sensor Design

The WL400's sensor is fully encapsulated with marine-grade epoxy. The unique wet-wet sensor eliminates vent tube moisture problems, which can cause drift or level sensor failure (as can be the case with other pressure sensors). The level sensor uses a highly flexible silicon diaphragm to interface between water and the sensing element. This silicon diaphragm protects the water level sensor's electronics from moisture and provides exceptional linearity and very low hysteresis. The WL400's design eliminates issues associated with metal foil diaphragms, which tend to crinkle and stretch over time causing drift, linearity, and hysteresis problems.

The pressure sensor is protected by a stainless steel micro-screen cap, which makes fouling with silt, mud, or sludge virtually impossible. The WL400's rugged design is even excellent for saltwater applications including tide level monitoring and floating docks.

Unique Low Level Range

The 0-3 ft low level range sensor is ideal for measuring shallow flows or small water level changes like those encountered in sewers, storm drains, weirs, and flumes. The 0-3 ft sensor accurately measures small level changes, even when the water's depth is only a few inches deep. Other metal foil-type water level sensors typically have serious problems at low level ranges because of sensor crinkling, stretching, and drifting.

Flexible Output and Power

The WL400 has a two-wire 4-20 mA output signal that is linear with water depth. The output signal can travel up to 3,000 feet from the sensor to the logging device. Common twisted pair or electrical extension cord wire can be spliced to the WL400's vented cable to extend the cable out of water. The 4-20 mA signal may be converted to 0.5 to 2.5 VDC by dropping the current signal across a 125 ohm resistor. The sensor will operate with 8 to 36 VDC, so common 12 VDC battery sys-

Applications
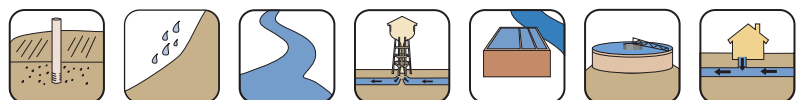
Ideal for groundwater wells, rivers, streams, flumes, weirs, saltwater, tanks, open channels, lift stations, sewers, pipes, and more.

tems can be used to power the unit.

Versatile Options

A variety of options are available to best meet the needs of your application:

- The THO Titanium Option includes a rugged titanium housing for the water level sensor. For best performance in marine environments we recommend using the titanium option.

- The Pressure Pipe Option houses the sensor in either a 6" PVC (PRPP) or stainless steel (PRPM) pipe with ¾" NPT male thread for logging pressure in municipal water systems. The sensor is calibrated for pressure with ranges of 30 psi, 60 psi, 100 psi, and 250 psi available. A 10' cable is standard.

- The WL-SWO Sewer Flow Option includes a mouse-shaped cover to protect the sensor from fouling and velocity effects in sewer, stormwater, and irrigation pipe flows. The sensor cover is attached to a 4 in x 24 in stainless steel strap for mounting to the bottom of a pipe.

- The WL-T Temperature Output Option monitors temperature as well as level data. This option supports a temperature range of 0-50°C and an accuracy of 1% of reading.

- The FL400-025 Sewer Level Sensor includes a protected 0-3 ft sensor on 25 ft of cable and is ideal for measuring level in sewer or stormwater pipes.

- The VL400-003 Vacuum Level Sensor includes a ¾" male thread and a unique 1 psi sensor designed to measure vacuum

You may also like . . .
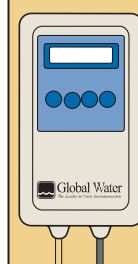
PC300 Process Controller
Accurate controller for measuring WL400 level sensors and controlling a variety of external devices.
Page 17

GL500 Dataloggers
Rugged and easy-to-use remote dataloggers to record WL400 data.
Page 122

Features

- High accuracy and reliability
- Completely submersible sensor and cable
- Compact, rugged design for easy installation
- 4-20 mA output sensor compatible with most monitoring equipment
- Vented cable for automatic barometric compensation
- Dynamic temperature compensation system
- Not affected by foam, wind, or rain
- Optional temperature output

Specifications

Sensing Element

Sensor Element	Silicone Diaphragm, Wet/Wet Transducer
Ranges (ft)	0-3, 0-15, 0-30, 0-60, 0-120, 0-250, 0-500
Linearity and Hysteresis	±0.1% full scale
Accuracy	±0.1% full scale at constant temperature, ±0.2% over 35°F to 70°F (1.37° to +85°C) range
Overpressure	Not to exceed 2x full scale range
Resolution	Infinitesimal (analog)
Outputs	4-20 mA or 0.5 to 2.5 VDC across 125 ohms
Supply Voltage	8 to 36 VDC
Current Draw	Same as sensor output
Warm-Up Time	3 seconds recommended
Operating Temp	-40° to +185°F (-40° to +85°C)
Compensation	Uses dynamic temperature compensation 30 to 70°F (-1.1 to 21.1°C), automatic barometric pressure compensation
Weight	1/2 lb (227 g)
Certificates	CE Compliance

Housing

Material	304L stainless steel, stainless steel microscreen with hundreds of holes to prevent fouling, electronics are fully encapsulated in marine grade epoxy, guaranteed not to leak
Size	Up to 13/16 inch dia. X 5-1/2 inch L (2cm dia. X 14 cm L), small enough for a 1 inch well. Titanium option has 1 inch diameter.

Cable

Conductors	4 each 22 AWG
Material	Marine grade polyether jacket, polyethylene vent tube, full foil shield
Outside Diameter	0.306 in (0.78 cm)
Temperature Range	-22° to +185°F (-30° to +85°C)
Length	Standard 25 ft (up to 500 ft from the factory)

Ordering & Options

Level Sensors

Order No.	Sensor Range (Ft) [1]	Cable Length (Ft) [2]
WL400-003-025	3	25
WL400-015-025	15	25
WL400-030-050	30	50
WL400-060-100	60	100
WL400-120-150	120	150
WL400-250-300	250	300
FL400-025	3	25
VL400-003	1 psi	25

1) When ordering, specify the sensor range that will cover the maximum water level change for your application (this is not necessarily the total depth of water). 500 ft sensor range available, please call.

Options

Order No.	Description
WLEXC [2]	Extra Cable (up to 500 ft)
WL400-500	0-500 ft Sensor Range
THO	Titanium Option
PRPP [3]	Pressure Pipe Option- PVC
PRPM [3]	Pressure Pipe Option - Stainless Steel
WLSWO	Sewer Flow Option
WL-T	Temperature Output Option

2) When ordering, specify the cable length. The WL400 includes stated lengths of cable, and additional lengths are available with option WLEXC up to 500 ft (152.4 m).

3) When ordering a Pressure Pipe Option, specify the sensor range: 30 psi, 60 psi, 100 psi. A 10 ft cable length is standard.

WL450 All Stainless Level Transmitter

High Accuracy Submersible Pressure Transducer

Features

- Rugged 316L stainless steel flush-diaphragm sensor
- Highly stable digital temperature compensation
- 16-bit internal digital error correction
- Durable and environmentally neutral Hytrel® cable
- Custom cable lengths and ranges are available

Applications

Ideal for groundwater, streams, rivers, lakes, runoff, drainage basins, irrigation canals, and more.

You may also like . . .

PC300 Process Controller
Accurate controller for measuring WL400 level sensors and controlling a variety of external devices.
Page 17

GL500 Dataloggers
Rugged and easy-to-use remote dataloggers to record WL400 data.
Page 122

Description

The WL450 All Stainless Level Transmitter offers standard features and a level of performance that far exceed those of other comparably priced transmitters. The WL450 features a 316L stainless steel diaphragm, digital temperature compensation, and environmentally neutral Hytrel® cable. These assets enable the unit to provide a high level of performance over a long period of time and a wide range of operating conditions. The WL450 is ideally suited for environmental monitoring applications such as test wells, streams, rivers, and reservoirs.

Standard Units for a Range of Uses

All of our standard WL450 units are set up for 2-wire, 4-20 mA output. They are calibrated for specific ranges in feet of head with an appropriate length of Hytrel® vented cable, including: 0-3 ft range (25 ft cable), 0-15 ft range (25 ft cable), 0-30 ft range (50 ft cable), 0-60 ft range (100 ft cable), 0-120 ft range (150 ft cable), 0-250 ft range (300 ft cable), and 0-500 ft range (510 ft of cable).

Simple Digital Output

The WL450 includes a RS-485 direct to digital output for a modem or other communications network. This avoids the error and complication involved with analog to digital conversion devices. Please contact Global Water for more details about direct to digital applications.

Customize for Your Application

In addition to the standard WL450 ranges and cable lengths, we can customize your WL450 for a small additional fee. Please contact Global Water regarding this option.

Specifications

Sensing Element

Sensor Element	316L stainless steel, flush mounted (titanium available)
Available Ranges (Ft)	0 to 3, 0-15, 0-30, 0-60, 0-120, 0-250, 0-500
Accuracy	Total Error Band ±0.1%, 16 bit digital error correction
Overpressure	Not to exceed 2x full scale range
Operating Temp	14 to 176°F (-10 to 80°C)
Temperature Compensation	Digital over entire operating range
Output	4-20 mA, 2-wire loop powered
Supply Voltage	10 to 28 VDC
Load Resistance	(Ω): mA: < (supply - 8V) / 0.02A
Communication	RS-485

Housing

Wetted Materials	316L stainless steel, polyamide, fluorocarbon
Dimensions	0.825″ (21mm) diameter x 3-3/4″ (95mm) long
Weight	1Lb (453.6g)

Cable

Material	Hytrel-jacketed, vented & shielded
Outside Diameter	0.23 in (5.8mm)
Temperature Range	-22° to +185°F (-30° to +85°C)
Length	Standard 25 feet (up to 1,000 feet total)

Ordering & Options

All Stainless Level Transmitters

Order No.	Sensor Range (Ft/Head)	Cable Length (Ft)
WL450-003	0 to 3	25
WL450-015	0 to 15	25
WL450-030	0 to 30	50
WL450-060	0 to 60	100
WL450-120	0 to 120	150
WL450-250	0 to 250	300
WL450-500	0 to 500	510
WL450-CUS	Custom Range	Custom Length

Options

Order No.	Description
WL450-EXC	Extra Hytrel® Vented Cable (up to a total of 1000 ft)
WL450-T	Titanium Option

WL430 Sewage Lift Station Level Sensor

Submersible Wastewater Level Sensor

Description

Global Water's WL430 Sewage Lift Station Level Sensor is ideal for measuring level in high solids environments. It is based on over 30 years of design and field service experience. The WL430 has a standard 4-20 mA output for interface with most datalogging and remote monitoring equipment.

"Steel Cage" Design

The WL430 consists of a submersible pressure sensing element encased in a 316L stainless steel housing. The unit's "steel cage" design offers the highest reliability in level measurement for severe high solids environments such as sewage, lift stations, storm canals, wet wells, and slurry tanks. The "steel cage" gives full protection and allows sensing of sewage levels no matter how much debris, mud, or sand builds up.

Barometric Pressure Compensation

The WL430 includes 40 ft of polyurethane shielded and vented cable, and additional cable lengths are available up to 500 ft. The instrument's unique vented cable system allows for barometric pressure differential compensation (described further on page 6), while the unit is protected from the elements with a Gortex® filter encapsulated tip.

Lightning Strike Protection

The WL430 includes an **exclusive lifetime warranty** against lightning strikes. The sensor's electronics are capable of withstanding lightning strikes and meet RCTA/DO 160D for lightning direct effects and surge protection for FAA and MIL-STD test and NASA standard electrical surge requirements. The WL430 is also CSA explosion proof and intrinsically safe if used with a client supplied barrier strip.

Features

- UL listed
- Flush clog-free sensor; 316L stainless steel
- Lifetime warranty against lighting strikes
- ± 0.5% full scale output static accuracy
- Vented cable for automatic barometric compensation
- Double-sealed submersible cable exit
- CSA explosion proof and intrinsically safe if used with a client supplied barrier strip

Specifications

Electrical

Excitation	8 to 38 VDC
Output	4–20 mA DC
Zero Balance	± 1% full scale output
FSO Setting	± 1% full scale output
Resolution	Infinite (±0.001% full scale output usable)
Response Time	< 5mS
Insulation Resistance	1000 MO @ 50 VDC
Reverse Polarity	Protected
Warm-Up	< 10 mS
Power Supply Effect	± 0.002% full scale output per V input
EMI/RFI	Internal Filtering
Lightning Protected	MOV and dual gas discharge tube; life lightning protection warranty
Short Circuit Protected	Up to 40 VDC

Performance

Static Accuracy	± 0.5% full scale output (BFSL, RSS) (combined effects of non-linearity, hysteresis & repeatability)
Repeatability	± 0.1% full scale output
Temperature Effects	± 1.5% full scale output over comp range (combined effects of Zero & FSO with reference at 70°F (21.1°C))
Long Term Stability	± 0.25% full scale output per year

Mechanical

Pressure Ranges	10 psi (23 ft) or 15 psi (34 ft)
Proof Pressure	2x full scale
Burst Pressure	5x full scale
Materials	316L stainless steel plus cable
Pressure Port	Flush mount per outline
Electrical Connector	½ inch NPT male submersible conduit fitting with 40' of polyurethane cable
Compensated Temp Range	20 to 170°F (-6 to 76°C)
Operating Temp Range	0 to 200°F (-17 to 93°C)
Storage Temp Range	-20 to 250°F (-28 to 121°C)
Dimensions	3 inch dia. x 6 inch long (7.6 cm dia. x 15 cm long)
Weight	Nominal 20 oz (.57 kg)

Applications

Ideal for severe high solids environments such as sewage, lift stations, storm canals, wet wells, slurry tanks, and more.

Ordering & Options

Sewage Lift Station Level Sensor

Order No.	Cable Length
WL430-023	23ft (7m)
WL430-034	34ft (10m)

Options

Order No.	Description
WL430CAB*	Extra Sensor Cable, Per Foot (up to 500 ft)

*   Add two weeks to shipping time with this option.

WL700 Ultrasonic Level Sensor

Non-Contact Water Level Measurement Device

Description

The WL700 Ultrasonic Water Level Sensor uses the latest ultrasonic distance measurement technology for accurate non-contact water level monitoring. The fully encapsulated sensor is temperature compensated and provides an industry standard 4-20 mA output, which corresponds to the distance from the sensor to the water. The unit is rugged, reliable, and completely weatherproof. It is ideal for sewer and wastewater applications.

Sensor Ranges for Every Application

The WL700 is available in four level ranges to meet a wide variety of applications including: 1 ft, 3 ft, 6 ft, and 35 ft . The unique 1' range is ideal for measuring flows in small flumes and weirs. The 3 ft and 6 ft sensors are excellent for measuring streams, tank levels, and open channel

flows in larger flumes. The 35 ft sensor is good for measuring deep rivers and lakes.

Easy Installation and Interface

The WL700 is easy to install and mount, requires no programming or calibration, and includes complete instructions. The unit comes with 10 ft (3 m) of cable, and additional cable lengths up to 500 ft (152.4 m) are optional. The unit's simple 3-wire 4-20 mA output is easy to interface with all PLC's, SCADA, and telemetry systems. No maintenance of the instrument is required.

Monitoring and Control Capabilities

The WL700 is compatible and provided optionally with Global Water's FC200 Open Channel Flow Monitor for ultrasonic flow monitoring (page 26). It is also fully compatible with our PC300 Process Controller for water level control (page 17).

Features

- Non-contact measurement
- Rugged and fully encapsulated
- 4-20 mA transmitter
- Easy installation, no programming
- Cost effective
- Great for wastewater
- Great for flumes and weirs
- Temperature compensated
- Four ranges: 1 ft, 3 ft, 6 ft, and 35 ft
- For monitoring water level and open channel flow

Applications

Ideal for sewers, wastewater, tanks, flumes, weirs, and more.

> "The cure for anything is salt water– sweat, tears, or the sea."
>
> – Tagore, Bengali poet and novelist

Specifications

Ranges (Ft)	0.17 to 1.00, 0.67 to 3.00, 0.84 to 6.00, and 1.5 to 35
Input Voltage	18 to 30 VDC
Current Draw	100 mA
Output	4-20 mA (4 mA is minimum water level and 20 mA is maximum water level)
Averaging	15 second running average (to smooth out water turbulence)
Warm-up Time	15 seconds
Resolution	Continuous analog
Operating Temperature Range	1', 3', 6': -40° to +185°F (-40° to +85°C)
	35 ft: -40° to +145°F (-40° to +62.8°C)
Temperature Compensation Range	-20° to +120°F (-28° to +48°C)
Accuracy	+0.5% of range, +1.0% of 35 ft range
Beam Angle	12°
Dimensions	1 ft: 1 x 2 x 4 inch rectangular (2.5 x 5.1 x 10.2 cm)
	3, 6 ft: 1 inch ID pipe thread x 4 inch long (2.5 cm ID x 10.2 cm long)
	35 ft: 2-1/2 inch ID pipe thread x 4 inch long (6.3 cm ID x 10.2 long)
Weight	1.5 lbs (0.68 kg)

Ordering & Options

Ultrasonic Level Sensors

Order No.	Sensor Range (Ft) [1]	Cable Length (Ft) [2]
WL700-01-10	1	10
WL700-03-10	3	10
WL700-06-10	6	10
WL700-35-50	35	50

1) When ordering, specify the sensor range for your application.

Options

Order No.	Description
WQEXC[2]	Extra Sensor Cable, Per Foot (up to 500 ft (152.4 m))

2) When ordering, specify cable length. The WL700 includes stated length of cable, and additional cable lengths are available with WLEXC up to 500 ft (152.4 m).

WL750 Ultrasonic Level Transmitter

Non-Contact Tank Level Measurement Device

Description

The WL750 Ultrasonic Level Transmitter is perfect for short range, non-contact tank level measurements for a variety of liquids and solids. With its narrow 8 degree beam angle and slim 1.38 in (35mm) chemical-resistant process end, the WL750 is designed for accurate level measurements even in relatively small tanks. Purchase of the WL750 includes a 3-bolt 2-3/4 inch flange for use in secure mounting.

Capable Data Display and Transmitter

The WL750 includes an integrated LCD display, user interface, and transmitter unit that provides a local level readout and the ability to send a scalable, 4-20 mA signal to another device. The display/transmitter also features user-programmable settings and an LED alarm light. The WL750's optional power and signal cable assemblies connect to the display unit with a molded on, locking 5-pin plug.

Flexible Signal Cable and Power Options

You can select an optional signal cable assembly that will connect to the WL750 display's 5-pin plug. Choose from 6-foot (2m) (Option WL750-CBL-2) or 16-foot (5m) (Option WL750-CBL-5) cable assemblies. If you would like to create your own longer cable runs, you can simply purchase the unit with just the 5-pin plug. The WL750 will work with up to 3,000 feet of the appropriate signal cable. Please note, either a cable assembly or 5-pin plug is required.

Flexible power options are also available for the WL750, such as the IDEC 24 volt power supply (see Ordering & Options).

Features

- Integrated display and user interface
- Compact chemical resistant body
- User adjustable limits and alarm points
- Scalable 4-20 mA signal output

Specifications

Electronics

Supply Voltage	18 to 30 VDC
Power Consumption	< 3 watts
Output	4-20 mA, 2 to 10 V across 500 Ohm resistor to 0 V
Switching Values (S1 and S2)	PNP or NPN selectable; 300 mA max load
Hysteresis	Adjustable; position depends on min. or max. setting
Display	Graphical LCD display; back-lit LED signaling lamp
Connection	M 12x1; 5-pole locking plug

Operational

Beam Angle	8 degrees
Accuracy	±0.2% full scale
Linearity Error	< 0.3% full scale
Temperature Error	0.03% °C
Operating Temperature	32 to 158°F (0 to 70°C)
Operating Pressure	Ambient

Environmental

Approval	IP67, CE

Mechanical

Wetted Materials	PET 30% GV, epoxy resin
Housing Materials	Stainless steel, tempered glass
Mounting	3-bolt flange with set screw for adjustment

General

Weight	0.8 lbs (363 g)
Dimensions	4 in dia. x 8.5 in long (10 cm dia. x 21.6 cm long)

Applications
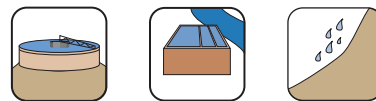
Ideal for wastewater treatment tanks, water treatment tanks, stormwater basins, small tanks, tanks of liquids and solids, and more.

Ordering & Options

Ultrasonic Level Transmitters

Order No.	Operating Range
WL750-4	0.66 to 4.3 feet
WL750-8	0.98 to 7.5 feet

Cable Assemblies*

Order No.	Description
WL750-CBL-2	6 feet (2m) Cable & Connector
WL750-CBL-5	16 feet (5m) Cable & Connector
WL750-PLG	5-Pin Locking Plug (no cable)

* A cable assembly or 5-pin plug is a required item.

Accessories

Order No.	Description
PS5R-SC24	IDEC Slim Line 24VDC Power Supply

WL900 Radar Level Transmitter

Non-Contact Level Measurement Device

Description

The WL900 Radar Level Transmitter offers a logical extension to ultrasonic devices. It is suitable for applications that require non-contact liquid level measurement when ultrasonic level measurement is not acceptable.

Variety of Uses

The WL900 is ideal for a variety of water and wastewater applications involving a reflective liquid that has a foaming surface, vapors, or dusty conditions beyond ultrasonic wave capabilities.

State of the Art Radar Technology

The WL900 uses a state of the art radar pulse technology, which provides accurate and reliable level measurements over a wide 10-inch to 50-foot range. The unit's microwave sends out very short pulses, which reflect off a target and are received back by the antenna for processing.

Simple Operation

With its single push-button calibration system, the WL900 is easy to set up and maintain. Simply aim the WL900 at your low range level set point and push the button to lock in the setting– then do the same with the high level set point. This may be done before permanent installation by aiming at a wall and using a tape measure to determine your exact range.

Rugged Design

The unit's rugged NEMA 4 (IP65) housing is available in either aluminum or 316L stainless steel for corrosive environments. A standard 2 inch NPT (M) process connection allows for quick and versatile installation. In addition, the unit's polypropylene antenna rod is virtually corrosion proof.

Features

- Accurate, non-contact measurement
- Works in conditions where ultrasonic is not acceptable
- Pulse radar measurement range 0.83 to 50 ft
- Simple push-button calibration
- Standard 4-20 mA signal output

Applications

Ideal for water and wastewater applications where conditions are beyond ultrasonic wave capabilities, such as those involving a reflective liquid that has a foaming surface, vapors, or dusty conditions.

Specifications

Power	AC: 115 VAC, 60 Hz (± 20%), 1.7 VA
	DC: 12 to 30 VDC, 0.07 Amps max. @ 24 VDC
Outputs	Signal: 4-20 mA, 6.1 µA resolution; 750 ohms (isolated on 4-wire models only)
	Communication: RS-232
Accuracy	±0.25% of max. target range (in air)
Frequency	6.3 GHz
Transmitter Power	50 µW average
Calibration	Push-button or optional programmable
Antenna	Polypropylene over dielectric rod
Beam Angle	12 degrees
Operating Temperature	-40 to 140°F (-40 to 60°C)
Operating Pressure	150 psi max
Installation Category	Class II
Process Connection	2 inch NPT

Conduit Entry	1/2 inch NPT standard
Housing	Aluminum or 316L stainless steel
Ingress Protection	NEMA 4 (IP65)
Approvals	FCC Part 15 - low-power communication device
Weight	3.6 lbs (1.63 Kg)
Dimensions	4 in dia. x 18 in long (10cm dia. x 45.7cm long) See drawing.

Ordering & Options

Order No.	Power	Enclosure
WL900-AC	115VAC (60Hz), 230VAC (50Hz)	Aluminum
WL900-DC	12 to 30 VDC	Aluminum
WL901-AC	115VAC (60Hz), 230VAC (50Hz)	Stainless Steel
WL901-DC	12 to 30 VDC	Stainless Steel

WL500 Well Level Sounder
Water Detection Unit and Measuring Tape Reel

Description

Global Water's WL500 Well Level Sounder sets a precision standard for well water level measurement. The sounder meets or exceeds federal specification US GGG-T-106E (USA) and EEC CLASS II (Europe) for a guaranteed accuracy of 0.008%.

Reliable Design

The WL500 has a strong NTS-certified polyethylene jacketed measuring tape that will accurately read to 0.01 foot or 1 mm. The tape reels are built of resistant polycarbonate (or, for units with over 400 ft cable, of lighter aluminum). The sounder is battery operated, thus there is no danger of shock from an outside power supply. In addition, the unit includes two conductors that make a separate ground connection unnecessary, so the instrument will function well in both uncased test holes and uncased wells in rock. Water entering the well from casing leaks or perforations will not affect the device's measurements.

The WL500's 5/8 in (16 mm) diameter sensor probe is encased in a full depth-rated stainless steel and Teflon® probe that pro-

tects the electronics from water and dust. For ease of cleaning and decontamination of the entire reel and tape, the sounder's electronics module can be removed. The unit's measuring tape has a flat spring steel core that ensures it will hang perfectly straight in large and small diameter wells. This provides unparalleled accuracy and avoids errors typically introduced by flat white tapes, which can easily kink inside a well.

Ideal for Pump and Drawdown Tests

The WL500 uses a shrouded probe with a unique design to prevent bridging and detect the bottom of the well. When the probe assembly makes contact with the surface of the water, a bright LED glows and a beeper sounds on the reel. The sounder detects the bottom of the well using a specially engineered tip that causes the audio alarm to cease when the bottom of the well is reached. The sensitivity adjustment allows you to compensate for different water qualities, preventing false readings in very pure water or high conductivity water. This makes the device ideal for pump and drawdown tests.

Specifications

Table Graduation	1 ft and 0.01 ft intervals or 1 m and 1 mm intervals
Tape Material	Polyethylene
Probe Diameter	5/8 inch (16 mm)
Signal	Audible buzzer and light
Battery	9V battery
Shipping Weight	300 ft (100m) tape = 9 lbs (4kg)
Shipping Size	12 x 14.5 x 8.5 inch (31 x 37 x 22 cm)

Ordering & Options*

Order No.	Tape Length
WL500-50	50 feet
WL500-100	100 feet
WL500-150	150 feet
WL500-200	200 feet
WL500-300	300 feet
WL500-400	400 feet
WL500-500	500 feet
WL500-15m	15 meters
WL500-30m	30 meters
WL500-50m	50 meters
WL500-60m	60 meters
WL500-100m	100 meters
WL500-120m	120 meters
WL500-150m	150 meters

* Please call us for longer lengths.

Features

- Detect water levels and well bottoms with high precision
- Trouble-free operation in wells with falling water and heavy oil slicks, even if well is not cased
- Polycarbonate sturdy reel
- Corrosion-resistant stainless steel fittings
- Soft grip vinyl frame handle
- Large, ergonomic brake and winding handle
- Water and dust-proof encapsulated electronics
- Strong and accurate NTS certified tape with stainless conductors
- Long lasting flexible link between the tape and probe
- Full depth stainless steel and Teflon® probe
- Self-contained power supply using a standard, small 9V battery
- Audio alert beeper and LED indicate contact with the water

Applications
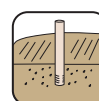
Ideal for wells with cascading water, wells with heavy oil slicks, high conductivity water, and pump and drawdown tests.

WL650 Sonic Water Level Meter
Polluted Well Level and Depth Measuring Meter

Features

- Accurate water level measurements
- Simple operation
- Obtain measurements in seconds
- Avoid cross-contamination
- No equipment to clean
- Measures around corners
- Works in cased steel or PVC-capped wells, partially cased rock wells, crooked wells, and wells with pipes, wiring, and operating pumps

Applications
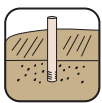
Ideal for crooked wells, wells with cascading water, partially cased rock wells, wells with submersible pumps, and capped or uncapped wells.

Description

Global Water's WL650 Sonic Water Level Meter is a self-contained, battery operated device that uses sound waves to measure well water level. Fast and accurate measurements are possible in the field without the use of down-hole instrumentation. The WL650 is lightweight, compact, versatile, and easy to operate.

Measure in Difficult Environments

The WL650 allows you to measure water levels in crooked wells, wells with cascading water, partially cased rock wells, wells with submersible pumps, capped or uncapped wells, and wells with pipes and wires inside. In fact, you can even use the device to measure the length of a coiled pipe. As long as obstructions take up no more than half of the bore area, the meter will not suffer any loss of accuracy. The device should only be used on wells under 10 inch in diameter, as the accuracy decreases with larger diameter wells.

Simple Operation

The WL650 is very simple to operate.

To begin, select either the "normal" (10-500 feet) or "deep" (up to 1,200 feet) setting on the depth switch. Then, to measure a capped well, simply insert the duct into the 5/8 inch wide access port and push the power-on switch. In a few seconds, the water level reading will appear on the digital display. In the "normal" setting, the sonic water level meter stays activated for 5 seconds or 5 pings. Using the "deep" mode, the water level meter emits 4 pings in 16 seconds. For more measuring time, hold the switch down as long as necessary.

For uncapped wells, use the provided cover plate, which slips onto the measuring duct and provides a seal for up to 6 inches diameter casings. Cover plates for larger diameters can easily be fabricated from plastic or metal sheeting.

Temperature Control

The WL650 includes a temperature control that corrects for the variation in the velocity of sound with the air temperature in the well bore. In order to obtain accurate measurements, the WL650's temperature toggle switch must be set to the average air temperature inside the well casing. The correct temperature setting can be determined using the temperature map and look-up tables provided with the instrument. The selected temperature value is shown on the WL650's display and is retained until changed.

Specifications

Measurement Range	Normal 10-500 ft (3-152 m), Deep 200-1200 ft (61-366 m)
Display Resolution	0.1 ft
Measurement Accuracy	±0.2% of reading. Exclusive of temperature setting errors*
Operating Temperature	30 to 140° F (-1 to 60° C)
Power	8 AA dry cell batteries
Dimensions (LxHxW)	(excluding sonic measuring duct) 7x4x5 in (18x10x13 cm)
Sonic Measuring Duct Dimensions	5/8 in dia. x 2 in long (1.5 cm dia. x 5 cm long)
Weight	3-1/2 lbs (1.5 kg)

* Under certain conditions, accuracy may exceed this limit: when the well casing is discontinuous; when the well casing is highly corroded or rough; when large obstructions (e.g. pipe joints) or wiring exceed half the area of the well casing; or if the well casing is less than 2 inches or greater than 10 inches in diameter.

Ordering & Options

Order No.	Description
WL650	Sonic Water Level Meter
WL610	Case for WL650

WA600 Water Alarm Sensor

High and Low Level Water Detection Device

Description

The WA600-W Water Level Alarm Sensor is a solid state sensor for detecting fluid presence in spill, rising water, or precision level monitoring situations (WA600-W version). The WA600 can also be purchased to trigger an alarm upon contact with air for low water level detection (WA600-A version). The WA600 is rugged and durable and requires minimal maintenance.

Simple Operation

The WA600 includes a pair of stainless steel electrodes that you can position at a desired distance for liquid detection. When fluid is detected, a relay closes in the water level alarm, and the signal can be used to sound an audible alarm or close a switch in a remote monitoring device. After the WA600 comes out of the water, the sensor automatically resets without the need for additional service.

Specifications

Electronics	Solid state, fully encapsulated in epoxy
Electrodes	304 stainless steel
Cable	4 wire shielded; 25 ft length (may be extended to 500 ft)
Input Voltage	12 VDC to 36 VDC
Current Draw	Continuous 5 mA Active 44 mA
Alarm Output	isolated relay Switch closure, switching voltage: 100Vdc max, switching current: 250 mA max, carry current: 400 mA max
Dimensions	1 inch dia. x 5 inch long (2.5 cm dia. x 13 cm long)
Weight	6 oz (170 g)

Ordering & Options

Water Alarm Sensor

Order No.	Alarm on Contact	Cable Length (Ft)
WA600-W	Water	25
WA600-A	Air	25

Options

Order No.	Description
WQEXC	Extra Sensor Cable, Per Foot (up to 500 ft (152.4 m)

Features

- Rugged fluid detection
- Fully submersible
- Available with alarm on water or air contact

Many Uses

The Water Level Alarm can be used in a variety of applications, including surface water monitoring, precision level detection, water level control, high water indication, and submersible marine low level indication.

Alarm Components

The WA600 complements our robust WA400-AC Strobe and Sounder Alarm (see page 137), which is easy to install anywhere you need a reliable high or low water level alarm. The WA400 alarm features a bright flashing strobe light and loud siren for alarm notification.

Applications
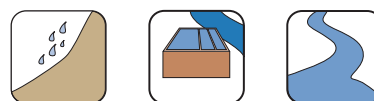
Ideal for water spills, tank levels, tank failure, pump failure, rising water, floods, drainage ponds, surface water monitoring, precision level monitoring, water level control, high water indication, marine low level indication, and more.

WA100 Float Switch

Low-Current Liquid Level Detector

Features

- Easy installation and compact size
- Highly reliable with long service life
- Built in slosh shield reduces false trips
- Use for high level or low level operation

Description

Global Water's WA100 Float Switch is easy to install and fully submersible. It includes 20 ft of 22 AWG PVC jacketed 2-conductor cable. It is also self-weighted, so it can be suspended at the required level in a tank, stilling well, or standpipe without being attached to anything. You can easily adjust the suspension depth to change the point at which the switch actuates. A built-in, removable slosh shield prevents false tripping in turbulent conditions. In addition, the WA100 can easily be changed from NC (normally closed) to NO (normally open) operation so that it may be used for high or low level applications. You can simply remove the float clip and flip the float over to change the function.

The WA100 works well with our WA400 Level Alarm (see page 137).

Specifications

Materials	Stem & extension: Brass Float: Buna-N Slosh shield: PBT Cable: 20 ft AWG 22 w/PVC jacket
Current/ Voltage Ratings	0.14 A (resistive) @ 220 VAC 0.28 A (resistive) @ 110 VAC 0.07 A (resistive) @ 120 VDC 0.28 A (resistive) @ 24 VDC
Operation	NC (normally closed): Closes on low level NO (normally open): Closes on high level
Weight	0.4 lbs (181 g)
Dimensions	1.44 inch dia. x 4 inch long (3.7cm dia. x 10cm long)

Ordering & Options

Order No.	Description
WA100	Liquid Level Float Switch

PG100 Pressure Gauge
Liquid-Filled Pressure Gauge

Features

- Liquid filled for shock protection and long life
- Rugged stainless steel case and acrylic lens
- Dual scale psi and kPa

Description

The PG100 Liquid-Filled Pressure Gauge is a quality pressure gauge that features a stainless steel case, built-in snubber, acrylic lens, and excellent 1.5% of full range accuracy. The PG100's liquid fill provides both shock protection and lubrication for a long, trouble-free service life.

Specifications

Accuracy	±1.5% full scale, BFSL
Dial	Dual scale psi & 100x kPa
Process Connection	¼ inch NPT(M), bottom
Wetted Materials	Brass
Case	304 stainless steel
Lens	Acrylic
Fill Liquid	Glycerin
Weight	0.6 lb (272g)
Dimensions	2-5/8 in dia. x 1in deep (6.7cm dia. x 2.54cm deep)

Ordering & Options

Order No.	Range psi (VAC"HG)
PG100-VAC	VAC 30 inch Hg VAC
PG100-015	15 psi
PG100-030	30 psi
PG100-060	60 psi
PG100-100	100 psi
PG100-160	160 psi
PG100-200	200 psi
PG100-300	300 psi

PG250 Test Gauge
Dual-scale Process Gauge

Features

- 0.5% full scale accuracy
- 316 stainless steel wetted materials
- Large, easy to read dial
- Rugged phenolic case with safety glass lens

Description

Dual Scale Altitude Gauge

Commonly called an "altitude gauge", the PG250 has a large dual scale dial that shows both feet of head (ft WC) and psi. The gauge can be surface-mounted for panel applications. It is filled with glycerin, which absorbs shock, reduces vibration effects, and lubricates the movement to assure long and trouble-free service lives. Since there is a direct correlation between water pressure and water column, altitude gauges are commonly used to determine level readings on water tanks and towers.

Specifications

Accuracy	0.5% full scale
Wetted Materials	316 stainless steel
Case Material	Phenolic body; laminated safety glass lens
Connection	¼ inch NPT(M), bottom
Dial Size	4-1/2 inch (11.4 cm)
Mounting	Stem or surface
Weight	1.6 lb (727 g)
Dimensions	6 in dia. x 3 inch deep (15.2 cm dia. x 7.6 cm deep)

Ordering & Options

PG250 Dual Scale Altitude in psi & ft WC

Order No.	Range psi/ ft WC
PG250-15	15 psi/34.6 ft
PG250-30	30 psi/69.2 ft
PG250-60	60 psi/138.4 ft
PG250-100	100 psi/230.67 ft
PG250-160	160 psi/369.07 ft
PG250-200	200 psi/461.33 ft
PG250-300	300 psi/692 ft

PG300 Pressure Gauge
Digital Pressure Gauge

Features

- High accuracy, ±0.25% full scale
- Robust, laser-welded stainless steel wetted end
- NEMA 4X wash down rated enclosure
- Display in psi, ft of head, or bar

Description

Our highly accurate PG300 Digital Pressure and Altitude Gauge is compact and robust, making it well suited for a variety of pressure and feet of water column applications. The PG300's backlit LCD display is easy to read, and it includes a zero reset button and a pressure unit selection button for measuring psi, ft WC, and bar.

Unlike mechanical gauges, the PG300 allows you to use a much larger range because of its high accuracy and digital readout. For instance, a 100 psi PG300 will work in place of any standard mechanical gauge from 15 psi to 100 psi, so you will only need one or two PG300's to cover all of your pressure or altitude gauge needs.

Specifications

Accuracy	±0.25% full scale, BFSL
Display	LCD, 1/2" high
Units	psi, ft of Head (WC), bar
Process Connection	¼ inch NPT(M), bottom
Wetted Materials	304L & 316L stainless steel
Operating Temp	14 to 140°F (-10 to 60°C)
Power	Standard 9 VDC battery (included)
Weight	0.8 lb (363 g)
Dimensions	2-5/8 in dia. x 1 inch deep (6.7cm dia. x 2.54cm deep)

Ordering & Options

Order No.	Range
PG300-100	0 to 100 psi/0 to 231 ft WC
PG300-300	0 to 300 psi/0 to 693 ft WC

PC300 Level Process Controller

System for Controlling Processes Based on Water Level

Description

Global Water's PC300 Level Process Controller is a highly reliable and accurate measurement and control device for all 2 and 3 wire 4-20 mA level sensors, including Global Water's WL400 Water Level Sensor (see page 6). In addition, the PC300 comes pre-programmed for use with 9 additional sensors and 14 engineering units. The PC300-C can also be custom programmed at the factory to monitor any sensor in any units selected by the customer, including sensors with voltage outputs. Please contact Global Water regarding this option.

Accurate Control

The PC300 includes two separate relays for controlling all types of external devices, including samplers, alarms, mixers, pumps, control valves, floodgates, and telemetry systems. Each relay is independently programmable to trigger on maximum and/or minimum levels in one of three different modes.

Capable Display

The PC300 includes an LCD display that shows the type of sensor that is being monitored, the data reading, and the engineering units. The display also indicates if either of the PC300's two relays have been triggered since last reset, and if so, which relay was triggered and whether the maximum or minimum limit was exceeded.

Easy Installation

The Process Controller is enclosed in a rugged case that can be easily secured to a wall, panel, or different types of mounting hardware. Please note that, while the case is watertight and will resist moisture, Global Water does not recommended mounting the PC300 outdoors without additional protection. For outdoor use, select the FCBAT Environmental Enclosure option, which includes an enclosure, battery, and battery charger.

Datalogging Options

For combined control and datalogging capabilities, you can select the PC300-DS (for serial communication) or the PC300-DU (for USB communication). These options include a process controller and an internal datalogger. (For datalogger specifications, please see the GL500-2-1 on page 123.)

PC300 Process Controller

Features

- Control a variety of external devices based on water level

- Digital LCD screen

- Easy to use four button interface with user selectable sensor types

- 4-20 mA analog output for recorders or displays

- Two independent isolated output relays and corresponding open-collector outputs

- Water resistant enclosure

Ordering & Options

Process Controllers

Order No.	Description
PC300	Process Controller
PC300-DS	Process Controller with Serial Datalogger
PC300-DU	Process Controller with USB Datalogger
PC300-C	Custom Controller

Accessories

Order No.	Description
WL400	Water Level Sensor, see page 6
FCBAT	Environmental Enclosure, Battery, and Battery Charger

Specifications

Power	90-240 AC or 12VDC 60mA DC normal, 150mA maximum 120µA average during sleep mode
Sensor Reading	5 digits + decimal point
Analog Sensor Input	4-20 mA, , 0-1V, or 0-5V
Input Resolution	0.005mA, 0.24mV, or 1.2mV
Relay Contacts	Voltage: 30VDC Current: 5A/30VDC Max Capacity: 150W Relay 1, 2nd Output: NPN to ground, 1.0 Kohm pull-up resistor Relay 2, 2nd Output: NPN to ground, open-collector
Analog Output	4mA minimum, 20mA maximum Resolution: 0.005mA

|	
Sensor Types/Units	Water Level (feet/meters), Temperature (°F/°C), pH (no units), Dissolved Oxygen (%), Turbidity (NTU/ppm), Conductivity (µS), Wind Speed (mph/kph), Wind Direction (°), Soil Moisture (%), custom sensor (any of the above, mA, mV or custom programmed units)
Sensor Data Ranges	0.000 to 60,000 (60000 in the display with 4 different decimal point positions)
Relay Time Ranges	1-60,000 seconds (16.7 hours) Resolution: 1 second increments
Sleep Time Range	1 to 240 minutes (4 hours) Resolution: 1 minute increments
Operating Temp	32 to 122 °F (0 to 50 °C)
Storage Temp	-4 to 158 °F (-20 to 70 °C)
Enclosure (WxHxD)	4.7 x 7.9 x 2.9 inch (12 x 20 x 7.5 cm), Nema 4z
Weight	31 oz (879 g)

PL200-G Pressure Logger

System or Building Water Pressure Gauge with Garden Hose Connection

Features

- Rugged and easy to use

- Records over 81,000 pressure readings

- Standard garden hose pressure connection

- Fast 10 per second recording mode to catch spikes and dips

- Includes user-friendly Windows™ software

- Battery operated

- Water-resistant enclosure

Applications
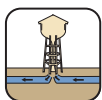
Ideal for verifying low water pressure complaints, locating water pressure spikes, providing data for water system modeling, and more.

Description

Global Water's PL200-G Water Pressure Datalogger makes it easy for you to verify low water pressure complaints, locate water pressure spikes, and even provide data for water distribution system modeling. With its standard ¾ inch garden hose connection and compact, water-resistant enclosure, you can use the PL200-G to record water pressure data just about anywhere.

Flexible Datalogging

The unit's massive memory buffer will store over 81,000 readings, with user-defined intervals from 1 per second to more than 1 per year. You can easily capture momentary pressure spikes and dips with the PL200-G's fast, 10 water pressure samples per second sampling mode. You can also use the unit's programmable start and stop alarm times to synchronize multiple PL200-G's to start at the same time, delay starting until a preset time, or limit the number of recordings during a day.

Smart Power

The unit operates on two standard 9 volt batteries, which it monitors so you will not be caught off guard with dead batteries. Data is stored in non-volatile flash memory so your water pressure data will be safe.

Capable Software

The PL200-G is equipped with a standard USB data port and includes our user friendly Global Logger II Windows™ software, which allows for easy setup, calibration, upload, and data transfer to a spreadsheet program on your laptop or desktop PC. The Global Logger II software also has online help files that are easily accessed using drop down menus and links so that you can

Specifications

Pressure Logger

Pressure Range	0-200 psi, 300 psi overpressure
Pressure Connection	Standard ¾ inch garden hose thread
Accuracy	± 1.0% full scale
Memory	Non-volatile flash memory
Power	Two 9VDC alkaline batteries standard; 8 VDC min. to 24.0 VDC absolute maximum Standby Current: 65µA typical Logging Current: 5mA typical + sensor current
Sample Modes	Fixed Interval: Programmable from 1 sec to >1 year High Speed: 10 samples/sec Logarithmic: Approximation Exception: Log only on programmed deviation from previous reading
Storage Capacity	81,759 recordings of two analog inputs, battery voltage monitor, pulse channel, and date/time stamp
Data Overwrite	Select memory wrap or unwrap (unwrap will stop logging data once memory is full)
Communications	USB Type B

Selectable Baud Rates	9600, 19200, 28800, 38400, 57600, 115200
Clock	Synchronizes to the time and date of user's computer
Operating Temperature	-40° to +85°F (-40° to +85°C) (batteries may not apply)
Weight	0.8 lb (363 g)
Dimensions (Enclosure)	3-1/8 x 3-1/8 x 2-1/8 inches (7.9 x 7.9 x 5.4 cm)

Global Logger II Software

Compatibility	Microsoft's Windows™ 98, ME, 2000, NT, XP, and Vista
Features	Tabular display/printout Data in standard spreadsheet format (CSV) Programmable alarm start and stop times Field calibration software included

Ordering & Options

Order No.	Description
PL200-G	Garden Hose Pressure Logger

PL200-H Hydrant Water Pressure Logger

Water Distribution System Pressure Recorder with Standard Hydrant Connection

Description

The Global Water PL200-H-1 Hydrant Pressure Logger is an easy to use water pressure data logger that will assist you to quickly identify and locate distribution pressure problems as well as a wealth of system modeling data. The PL200-H-1 ez-connect adapter system allows you to connect directly to a standard 2 1/2 inch NST(NH) fire hydrant port, or easily adapt to other hose threads and special "city" threads." Designed to resemble a regular hydrant cap, the PL200-H-1 is less likely to be stolen or vandalized by casual passers by. The massive memory buffer will store over 81,000 pressure readings with user defined intervals from 1 per second to more than 1 per year. Plus, the PL200-H-1's fast, 10 samples per second sampling mode can capture momentary events like pressure spikes and water hammer.

(Note: Fast recording will reduce battery life.) Programmable start and stop alarm times makes it possible to synchronize multiple loggers to start simultaneously, delay start until a preset time, or limit the number of recordings during a given time period.

Software

The PL200-H-1 is equipped with a standard USB data port and includes our user friendly Global Logger II Windows software, which allows for easy setup, calibration, upload, and data transfer to a spreadsheet program on your laptop or desktop PC. The Global Logger II Windows software also has online help files that are easily accessed using drop down menus and links to quickly find the answers to your questions.

Features

- Rugged and easy to use
- Records over 81,000 pressure readings
- Versatile ez-connector adapts to most thread sizes
- Fast 10X/second mode to catch pressure spikes
- * USB port works with any desktop or laptop PC
- Includes user friendly Windows™ software

Specifications

Hydrant Pressure Logger

Pressure Range	0-200 psi, 300 psi overpressure
Pressure Connection	Standard 2 1/2 inch BSPP (British Standard Pipe Parallel) threads
Accuracy	± 1.0% FS
Sample Modes	Fixed Interval: Programmable from 1 sec. to >1 year
	High Speed: 10 samples per second
	Exception: Log only on programmed deviation from previous reading
Storage Capacity	81,759 recordings of pressure and battery voltage, date/time stamped
Communications	USB Type B
Power	3.6 volt lithium AA (apprx. 1 year battery life or 2 million samples)
Operating Temp	-40 to +185°F (-40 to +85°C)
Enclosure	Machined anodized aluminum fitting, polycarbonate electronics housing
Weight	1.8 lbs (0.9 kg)
Dimensions	3.9 in dia. x 3.1 in tall (9.9 cm dia. x 7.9 cm tall)

Global Logger II Software

Compatibility	Microsoft's Windows™ 98, ME, 2000, NT, XP, and Vista
Features	Tabular display/printout Data in standard spreadsheet format (CSV) Programmable alarm start and stop times Field calibration software included

Ordering & Options

Order No.	Description
PL200-H-2	Pressure logger with 2 1/2 inch NHT F-F adapter
PL200-H-1	Pressure logger without hydrant adapter
01-826	2 1/2 inch NHT-F x 2 1/2 inch BSP-F Adaptor
01-827	Spanner Wrench for 3.9 inch outside diameter
PL200-H-LK	Pressure logger hydrant lock
01-678	Replacement 3.6v Battery

Applications
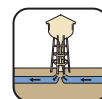
Ideal for identifying pressure problems in water distribution systems, obtaining system modeling data, and more.

FP111, 211, 311 Flow Probes
Digital Handheld Water Velocity Meters

Description

Global Water's FP111, FP211, and FP311 Flow Probes are highly accurate water velocity instruments for measuring flows in open channels and partially filled pipes. Each Flow Probe consists of a protected turbo-prop sensor coupled to an expandable probe handle that ends in a digital readout display. The unit incorporates true velocity averaging for the most accurate flow measurements. It is ideal for measuring flows in streams, rivers, canals, stormwater, wastewater, and industrial process waters.

Highly Accurate Turbo-Prop Sensor

The Flow Probe incorporates a unique turbo propeller sensor that 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 propeller rotates freely on its bearing shaft with no mechanical interconnections for minimal friction. The turbo-prop is easily removed for cleaning or replacement.

Unique Digital Readout Display

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 data points can be stored in the computer. These data points can be reviewed on the LCD for later analysis. The housing is water-resistant and incorporates a unique four-button operation for changing functions and resetting the display. The computer is powered by a non-replaceable battery that will last approximately five years with normal use. A low battery warning will be displayed.

Durable, Lightweight Telescopic Handle

The Flow Probe handle can telescope from 3.7 to 6 feet in length (FP111), 5.5 to 15 feet (FP211), or 2.5 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, 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 is ideal for carrying into remote flow monitoring areas. A mylar coated staff gauge (graduated in hundredths of a foot and centimeters) is attached to the lower section of the probe for instant water depth measurements and accurate propeller positioning. An optional fin allows you to orient the propeller correctly in turbid water.

Global Water's Flow Probe is ideal for quick, easy, and highly accurate streamflow measurements.

True Velocity Averaging

You can use the Flow Probe to measure the average water velocity of a channel's flow. As long as you keep the turbo-prop sensor in the flow, the averaging continues. One reading is taken per second, and a continuous average is displayed. Once the reading becomes steady, the true average velocity of the stream 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 can be saved by pressing the SAVE button and reviewed later.

Optional Swivel Head

The Swivel Head option allows you to rotate the turbo prop to ± 90 degrees from it's 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.

Specifications

Range	0.3 to 19.9 fps (0.1 to 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 data sets, MIN, MAX, and AVG
Features	Timer, Low battery warning
Sensor Type	Protected Turbo-Prop propeller with magnetic pickup
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, Non-Replaceable
Operating Temp	-4 to 158° F (-20 to 70° C)
Carrying Case	Padded carrying case included
Certificates	CE Compliance
Weight	FP111: 2 lbs (0.9 kg)
	FP211: 3 lbs (1.4 kg)
	FP311: 2.8 lbs (1.3 kg)

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

Applications

Ideal for measuring flows for streams, rivers, canals, stormwater runoff, agricultural runoff, ditches and canals, sewer flows, inflow and infiltration studies, industrial process waters, and more.

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

FP111 prop housing with optional orientation fin.

> "Water is life's matter and matrix, mother and medium. There is no life without water."
>
> – Albert Szent-Gyorgyi, Hungarian biochemist and Nobel Prize Winner for Medicine

Ordering & Options

Flow Probes

Order No.	Handle Length
FP111	3.7 to 6 ft (1.1 to 1.8 m)
FP211	5.5 to 15 ft (1.7 to 4.6 m)
FP311	2.5 to 5.5 ft (0.76 to 1.7 m)
FP111-S	3.7 to 6 ft (1.1 to 1.8 m) handle w/swivel
FP211-S	5.5 to 15 ft (1.7 to 4.6 m) handle w/swivel
FP-FIN	Detachable orientation fin

Replacement Parts

Order No.	Description
BA2000	Digital Flow Computer
BG0000	Prop/Bushing/Screw Kit
00-155	Flow Probe 111 Case
00-082	Flow Probe 211 Case
BC1150	Flow Probe 311 Case

FL16 Flow Logger

Water Flow and Temperature Recorder for Partially Filled Pipes, Flumes, and Weirs
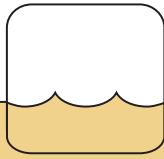
Managing Inflow and Infiltration Problems

Inflow and infiltration are terms used to describe the ways that stormwater (inflow) and groundwater (infiltration) enter into dedicated wastewater or sanitary sewer systems. Inflow and infiltration (I/I) add clear water to sewer systems and treatment facilities, reducing the system's ability to adequately transport and treat wastewater.

The reduction of I/I should be planned in a long-term monitoring and control program. Initially, a variety of information should be researched, recorded, and mapped so that key locations for sewer flow monitoring can be identified throughout a sewer system's watershed, basins, and sub-basins.

Global Water's FL16 Flow Logger is ideal for measuring wastewater flows and their responses to I/I. The following "rules-of-thumb" can be used in I/I monitoring: monitor for a minimum of 45 days, with 60 days being optimal; measure during 6 to 8 separate rainfall events; monitor during a period of high seasonal groundwater; use one flow meter for every 30,000 to 50,000 feet of pipe; and set the flow meters' recording intervals at 15 minutes. Once monitoring data has been collected and evaluated for accuracy, it can inform system modeling that will help narrow in on I/I sources.

Inspections, cleanings, smoke testing, and dyed-water testing can be employed to pinpoint I/I sources. Once a source has been discovered, a jurisdiction can evaluate rehabilitation and control alternatives. By continuing periodic monitoring, a jurisdiction will be able to evaluate the effectiveness of control efforts, deter-mine new sources of I/I, and maintain the integrity of the system over time.

Description

Global Water's FL16 Flow Logger will revolutionize the way you collect flow data. The FL16 consists of a sensor and a datalogger that will record over 81,000 depth, temperature, flow, and velocity readings. The FL16 operates on two standard 9 volt batteries, which it monitors so you are never caught off guard with dead batteries.

Many Uses

The FL16 is ideal for a variety of applications, such as: inflow and infiltration studies, storm and waste collection systems, open channels (including sewer and drainage pipes, flumes, weirs, and square channels), and a host of other gravity-flow type systems. With multiple FL16's, you can collect rain event or other flow event data from 5 or 6 sites simultaneously for a minimal investment.

Specially Engineered Sensor

The FL16's specially engineered, non-fouling level sensor works in depths as low as ½" and allows for deployment in manholes and other difficult to access areas without the need to enter the confined space. The sensor is fully encapsulated with marine-grade epoxy so that moisture can never leak in or work its way down the vent tube to cause level sensor failure (as can be the case with other pressure sensors).

Powerful Flow Logger Software

The FL16 includes user-friendly Windows™-based Flow Logger software that is tailored specifically for calculating flows in partially filled sewer and drainage pipes using the Manning's Equation. Pull-down menus for selecting and entering the necessary pipe or primary device information make programming quick and easy. A unique calibration feature allows users to view calculated water velocity, compare this to actual measured data, and adjust the flow parameters to calibrate the flow conditions of a specific application. Flow equations for over 40 standard flumes and weirs are provided, and users can define their own custom lookup tables to convert water level to flow for virtually any application. Once configured, all setup and flow parameters are stored in the FL16's memory and are uploaded to the software automatically upon connection. This information can also be saved to a file for later use, allowing the FL16 to be deployed in multiple locations without the need to re-enter the flow parameters each time it is moved. The FL16 also includes Windows™ CE-based PDA software for easy field data collection.

Flexible Options

The FL16 Flow Logger package includes the weatherproof logger unit, the non-fouling sensor with 25 ft (7.6 m) of heavy duty cable, and the Flow Logger and PDA software packages. Optional cable lengths are available up to 500 ft (152.4 m) (cable length is measured from the top of the datalogger to the bottom of the sensor). Choose the FL16U model for a USB interface, which is best for direct to PC or laptop communication; or select the FL16S serial version, which is best for Windows™ CE-based PDA's. Our optional FLMNT protective housing includes hardware for mounting to a manhole step or other structure, providing for easy installation and replacement in the field.

Applications
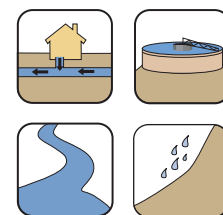
Ideal for inflow and infiltration studies, storm and waste collection systems, sewer and drainage pipes, flumes, weirs, square channels, and other gravity-flow type systems.

Bluetooth Capability

The AK1500 Bluetooth Adaptor was designed to eliminate the need for custom PDA cables to communicate between your PDA and the FL16. The adaptor connects to the FL16's serial port using the same interface cable provided with the software-cable kit.

Specifications

Datalogger

Memory	Non-volatile flash memory
Power	Two 9VDC alkaline batteries
Battery Life	Up to 1 year (depending on recording intervals)
Resolution	12 bit
Moisture Protection	Silicon coating (prevents damage to electronics from condensation)
Temperature	-40° to +185°F (-40° to +85°C) Batteries may not apply Lithium batteries recommended for operation below 32°F (0°C)
Humidity	0-95% non-condensing
Storage Capacity	81,759 time/date stamped datapoints (including battery voltage)
Sample Modes	High Speed (10 samples per second), Fixed Interval (programmable from 1 sec. to >1 year), Logarithmic, Exception
Data Overwrite	Select memory wrap or unwrap (unwrap will stop logging once memory is full)
Clock	Synchronizes to user's computer; accuracy of 0.0025% or 1 minute in 1 month; format is m/d/yr and hr/min/sec
Enclosure	Stainless steel UV protected PVC Vented for barometric pressure compensation
Communication Port	FL16S: RS-232 4-pin circular connector FL16U: USB Type B Selectable Baud Rates: 9600, 19200, 28800, 38400, 57600, 115200
Dimensions	1-7/8 inch dia. x 11-1/2 inch long, fits in 2 inch well (4.8 cm dia. x 29 cm long)
Weight	2.4 lbs (1 kg) (includes logger, 25 ft cable, and sensor)

Global Logger Flow Software

Compatibility	Microsoft's Windows™ 98, ME, 2000, NT, XP, and Vista
Features	Tabular Display/Printout Data in standard spreadsheet format (CSV) Programmable alarm start and stop times Field calibration software and help files included

Features

- Compact, self-powered and easy to use
- Over 81,000 flow, velocity, level, and temperature readings
- Free user-friendly Windows™ and Windows™ CE-based PDA software included
- USB or serial communications
- No confined space entry required for sensor deployment
- User-programmable start and stop alarms, engineering units, and field calibration setup

Cable

Conductors	4 each 22 AWG
Material	Marine grade polyurethane jacket, polyethylene vent tube, aluminum mylar shield
Outside Diameter	0.306 inch (7.8 mm)
Temperature Range	-22° to +185° F (-30° to 85°C)
Length	Standard 25 ft (up to 500 ft from factory)
Cable	~0.7 oz/ft (65 g/m)

Flow Sensor

Sensor Element	Silicone Diaphragm, Wet/Wet Transducer
Pressure Range	0 to 3 ft of water
Linearity and Hysteresis	±0.1% full scale
Pressure Accuracy	±0.1% full scale at constant temperature, ±0.2% over 32°F to 70°F (0° to 21.1°C) range
Overpressure	2 x full scale range
Burst Pressure	10 x full scale range
Resolution	Infinite (analog)
Output Currents	Level: 4-20mA ±1mA full scale Temperature: 0-10mA ±1mA full scale
Supply Voltage	10 to 36VDC
Current Draw	Combined level and temperature output currents
Warm Up Time	3 seconds recommended
Operating Temperature	0° (not frozen) to +185°F (-17°C (not frozen) to 85° C)
Compensation	Dynamic temperature compensation 32 to 70°F (0° to 21.1°C), automatic barometric pressure compensation
Material	316 stainless steel outer sleeve, PVC diffuser and strain relief
Dimensions	9 inch long x 1 inch dia. (22.9 cm long x 2.5 cm dia.)
Weight	~9 oz (250 g)

Temperature Sensor

Temperature Range	32° to 100°F (0 to 50° C)
Accuracy	±1.0% of reading

Ordering & Options

Flow Loggers

Order No.	Comm. Port	Sensor Range (Ft)	Cable Length (Ft)
FL16U	USB	0 to 3	25
FL16S	Serial	0 to 3	25

Options

Order No.	Description
WLEXC	Extra Sensor Cable (up to 500 ft)

Accessories

Order No.	Description
PDAWL16	PDA Package
FLMNT	Protective Mounting Sleeve
AK1500	Bluetooth External Adapter

You may also like . . .

Global Water Flumes
Durable, highly accurate, and easy to install flumes for your flow monitoring application.
Starting on Page 40

Barometric Pressure Compensation
The FL16 is automatically compensated for barometric pressure changes. Find out more about this critical asset.
Page 6

FC200 Open Channel Flow Monitor
Open Channel Flow Meter and Flow Totalizer

Description

Global Water's FC200 Open Channel Flow Monitor is reliable and accurate for measuring and totalizing flows for all flumes and weirs, as well as for any gravity-type open-channel application. The FC200 measures water depth with Global Water's highly accurate pressure transducer, and the unit's electronic circuitry calculates and displays flow rate and total flow values for any depth-to-flow relationship in any engineering units. The Open Channel Flow Monitor is easy to set up in the field using a unique four-button programming system.

Accurate Depth Sensor

Our Open Channel Flow Monitor measures water depth with a highly accurate, fully submersible water level sensor constructed of stainless steel. The standard level range is from 0 to 3 ft of water, which provides for accurate flow measurements even with depth changes as small as a fraction of an inch. Simply mount the pressure transducer slightly below the "zero" flow depth of the channel, upstream from the throat of a flume or weir. For open channels with no primary device, mount the sensor below the lowest expected water depth. The sensor includes 25 ft of waterproof cable. In addition, the sensor has a 2-wire 4-20 mA signal, so you can extend the cable out of water with standard, twisted-pair signal wire and mount the flow computer up to 1,000 feet away from the sensor location.

We also offer an ultrasonic water level sensor model (FC200-U) that allows the Open Channel Flow Monitor to measure semi-solid flows or other flows that are not suitable for a standard submersible pressure transducer (for sensor specifications, see the WL700 on page 10). This option includes a 0 to 3 ft ultrasonic sensor on 10 ft of cable. We recommend that the ultra-sonic sensor option only be used in areas where AC power is available. A submersible pressure transducer should be used for applications in areas without AC power.

Capable Displays and Outputs

The Open Channel Flow Monitor displays the 5-digit flow rate on an LCD screen and the totalized output on a second LCD display. The displays read in user-defined units of flow, including mgd, csf, gpm, and m³s. The FC200 produces an analog 4-20 mA output signal that is proportional to flow. You can use this output for chart recorders, dataloggers, or as an input to telemetry or process control systems. In addition, the meter has a flow proportional output signal for triggering water samplers. To add datalogging capabilities, select the FC200-D, which includes the FC200 as well as an internal serial version of Global Water's GL500-2-1 Global Logger (see specifications on page 123).

Powerful Digital Flow Computer

The FC200 has powerful internal electronic circuitry that calculates and totalizes flow. You can easily select your desired engineering units and depth-to-flow relationships

Applications
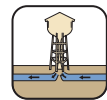
Ideal for flumes, weirs, and any other gravity-flow type system.

(from over 20 pre-defined tables) using the unit's four front panel push buttons. User programming does not require you to open the unit's enclosure. The unit's manual includes programming information, including depth-to-flow tables for all standard flumes and weirs. In the event that our preprogrammed tables do not meet your needs, you can purchase a custom version (FC200-C) by contacting Global Water.

Rugged Enclosure

The FC200's enclosure is made of weatherproof injection molded plastic. It is suitable for use in a wide variety of environments. The enclosure can be wall mounted and fitted with conduit for sensor and power connections, if required. The FCBAT Battery Option includes a heavy-duty weather resistant enclosure for the FC200 and a 12V, 4.5Ah rechargeable battery.

Features

- Easy to use interface with user selectable flow tables
- Simple four button programming
- Digital LCD screen
- Highly accurate depth sensor
- Output signal for recorders or displays
- Sampler triggering output
- Water resistant enclosure
- Over 20 flumes and weirs pre-programmed
- Custom lookup tables available

> "Thousands have lived without love, not one without water."
>
> – W.H. Auden

Specifications

Flow Monitor

Rate Display	5 digit + decimal place, LCD
Totalizer Display	6 digit
Accuracy	+0.01% + the depth-flow-table error
Flow Units	cfs, gpm, m³s, mgd
Totalizer	Related to flow units
Enclosure	NEMA 4X (IP67)
Power	120 VAC to 240 VAC Optional battery power available
Current Draw	60mA typical, 100mA max when the output relays are on, and 100uA in sleep mode
Pre-Defined Tables	Parshall: 1", 2", 3", 6", 9", 12" Palmer-Bowlus (4D): 4", 6", 8", 10", 12", 15" Weir: 45° V notch, 90° V notch, 1' rectangular, 2' rectangular H Flume: 0.4HS, 0.6HS, 0.5H, 0.75H, 1.0H, 1.5H, 2.0H Trapezoidal: 60°
Custom Table	Please provide Global Water with a depth-to-flow equation or look up table at time of order (allow for longer lead times)
Dimensions	4-3/4x8x3 inch (12 x 20 x 7.5 cm) (WxHxD)
Weight	3.4 lbs (1.54 kg)

Depth Sensor

Sensor Element	Silicone Diaphragm, Wet/Wet Transducer
Range	0 to 3 ft
Linearity and Hysteresis	±0.1% full scale
Accuracy	±0.1% full scale at constant temperature, ±0.2% over 35 - 70°F range (1.37 - 21.1°C)
Overpressure	Not to exceed 2x full scale range
Resolution	Infinitesimal (analog)
Outputs	4-20 mA or 0.5 to 2.5 VDC across 125 ohms
Supply Voltage	8 to 36 VDC
Current Draw	Same as sensor output
Warm-up Time	3 seconds recommended
Operating Temperature	0°F (not frozen) to 185°F (-17°C (not frozen) to 85°C)
Compensation	Uses dynamic temperature compensation 30 to 70°F (-1.1 to 21.1°C), automatic barometric pressure compensation
Materials	304L stainless steel, stainless steel microscreen with hundreds of holes to prevent fouling, electronics are fully encapsulated in marine grade epoxy, guaranteed not to leak
Dimensions	5-1/2 in long x 13/16 in dia. (14 cm long x 2 cm dia.)
Weight	1/2 lb (227 g)

Ordering & Options

Open Channel Flow Monitors[1]

Order No.	Sensor Type	Sensor Range (Ft)	Cable Length (Ft)
FC200	Pressure	0 to 3	25
FC200-U[2]	Ultrasonic	0 to 3	10
FC200-D[3]	Pressure	0 to 3	25
FC200-C[4]	Pressure	Custom	Custom

1) Please specify flume/weir type when placing order.

2) For sensor specifications, see the WL700 on page 10.

3) The FC200-D includes the FC200 and an internal serial version of the GL500-2-1 (see page 123).

4) For custom tables not identified in specifications, please contact Global Water with a depth-to-flow equation or look up table when placing order and allow for longer lead times.

Options

Order No.	Description
FCBAT	Battery Option (includes heavy-duty enclosure and 12V, 4.5 Ah rechargeable battery)
WLEXE	Extra Cable (up to 500 ft (152.4 m))
01-842	Extra Cable (up to 500 ft (152.4 m)) for FC200-U only

FC200-S Sewer Flow Monitor

Sewer System Flow Meter and Totalizer for Open Channel Flows

Features

- Unique sensor can be installed without entering confined space
- Quick, easy programming with user selectable flow tables
- Output signal for recorders or displays and samplers

Specifications

Power	120 VAC to 240 VAC, Optional battery power available
Current Draw	60mA typical, 100mA max when the output relays are on, and 100uA in sleep mode
Enclosure	NEMA 4X (IP67)
Rate Display	5 digits + decimal place, LCD
Totalizer Display	6 digit
Totalizer	Related to flow units
Outputs	Flow rate display, total flow display, scalable 4-20 mA output, scalable pulse and relay output
Accuracy	Pressure transducer: ±0.2% full scale; Flow Monitor: ±0.1% + the depth flow table error
Engineering Units	cfs, gpm, m³s, mgd
Weight	3.8 lbs (1.72 kg)
Dimensions	4-3/4x8x3 inch (12x20x7.5 cm) (WxHxD)
Pre-Defined VCP Sanitary Sewer Pipe Tables	Roughness Factor: 0.014
	Pipe Diameter: 6", 8", 12"
	Pipe Slope: 1/2%, 1%, 1-1/2%, 2%, 3%, 4%, 6%, and 8%

Please see flow sensor and cable specifications for the FL16 Flow Logger (page 24).

Ordering & Options

Sewer Flow Monitors[1]

Order No.	Description
FC200-S	Sewer Flow Meter
FC200-SC[2]	FC200-S with Custom Programming
FC200-SD	FC200-S with Internal Serial Global Logger

1) Please specify sewer pipe information when placing order.
2) Please contact Global Water for customization.

Options

Order No.	Description
FCBAT	Battery & Enclosure Option
WLEXE	Extra Sensor Cable (up to 500 ft (152.4 m))

Description

The FC200-S Sewer Flow Meter provides a reliable and accurate way for you to measure flows in stormwater, wastewater, and other partially filled, gravity-flow pipelines without the need for a flume or weir. Based on our popular FC200 Open Channel Flow Meter (see page 26), the FC200-S Sewer Flow Meter includes 24 lookup tables that have been preprogrammed for the most common gravity-fed sewer pipes with diameters from 6 to 12 inches and slopes of 0.5% to 8%.

Unique Rugged Sensor

Our unique FC200-S sensor resists fouling and the effects of velocity changes. It is designed so that you can place it in a pipe without having to enter a manhole or other confined space. The sensitive 0 to 3 ft depth sensing element provides highly accurate measurements in flow depths as low as three quarters of an inch. Since the sensor is a 2-wire, 4-20 mA transmitting device, the FC200S flow computer may be mounted up to 1,000 feet away from the sensor location. The sensor and flow computer can be connected with inexpensive signal wire, which allows you to mount the FC200-S in a safe and convenient location.

### Capable Displays and Outputs

The FC200-S displays the 5-digit flow rate on an LCD screen and the totalized output on a second LCD display. You can choose the displayed units of flow: mgd, cfs, gpm, or m³s. The proportional analog 4-20 mA output signal can be used for chart recorders, dataloggers, or telemetry and process control systems. In addition, the FC200-S

Applications

Ideal for inflow and infiltration studies, treatment plant discharge, collection system flow monitoring, gravity-fed raw water intakes, gravity-fed backwash discharge, and more.

has a flow-proportional pulse output signal for triggering water samplers or flow pacing chemical feed pumps.

Powerful Digital Flow Computer

The FC200-S's powerful flow computer calculates and totalizes flow based on your selection of desired engineering units and depth-to-flow relationships from easy-to-use, preprogrammed lookup tables. You can make selections quickly from the front of the unit with four push buttons, so you never need to open the enclosure to modify the unit's settings.

Customize for your Application

In the event that our preprogrammed tables do not meet the needs of your application, custom tables can be factory-programmed into the FC200-S by providing Global Water with your pipe's diameter, slope, and construction material. Please contact Global Water regarding this option (Order No. FC200-SC).

What's in the Box

The FC200-S Sewer Flow Meter includes the flow computer in a NEMA 4X enclosure, a sewer flow sensor with 25 ft of heavy duty vented cable, and built-in lookup tables with pipe material, diameter, and slope information (please verify your pipe requirements when placing your order). To add datalogging capabilities, select the FC200-SD, which includes the FC200-S as well as an internal serial version of Global Water's GL500-2-1 Global Logger (see specifications on page 123). For remote sites or temporary flow studies, we also offer the FCBAT Battery & Enclosure Option, which includes a heavy duty weather-resistant enclosure and a 12V, 4.5Ah rechargeable battery.

WMX101-104 Magnetic Flow Meter

Flanged Magnetic Meter for Full Pipe Flows

Description

The WMX101-104 Series flanged magnetic flow meters offer the perfect replacement for your old industrial mechanical turbine or propeller flow meters. Because the WMX meters have no rotor to stop turning or bearings to wear out, they are virtually maintenance free, especially in applications where debris or sand would foul most industrial mechanical flowmeters. The WMX101-104 meters are also designed to work with minimal straight pipe run requirements, which is ideal when you have very little space between the meter and an elbow.

Rugged Housing and Display

The WMX's electronics are housed in a rugged NEMA 4X aluminum enclosure with a 2-line LCD that clearly displays the flow rate and totalizer values. The housing is fitted with tamper-evident features. The display units are in US gallons and cannot be changed in the field. However, you may request flowmeter displays in the following units:

- Rate: mgd, cfm, lpm
- Total: c³, m³, Ml

Flexible Output and Power

The meters have a solid state pulse output that allows connection to a variety of devices, such as a PLC, telemetry system, datalogger, or the FT420W wall mounted display. The AO55W pulse-to-analog converter can be added if a 4-20 mA signal is required.

You can power the WMX101 meters from 12-24 VDC power supplies. Their low power requirements make them ideal for solar powered applications. The WMX104 meters are battery powered. A shielded power/pulse output cable with DIN connection is included.

Features

- Simple and economical mechanical meter
- No moving parts for low maintenance and a long life
- Minimal straight pipe required
- Pulse output for loggers, PLC's, telemetry
- Solar power compatible

Applications
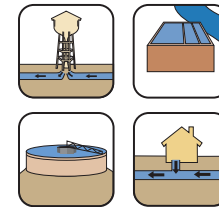
Ideal for municipal and industrial water, wastewater effluent, cooling tower water, well usage reporting, irrigation water, and more.

Specifications

Pipe Sizes (Inches)	4, 6, 8, 10
Flow Ranges (Inch)	4: 12 to 500 gpm
	6: 32 to 1200 gpm
	8: 60 to 2200 gpm
	10: 95 to 3500 gpm
Flanges	AWWA 150 lb drilling
Pressure	150 psi working pressure
Temperature Range	10°F to 130°F (-12°C to 55°C)
Accuracy	±1% at 100% to 10% of reading
	± 2% at 10% of reading to cut off
Materials	Body: Welded steel, epoxy powder coated
	Liner: HDPE
	Electronics Housing: Die cast aluminum, powder coated
	Electrodes: 316 stainless steel
Rate Display	6-digits in units of gpm (standard), mgd, liters/minute, cfm
Totalizer Display	8-digits in units of gallons x 1000, cu feet, cu meters, megaliters

Power	WMX101: 12 to 24 VDC, 30 mA
	WMX104: 2 lithium 3.6VD batteries, replaceable, 3yr life (inc.)
Output Signal	Current sinking pulse, opto-isolated, 24 VDC, 10 mA max
Empty Pipe Detection	Hardware/software, conductivity-based
Environmental	NEMA 4X standard (optional short-term immersible)

Meter Size (Inch)	L		H		T		Weight	
	in	mm	in	mm	in	mm	lbs	kg
4	9.84	250	7.4	188	0.625	15.9	21	9.5
6	11.81	300	8.5	216	0.688	17.5	36	16.3
8	13.78	352	9.5	241	0.688	17.5	50	22.7
10	17.72	450	10.4	264	0.688	17.5	75	34.1
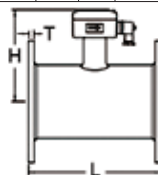
Ordering & Options

Magnetic Flow Meters*

Order No.	Pipe Dia. (Inch)	Power
WMX101-400	4	External
WMX101-600	6	External
WMX101-800	8	External
WMX101-1000	10	External
WMX104-400	4	Battery
WMX104-600	6	Battery
WMX104-800	8	Battery
WMX104-1000	10	Battery

* Standard units are US gallons. Please specify other units when placing order: mgd, cfm, or lpm.

Options

Order No.	Description
FT420W	Pulse to 4-20 mA Output and Wall Mounted Display
AO55W	Blind 4-20 mA Converter

EX80-Series Insertion Magmeters

Fixed Depth Electromagnetic Insertion Flow Meters for Full Pipe Flows

Features

- Ideal for wastewater and turbid water applications
- Low flow performance and accuracy superior to any mechanical flow sensor
- Retainer clip automatically sets correct depth
- Meter extends into the pipe about 1/8 of the pipe diameter, minimizing potential for clogging with debris

Applications

Ideal for metering pipe flows, wastewater effluent, industrial water processing, and other difficult environments.

Specifications

Flow Range	0.2 to 20 ft/sec (.06 to 6.09 m/sec)
Accuracy	1% full scale
Output	Square wave pulse, opto isolated, 500 Hz @ 20 ft/sec
Bi-Directional	Direction output, opto isolated
Empty Pipe Detection	Flow defaults to zero
Maximum Pipe Pressure	200 psi (13.8 bar)
Maximum Temperature	PVC: 130°F (55°C)
	Stainless Steel: 200°F (93°C)
Minimum Conductivity	20 microsiemens/cm
Power	12 to 24 VDC, 250 mA minimum
Materials	Mechanical: 316 SS/PVC
	Electrodes: Hastelloy
	Electrode plate: PVDF
	Housing cast: Powder-coated aluminum
	O-rings: EPDM
Dimensions	4 inch square; 6 to 7 inch total length (10.2 cm square; 15.2 to 17.8 cm total length)
Weight	2 lbs (907g)

Description

The EX80-Series Insertion Magmeters have a low-flow performance and accuracy superior to any mechanical flow sensor. The meters have no moving parts, so they are highly suitable for corrosive environments and difficult applications such as those involving changing viscosities and pulsating flows. They are particularly well-suited for metering the output of air-driven diaphragm pumps.

Select EX81 units for pipe sizes from 1 to 4 inch, EX82 units for pipe sizes from 6 to 10 inch, and EX83 units for 12 inch pipes. Meters are available in PVC (EX81P and EX82P) and stainless steel (EX81S, EX82S, and EX83S) materials.

Versatile Output

Designed for modularity and versatility, the EX80-series meters have a current-sinking pulse output that you can integrate with an appropriate transmitter or indicator depending on your application. For a scaled pulse and 4-20 mA output display, you can use the FT420M meter mounted display or the FT420W wall mounted display. For a 4-20 mA analog output only, you can mount the AO55M blind 4-20 mA converter directly onto the meter. If you are using the EX80 meter with a programmable controller, the output signal can be fed directly with no other conditioning required.

Simple Installation Fittings

We offer a range of special installation fittings for the fixed depth meters that will automatically ensure correct depth placement in the pipe. Fittings are available in PVC, stainless steel, bronze and ductile iron.

Ordering & Options

Insertion Magmeters

Order No.	Material	Pipe Diameter
EX81P	PVC	1" to 4"
EX81S	Stainless Steel	1" to 4"
EX82P	PVC	6" to 10"
EX82S	Stainless Steel	6" to 10"
EX83S	Stainless Steel	12"

Installation Fittings for EX81

Order No.	Material	Fitting Type	Pipe Diameter (Inch)
EF81T-P-100	PVC	Tee	1
EF81T-P-150	PVC	Tee	1½
EF81T-P-200	PVC	Tee	2
EF82S-P-300-16[1][2]	PVC	Saddle	3
EF82S-P-400[2]	PVC	Saddle	4
EF81T-S-100	304 SS	Tee	1
EF81T-S-150	304 SS	Tee	1½
EF81T-S-200	304 SS	Tee	2
EF82S-B-300	Bronze	Saddle	3
EF82S-B-400	Bronze	Saddle	4
EF82W-S-400	316 SS	Weld	4

1) Installed on 16 inch long pipe stub.

2) PVC saddle is supplied with Buna-N O-rings only. For chemical service, the O-ring must be removed and the saddle glued on to the pipe with PVC cement.

Installation Fittings for EX82

Order No.	Material	Fitting Type	Pipe Diameter (Inch)
EF82S-P-600[2]	PVC	Saddle	6
EF82S-P-800[2]	PVC	Saddle	8
EF82S-F-600	Ductile Iron	Saddle	6
EF82S-F-800	Ductile Iron	Saddle	8
EF82S-F-1000	Ductile Iron	Saddle	10
EF82S-F-1200	Ductile Iron	Saddle	12
EF82W-S-600	316 SS	Weld	6
EF82W-S-800	316 SS	Weld	8
EF82W-S-1000	316 SS	Weld	10
EF82W-S-1200	316 SS	Weld	12

2) PVC saddle is supplied with Buna-N O-rings only. For chemical service, the O-ring must be removed and the saddle glued on to the pipe with PVC cement.

Optional Output Displays & Converters

Order No.	Description
FT420M	Pulse to 4-20 mA Output and Meter Display
FT420W	Pulse to 4-20 mA Output and Wall Mounted Display
AO55M	Blind 4-20 mA Converter
AO55W	Blind 4-20 mA Converter and Wall Mounted Display

EX100-200 Electromagnetic Flow Sensors

Adjustable Depth Electromagnetic Insertion Flow Sensors for Full Pipe Flows

Description

The EX100-200 Electromagnetic Sensors are highly reliable adjustable depth insertion flow sensors. The meters have no moving parts, no rotors to stop turning in dirty water, and no bearings to wear out.

How it Works

The sensor produces a rapidly reversing magnetic field in the lower housing. As fluid moves through this field, a voltage is generated. This voltage is measured and translated into a frequency signal that is proportional to flow rate. This square wave signal can then be sent directly to a PLC or other control system, or it can be converted using optional output displays and converters. The EX115-215 Hot Tap meters incorporate an isolation valve and a longer tube,

which allows these meters to be easily inserted into or removed from the pipe while it is under pressure.

Versatile Output

Designed for modularity and versatility, the EX100-200 sensors have a current-sinking pulse output that you can integrate with an appropriate transmitter or indicator depending on your application. For a scaled pulse and 4-20 mA output display, you can use the FT420M meter mounted display or the FT420W wall mounted display. For a 4-20 mA analog output only, you can mount the AO55M blind 4-20 mA converter directly onto the meter. If you are using an EX100-200 meter with a programmable controller, the output signal can be fed directly with no other conditioning required.

Easy Installation

The installation fitting included with the EX100-200 sensors is standard male NPT, which can be directly threaded into ordinary saddles or threaded weld fittings.

Applications
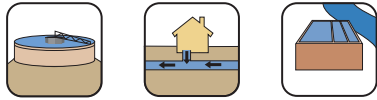
Ideal for metering pipe flows, wastewater effluent, industrial water processing, and other difficult environments.

Specifications

Flow Range	0.2 to 20 ft/s (0.06 to 6.09 m/s)
Accuracy	1% full scale
Output	Square wave pulse, opto isolated, 500 Hz @ 20 ft/sec
Bi-Directional	Direction output, opto isolated
Empty Pipe Detection	Flow defaults to zero
Maximum Pipe Pressure	200 psi (13.8 bar)
Temperature	Ambient: 0° to 180°F (-17 to 82° C) Fluid: 32° to 212° F (0° to 100°C)
Minimum Conductivity	20 microsiemens/cm
Power	12 to 24 VDC, 250 mA
Installation Fitting	1-1/2 inch Male NPT
Materials	Mechanical: 316 SS/Brass Electrodes: Hastelloy Electrode plate: PVDF Housing Cast: Powder-coated aluminum O-rings: EPDM
Weight	EX101: 3 lbs (1.36 kg) EX201: 3.4 lbs (1.54 kg)
Dimensions	EX101: 4 inch square x 12 in long (10cm square x 30.5cm long) EX201: 4 inch square x 17 in long (10cm square x 43.2cm long)

Features

- Ideal for turbid water applications
- Depth adjustable sensors
- EX101 fits any 1½ inch pipe fitting (standard saddle, for instance) and adjusts to pipe sizes 3-10 inch
- EX201 adjusts to pipe sizes 10 to 48 inch
- Meter extends into the pipe about 1/8 of the pipe diameter, minimizing potential for clogging with debris
- Optional 4-20 mA flow rate and totalizer display
- Alternatively, signal can be sent directly to a PLC or other controller
- Available in brass or 316 stainless steel

Ordering & Options

Electromagnetic Flow Sensors

Order No.	Material	Pipe Dia. (Inch)
EX101B	Brass	3 to 10
EX101S	Stainless Steel	3 to 10
EX201B	Brass	10 to 48
EX201S	Stainless Steel	10 to 48

Hot Tap Electromagnetic Flow Sensors

Order No.	Material	Pipe Dia. (Inch)
EX115B	Brass Unit/Bronze Ball Valve	3 to 10
EX115S	316 SS Unit/Bronze Ball Valve	3 to 10
EX215B	Brass Unit/Bronze Ball Valve	10 to 48
EX215S	316 SS Unit/Bronze Ball Valve	10 to 48

Optional Output Displays & Converters

Order No.	Description
FT420M	Pulse to 4-20 mA Output, Meter Mounted Display
FT420W	Pulse to 4-20 mA Output, Wall Mounted Display
AO55M	Blind 4-20 mA Converter, Meter Mounted Display
AO55W	Blind 4-20 mA Converter, Wall Mounted Display

"When the well is dry, we learn the worth of water."

– Benjamin Franklin

TX80-Series Turbine Insertion Flow Meters

Fixed Depth Turbine Insertion Flow Meters for Full Pipe Flows

Description

The TX80-Series Turbine Insertion Flow Meters are turbine-type insertion flow meters designed for use in pipes from 1½ to 8 inch in diameter. They are available in brass, 316 stainless steel, and polypropylene.

Precision Design

The TX80 meters have high quality jewel bearings and nickel bound tungsten carbide shafts that ensure maximum life and extreme low friction. The meter bodies are machined from solid rod for maximum precision and superior low flow performance. The precision design makes the meters ideal for chemical proportioning applications.

How it Works

The rotation of the meter's rotor is detected by a non-drag Hall effect sensor. The meter's output is a pulse-type square wave, which can be sent long distances (up to 2,000 feet) without a transmitter.

This signal can be connected directly to PLC's, counters, and computer cards.

Versatile Output and Displays

For rate and total flow display, as well as pump pacing, you can mount the FT415M or FT420M flow indicator directly onto the sensor. For a wall-mounted display, select the FT420W. For a 4-20 mA analog output only, you can mount the optional AO55 blind 4-20 mA converter directly onto the meter.

Range of Installation Fittings

We offer a range of special installation fittings for the fixed depth meters that will automatically ensure correct depth placement in the pipe. Fittings are available in PVC, brass, and stainless steel.

Applications

Ideal for metering clean water flows and chemical proportioning.

Features

- Easy to install
- No spool pieces required
- High-quality ruby bearings for excellent low-flow performance and long life
- One easily replaced moving part
- Pickup exerts no magnetic drag on the rotor
- Square wave frequency output can connect directly to PLC's or counter controls
- Indicator or transmitter can be mounted on the flowmeter or remotely
- Fittings are available in a wide variety of materials and sizes

Specifications

Flow Range	0.2 to 30 ft/sec (0.06 to 9.14 m/sec)
Accuracy	±1% full scale
Sensor/Output	Hall Effect Sensor: 12 VDC current sinking pulse
Maximum Pipe Pressure	Polypro: 175 psi @ 75°F (12 bar @ 23.9°C)
	Brass: 200 psi (14 bar)
	316 SS: 250 psi (17 bar)
Maximum Temperature	Polypro: 130°F (55°C) at 0 psi
	Brass, Stainless Steel: 200°F (93°C) at 0 psi
Nominal K-Factor	11 Hz/ft/sec (3.6 Hz/m/sec)
Power	6 to 24 VDC, 8 mA minimum
Materials	Sensor Body: Polypro, Brass, 316 stainless steel
	Rotor: Polypro
	Shaft: Nickel-bound tungsten carbide
	Bearings: Ruby
	Cable: #22 AWG 3-con 18' (6m)
Maximum Cable Run	2,000 ft (650m)
Weight	~2lbs (907g)
Dimensions	1-1/2" dia. x 4" long (3.8 cm dia. x 10 cm long)

Ordering & Options

Turbine Insertion Flow Meters

Order No.	Material	Pipe Dia. (Inch)
TX81Y	Polypro	1½ to 4
TX81B	Brass	1½ to 4
TX81S	Stainless Steel	1½ to 4
TX82Y	Polypro	6 to 8
TX82B	Brass	6 to 8
TX82S	Stainless Steel	6 to 8

Installation Fittings for TX81

Order No.	Material	Fitting Type	Pipe Dia. (Inch)
TF81T-P-150	PVC	Tee[1]	1½
TF81T-P-200	PVC	Tee[1]	2
MF82S-P-300-16[2][3]	PVC	Saddle	3
MF82S-P-400[3]	PVC	Saddle	4
TF81T-S-150	304 SS	Tee	1½
TF81T-S-200	304 SS	Tee	2
MF82S-B-300	Bronze	Saddle	3
MF82S-B-400	Bronze	Saddle	4
MF82W-S-400	316 SS	Weld	4

1) Male stub ends.

2) Installed on 16 inch long pipe stub.

Installation Fittings for TX82

Order No.	Material	Fitting	Pipe Dia. (Inch)
MF82S-P-600[3]	PVC	Saddle	6
MF82S-P-800[3]	PVC	Saddle	8
MF82S-F-600	Ductile Iron	Saddle	6
MF82S-F-800	Ductile Iron	Saddle	8
MF82W-S-600	316 SS	Weld	6
MF82W-S-800	316 SS	Weld	8

3) PVC saddle is supplied with Buna-N O-rings only. For chemical service, the O-ring must be removed and the saddle glued on to the pipe with PVC cement.

Optional Output Displays & Converters

Order No.	Description
FT415M	Battery Powered Pulse Output and Meter-Mounted Display
FT415W	Pulse to 4-20 mA Output and Wall-Mounted Display
FT420M	Pulse to 4-20 mA Output and Meter-Mounted Display
FT420W	Pulse to 4-20 mA Output and Wall-Mounted Display
AO55M	Blind 4-20 mA Converter, Meter Mounted
AO55W	Blind 4-20 mA Converter, Wall Mounted

TX100-200 Turbine Flow Sensors

Adjustable Depth Turbine Insertion Flow Sensors for Full Pipe Flows

Description

The TX100-200 Turbine Flow Sensors are highly reliable adjustable depth insertion turbine flow sensors. The sensors use ruby bearings and a non-drag pick off to achieve a wide flow range and a long life. A depth adjustment system allows two basic sizes to cover pipes from 3 to 48 inch in diameter.

How it Works

As fluid moves the TX100-200 turbine, a sensor detects the passage of miniature magnets in the rotor blades (magnets are in 2 or 4 blades only.) The resulting square wave signal can be sent over unshielded cable for hundreds of feet without a transmitter. This signal can be sent directly to a PLC or other controller, or it can be converted using a blind 4-20mA output or a flow rate and totalizer display. The TX115-215 Hot Tap meters incorporate an isolation valve and a longer tube, which allows these meters to be easily inserted into or removed from the pipe while it is under pressure.

Versatile Output and Displays

Designed for modularity and versatility, the TX100-200 sensors have a current-sinking pulse output that you can integrate with an appropriate transmitter or indicator depending on your application. For a battery powered pulse output, select the FT415M meter display or FT415W wall display. For a scaled pulse and 4-20 mA output display, you can use the FT420M meter display or the FT420W wall display. For a 4-20 mA analog output only, you can mount the AO55 blind 4-20 mA converter directly onto the meter. If you are using a TX100-200 sensor with a programmable controller, you can feed the output signal directly with no other conditioning required.

Easy Installation

The installation fitting included with the TX100-200 sensor is standard 1½ inch male NPT, which can be directly threaded into ordinary saddles or threaded weld fittings.

Specifications

Accuracy	±1% full scale
Flow Range	0.2 to 30 ft/sec (.06 to 9.14 m/sec)
Sensor/Output	Hall Effect Sensor: 12 VDC current sinking pulse
Maximum Pipe Pressure	200 psi (14 bar)
Maximum Temperature	200°F (93°C)
Pipe Size	TX101: 3 to 10 inch (50 to 250mm)
	TX201: 10 to 48 in (250 to 1200mm)
Fitting Size	1-1/2 inch NPT
Insertion Force	0.44 x pressure in pipe
Power	5 to 24 VDC, 1.5 mA
Materials	Sensor Body: Brass, 316 stainless steel Rotor: Polypro Shaft: Nickel-bound tungsten carbide Bearings: Ruby Cable: #22 AWG 3-con 18' (6m)
Maximum Cable	2,000 ft (650m)
Weight	TX101: 3 lbs (1.36 kg)
	TX201: 3.4 lbs (1.54 kg)
Dimensions	TX101: 4 inch square x 12 inch long (10cm square x 30.5cm long)
	TX201: 4 inch square x 17 inch long (10cm square x 43.2cm long)
	TX115: 15-3/4 inch (40 cm) tall w/ 2 inch male NPT
	TX215: 21-3/4 inch (55 cm) tall w/ 2 inch male NPT

Ordering & Options

Adjustable Depth Turbine Flow Sensors

Order No.	Material	Pipe Dia. (Inch)
TX101B	Brass	3 to 10
TX101S	Stainless Steel	3 to 10
TX201B	Brass	10 to 48
TX201S	Stainless Steel	10 to 48

Hot Tap Adjustable Depth Turbine Meters

Order No.	Material	Pipe Dia. (In)
TX115B	Brass Unit/Bronze Ball Valve	3 to 10
TX115S	316 SS Unit/Bronze Ball Valve	3 to 10
TX215B	Brass Unit/Bronze Ball Valve	10 to 48
TX215S	316 SS Unit/Bronze Ball Valve	10 to 48

Optional Output Displays & Converters

Order No.	Description
FT415M	Battery Powered Pulse Output and Meter-Mounted Display
FT415W	Battery Powered Pulse Output and Wall-Mounted Display
FT420M	Pulse to 4-20 mA Output and Meter-Mounted Display
FT420W	Pulse to 4-20 mA Output and Wall-Mounted Display
AO55M	Blind 4-20 mA Converter Meter-Mounted Display
AO55W	Blind 4-20mA Converter Wall-Mounted Display

Features

- Easy installation through 1.5 inch NPT
- Two sizes fit entire pipe range: 3 to 10 inch and 10 to 48 inch
- Turbine rotor to optimize minimum flow limits
- High quality ruby bearings for long life
- One easily-replaced moving part
- Uses standard NPT threaded pipe fittings or saddles
- Optional 4-20 mA flow rate and totalizer display
- Signal can be sent directly to controller

Applications
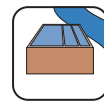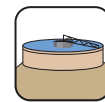
Ideal for metering clean water flows and chemical proportioning.

"Water links us to our neighbor in a way more profound and complex than any other."

– John Thorson, *Indian Water Rights*

SPX Inline Low Flow Meter

Chemical-Resistant Low Flow Meter for Small Pipes

Description

The SPX Inline Low Flow Meter is a chemical-resistant meter designed for measuring flows in small pipes. The SPX is available in standard pipe thread sizes from 3/8 to 1 inch NPT. A transparent acrylic cover provides visual flow indication for the meter's PVDF rotor element. The 6-24 VDC pulse output is compatible with many different types of PLCs, counters, and a full range of rate displays and controls.

The SPX employs ruby bearings and a nickel tungsten carbide shaft to measure very low minimum flows and provide superior wear characteristics. The meter's polypropylene body is resistant to many mild chemicals. The meter's rotor is PVDF, and the nickel-bonded tungsten carbide shaft is similar to stainless steel in

Features

- Accurate at lower flow rates
- Resistant to many low-corrosive chemical solutions
- Pulse output is compatible with most PLC's and controllers
- Transparent housing for sight flow inspection
- Replaceable non-wetted solid-state pickup
- Thread sizes from 3/8 to 1 inch NPT

resistance. If you are using wetted materials that are questionable, please contact Global Water for assistance.

The meter can be installed vertically or horizontally. Please note that a straight pipe run of at least 5 diameters (10 diameters is preferred) upstream of the meter is recommended.

Applications
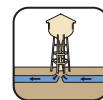
Ideal for weak chemical flows, small diameter pipes, and low flows.

Specifications

Flow Rates	3/8 inch: 0.07 to 5 gpm
	1/2 inch: 0.1 to 10 gpm
	3/4 inch: 0.2 to 20 gpm
	1 inch: 0.5 to 40 gpm
Accuracy	±1% full scale
Maximum Pressure	150 psi (10 bar)
Maximum Temperature	160°F (70°C)
Power	6 to 24 VDC, 2 mA minimum
Sensor Cable	18 ft AWG 22 3-conductor
Maximum Cable Run	2000 ft (650 m)
Materials	Body: Polypropylene
	Cover: Acrylic
	Rotor: PVDF
	Shaft: Nickel tungsten carbide
	Bearings: Ruby
Size	4.1 x 2.2 x 2.1 inch
	(10.5 x 5.5 x 5 cm)
Weight	2.5 lbs (1.13 kg)

Ordering & Options

SPX Inline Low Flow Meters

Order No.	Thread Size (Inch) (NPT)	Cable Length
SPX-038	3/8	18 ft
SPX-050	1/2	18 ft
SPX-075	3/4	18 ft
SPX-100	1	18 ft

Optional Output Displays & Converters

Order No.	Description
FT415W*	Battery Powered Pulse Output and Display
FT420W	Pulse to 4-20 mA Output and Display
AO55W	Blind 4-20 mA Converter

*NOTE: The FT415W requires the SPX to be fitted with a micropower option. Please ensure that this option is noted when you order your flow meter.

Micro-Flo Paddlewheel Flowmeter
Digital Flowmeter for Very Low Flows

Description

The Micro-Flo Paddlewheel Flowmeter is designed to measure very low flows down to 1 oz./min, in tubing sizes down to 1/8 inch. The Micro-Flo's chemical resistant wetted materials make it suitable for many chemical feed applications. (More chemical feed products are presented starting on page 96.)

Easy Digital Display and Calibration

The Micro-Flo's easy to read, 6-digit LCD display indicates both rate and total accumulated flow, with user selectable or custom programmable scale factors in units of US gallons, liters, ounces, and milliliters. Time units are selectable in minutes, hours, or days. The Micro-Flo meter also features a volumetric field calibration programming system, which allows the user to fine tune the meter for a particular application. A handy open collector alarm output is included for use with an autodialer, PLC, or telemetry system.

Rugged Design

The Micro-Flo's rugged sensor body is constructed of chemical-resistant PVDF and includes a clear PVC window so that you can observe the liquid flow past the impeller.

Options to Meet Your Needs

The Micro-Flo models listed below are offered with 1/8 inch NPT(F) or 3/8 inch OD connections, a sensor-mounted display, and a 115 VAC to 15 VDC power supply. Additional process connections are available by special order— please contact Global Water regarding this option.

Features

- No external power required
- Quick and easy to install
- LCD rate and totalizer display
- No programming required
- Measure very low flows (to 1 oz./min)

Applications
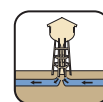
Ideal for low flow and small pipe diameter flow metering applications.

Micro-Flo Installation Notes

When installing your Micro-Flo meter, please note the following instal-lation tips:

1. The meter can be mounted on horizontal or vertical runs of pipe. The paddle axle must remain horizontal ±10°.

2. The meter can accurately measure flow from either direction.

3. The meter can only be used with fluids that can pass infrared light.

4. The meter is designed to withstand outdoor conditions. We recommend you install it in a cool, dry location where it can be easily accessed.

5. The unit's LCD is not recommended for direct sunlight applications.

Specifications

Accuracy	±6% full scale
Materials	Body, Paddle, Axle: PVDF NPT (F) Connection: PVC Tubing Connectors: PVDF
Maximum Working Pressure	PVC lens: 130 psig (9 bar) @ 70°F (21°C) PVDF lens: 150 psig (10 bar) @ 70°F (21°C)
Maximum Fluid Temperature	PVC Lens, F/NPT Connectors: 130°F (54°C) @ 0 psi PVDF Lens, tubing connectors: 200°F (93°C) @ 0 psi

Input Power	9 to 28 VDC
Sensor Type	Infra-red light beam
Sensor Output Cable	3-wire shielded cable, 6 ft
Enclosure	Valox® PBT, NEMA type 4X (IP56)
Shipping Weight (Approximate)	1 lb (0.45 kg)
Dimensions	5 x 3.5 x 2.22 inch (127 x 89 x 56.26 mm)

Ordering & Options

Order No.	Flow Range (oz./min)	Flow Range (ml/min)	Connection (Inch)
FS1-100-5V	1 to 10	30 to 300	1/8 NPT(F)
FS1-200-5V	3.5 to 35	100 to 1,000	1/8 NPT(F)
FS1-300-5V	7 to 70	200 to 2,000	1/8 NPT(F)
FS1-400-5V	10 to 100	300 to 3,000	1/8 NPT(F)
FS1-500-5V	17 to 170	500 to 5,000	1/8 NPT(F)
FS1-600-5V	24 to 240	700 to 7,000	1/8 NPT(F)
FS1-100-6V	1 to 10	30 to 300	3/8 OD Tubing
FS1-200-6V	3.5 to 35	100 to 1,000	3/8 OD Tubing
FS1-300-6V	7 to 70	200 to 2,000	3/8 OD Tubing
FS1-400-6V	10 to 100	300 to 3,000	3/8 OD Tubing
FS1-500-6V	17 to 170	500 to 5,000	3/8 OD Tubing
FS1-600-6V	24 to 240	700 to 7,000	3/8 OD Tubing

F-1000 Series Flowmeters

Saddle or T-Mount Paddlewheel Meters for Full-Pipe Flows

Features

- No external power required
- Quick and easy to install
- LCD rate and totalizer display
- No programming required
- Battery powered
- Rugged design

Applications
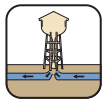
Ideal for full pipe water flow metering in pipes sizes from 3/8 to 2 inch, including in mildly corrosive liquids.

Specifications

Accuracy	±2% full scale
Display	6-digit LCD, rate and total
Maximum Pressure	300 psig (20.7 bar) @ 70°F (20.7°C)
Maximum Fluid Temperature @ 0 psi	T-mount: 200°F (93°C)
	Saddle-mount: 140°F (60°C)
Materials	Sensor body/paddle/axle: PVDF
	Mounting T: Polypropylene
	Mounting saddle: 1-1/2 to 3 inch: PVDF, 6 to 10 inch: PVC
	O-Rings: Viton®
Power	Two AAA batteries (included)
Battery Life	1-year minimum
Enclosure	NEMA 4X, ABS
Dimensions	See illustrations
Weight	2 lbs (907 kg)

T-Mount Dimensions

Pipe Size	A	B
3/8 MPT	5-3/8	4-3/4
1/2 MPT	5-3/8	5-1/8
3/4 MPT	5-3/8	5-1/4
1 MPT	5-3/8	5-5/8
1-1/2 MPT	6-1/8	6-1/2
2 MPT	6-1/8	6-3/4

All dimensions in inches.
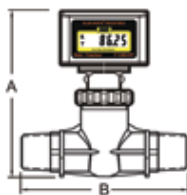
Description

The DIGI-FLOW™ F-1000 paddlewheel meters are easy to install, battery-powered, and a great value for many full pipe water flow applications. The F-1000 features high quality, durable materials that provide for a long operational life in a variety of applications, including mildly corrosive liquids. With simple strap-on saddle or T-mount installation fittings, you can install the F-1000 quickly on most standard pipe sizes and mount it in virtually any position. The easy to read, 6-digit LCD display indicates both rate of flow and total flow, and includes a reset button for the totalizer. Once the F-1000 is installed, its meter head and mechanical portion may be quickly removed for maintenance or replacement.

Options to Meet Your Needs

The T-mount F-1000 meters are available in sizes from 3/8 to 2 inch and come with standard male pipe threads. The saddle-mount version fits any pipe with a wall thickness equal to schedule 40 or schedule 80 pipe, with model diameters from 1½ to 6 inch.

Easy Installation

You can quickly and easily install a meter by simply drilling a 1-1/8 inch hole in the pipe and strapping the unit on with the included hardware. Each F-1000 is pre-calibrated for a specific pipe size and wall thickness, so it is ready to install right out of the box. All necessary mounting hardware and batteries are included.

Additional Notes

In addition to the gpm units presented below, F-1000 Models are available in lpm and metric pipe sizes– please contact us regarding availability. Remember to always check for chemical compatibility before using this or any other flowmeter with a liquid other than clean to slightly turbid water.

Ordering & Options

T-Mount Models

Order No.	Pipe Size (Inch)	Flow Range (gpm)
RT-375MI-GPM1	3/8	0.8 to 8
RT-375MI-GPM2	3/8	0.4 to 4
RT-500MI-GPM1	½	2 to 20
RT-500MI-GPM2	½	0.5 to 5
RT-750MI-GPM1	¾	3 to 30
RT-750MI-GPM2	¾	0.8 to 8
RT-100MI-GPM1	1	5 to 50
RT-100MI-GPM2	1	2 to 20
RT-150MI-GPM1	1½	4 to 40
RT-150MI-GPM2	1½	6 to 60
RT-150MI-GPM3	1½	10 to 100
RT-200MI-GPM1	2	4 to 40
RT-200MI-GPM2	2	6 to 60
RT-200MI-GPM3	2	10 to 100
RT-200MI-GPM4	2	20 to 200

Saddle Mount Models - Schedule 40 Pipe Walls

Order No.	Pipe Size (Inch)	Flow Range (gpm)
RT-150S4-GPM1	1½	15 to 150
RT-200S4-GPM1	2	30 to 300
RT-300S4-GPM1	3	60 to 600
RT-400S4-GPM1	4	100 to 1000
RT-600S4-GPM1	6	250 to 2500
RT-800S4-GPM1	8	400 to 4000
RT-1000S4-GPM1	10	600 to 6000
RT-1200S4-GPM1	12	800 to 8000

Saddle Mount Models - Schedule 80 Pipe Walls

Order No.	Pipe Size (Inch)	Flow Range (gpm)
RT-150S8-GPM1	1½	15 to 150
RT-200S8-GPM1	2	30 to 300
RT-300S8-GPM1	3	60 to 600
RT-400S8-GPM1	4	100 to 1000
RT-600S8-GPM1	6	250 to 2500
RT-800S8-GPM1	8	400 to 4000
RT-1000S8-GPM1	10	600 to 6000
RT-1200S8GPM1	12	800 to 8000

Saddle Dimensions

Pipe Size in (mm)	A (Inch)	B (Inch)	Pipe Size in (mm)	A (Inch)	B (Inch)
1.5 (050)	4-5/16	3-3/16	6 (160)	4-1/4	3-3/16
2 (063)	4-5/16	3-3/16	8 (200)	4-1/4	3-3/16
3 (090)	4-5/16	3-3/16	10 (250)	4-1/4	4-1/2
4 (110)	4-5/16	3-3/16	12 (315)	4-1/4	4-1/2

Features

- Clean or dirty water applications with selectable modes
- Quick and easy setup and operation
- Clamp-on transducers never contact process liquid
- Built in data logger downloads to standard SD card
- Fully configurable analog and pulse outputs
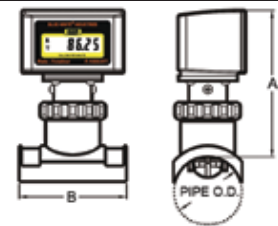
FM500 Ultrasonic Flow Meters

Ultrasonic flow meters that use transit time and Doppler methods to measure flow

Description

The Global Water FM500 ultrasonic flow meters provide accurate and trouble free flow metering for a wide range full pipe applications including: potable water, raw wastewater, effluent, well water, slurries, or virtually any sound conducting liquid. The FM500 incorporates the latest ultrasonic technology to give you an accurate, easy to use hybrid flow meter with selectable Doppler or transit-time operating modes. With its quick and easy clamp-on transducer installation, factory pre-configuration and user programmable menu driven interface, the meter is a snap to commission in the field. The reliable ultrasonic flow meters use custom algorithms and DSP technology to ensure high accuracy flow metering, and the proprietary AGC (Automatic Gain Control) algorithm eliminates the need for manual gain adjustments.

Loaded with the features, the FM500 includes: five programmable and password protected configurations for multiple user and portable applications, an easy to read 320 x 240 pixel backlit LCD display, data logging to standard SD Card format (user configurable to time interval, flow rate and total set-point triggers), isolated 4-20mA analog and 0-1000Hz pulse outputs.

Optional features include: three configurable relay outputs and a communications package that allows the meter to connect to your computer via RS-232, RS-485, USB or Ethernet. The communication package also permits remote access and control of all functions including real-time display, system configuration, data logging, remote data capture and process control functions. The software included with the meter's communication package allows remote internet access through a local network set-up.

Specifications

Liquid velocity range	0 to 30 f/s (0 to 9 m/s)
Measuring principle	Ultrasonic Doppler or transit time via pipe mounted transducers
Accuracy at pipe inside diameter	Flow rate averaging time (5.0s): +1% of rate >8 ft/s and +0.06 ft/s <8 ft/s (Transit time 1/2" to 1") +1% of rate >1 ft/s and +0.01 ft/s <1 ft/s (Transit time 1-1/4" to 12")
	Flow rate averaging time (1.0s): +1% of rate >12 ft/s and +0.12 ft/s <12 ft/s (Transit time 1/2" to 1") +1% of rate >5 ft/s and +0.05 ft/s <5 ft/s (Transit time 1-1/4" to 12")
	Flow rate averaging time (0.5s): +2% of rate >12 ft/s and +0.25 ft/s <12 ft/s (Transit time 1/2" to 1") +2% of rate >12 ft/s and +0.25 ft/s <12 ft/s (Transit time 1-1/4" to 12")
Condition of flow	Full pipe within the minimum and maximum velocity specifications
Liquid types	Virtually any acoustically conductive fluid
Transit time mode	from 0% to 1% (0 to 10,000 ppm) particulate
Nominal pipe sizes	1/2 - 12 inch (20 to 315 mm)
Pipe materials	Most metal and plastic pipes

Pipe liner materials	Most plastic liners
Enclosure	NEMA 4X (IP66), powder coated aluminum, stainless steel hardware
Mounting	Wall, pipe (vertical or horizontal) or panel Hardware included
Panel opening	10.63x8.10 inches (270x206 mm) (HxW)
Panel depth	2.78 inches (71 mm), front: 2.18 inches (55 mm)
Operating temp	14 to 140° F (-10 to 60° C)
Storage temp	-40 to 158° F (-40 to 70° C)
Dimensions	11.0x8.6x5.0 inches (279x218x127 mm) (HxWxD)
Weight	6.8 lb. (3.1 kg)

Clamp-On Transducers

Housing	NEMA 4X (IP66), powder coated aluminum, stainless steel hardware
Cable	Shielded coaxial RG/U 59, PVC jacket, RoHS Compliant. Standard length: 10 ft. (3m)
Nominal Pipe Sizes	A series: 1/2 - 2.0 inch (20 - 63 mm) B series: 2.0 - 12.0 inch (63 - 300mm)
Dimensions	3.12x2.95x1.60 inches (79x75x41 mm) (HxWxD)
Weight	0.8 lb. (0.4 kg.) each

Ordering & Options

FM500

Order No.	Description
FM500	Ultrasonic Flow Meter
FM500-B	3-relay option (for control and alarms)
FM500-A	Smart communications/ configuration package
FM500-50	50 FT transducer cable (for 2 transducers)

NOTE: Optional transducer cable lengths available, 25 ft. (7m), 50 ft. (15m), and 100 ft. (30m)

> "Filthy water cannot be washed."
>
> – African proverb

F-400N Series Flowmeters

Variable Area Inline Flowmeters

Description

The F-400N Series Variable Area Flowmeters, including the F-400N and F-410N versions, have long been two of the most popular lines. These flowmeters feature superior styling and quality materials. They are also available in a variety of models to suit the needs of your specific applications.

Quality Features

The F-400N Series flowmeters are machined of highest quality acrylic that is polished to a crystal clear finish. Additional design features include corrosion and wear resistant internal parts, sturdy well-built adapters, Viton® o-ring seals, and PVC or stainless steel floats.

Easy Reading

Permanent scales are screen printed onto the meter body directly in front of the float for easy reading. The F-400's also include back reflectors for easy reading.

Various Models

As shown in the Ordering & Options section below, F-400N Series flowmeters are available for a variety of flow rates; with 1/4, 3/8, or 1/2" F/NPT adapters; and with components in a variety of materials. In addition to the versions presented below, other configurations and flow ranges are available. Please contact us with your desired mounting configuration, liquid being measured, and measurement range in gpm, lpm or cfm.

Features

- Tough machined acrylic meter body
- Direct reading permanent scale
- Acceptable in direct sunlight applications
- Reinforced connections with metal thread supports

Applications
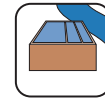
Ideal for water treatment systems, reverse osmosis systems, manufacturing and management of deionized water, and more.

Specifications

Max. Working Pressure	150 psi (10.3 bar) @ 70°F (21°C)
Max. Fluid Temperature	Polypropylene adapters: 150°F (65°C) @ 0 psi
	PVC adapters and floats: 120°F (49°C) @ 0 psi
Full Scale Accuracy	± 5%
Calibration Fluid	Water, specific gravity 1.0
Maximum Pressure Drop	2 psi
Dimensions	F-400N: 8-3/16 inch H x 1-1/4 inch dia. (21cm H x 3.2cm dia.)
	F-410N: 11 inch H x 1-3/4 inch dia. (28cm H x 4.5cm dia.)
Weight	F-400N: 0.5 lb. (.23 kg)
	F-410N: 2.0 lb. (.91 kg)

Ordering & Options

F-400N Standard Models for Liquid

Order No.	Flow Range (gpm)	Flow Range (lpm)	F/NPT Adapter (Inch)	Connector	Float
F-40250LN-4	0.025 to 0.250	0.1 to 1.0	1/4"	PVC	PVC
F-40050LN-4	0.050 to 0.500	0.2 to 2.0	1/4"	PVC	316 SS
F-40375LN-8	0.1 to 1.0	0.4 to 4.0	1/2"	Polypropylene	PVC
F-40376LN-8	0.2 to 2.0	1.0 to 7.5	1/2"	Polypropylene	316 SS
F-40377LN-8	0.3 to 3.0	1.5 to 11.0	1/2"	Polypropylene	316 SS
F-40500LN-8	0.5 to 5.0	2.0 to 20.0	1/2"	Polypropylene	316 SS

F-410N Standard Models for Liquid

Order No.	Flow Range (gpm)	Flow Range (lpm)	F/NPT Adapter (Inch)	Connector	Float
F-40750LN-12	1.0 to 10	4 to 38	3/4	Polypropylene	316 SS
F-41017LN-12	1.0 to 17	4 to 64	3/4	Polypropylene	316 SS
F-41000LN-12	2.0 to 20	8 to 80	3/4	Polypropylene	316 SS
F-41000LN-16	2.0 to 20	8 to 80	1	Polypropylene	316 SS

> "Rain is a blessing when it falls gently on parched fields, turning the earth green, causing the birds to sing."
>
> – Donald Worster, *Meeting the Expectations of the Land*

F-550 Series Flowmeters

Variable Area Flowmeters for Flush Panel Mounting

Description

The F-550 Series Panel Mount Flowmeters are used widely to monitor and control flows in a variety of water and mild chemical applications. Designed for easy flush panel mounting, the F-550 meters come with polypropylene back connectors in standard NPT sizes, with the bulkhead nuts included. The rugged F-550 meters are made from one-piece machined and polished acrylic with 316 stainless steel floats for accuracy and long life. A precisely calibrated dual flow scale (gpm and lpm) is permanently printed on the meter body for clear and accurate readings.

Choose from a standard unit or an adjustable unit with a built-in rate valve for precise flow control.

Features

- One piece machined and polished acrylic meter body
- Annealed for added strength and chemical resistance
- Flush mount design includes bulkhead nuts
- Monitor and control flows in a variety of applications
- Accurate and rugged design
- Dual flow scale (gpm and lpm)

Applications
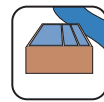
Ideal for water treatment systems, reverse osmosis systems, manufacturing and management of deionized water, and more.

Specifications

Accuracy	±5% full scale
Materials	Float: 316 stainless steel Body: Acrylic Adapter Polypropylene O-ring: Viton®
Mounting	Panel mount
Mounting Hole Diameter	11/16 inch
Maximum Fluid Temperature	200°F (93°C) @ 0 pressure

Maximum Pressure	250 psig (17.2 bar) @ 70°F (21°C)
Maximum Pressure Drop	2 psi
Weight	2 lbs (907 kg)
Dimensions	7-1/4 x 1-1/16 x 1-1/4 inch (184 x 27 x 32 mm)

Ordering & Options

Standard Models

Order No.	Flow Range (gpm)	Flow Range (lpm)	Connection (Inch)
F-55250L	0.025 to 0.25	0.1 to 1	1/4 NPT (M)
F-55375L	0.1 to 1	0.4 to 4	3/8 NPT (M)
F-55376L	0.2 to 2	0.75 to 7.5	3/8 NPT (M)
F-55500L	0.5 to 5	2 to 20	1/2 NPT (M)
F-55010L	1 to 10	4 to 40	1 NPT (M)
F-55200L	2 to 20	7.5 to 75	1 NPT (M)

Adjustable Models with Rate Valve

Order No.	Flow Range (gpm)	Flow Range (lpm)	Connection (Inch)
F-55250LA	0.025 to 0.25	0.1 to 1	1/4 NPT (M)
F-55375LA	0.1 to 1	0.4 to 4	3/8 NPT (M)
F-55376LA	0.2 to 2	0.75 to 7.5	3/8 NPT (M)
F-55500LA	0.5 to 5	2 to 20	1/2 NPT (M)
F-55010LA	1 to 10	4 to 40	1 NPT (M)
F-55200LA	2 to 20	7.5 to 75	1 NPT (M)

Variable Area Flow Metering

A variable area flowmeter includes a vertically tapered tube through which fluid passes, from the smaller end up to the larger. As fluid flows through the tube, it forces an indicator (a float) upward. The clearance space (area) between the float and tube increases as the float approaches the top of the meter. This increasing area requires a larger amount of fluid to force the float higher. By varying the taper of the tube, the mass of the float, and the length of the tube, different flow ranges can be calibrated.

A variable area flowmeter must be plumbed into a piping system with the narrow part of the taper at the bottom. The tube usually includes a scale of flow increments. The flow rate can be read by matching the increments on the tube with the float. There are four common types of floats, which should be read in specific ways to ensure accurate measurements. In addition, when disassembling flowmeters for cleaning, the floats "up" position should be noted. While our variable area flowmeters are clearly marked, indicating how they should be read, the following can be used as an additional reference:

- Sharp Edge and Ball Floats: Sharp edge floats include a single wide ridge, and ball floats are widest around their circumference. These types of floats should be read at their largest diameters.

- Hat and Slug Floats: These floats both have flat tops and tapered bottoms. The hat float also has a recognizable raised band around its upper diameter. These floats should be read at their tops.

RF-Series Ramp Flumes

Fixed Size Flumes for Flow Measurement

Features

- Low investment for accurate water measurement
- Wide flow rate ranges available
- Easy to install
- Self cleaning approach section
- Flumes with flow rates up to 10 cfs can be shipped via UPS

Applications

Ideal for small streams, irrigation ditches, and lined or unlined canals.

"Solid stone is just sand and water . . . Sand and water and a million years gone by."

– Beth Nielsen Chapman, Singer/Songwriter

Description

Global Water's RF-Series Ramp Flumes are low cost flumes built for easy installation and high accuracy.

Rugged Design

The Ramp Flumes are built from high grade 16 gauge galvanized steel and will resist most corrosive environments. The design utilizes rigid flanges and bracing to allow the use of soil as a backfill during installation.

Easy Shipping

The flumes are shipped unassembled to minimize cost of freight. The RF3.5, RF7, and RF10 units (with maximum flow rates from 3.5 to 10 cubic feet per second) can be shipped by UPS.

Simple Installation

Installation of a Ramp Flume is simple and straightforward. The flume can be transported to the installation site by hand, horse, truck, or ATV. The large ramp flumes are heavy and will require excavation equipment for lifting and site preparation. However, surveying and complicated excavation are not required, so the cost of installation will be minimal. When installing, simply ensure that the flume is level from end to end and side to side. Only a nut wrench and screw driver are necessary for assembly, but gloves should be used for safety during installation.

High Accuracy and Low Maintenance

Extensive testing and evaluation under field and laboratory conditions have shown that the RF-Series Ramp Flumes consistently achieve accuracy to within 3% when properly installed. The increased flow velocity in the throat section discourages sediment accumulation in this part of the flume. The approach section near the gauge has a self-cleaning function that provides long intervals for debris-free operation and consistent accuracy. This allows for long periods of operation between cleanings and maintenance.

Ordering & Options*

Order No.	Flow Range (cfs)	Flow Range (gpm)	Constructed Size (Inch) (LxHxW)	Shipping Weight
RF3.5	0.1 to 3.5	45 to 1,571	47-1/2x14-7/8x12-1/4	62 lbs (28 kg)
RF7	0.1 to 7.0	45 to 3,142	47-1/2x14-7/8x24-1/4	86 lbs (39 kg)
RF10	0.1 to 10.0	45 to 4,488	47-1/2x14-7/8x36-1/4	108 lbs (48 kg)
RF20	0.5 to 20.0	224 to 8,976	80x28x34-1/8	400 lbs (181 kg)

* Choosing the correct flume size is important. We suggest using the smallest size that will accommodate your channel's flow. Please contact Global Water regarding your selection.

Parshall, Palmer Bowlus, and "H" Flumes

Primary Devices for Open Channel Flow Measurement

Description

Global Water's Parshall, Palmer Bowlus, and "H" Flumes are constructed of high quality polyester resin and fiberglass. These flumes are durable, highly accurate, and easy to install.

These primary device flumes constrict an open channel's flow either horizontally, vertically, or both horizontally and vertically. Once the flow is backed up behind the flume's constriction, there is a defined relationship between the upstream water level and the open channel flow through the constriction. This relationship can be determined either by an equation or a look-up table.

Global Water's three standard molded flumes include:

- The *Parshall* flume, which constricts primarily horizontally, and is design for rectangular or trapezoidal channels.

- The *Palmer-Bowlus*, which constricts the flow vertically and horizontally and can be molded to be inserted into an existing half-round pipe.

- *"H" flumes*, which attach to the ends of pipes where the water is free-falling.

Diagrams of these flumes, dimensions, and flow data are available on Global Water's

Applications

Parshall Flume: Ideal for rectangular channels, including many irrigation, environmental, and industrial channels.
Palmer Bowlus: Ideal for monitoring sewer flow, effluent, influent, and other flows in round channels such as pipes.
"H" Flume: Ideal for measuring runoff from small agricultural wetlands, feedlots, infiltration areas, as well as flows in streams and sewage systems.
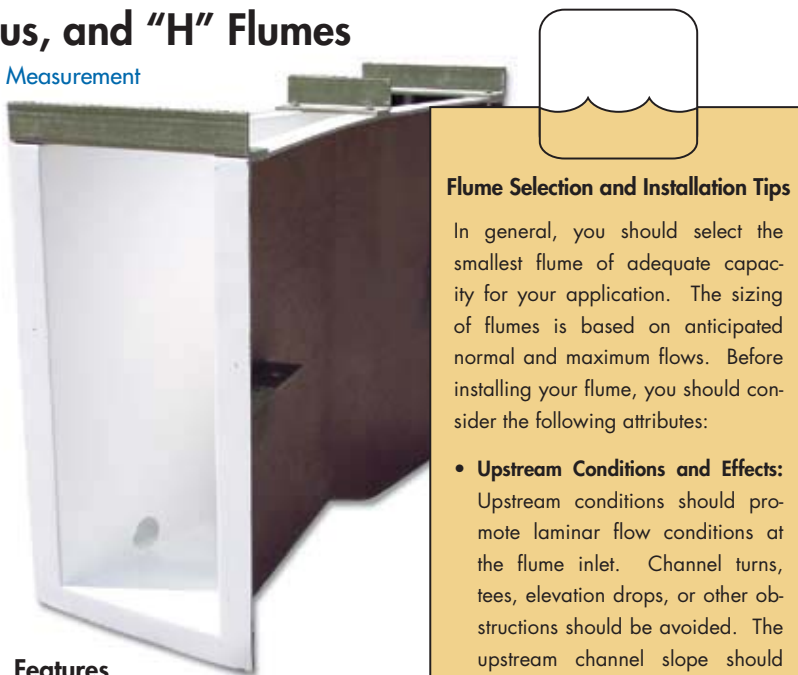
Features

- High quality polyester resin and fiberglass materials

- Highly durable and accurate

- Easy to install

Ordering & Options

Flumes*

Order No.	Flume Type	Size (Inch)
01-006	Parshall	1 Width
01-007	Parshall	2 W
01-008	Parshall	3 W
01-009	Parshall	6 W
01-010	Parshall	9 W
01-011	Parshall	12 W
01-014	Palmer-Bowlus	4 Dia.
01-015	Palmer-Bowlus	6 D
01-016	Palmer-Bowlus	8 D
01-017	Palmer-Bowlus	10 D
01-018	Palmer-Bowlus	12 D
01-027	"H"	0.5 H
01-028	"H"	0.75 H
01-029	"H"	1.0 H

Accessories

Order No.	Description
Flume-SW8	Attached 8 inch Stilling Well
Flume-SWP2	2 inch Stilling Well Port
Flume-SW2	2 inch Stilling Well
Flume-SG	Staff Gauge
Flume-BT	Bubbler Tube
Flume-WW	Wingwalls (pair)
Flume-CAC	Concrete Anchor Clips

Flume Selection and Installation Tips

In general, you should select the smallest flume of adequate capacity for your application. The sizing of flumes is based on anticipated normal and maximum flows. Before installing your flume, you should consider the following attributes:

- **Upstream Conditions and Effects:** Upstream conditions should promote laminar flow conditions at the flume inlet. Channel turns, tees, elevation drops, or other obstructions should be avoided. The upstream channel slope should not allow excessive velocity at the flume. A slope of almost flat to 3% maximum is ideal for very small flumes, and 2% maximum is ideal for larger flumes. A 1:4 sloping ramp upstream should be provided for flumes that must be installed above the channel floor. Since a flume will restrict your channel, you should also consider the influence that backwater may have on upstream drains and channel walls.

- **Crest of the Flume:** The crest of the flume (the floor of the converging section where depth measurements are made) must be level both longitudinally and transversely.

- **Downstream Channel:** The downstream channel should not permit submerged flow conditions to occur. Long, narrow, flat, or undersized channels can result in a backwater effect at the flume and should be avoided. A large fall or steep slope immediately downstream of the metering station can eliminate the possibility of submerged flow conditions.

WS705-755 Improved Water Samplers
Combined Composite/Discrete Samplers for a Range of Sampling Requirements

Description

Global Water's WS705 single-bottle and WS755 dual-bottle samplers combine all of the features you need to meet a wide variety of sampling requirements, including those for stormwater, rivers and streams, industrial discharge, water and wastewater treatment, and wastewater collection.

Powerful Operation

The WS705-755's state of the art controller gives you power over your sampling process. With the sample size control, you can adjust the WS705-755 to take one of 15 individual time-weighted composite sample sizes, from 50 ml to 2 liters. You can also set the size control to the full-bottle discrete setting for full-bottle grab samples. The sample interval control allows you set the time between individual composite samples to one of 15 time settings, from 5 minutes to 12 hours, or you can enable the external trigger mode. A start delay timer allows you to start multiple samplers in the field at the same time, or to delay drawing a sample after a triggering event so that your sample better represents the water source. An automatic 15-second backflush cycle clears any debris from the strainer and empties the water from the hose so the next sample is not contaminated. The sample bottle is equipped with a float switch that automatically turns off the peristaltic sampling pump if the water bottle becomes full. The sampler's 5 AH rechargeable battery will power the unit for several months or through several sampling events.

Unique Independent Pump Operation

A unique feature of the WS755 model is the ability to set the sampling mode for each pump and bottle individually. This allows you to take a time-weighted composite sample and a discrete (grab) sample at the same time. Or you can take two individual time-weighted composite samples with different size settings for each pump.

Useful Inputs and Outputs

Both the WS705 and WS755 include trigger inputs for each pump and bottle so you can control sample collection from an external closed contact switch like a water level sensor, rain gauge sensor, or external process controller. You can use a 4-20 mA sensor to trigger sample collection with a 4-20 mA to Pulse Converters (see the RG750 and RG755 in the Accessories table). Pulse outputs for each bottle are also provided for tracking sample collection information via a GL500 Datalogger (see page 122) or other monitoring device.

Range of Features and Options

The WS705 and WS755 samplers are housed in a rugged, weatherproof enclosure featuring heavy duty polyurethane wheels and a retractable extension handle for easy transportation. Both units include 15 feet of reinforced sampling hose with an intake strainer for each pump, a 1 gallon (WS755) or 2.5 gallon (WS705) polybottle for each pump, and a rechargeable battery and charger. For stormwater sampling, add the WSSWK Stormwater Kit, which includes our Rain Sensor, Flow Sensor, and Auto-drain Rain Gauge all in one package.

Applications
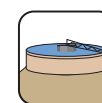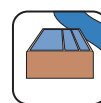
Ideal for sampling in stormwater, rivers, streams, water treatment facilities, industrial discharge, wastewater collection, wastewater treatment, and more.

Features

- Ideal for wastewater, industrial, and environmental sampling

- Quick disconnect pickup hose conveniently stored inside the enclosure for easy transport

- Heavy duty wheels and retractable handle built in

- Enclosed battery compartment and smart battery charger to improve battery life

- Automatic backflush clears pickup strainer and hose

- Rugged construction for harsh environments

Specifications

Operating Temp	32° to +158°F (0° to +70°C)
Materials	Enclosure: Expanded UV protected PVC
	Bottle: 2.5 gal (9.5 l) Polyethylene (WS705), two 1 gal (3.8 l) Polyethylene (WS755)
	Pickup Hose: 15 ft (4.6 m) reinforced PVC 1/4 in ID polyethylene flexible tubing section with 20-Mesh intake strainer
	Pump Tubing: Norprene® 1/4 in ID, 7/16 in OD
Sample Pump	Flow Rate: 1000 ml per minute at a 4 foot head
	Type: Peristaltic
	Maximum Lift: ~20 feet (6 m)

The WS755 dual bottle sampler allows you to take a time or flow (with optional flow monitor) weighted composite sample and a discrete (grab) sample at the same time.

Battery	Rechargeable 5 AH Gel Cell
Battery Life	WS705: ~1 hour continuous pumping under load
	WS755: ~½ hour continuous pumping under load
	Standby: 3 months while still retaining enough power to run the pump to capacity
Start Delay	16 time settings from 0 to 12 hours
Composite Interval	15 time settings from 5 min. to 12 hours plus an external trigger mode setting
Sample Size	15 composite sample sizes from 50ml to 2 liters plus a full bottle discrete setting (approximate sizes at 4 foot head)
External Trigger Input(s)	250mS minimum pulse width switch closure or 4 to 24VDC
Pulse Output(s)	5VDC one-second pulse, 1000ohm output impedance
Bottle Switch Input(s)	Switch closure input, float switch in bottle
Rain & Water Sensors	Optional moisture sensors or switch closure inputs
Internal Fuse	10A Slow-Blow
Certificates	CE Compliance
Dimensions	22x18x10 inches (56x45.7x25.4 cm) (HxWxD)
Weight	WS705: 26 lbs/11.7 kg (shipping weight 28 lbs/12.7 kg) WS755: 30 lbs/13.6 kg (shipping weight 32 lbs/14.5 kg)

*Visit our website for information on the WS700/750 water samplers

Ordering & Options

Improved Water Samplers

Order No.	Bottles	Inputs	Outputs
WS755	2	2	2
WS705	1	1	1

Standard Water Samplers

Order No.	Bottles	Inputs	Outputs
WS750	2	2	2
WS700	1	1	1

Accessories

Order No.	Description
WSSWK	Stormwater Kit
01-342	Quick Release Pump Head
SMPL-AC	AC-Powered Battery Option for WS700. Includes BC100, Smart Charger
BC100	Smart Battery Charger for WS700, see page 128
GL500-7-2	9-Channel Datalogger
GL500-2-1	3-Channel Datalogger
RG750	4-20 mA to Pulse Converter Module (one pulse per 15 min at 20mA)
RG755	4-20 mA to Pulse Converter Module (one pulse per 30 min at 20mA)
SP101	Solar Panel (2 watts, 80mA minimum)
SP102	Solar Panel (5 watts, 300mA minimum)

The WS705 single bottle sampler allows you to take a time or flow (with optional flow monitor) weighted composite sample or a discrete (grab) sample.

Replacement Parts

Order No.	Description
00-010	Spare 12V Gel Cell Battery
01-947	Universal Charger (WS705/755)
FE0400	Battery Charger (WS700/750)
CA0850	Quick-Disconnect Fitting Plug & Cap
CA0860	Tubing Quick-Disconnect Fitting
00-418	1-Gallon Plastic Bottle (WS755/750)
00-419	2.5-Gallon Plastic Bottle (WS705/700)
00-835[2]	1-Gallon Glass Bottle
CA0200	WS705/700 Bottle Cap with Float Switch for 2.5 Gal Plastic Bottle
CA0250	WS705/700 Bottle Cap with Float Switch for 1 Gal Glass Bottle
CB0200	WS755/750 Bottle Cap with Float Switch for 1 Gal Plastic Bottle
CA0600	Stainless Steel Suction Strainer #20 Mesh
01-881	Replacement #20 Mesh Strainer Head
01-945	#6 Mesh Strainer Head
00-546	Suction Hose, per foot
00-744	Peristaltic Pump Tubing, per foot

2) Only one glass bottle will fit in the WS700/750 sampler case without removing battery.

FSS Flow Sampling System

Sampling Package for Stream, Stormwater, Wastewater, and Industrial Flows

Description

Global Water's FSS Flow Sampling System is a unique water monitoring package that includes an easy to use lightweight composite/discrete water sampler, an open channel flow monitor with dual displays and outputs, and a data recorder that is both Windows™ and Windows™ CE compatible. The FSS is a portable package that can easily be set up to take samples based on flow rates, making it ideal for stream, stormwater, wastewater, or industrial flow monitoring and recording.

Range of Versions

We offer a range of FSS versions to help you meet your monitoring needs: the standard version (FSS-STD), which includes the sampler unit, with the flow monitor and a 9-channel serial/USB datalogger in a separate enclosure; the light version (FSS-LTS), which includes the sampler and a flow monitor with a built in 2-channel serial datalogger in a separate enclosure; the integrated version (FSS-INT), which includes the sampler, a 9-channel serial/USB datalogger, and a small flow monitor (without a totalizer display) within a single enclosure; and a custom version (FSS-C), which is fully customizable.

Rugged Composite/Discrete Water Sampler

The FSS's composite/discrete water sampler is enclosed in a rugged rainproof enclosure, but it is lightweight enough that it can be suspended in a manhole for wastewater or stormwater sampling. The sampler includes a 2.5-gallon polyethylene sample bottle, a peristaltic sampling pump, a pickup hose, a circuit board controller, a rechargeable gel cell battery, and a battery charger. With the unit's water sample size control, you can take individual time-weighted composite samples or full-bottle discrete grab samples. The water sample interval control allows you set the time between individual composite samples or enable the external trigger mode for flow proportional sampling.

Accurate Open Channel Flow Monitor

The FSS's open channel flow monitor is reliable and accurate for measuring and totalizing open channel flows for all flumes and weirs, as well as any gravity-type open-channel flow. The flow monitor is pre-programmed with over 20 different flume and weir characteristics and, with the FSS-C version, we can custom program the unit for your unique application. The unit measures water depth with Global Water's highly accurate pressure transducer and instantly calculates (for display and output) water flow and totalizer values for any depth-to-flow relationship in any engineering units (the FSS-INT version does not include a totalizer display). Please see the FC200 Open Channel Flow Monitor on page 26 for additional information about this component.

Smart Flow Data Recorder

The FSS's flow data recorder includes Windows™-based Global Logger II software, which provides many useful features and makes accessing stored data and setting options easy. The data recorder also includes Windows™ CE-based PDA software for simple field data collection. The FSS-STD and FSS-INT feature a data recorder with 7 analog channels, 2 pulse channels, and USB and serial communication ports. The FSS-LT features a recorder with serial communication port that monitors flow and total flow. Please see the 9-channel GL500 on page 122 and the 3-channel GL500 on page 123 for additional information.

Applications
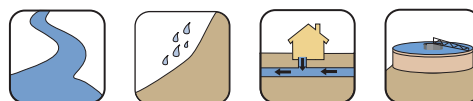
Ideal for flow sampling and recording at flumes, weirs, inflow and infiltration studies, storm and waste collection systems, sewer and drainage pipes, and more.

(Two-bottle system shown. Call for more information.)

Specifications

Composite Water Sampler
Please see specifications for the WS700 on website.

Flow Monitor

Rate Display	5 digit + decimal place, LCD
Totalizer Display	6 digit, LCD (FSS-STD and FSS-LTS only)
Accuracy	Pressure Transducer: ±0.2% full scale
	Flow Monitor: ±0.01% + the depth-flow-table error
Flow Units	cfs, gpm, m³s, mgd
Totalizer	Related to flow units (FSS-STD and FSS-LTS only)
Relay Contacts	Voltage: 30 VDC
	Current: 5A/30 VDC
	Max. Capacity: 150 W
	Relay 1, Pulse Output: NPN to ground, 1.0Kohm pull-up resistor (connected to sampler) (FSS-STD and FSS-LTS)
	Relay 2, Pulse Output: NPN to ground, open-collector (connected to datalogger and tied to totalizer scaler) (FSS-STD and FSS-LTS)
Analog Output	4mA minimum, 20mA maximum (flow reading), resolution= 0.005mA
Power	FSS-STD and FSS-LTS: Independent 12VDC rechargeable battery
	FSS-INT: Uses the sampler's 12VDC rechargeable battery
	60mA DC normal, 100 mA maximum
	120µA during sleep mode
Pre-Defined Tables	Parshall: 1", 2", 3", 6", 9", 12"
	Palmer-Bowlus (4D): 4", 6", 8", 10", 12", 15"
	Weir: 45° V notch, 90° V notch, 1' rectangular, 2' rectangular
	H Flume: 0.4HS, 0.6HS, 0.5H, 0.75H, 1.0H, 1.5H, 2.0H
	Trapezoidal: 60°
Custom Table	Provide Global Water with a depth-to-flow equation or look up table at time of order (allow for longer lead times)

Flow Data Recorder

Memory	Non-volatile flash memory
Power	FSS-STD and FSS-LTS: Independent 12VDC rechargeable battery
	FSS-INT: Uses sampler's 12VDC rechargeable battery
	Standby Current: 70µA typical
	Logging Current: 5mA typical + sensor current
Analog Sensor Inputs	Type: 4-20 mA
	Resolution: 12-bit, 4096 Steps
	Sensor Warm-up Time: Programmable, 0-60 sec
	FSS-STD and FSS-INT: 6 input channels + flow rate + battery voltage monitor
	FSS-LTS: flow rate and battery voltage monitor

Features

- Scalable flow proportional sample triggering ideal for environmental, waste-water, and industrial flow sampling

- Rugged construction for harsh environments, yet lightweight and easy to carry

- Over 20 pre-programmed flume and weir tables for ease of use and flexibility

- Peristaltic pump prevents sample contamination

- Windows™/Windows™ CE compatible

Digital Inputs	Maximum Input Voltage: 24VDC
	Maximum Frequency: 100Hz
	Minimum Pulse Width: 2mS
	Maximum Count: 65,535 (16-bit)
	FSS-STD and FSS-INT: Sample event + total flow
	FSS-LTS: 1 input channel connected to totalizer
Sample Modes	Fixed interval programmable from 1 sec to >1 yr
	High speed 10 samples per second
	Logarithmic sample rate (approximation)
	Exception (log only on deviation from previous reading)
Storage Capacity	FSS-STD and FSS-INT: 40,879 recordings for all inputs plus time stamp
	FSS-LTS: 81,759 recordings for all inputs plus time stamp
Data Overwrite	Select memory wrap or unwrap (unwrap will stop logging once memory is full)
Communication Ports	FSS-STD and FSS-INT: RS-232 DB9 or USB Type B
	FSS-LTS: RS-232 4-pin circular connector
Selectable Baud Rates	9600, 19200, 28800, 38400, 57600, 115200
Clock	Synchronizes to user's computer
Operating Temperature	Industrial, -40 to +185°F (-40 to +85°C) (battery may not apply)
Enclosure	Expanded UV protected PVC

Size & Weight

FSS-STD (2 enclosures)	Sampler: 22x17x9 inch (56x43x23 cm) (HxWxD), 20 lbs (9 kg)
	Flow Logger: 14.5x10x6 inch (17x25x15 cm) (HxWxD), 14.1 lbs (6.4 kg)
FSS-LTS (2 enclosures)	Sampler: 22x17x9 inch (56x43x23 cm) (HxWxD), 20 lbs
	Flow Logger: 14.5x10x6 inch (17x25x15 cm) (HxWxD), 13.1 lbs (5.9 kg)
FSS-INT (1 enclosure)	Dimensions: 22x17x9 inch (56x43x23 cm) (HxWxD)
	Weight: 22 lbs (10 kg)

Ordering & Options

Flow Sampling Systems[1]

Order No.	Description
FSS-STD[2]	Standard Flow Sampling System
FSS-LTS[3]	Light Flow Sampling System
FSS-INT[4]	Integrated Flow Sampling System
FSS-C[5]	Custom Flow Sampling System

1) Please specify flume/weir type when placing order.

2) The FSS-STD includes a sampler and external flow monitor and datalogger.

3) The FSS-LTS includes the sampler and a flow monitor with a built in 2-channel serial datalogger in a seperate enclosure.

4) The FSS-INT includes the sampler with an internal version of the flow monitor and datalogger.

5) Please contact Global Water with a depth to flow equation or lookup table when placing order and allow for longer lead times.

Accessories & Parts

Order No.	Description
PDAWL16	PDA Package
00-010	Spare 12V Gel Cell Battery
FE0400	Battery Charger
00-835[6]	1-Gallon Glass Bottle
CA0600	Stainless Steel Suction Strainer
00-546	Suction Hose, per foot
00-744	Peristaltic Pump Tubing, per foot

6) Note: Only one glass bottle will fit in sampler case without removing battery.

WQS Water Quality Sampling System

Parameter-Based Sampling Package
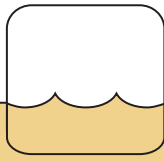
- Average pollutant concentration during the compositing period is determined
- Mass per unit time loadings are calculated
- Wastewater characteristics are highly variable.

Various methods for compositing samples are available, and samples can be collected either manually or with automatic samplers. A permit may specify which type of method to use. Compositing methods include:

Time-Based

This method requires discrete samples be collected in one container at constant time intervals. This method is appropriate when the flow of the sampled stream is constant (flow rate does not vary more than ±10 percent of the average flow rate).

Flow-Proportional

This sample type includes two methods: one method collects a constant sample volume at varying time intervals proportional to stream flow, and the other collects the sample by increasing the volume of each sample as the flow increases while maintaining a constant time interval between samples.

Sequential

This method requires discrete samples collected in individual containers at constant time intervals or discharge increments. The discrete samples can then be manually flow-proportioned to form the composite sample.

Continuous

This sample is collected continuously from the waste stream. The sample may be of constant volume, or the volume may vary in proportion to the flow rate of the waste stream.

Description

Global Water's WQS Water Quality Sampling System is a unique portable water quality sampling package that includes an easy to use, lightweight composite/discrete water sampler, a water quality process controller with dual relay outputs, and a data recorder that is Windows™ and Windows™ CE compatible. The WQS can easily be set up to take samples based on sensor parameters, making it ideal for locating water quality trouble areas in wastewater, industrial, or stormwater systems, or for triggering samples based on water level or weather factors.

Range of Versions

We offer a range of WQS versions to help you meet your monitoring needs: the standard version (WQS-STD), which includes the sampler unit, with the controller and a 9-channel serial/USB datalogger in a separate enclosure; the light versions (WQS-LTS and WQS-LTU), which includes the sampler and a controller with a built in 2-channel serial or USB datalogger in a separate enclosure; and the integrated version (WQS-INT), which includes the sampler, a 9-channel serial/USB datalogger, and a controller within a single enclosure.

Powerful System Controller

The WQS's controller includes an LCD display that shows the type of sensor being monitored, the data reading, and the engineering units. The display also indicates if either relay has been triggered since last reset, which relay was triggered, and whether the maximum or minimum limit was exceeded. Two separate relays are provided: one is used to trigger the WQS's sampler, and the other can be used to control a variety of external devices including alarms, mixers, pumps, control valves, floodgates, and telemetry systems. Each relay is independently programmable to trigger on maximum and/or minimum levels in one of three different modes. Please see the PC300 Process Controller on page 132 for additional information about this component.

Rugged Composite/Discrete Water Sampler

The WQS's lightweight composite/discrete water sampler is enclosed in a rugged rainproof enclosure. The sampler includes a 2.5-gallon polyethylene sample bottle, a peristaltic sampling pump, a pickup hose, a circuit board controller, a rechargeable gel cell battery, and a battery charger. With the unit's water sample size control, you can take individual time-weighted composite samples or full-bottle discrete grab samples.

Smart Water Quality Data Recorder

The WQS's water quality data recorder includes Windows™-based Global Logger II software, which provides many useful features, such as real time readout, measurement interval and engineering unit selection, station ID setting, and sensor calibration. The software makes accessing stored data and setting options easy. The data recorder also includes Windows™ CE-based PDA software for simple field data collection. The WQS-STD and WQS-INT feature a data recorder with 7 analog channels, 2 pulse channels, and USB and serial communication ports. The WQS-LTS and WQS-LTU features a recorder with one analog channel, one pulse channel, and either a serial (LTS) or USB (LTU) communication port. Please see the 9-channel GL500 on page 122 and the 3-channel GL500 on page 123 for additional information.

Applications
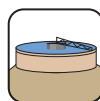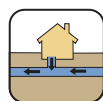
Ideal for locating water quality trouble areas in wastewater, industrial, or stormwater systems, or for triggering samples based on water level, water quality, or weather parameters.

Specifications

Composite Water Sampler
Please see specifications for the WS700 on website.

Process Controller

Sensor Display	5 digit + decimal place, LCD
Accuracy	0.1% full scale + 0.005mA + sensor error
Analog Sensor Input	4-20 mA, 0-5V, 01V jumper selectable
Input Resolution	0.005mA or 1.2mV
Sensor Types/Units	Water level (feet/meters), temperature (°F/°C), pH (no units), dissolved oxygen (%), turbidity (NTU/ppm), conductivity (µS), wind speed (mph/Kph), wind direction (°), soil moisture (%), custom sensor (any of the above, mA, mV, or custom programmed units)
Relay Contacts	Voltage: 30VDC Current: 5A/30VDC Max Capacity: 150W Relay 1 (All), Pulse Output: NPN to Ground, 1.0Kohm pull-up resistor (connected to sampler) (WQS-STD, WQS-LTS, and WQS-LTU only) Relay 2 (All), Pulse Output: NPN to Ground, Open-collector (WQS-STD, WQS-LTS, and WQS-LTU only)
Relay Time Ranges	1-60,000 seconds (16.7 hours) Resolution: 1 second increments
Sleep Time Range	1-240 minutes (4 hours) Resolution: 1 minute increments
Analog Output	4mA minimum, 20mA maximum (sensor reading) Resolution: 0.005mA
Power	WQS-STD, WQS-LTS, WQS-LTU: Independent 12VDC rechargeable battery WQS-INT: Uses the sampler's 12VDC rechargeable battery 60mA DC normal, 100 mA maximum, 120µA during sleep mode

Data Recorder

Memory	Non-volatile flash memory
Power	WQS-STD, WQS-LTS, and WQS-LTU: Independent 12VDC rechargeable battery WQS-INT: Uses sampler's 12VDC rechargeable battery Standby Current: 70µA typical Logging Current: 5mA typical + sensor current
Analog Sensor Inputs	4-20 mA Resolution: 12-bit, 4096 steps Sensor Warm-up Time: Programmable, 0 to 60 sec WQS-STD and WQS-INT: 6 input channels + sensor + battery voltage monitor WQS-LTS and WQS-LTU: sensor + battery voltage monitor

Digital Inputs	Maximum Input Voltage: 24VDC Maximum Frequency: 100Hz Minimum Pulse Width: 2mS Maximum Count: 65,535 (16-bit) WQS-STD and WQS-INT: Sample event + 1 input channel WQS-LTS and WQS-LTU: 1 input channel connected to sample
Sample Modes	Fixed interval programmable from 1 sec to >1 yr High speed 10 samples per second Logarithmic sample rate (approximation) Exception (log only on deviation from previous reading)
Storage Capacity	WQS-STD and WQS-INT: 40,879 recordings for all inputs plus time stamp WQS-LTS and WQS-LTU: 81,759 recordings for all inputs plus time stamp
Data Overwrite	Select memory wrap or unwrap (unwrap will stop logging once memory is full)
Communication Ports	WQS-STD and WQS-INT: RS-232 DB9 or USB Type B WQS-LTS: RS-232 4-pin circular connector WQS-LTU: USB Type B
Selectable Baud Rates	9600, 19200, 28800, 38400, 57600, 115200
Clock	Synchronizes to user's computer
Operating Temperature	Industrial, -40 to +185°F (-40 to +85°C) (battery may not apply)
Enclosure	Expanded UV protected PVC

Features

- Ideal for locating water quality trouble areas in wastewater, industrial, or stormwater systems

- Easy to use four button interface with user selectable sensor types

- Rugged construction for harsh environments

- Two independent programmable output relays with parallel open collector signal lines

- Scalable water quality triggers for taking composite samples

- Data recorder is Windows™ and Windows™ CE compatible

(Two-bottle system shown. Call for more information.)

Ordering & Options

Water Quality Sampling System[1]

Order No.	Description
WQS-STD[2]	Standard Water Quality Sampling System
WQS-LTS[3]	WQS with Built-In Serial Datalogger
WQS-LTU[3]	WQS with Built-In USB Datalogger
WQS-INT[4]	Integrated Water Quality Sampling System

1) Water quality sensors sold separately.

2) The WQS-STD includes a sampler and external controller and datalogger.

3) The WQS-LTS and -LTU includes the sampler and a controller with a built in 2-channel serial (LTS) or USB (LTU) datalogger in a separate enclosure.

4) The WQS-INT includes the sampler with an internal version of the controller and datalogger.

Accessories[5]

Order No.	Description
WL400	Water Level Sensor, see page 6
WQ101	Water Temperature Sensor, see page 60
WQ201	pH Sensor, see page 60
WQ730	Turbidity Sensor, see page 64
WQ301	Conductivity Sensor, see page 61

5) See sampler replacement parts on page 45.

Size and Weight

WQS-STD (2 enclosures)	Sampler: 22x17x9 inch (56x43x23 cm) (HxWxD), 20 lbs (9 kg) Water Quality Logger: 14.5x10x6 inch (17x25x15 cm) (HxWxD), 13.6 lbs (6.2 kg)
WQS-LTS and WQS-LTU (2 enclosures)	Sampler: 22x17x9 inch (56x43x23 cm) (HxWxD), 20 lbs (9 kg) Water Quality Logger: 14.5x10x6 inch (17x25x15 cm) (HxWxD), 12.6 lbs (5.7 kg)
WQS-INT (1 enclosure)	Dimensions: 22x17x9 inch (56x43x23 cm) (HxWxD) Weight: 21.5 lbs (9.75 kg)

WS700R Refrigerated Wastewater Sampler

Portable and Rugged Refrigerated Sampler

Features

- Simple to operate – no programming required
- Rugged construction for harsh environments
- Meets federal, state, and local wastewater regulations

Specifications

Operating Temp	32° to +158°F (0° to +70°C)
Materials	Enclosure: Expanded UV protected PVC
	Bottle: 2.5 gal (9.5 l) polyethylene
	Pickup Hose: 15 ft reinforced PVC 1/4 in ID polyethylene flexible tubing section with intake strainer
	Pump Tubing: Norprene® 1/4 in ID, 7/16 in OD
Sample Pump	Flow Rate: 1000 ml per minute at a 4 foot head
	Type: Peristaltic
	Maximum Lift: ~20 feet (6.1 m)
Power	Internal 12V Rechargeable Battery, Smart Charger, with AC 120 VAC adapter/charger
	Standby: 3 months while still retaining enough power to run the pump to capacity is required
Start Delay	16 time settings from 0 to 12 hours
Composite Interval	15 time settings from 5 min. to 12 hours plus an external trigger mode setting
Sample Size	15 composite sample sizes from 50ml to 2 liters plus a full bottle discrete setting (approximate sizes at 4 foot head)
External Trigger Input(s)	250mS minimum pulse width switch closure or 4 to 24 VDC
Pulse Output(s)	5 VDC one-second pulse, 1000 ohm output impedance
Bottle Switch Input(s)	Switch closure input, floating switch in bottle
Rain & Water Sensors	Optional moisture sensors or switch closure inputs
Internal Fuse	10 A Slow-Blow
Size of Unit	27x20x20 inch (69x51x51 cm) (HxWxD)
Weight	40 lb (18 kg) (shipping weight 42 lb (18 kg))

Description

Global Water's WS700R Refrigerated Wastewater Sampler combines all of the features you need to meet a variety of sampling requirements, including: a battery-powered refrigerated enclosure, a 2.5-gallon polyethylene sample bottle for collecting refrigerated composite samples, a peristaltic sampling pump, a sample pickup hose, a circuit board controller, a rechargeable gel cell battery, smart charger, and a battery charger.

Easy Set Up

The WS700R is easy to set up in the field, as described further for the WS705-755 samplers in the sidebar article on page 44. The sampler requires two 120 V outlets to power the peristaltic pump and refrigerator. The unit is relatively small and can be easily hidden or protected inside of a fiberglass enclosure.

State of the Art Controller

The WS700R's state of the art sampler controller gives you complete control over your water sampling process. With the sample size control, you can take individual time-weighted composite samples or full-bottle discrete grab samples in a 2.5-gallon sample bottle. The sample interval control allows you set the time between individual composite samples or enable the external trigger mode for flow proportional sampling. A start delay timer allows you to start multiple samplers in the field at the same time, or to delay drawing a sample after a triggering event so that your sample better represents the water source. An automatic 15-second backflush cycle clears any debris from the strainer and empties the water from the hose so the next sample is not contaminated.

Flow Proportional Sampling

You can use an external pulse-type flowmeter such as the Open Channel Flow Meter (see page 26) to control the WS700R's sample interval for true flow proportional sampling. If you already have a flowmeter but it has a 4-20 mA output, you can adapt your meter for use with the RG750.

Applications

Ideal for sampling wastewater, industrial discharge, water, stormwater, and rivers and streams.

Ordering & Options

Refrigerated Samplers

Order No.	Description
WS700R	Refrigerated Wastewater Sampler
WS700-PCO	Portable Cooler Composite Sampler
WS700-IBO	WS705 Sampler with Ice Bag Option

Accessories

Order No.	Description
WSSWK	Stormwater Kit
01-342	Quick Release Pump Head
BC100	Smart Battery Charger, see page 128
RG750	4-20 mA to Pulse Converter (1 pulse per 15 min @ 20mA)
RG755	4-20 mA to Pulse Converter (1 pulse per 30 min @ 20mA)

Replacement Parts

Order No.	Description
00-010	Spare 12V Gel Cell Battery
CA0600	Stainless steel suction strainer
CD0300	WS700R Bottle Cap with Float Switch
01-283	WS700R 2.5 Gallon Plastic Bottle
00-546	Suction Hose
00-744	Peristaltic Pump Tubing

SP-Series Portable Samplers

Portable Samplers with Variable Speed, Push Button, and Quick Release Options

Description

Global Water's SP-Series Portable Samplers include the SP200 Variable Speed Peristaltic Sampling Pump, the SP250 Quick Release Sampler, and the SP100 Push Button Sampler. These samplers are ideal for taking samples from shallow wells, lakes, ponds, holding pools, and, in the case of the SP250, wastewater sources. The units are lightweight, rugged, easy to use, weather resistant, and require minimal maintenance.

High Sample Integrity

The SP-Series is designed for high sample integrity. Samples do not contact any sampler components other than the Norprene® and polyethylene tubing. The tubing is easy to clean and replace. To avoid cross-contamination or lengthy decontamination procedures, you can simply change the inexpensive tubing between samples.

SP200 Variable Speed Sampler

The SP200's manually-operated Peristaltic Sampling Pump has a reversible variable speed motor so you can sample at any speed up to 500 ml per minute and backflush the sample hose after a sample has been taken.

SP250 Quick Release Sampler

The SP250 Quick Release Water Sampler allows you to take manual samples with the ability to backflush the sample hose after a sample has been taken. The unit uses the Masterflex™ easy load design and adjustable tubing retention system to allow you to use multiple tubing sizes and change the tubing without removing the pump head from the drive.

SP100 Push Button Sampler

The SP100 portable sampler allows you to take a manual sample and backflush the sample hose with an easy push button control.

Power Requirements

The SP200 and SP250 require an external 12 volt DC power source that can supply at least 2A continuous. The units include power cords (10 ft/3.05 m) fitted with alligator clips for easy connection to almost any 12 VDC battery. The SP100 includes an internal 5AH 12 VDC rechargeable gel cell battery that will power the water sampler to pump approximately 150 liters (40 gallons) between rechargings. The SP100 also includes a battery charger that will recharge the battery within 12 hours.

SP200

Features

- Easy sample collection
- Reversible motor to backflush hose
- Lightweight, weather resistant enclosure
- SP200 allows samples at any speed up to 500 ml per minute rate at 4 foot head
- SP250 is ideal for fast tubing changes and reduced maintenance
- SP100 uses easy push-button control for exact sample sizes

SP250

SP100

Applications

Ideal for sampling shallow wells, lakes, ponds, holding pools, and, in the case of the SP250, wastewater sources.

Specifications

Operating Temp	32° to +158°F (0° to +70°C)
Power	SP200-250: External, 12 VDC, 2A max. current draw
	SP100: Rechargeable 12 VDC, 5 AH gel cell battery (2-1/2 hours of continuous sampling)
Flow Rate	SP200: Variable analog, up to 500 ml per minute at 4 ft head
	SP250: Variable depending on tube size and head height
	SP100: 1000 ml per minute at 4 ft head
Backflush Rate	Same as flow rate
Pump Type	SP200-100: Peristaltic
	SP250: Peristaltic, Masterflex™ easy-load
Maximum Lift	22 ft (6.7 m)
Pump Tube	SP200-100: Norprene ®1/4" ID
	SP250: L/S 17, See table below
Sample Hose	15 ft (4.6 m) nylon reinforced polyethylene tubing with intake strainer

Enclosure	Expanded UV protected PVC
Dimensions	SP200-100: 9 x 7.5 x 4.5 inch (23 x 19 x 11.4 cm)
	SP250: 14 x 12 x 6 inch (36 x 30.5 x 15 cm)
Weight	SP200: 4.5lbs/2kg (shipping weight 6lbs/2.7kg)
	SP250: 7.5lbs/3.5kg (shipping weight 9lb/4.1kg)
	SP100: 6lbs/2.7kg (shipping weight 7lbs/3.2kg)

SP250 Pump Tube

Tubing Size	L/S 13	L/S 14	L/S 16	L/S 25	L/S 17	L/S 18
Inside Dia. in (mm)	0.03 (0.8)	0.06 (1.6)	0.12 (3.1)	0.19 (4.8)	0.25 (6.4)	0.31 (7.9)
Hose Barb in (mm)	1/16 (1.6)	1/16 (1.6)	1/8 (3.2)	3/16 (4.8)	1/4 (6.4)	3/8 (9.5)

Ordering & Options

Portable Samplers

Order No.	Description
SP200	Peristaltic Sampling Pump Battery not included
SP250	Quick Release Sampler Battery not included
SP100	Push Button Sampler

Replacement Parts

Order No.	Description
00-010	12V 5AH Rechargeable Battery
FE0400	Battery Charger (120VAC to 12 VDC)
00-546	¼ inch Pickup Hose
CA0600	Pickup Strainer
00-744	¼ inch ID Norprene Peristaltic Pump Tubing
01-746	L/S 17 PharMed BPT Peristaltic Pump Tubing

GP/WP-Series Groundwater Pumps

Groundwater Pumps for Purging, Testing, and Well Development

GP8815

Features

- Easy groundwater sample collection
- Used and trusted within the groundwater industry for more than 15 years
- Recommended by drillers, hydrologists, and field technicians
- Practical for dedicated use and disposal
- Reduces labor costs and saves time

Applications

Ideal for groundwater purging, testing, and well development.

Description

The GP-Series Groundwater Pumps include Submersible Pumps and Inline Pumps, while the WP-Series Purging Pump Kits include pumps, cables, and alligator clips to provide a ready-to-use pump solution. Each pump provides an easy-to-use, high-quality, economical solution for purging, ground water testing, and well development.

The Submersible pumps can be used to depths of up to 60 feet (18 m), and the Inline units can be stacked in series to draw water from greater depths. When used together, a Submersible unit with multiple Inlines will allow testing of wells up to 200 feet (61 m) deep. The WP Kits include the 5 amp Mini Purger with 50 feet (15.2 m) of cable and the 10 amp Super Purger with 70 feet (21.3 m) of cable. The Super Purger can sample to a depth of 60 feet (18 m) and at a rate of up to 3 gallons (11.4 liters) per minute.

Smart Design

The GP/WP-Series Pumps have a slim diameter, which minimize well hang ups and is ideal for use in 2 inch (5 cm) or larger monitoring wells. The pumps are self priming when fully submersed and can be connected directly to DC power sources to begin pumping. Each pump includes 3 feet (0.9 m) of cable.

The pumps are tough and powerful, having a plastic construction and a stainless steel impeller. They allow pumping of up to 3 gallons (11.4 liters) per minute. The GP/WP-Series Pumps have been used and trusted within the groundwater industry for more than 15 years and are recommended by drillers, hydrologists, and field technicians around the world.

Long Life

The GP/WP-Series Pumps can be run continuously for 48 hours without motor damage, even in dry conditions, although for the best results running periods should be restricted to 15 minutes with a 5 minute cool down period. They have an overall life expectancy of approximately 400 hours, although lab tests have shown that they can last up to 750 hours.

Specifications

Model	GP1352	GP1354	GP1652	GP1392	GP1692	WP4012	WP6012
Voltage	12VDC	24VDC	12VDC	12VDC	12VDC	12VDC	12VDC
Recommended Fuse	5 amp automotive	3 amp automotive	8 amp automotive	5 amp automotive	8 amp automotive	5 amp automotive	10 amp automotive
Hose Connections	To suit 3/8 or 1/2 inch (10 or 13mm) bore flexible hose						
Materials	ABS plastic, stainless steel, Nitrile		PC ABS Copolymer + PBT, stainless steel, Nitrile	ABS plastic, stainless steel, Nitrile	PC ABS Copolymer + PBT, stainless steel, Nitrile	ABS plastic, stainless steel, Nitrile	
Weight	0.3 lbs (0.15 kg)			0.3 lbs (0.15 kg)		2 lbs (0.9 kg)	4 lbs (1.4 kg)

Model	Current Draw (amp)	Output Performance (in gallons per minute) at Head (in feet)												
		0	5	10	15	20	25	30	35	40	45	50	55	60
GP1352 & GP1354	1.4-3.1	3.5	3.0	2.3	1.9	1.3	0.7	0.2						
GP1652	3.0-6.5	4.0	3.6	3.2	2.8	2.6	2.3	2.0	1.8	1.5	1.1	0.9	0.6	0.3
GP1392	1.4-3.1	3.5	3.0	2.3	1.9	1.3	0.7	0.2						
GP1692	3.0-6.5	4.0	3.6	3.2	2.8	2.6	2.3	2.0	1.8	1.5	1.1	0.9	0.6	0.3
WP4012	2.0-3.5			3.2	2.6	2.0	1.5	1.0	0.6	0.1				
WP6012	5.5-8.4			3.0	2.6	2.3	1.9	1.6	1.4	1.1	0.8	0.5	0.3	0.1

Note: GP pumps tested with 37 inches of cable. All tests carried out with 1/2 inch ID tubing.

Submersible Dimensions	A	B	D	E
GP1352, 1354,1652	20mm	109mm	129mm	36mm
	13/16 in	4-5/16 in	5-1/16 in	1-7/16 in
GP1392, 1692	20mm	115mm	134mm	36mm
	13/16 in	4-1/2 in	5-1/4 in	1-7/16 in
WP4012	21mm	114mm	135mm	36mm
	13/16 in	4-1/2 in	5-5/16 in	1-7/16 in
WP6012	19mm	241mm	260mm	36mm
	3/4 in	9-1/2 in	10-1/4 in	1-7/16 in

Ordering & Options

Order No.	Description
GP1352	Groundwater Pump, 0-30 ft, 12VDC
GP1354	Groundwater Pump, 0-30 ft, 24 VDC
GP1652	Groundwater Pump, 0-60 ft
GP1392	Inline Groundwater Pump, 0-30 ft
GP1692	Inline Groundwater Pump, 0-60 ft
WQEXC	Extra Cable (up to 100 ft can be added)
WP4012	Mini Purger (includes 50 ft of cable)
WP6012	Super Purger (includes 70 ft of cable)
WP9012[1]	Mega Purger (includes 90 ft of cable)

1) See website for specifications.

DRP Handled Dippers
Lightweight Long Handheld Sampler

Features

- Strong but lightweight
- Inert high density polyethylene

Applications
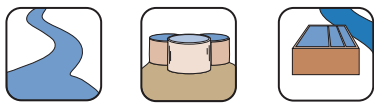
Ideal for removing samples from streams, basins, and large tanks.

Description

The DRP-Series includes high density polyethylene dippers that are perfect for removing samples from streams, basins, and large tanks. Lightweight but durable, the dippers feature two pour spouts, graduations (in ounces and milliliters), and a PVC grip handle. Choose from 16 oz. (500 ml) or 32 oz. (1,000 ml) cup sizes with handle lengths of 3, 6, or 12 feet (the 12 foot handle includes two pieces). Please note that dippers are not autoclavable.

Ordering & Options

Order No.	Sample Size	Handle Length	Price
CXBA00	16 oz. (500ml)	3 ft	$30.00
CXBA10	16 oz. (500 ml)	6 ft	44.00
CXBA20	16 oz. (500 ml)	12 ft	86.00
CXBB00	32 oz. (1000 ml)	3 ft	43.00
CXBB10	32 oz. (1000 ml)	6 ft	52.00
CXBB20	32 oz. (1000 ml)	12 ft	88.00

You may also like . . .

FSS Flow Sampling System
A unique combination of instruments that makes monitoring, sampling, and recording stormwater, wastewater, or industrial discharge flows easy.

SLDG Sludge Judge®
Sampler for Accurate Readings of Settled Solids

Description

The SLDG Sludge Judge® sampler is designed to take accurate readings of settled solids that are 5% or less in a variety of liquids at any depth. The SLDG is ideal for applications in non-caustic materials where accurate sample levels of settled solids are needed, including sewage treatment plants, chemical plants, and food processing facilities. The sludge sampler holds approximately 3 oz. per foot (89 ml per 0.31 m) and comes in 5 ft (1.53 m) sections of 3/4 in (1.90 cm) plastic pipe with screw-type connectors. The top section of the unit includes a nylon rope for raising and lowering the sampler. Individual sections can be combined as required to achieve the length needed. Among the sampler's accessories are a convenient canvas carrying case that holds up to four sections, a cleaning brush, a cleaning rod, and cotton strips. Please note, do not use the standard instrument in liquids over 165°F (74°C). The Sludge Judge® is not autoclavable.

For maximum strength and rigidity, we recommend the Sludge Judge® Ultra, which is constructed of extremely strong polycarbonate and treated with an ultraviolet stabilizer to help reduce deterioration from the sun's harmful rays. The material is very rigid, minimizing bending when the sampler is full

Features

- Take accurate readings of settled solids
- Combine sections to achieve the sampling length needed
- Ideal for sewage treatment plants, chemical plants, and food processing facilities

Applications
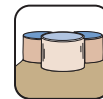
Ideal for sampling settled solids in sewage treatment plants, chemical plants, and food processing facilities.

of water or other liquids. The unit is durable in cold temperatures and can withstand heat up to 280°F (138°C) (with careful handling). The sampler's 3/4 in (1.9 cm) diameter tubing is marked with blue tape to designate 1 ft (0.31 m) measurements. The unit is made up of three 5 ft (1.53 m) sections (top, extension, bottom), and individual sections can be combined as required. The carrying case and cleaning brush for the original Sludge Judge® may be used with this unit. Please note, the Sludge Judge® Ultra is not autoclavable.

Accessories

Order No.	Description
CYA000	Canvas Carry Bag
CYA010	Cleaning Brush, 6 ft
CYA020	2-Piece Aluminum Cleaning Road, 6 ft
CYA030	Cotton Cleaning Strips, Bag of 50

Ordering & Options

Original Sludge Judge®

Order No.	Description	Length
CY0000	Sludge Judge	15 ft
CY0010	Top Section with Rope	5 ft
CY0020	Bottom Section with Valve	5 ft
CY0030	Extension Sections	5 ft

Sludge Judge® Ultra

Order No.	Description	Length
CY0100	Sludge Judge Ultra	15 ft
CY0110	Top Section with Rope	5 ft
CY0120	Bottom Section with Valve	5 ft
CY0130	Extension Sections	5 ft

> "In sweet water there is a pleasure ungrudged by anyone."
>
> – Ovid, 13 A.D.

WQ101
Temperature Sensor
Rugged Water Temperature Sensor

Features

- Fully encapsulated electronics
- 4-20 mA output
- Marine grade cable with strain relief

Description

Global Water's WQ101 Temperature Sensor is a rugged and reliable device for highly accurate submersible water temperature measurement. The sensor's probe is molded to 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The WQ101 has a two-wire configuration for minimum current draw. The unit's electronics are completely encapsulated in marine grade epoxy within a stainless steel housing.

Applications

Ideal for stream and lake monitoring, aquaculture studies, baseline analyses, mitigation monitoring, and other environmental applications.

Specifications

Output	4-20 mA
Range	-58 to +122° F (-50 to +50°C)
Accuracy	±0.2°F or ±0.1°C
Maximum Pressure	Open Water: 0 to 200 psi Online: 50 psi
Operating Voltage	10 to 36 VDC
Current Draw	Same as sensor output
Warm-up Time	5 seconds minimum
Operating Temp	-58 to +212° F (-50 to +100°C)
Size of Probe	Open Water: ¾ inch dia. x 4½ in long (1.9 cm dia. x 11.4 cm long) Online: 1.7 inch dia. x 8 in long (4.3 cm dia. x 20.3 cm long)
Weight	Open Water: 8 oz (227 g) Online: 9.4 oz (272 g)

Ordering & Options

Order No.	Description
WQ101	Temperature Sensor for Open Water (includes 25 ft cable)
WQ101-O	Online Temperature Sensor (with 3/4 inch NPT thread and 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

Description

Global Water's WQ201 pH Sensor is a rugged and reliable water pH measuring device. The pH transmitter is mounted on 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The sensor's output is 4-20 mA with a three-wire configuration. The WQ201's electronics are completely encapsulated in marine grade epoxy within a stainless steel housing. The unit also uses a removable shield and replaceable pH sensor element for easy maintenance.

Record and Control

As with all of Global Water's 4-20 mA output sensors, you can add recording and control capabilities to the WQ201 with the GL500 Datalogger and the PC300

Specifications

Output	4-20 mA
Range	0 to 14 pH
Accuracy	2% full scale
Maximum Pressure	40 psi
Operating Voltage	10 to 30 VDC
Current Draw	5.5 mA plus sensor output
Operating Temperature	23 to +131°F (-5 to +55°C)
Warm-up Time	3 seconds minimum
Size of Probe	Open Water: 1¼ inch dia. x 10 in long (3.2cm dia. x 25.4cm long) Online: 2 inch dia. x 12 in long (5cm dia. x 30.5cm long)
Weight	1 lb (454 g)

Ordering & Options

Order No.	Description
WQ201	pH Sensor for Open Water (includes 25 ft cable)
WQ201-O	Online pH Sensor (with 1inch NPT thread and 25 ft cable)
00-449	pH Sensor Replacement
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

Please call us for calibration standards.

WQ201 pH Sensor
Rugged Water pH Sensor

Features

- Submersible pH measurements
- Fully encapsulated electronics
- 4-20 mA output
- Marine grade cable with strain relief
- Stainless steel housing
- Replaceable pH element

Controller. The GL500 (on page 122) connects to the pH sensor's 4-20 mA output to record data, and the PC300 Controller (on page 132) connects to the sensor's output to control pumps or alarms.

Applications

Ideal for stream and lake monitoring, aquaculture studies, baseline analyses, mitigation monitoring, and other environmental applications.

"Whiskey is for drinking; water is for fighting over."

– Mark Twain

WQMS Water Quality Monitoring System
System for Monitoring Multiple Water Quality Parameters

Description

Global Water's WQMS Water Quality Moni-toring System allows you to monitor mul-tiple water quality parameters with a fully integrated, easy to use, economical system. The standard system includes our multichan-nel datalogger (featuring 7 analog channels and 2 digital channels for data recording) and four of our rugged 4-20 mA water qual-ity sensors for measuring water temperature, pH, conductivity, and dissolved oxygen. To customize the WQMS for your application, you can select up to three more analog sen-sors and up to two digital sensors to monitor additional parameters such as turbidity, ORP, water level, wind speed/direction, rainfall, and more.

Smart Water Quality Data Recorder

The WQMS's water quality data recorder fea-tures 7 analog channels, 2 pulse channels, and USB and serial communication ports. The durable and powerful datalogger is en-closed within a sturdy weatherproof case. The unit will operate for several months be-fore its internal 12VDC battery requires re-charging. Please see the GL500-7-2 on page 122 for additional information.

Powerful PC and PDA Software

The WQMS includes Windows™-based Global Logger II software, which makes ac-cessing stored data and setting options easy. The software provides many useful features, such as real time readout, measurement in-terval and engineering unit selection, sta-tion ID setting, and sensor calibration. The WQMS also includes Windows™ CE-based PDA software for simple data collection in the field. Data downloaded from the record-er can easily be opened in any PC spread-sheet program for analysis and graphic pre-sentation.

Rugged Water Quality Sensors

The WQMS comes standard with four rug-ged and reliable 4-20 mA water quality sen-sors, including our water temperature sensor, pH sensor, conductivity sensor (with a 0 to 5000µS range standard), and dissolved oxy-gen sensor. Each sensor is mounted on 25 ft (7.6 m) of marine-grade cable, with lengths up to 500 ft (152.4 m) available by special or-der. The sensors' electronics are completely encapsulated in marine-grade epoxy within a stainless steel housing. Each sensor outputs a 4-20 mA signal. Please see the WQ101, WQ201, and WQ301 starting on page 60 and the WQ401 on page 63 for more detail about these sensors.

Remote Communication Options

To add remote communication capabilities, select the GL500-Mod Modem Package for telephone modem communications (see Or-dering & Options) or the RM100 for radio communications (see page 126). We also offer solar panels and a battery charger to support your WQMS installation. See the Accessories table on the opposite page for additional information.

Customize for Your Application

To customize your WQMS, you can select up to three additional analog sensors and two digital sensors from Global Water's line of rugged water quality, weather, level, and flow sensors. Please see Ordering & Options on the next page and the sensors in this docu-ment for additional information.

If you require a unique water quality moni-toring system to meet the needs of your spe-cific application, Global Water can work with you to design a factory-integrated custom system. Please contact Global Water regard-ing this option.

Applications

Ideal for stream and lake monitoring, aquaculture studies, baseline analyses, mitigation monitoring, and other environmental applications.

Features

- Monitor temperature, DO, pH, conductivity, and 5 additional parameters at the same time

- High quality, rugged sensors

- Battery powered for remote locations

- User-friendly Windows™ and Windows™ CE-based PDA software included

- Four sample modes: timed, 10 times per second, logarithmic, and exception

- Both USB and serial communication ports

- Rugged, lockable, weather resistant enclosure

Specifications

Datalogger

Memory	Non-volatile flash memory
Power	Voltage: 7.2 VDC min. to 24.0 VDC absolute max.
	Standby Current: 70µA typical
	Logging Current: 5mA typical + sensor current
Analog Sensor Inputs	4-20 mA (0-5 VDC as factory option)
	Resolution: 12-bit, 4096 steps
	Channels: 7 input channels + battery voltage monitor
	Sensor Warm-up Time: Programmable, 0-60 sec
Digital Inputs	Two independent pulse counters
	Maximum Input Voltage: 24VDC
	Maximum Frequency: 100Hz
	Minimum Pulse Width: 2mS
	Maximum Count: 65,535 (16-bit)
Sample Now Input	Sample-on-demand input, software enabled
	Maximum Input Voltage: 24 VDC
	Minimum Pulse Width: 2 mS
Sample Modes	Fixed interval programmable from 1 sec to >1 yr
	High speed 10 samples per second
	Logarithmic sample rate (approximation)
	Exception (log only on deviation from previous reading)
Storage Capacity	40,879 recordings for all inputs plus time stamp
Data Overwrite	Select memory wrap or unwrap (unwrap will stop logging once memory is full)
Communication Ports	RS-232 DB9 or USB Type B
Selectable Baud Rates	9600, 19200, 28800, 38400, 57600, 115200

Clock	Synchronizes to user's computer
Operating Temperature	Industrial, -40 to +185°F (-40 to +85℃) (battery may not apply)
Enclosure	Expanded UV protected PVC 9 x 7.5 x 4.5 inch (23 x 19 x 11 cm)
Battery	12 Volt, 2.2 A/hr, rechargeable (gell cell)
Weight	3.5 lbs (1.6 kg)

Global Logger II Software

Compatibility	Microsoft's Windows™ 98, ME, 2000, NT, XP, and Vista
Features	Tabular Display/Printout; data in standard spreadsheet format (CSV); programmable alarm start and stop times; field calibration software included

Water Quality Sensors

Please see the WQ101 Temperature Sensor, WQ201 pH Sensor, and WQ301 Conductivity Sensor starting on page 60 and the WQ401 Dissolved Oxygen Sensor on page 63 for specifications.

> "The stone in the water knows nothing of the hill which lies parched in the sun."
>
> – African Proverb
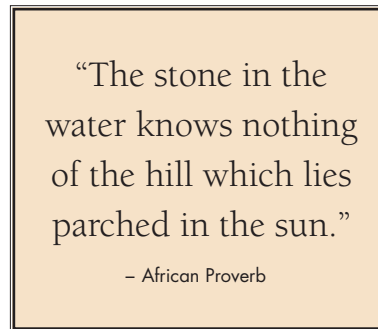
Ordering & Options

Water Quality Monitoring System

Order No.	Description
WQMS[1]	Water Quality Monitoring System
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

1) The standard unit includes a datalogger, temperature sensor, pH sensor, conductivity sensor (with a 0-5000µS range unless otherwise specified), and DO sensor. For a custom system, please call us.

Accessories

Order No.	Description
GL500-Mod	Modem Package
RM100-CSK	Wireless Communication System Client/Server Kit, see page 126
WQ730	Turbidity Sensor, see page 64
WQ600	Redox/ORP Sensor
WL400	Water Level Sensor, see page 6
RG200	Rain Gauge 6 inch, see page 109
RG600	Rain Gauge 8 inch, see page 109
BC100	Smart Charger, see page 128
SP101	Solar Panel (2 watt), see page 128
SP102	Solar Panel (5 watt), see page 128
PDAWL16	PDA Package

You may also like . . .

RM100 Wireless Communication System
Industrial RF transmitters and receivers for remote data collection from your WQMS.

SIT65 Satellite Internet Telemetry
Alternate datalogger to easily collect water quality data on the web via satellite Internet.

CL500 Chlorine Analyzer
Online Meter for Free or Total Chlorine Measurements

intuitive user interface features security code settings to prevent unauthorized tampering. A built-in diagnostic menu assists in troubleshooting.

Versatile Outputs

The TB500 includes an isolated 4-20 mA current output that may be used for chart or data recording, remote monitoring, PLCs, or SCADA systems. Two user-settable alarm relays may be connected to an autodialer or local alarm to notify you before dangerously high turbidity levels occur. Also included is an RS-485 digital output that may be interfaced with a Modbus system to link multiple units or to integrate the TB500 into your existing network.

What's in the Box

Each TB500 turbidimeter is shipped fully calibrated and includes desiccant, an inline pressure regulator, a universal 100-250 volt power supply, and an operator's manual. The TB502 models also include a spare measuring cuvette with a light shield.

Applications
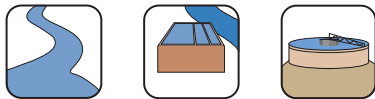
Ideal for continuous measurement of turbidity in filtered water, raw water, final wastewater effluent, and industrial applications.

You may also like . . .

GL500 Datalogger
Add recording capabilities to the TB500.
Page 122

AD200 Voice Alarm Autodialer
Receive turbidity alarm notifications.
Page 138

Description

The CL500 Free/Total Chlorine Analyzer is an accurate and reliable instrument for continuous online free or total chlorine residual measurement. The CL500 uses the reliable and economical, colorimetric DPD (N,N-diethyl-p-phenylenediamine) chemistry, proven to be the most accurate method for measuring free or total residual chlorine. With no troublesome mixing or pump components to wear out, the CL500 provides reliable operations with minimal maintenance.

The CL500's user selectable sample settings conserves reagents by allowing you to set the cycle time from 90 seconds up to 10 minutes. The low volume reagent and sample chamber saves on reagent costs and decreases water consumption. A removable sample cuvette allows for simple cleaning and maintenance, and the viewable sample chamber provides a clear view of the sample cuvette while the instrument is sampling.

The CL500 provides a programmable 4-20 mA output signal that may be used with one of our chart recorders for report-

Specifications

Range	0 to 10 mg/l
Cycle Time	User selectable, 90 seconds to 10 minutes
Resolution	0.01 mg/l
Accuracy	± 5% or 0.03 mg/l of Cl^2, whichever is greater
Method	USEPA accepted DPD method of analysis
Standard outputs	4-20 mA and RS-485 with Modbus
User Alarms	2 user selectable alarms (form C 240VAC 2A)
Operating Temp	41° to 104°F (5° to 40°C)
Input Pressure	1 to 200psi
Display	Backlit LCD
Enclosure	ABS Plastic, NEMA 4X, IP66
Power	100 to 240 Volt auto switchable 47 to 63hz
Certifications	CE, UL, CSA, (ETL, ETLc)
Weight	8 lbs (3.6 kg)
Dimensions	16x16x10 inches (41x41x26 cm)

Features

- Proven colorimetric DPD chemistry
- Reliable, low maintenance design
- Range of 0 to 10 ppm
- EPA accepted method

ing purposes or to control a chemical feed system. There are also two user-selectable Hi/Low limit relays that can trigger one of our AD200 autodialers (page 138) or a local alarm system. The unit's compact and corrosion-resistant NEMA 4X (IP66) enclosure allows for a simple installation.

The CL500 comes with an inline pressure regulator, replacement tubing/cuvette kit (one year supply), a power supply, and an owners manual. Please note that reagents must be purchased separately.

Applications
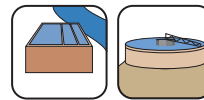
Ideal for monitoring and controlling the residual in water and wastewater treatment plants.

Ordering & Options

Chlorine Analyzer

Order No.	Description
CL500	Free/Total Chlorine Analyzer

Reagents & Replacement Parts

Order No.	Description
09951GW	Reagent Set for Free Chlorine (30 Day)
09952GW	Reagent Set for Total Chlorine (30 Day)
09953GW	Reagent Set for Free Chlorine (60 Day)
09954GW	Reagent Set for Total Chlorine (60 Day)
09939-G	Replacement Tubing/Cell Kit
CL500-ZCK-120	Zero Calibration Kit, 120 V
CL500-ZCK-240	Zero Calibration Kit, 240 V

pH3110/3210 pH/mV Meter Kits

User-Friendly Waterproof Kits for Measuring pH or mV and Temperature

Features

- Rugged, waterproof and field-friendly
- Kit includes everything in a convenient carry case
- Built-in datalogger (pH 3210)

Applications
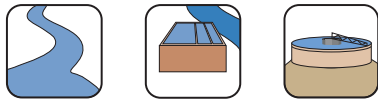
Ideal for environmental monitoring and water and wastewater applications.

Specifications

	3110	3210
Range	pH: –2.000 to 19.999	pH: –2.000 to 19.999
	mV: ±2000.0 mV	mV: ±2500.0 mV
	Temp: 23 to 221 °F(–5.0 to 105.0 °C)	Temp: 23 to 221 °F(–5.0 to 105.0 °C)
Resolution	All values +1 digit	
Accuracy	pH: ±0.005	
	mV: ±0.3	
	Temp: +0.2 °F (+0.1 °C)	
Calibration	1, 2, or 3 point	1, 2, 3, 4, or 5 point
Display	7-Segment LCD, customized	LCD backlit graphic
Memory	N/A	200 Manual Datasets
Battery Life	Up to 2500 hours	Up to 1000 hours w/o backlit, 150 hours w/backlight

Power	Four 1.5V AA batteries or four 1.2 V NiMH
Sensor/Temp input	DIN/4mm Banana
Weight	10.5 oz (300g)
Dimensions	7x3.15x2.17in (180x80x55mm)

Description

The user-friendly pH3110-3210 pH/mV Meter Kits are optimized for field use, but are accurate enough for the lab. The meters meet IP66/67 standards, so you don't need to worry about using it in the rain or accidentally dropping it into water. They have a sealed silicone keypad that offers real button response, yet allows for easy cleaning. The units feature simultaneous display of pH or mV with temperature, choice of automatic or manual temperature compensation, and multipoint calibration with automatic buffer recognition at eight buffer values. The pH3110 and pH3210 meters are ideal for environmental, water, and wastewater monitoring.

Flexible Models

The pH3110 is a great value for a robust and waterproof battery-operated pH/mV meter. It features an intuitive 6-key sili-cone keypad and a simplified calibration method with automatic buffer recognition and display for standard buffers. The meter's AutoRead function ensures stable and reproducible results. Typical applications for the pH 3110 include simple pH measurements or use in high schools and universities.

The pH 3210 includes a built-in data-logger, real-time clock, GLP-supporting functions and backlit display. It can be configured with the MultiCal® automatic calibration for buffer recognition, and au-tomatic temperature compensation. It has a continuous measurement control (CMC) function that alerts you when your meter is reading outside of the calibrated range. It's large memory allows you to manually store 200 datasets.

Ordering & Options

pH/mV Meter Kits

Order No.	Description	Electrode
pH3110	Meter Kit	SenTix® 41
pH3210	Meter Kit with Datalog-ger	SenTix® 41

Replacement Electrodes

Order No.	Description
SenTix41	Plastic Body Electrode with Tempera-ture Sensor
SenTix21	Plastic Body Electrode without Tempera-ture Sensor

pH Solution

Order No.	Description
478554	Rainbow Buffer Pack: Includes one 500 ml bottle each of pH 4, 7, and 10

> "Water is the most basic of all resources. Civilizations grew or withered depending on its availability."
>
> – Dr. Nathan W. Snyder

pH 1970i Portable pH Meter

Portable pH Meter with Rubberized Housing

Description

The accurate and field-friendly pH 1970i Portable pH Meter features a shock absorbing housing that is not only waterproof (IP67) but will actually float. In addition, the meter's convenient carrying handle doubles as a meter stand for benchtop use. The pH 1970i displays pH/temperature or mV/temperature simultaneously, which makes taking your pH readings easy. With it's GLP memory functions, real-time clock, 800 data point memory capacity, and convenient carrying handle, the pH 1970i is a complete pH measuring system. The standard BNC electrode connector allows you to quickly connect one of the waterproof SenTix® electrodes listed below, or you can use your own existing pH probe.

Features

- Waterproof rubberized housing
- Record readings to the built-in memory
- Doubles as a bench top meter

Ordering & Options[1]

Order No.	Description
pH1970i	Portable, Waterproof pH Meter w/Universal Power Supply
SenTix® 41	Plastic Body Electrode with Temperature Sensor
SenTix® 21	Plastic Body Electrode without Temperature Sensor

1) Buffers with values of 2.00, 4.01, 7.00, 10.01 are standard US buffers. Buffers with values of 1.679, 4.008, 6.865, 9.18 are NIST buffer values. A pH probe must be ordered separately.

Specifications

Range	pH: -2.00 to 19.99 mV: ±199.9 or ±1999 Temperature: 23.0 to 221°F (–5.0 to 105°C)
Resolution	pH: 0.01 mV: 0.1 or 1 Temperature: 0.2°F (0.1°C)
Accuracy (±1 digit)	pH: ±0.01 mV: ±0.5 or ±1 Temperature: ±0.1
Temperature Compensation	Automatic with ATC probe or Manual -4 to 266°F (-20 to +130°C) in 1° increments
Buffer Recognition	2.00, 4.01, 7.00,10.01; and pH 1.979, 4.008, 6.865, 9.18

Datalogging	50 data sets
Output	RS-232
Display	Multi-line LCD
Operating Temp	14 to 131°F (-10 to 55°C)
Storage Temp	-13 to 149°F (-25 to 65°C)
Power	NiMH rechargeable battery or 110/220 VAC adapter
Battery Life	Up to 600 hrs
Dimensions	3-1/2 x 7-7/8 x 7-1/2 inches (90 x 200 x 190 mm)
Weight	3.3 lbs (1.5 kg)
IP rating	IP 67
Certifications	CE

VARIO 2V00 pH Meter

Waterproof pH Meter for Simple Operation and Easy Handling

Description

The innovative VARIO 2V00 pH meter combines handheld convenience with benchtop features for easy pH monitoring.

Simple Operation

Just a fingertip touch on the unit's display, and the VARIO is ready for use. Immersion in a solution starts the measurement automatically. Highly accurate pH, mV, and temperature measurements can be read from the VARIO's large display and can also be temporarily locked on the screen or stored to memory. The memory can store up to 50 measured values for later evaluation. When not in use as a pH meter, the VARIO doubles as a laboratory clock or timer.

Specifications

pH Range	-2.00 to 16.00
pH Accuracy	±0.01 pH
Temperature	23 to 212 °F (-5.0 to 100.0°C)
Auto Buffer Recognition	TEC/NIST
Calibration Points	3 (MultiCal®)
Operating Temp	14 to 131°F (-10 to 55°C)
Storage Temp	-13 to 149°F (-25 to 65°C)
Power Source	1 x 1.5 V, type Mignon/AA
Battery Life	Up to 1500 hrs
IP Rating	65
Weight	Approx. 4 oz (115 g)
Dimensions	5-1/2 x 3-1/8 x 1-1/4 inches (140 x 80 x 33 mm)

Applications

Ideal for water and wastewater treatment applications.

Features

- Compact, rugged, and easy to use
- Innovative touch screen display inverts 180 degrees
- Built in memory saves up to 50 readings

Ordering & Options

VARIO pH Meters

Order No.	Description	Electrode
2V00-001V	pH Meter	Short Standard
2V00-1011	pH Meter	SenTix® 21
2V00-1012	pH Meter	SenTix® 41

Replacement Electrodes

Order No.	Description
SenTix® 41	Plastic Body Electrode with Temperature Sensor
SenTix® 21	Plastic Body Electrode without Temperature Sensor

pH/Ion 3400i Ion Selective Electrode Analyzer

Meter for measuring ISE/pH, temperature and ORP

Description

The pH/mV and ion selective electrode analyzer pH/ION 3400i offers the highest degree of flexibility possible. For pH measurements the analyzer can be calibrated manually or automatically and offers simultaneous display of pH and temperature. For measurements with ion-selective electrodes the pH/ION 3400i offers concentration display in mg/l. The analyzer also displays directly in mV to ±999.9 mV in 0.1 mV steps; and to ±1999 mV in 1 mV steps.

Of course, even in these higher ranges the pH/ION 3400i calculates the concentration from a mV resolution of 0.1 mV. Calibration of the analyzer is carried out with up to three standards (selected from 16 standards in the range of 0.01 to 1000 mg/l).

Operating on either line power or rechargeable battery for up to 1500 hours with "LoBat" warning means that the analyzer can be used in the laboratory or in the field. Lightweight and compact, the rugged analyzers are IP 66 (hose proof) and IP 67 (submersible). The pH/ION 3400i has a built-in datalogger for up to 500 measurements together with GLP calibration protocol offers a comprehensive documentation of the results. The analyzer supports analog or digital data transfer (RS 232), automatic recognition of stable measurements (AutoRead), electrode evaluation and calibration interval monitoring functions to ensure reproducible and reliable measurements.

The ion-selective membrane of the electrode consists of a sparingly soluble salt of the ion to be measured (solid state electrodes), a PVC-membrane, modified by an ion exchanger or ion carrier (matrix electrodes), glass (glass electrode) or a gas-permeable plastic (gas-sensitive electrodes). The activity of the ions to be measured determines the electrode current. With increasing activity of the anions the voltage turns more negative, with increasing activity of cations, more positive. An ion selective electrode analyzer uses the electrode signal to calculate the concentration of the sample.

Features

- Simultaneous display of pH and temperature
- Up to 1500 hours with "LoBat" warning
- Built-in datalogger
- IP67 waterproof rated

Specifications

Measuring Ranges	pH: -2.000 to +19.999, -2.00 to +19.99
	mV: -999.9 to +999.9, -1999 to +1999
	Temp: -23 to 221 °F (-5.0 to 105.0 °C)
	ISE: 0.000 to 9.999 mg/l, 0.00 to 99.9 mg/l, 0.0 to 999.9 mg/l, or 0 to 1999 mg/l
Measuring Resolution	pH: 0.001, 0.01
	mV: 0.1, 1
	Temp: 0.2°F (0.1°C)
	ISE: 0.001 mg/l, 0.01 mg/l, 0.1 mg/l, 1 mg/l
Precision	pH (± pH units from the calibration point): ±0.003 from 59 to 95 °F (15 to 35 °C), +0.01
	mV: ±0.2 from 59 to 95 °F (15 to 35 °C)
	Temp: ±0.1 (NTC 30); ±0.5 from 32 to 59 °F (0 to 15 °C), ±0.1 from 59 to 95 °F (15 to 35 °C), ±0.2 from 95 to 131 °F (35 to 55 °C) (PT 1000)
pH correction function	Manual from -4 to 266 °F (-20 to 130 °C)

Usable ISE electrodes	Combination and single electrodes with connector according to DIN 19262
ISE calibration procedure	Two point calibration or three point calibration with standards suiting the sample
ISE slope ranges	± 25 to 35 mV and ± 50 to 70 mV
Ambient Conditions	Storage: -13 to +149 °F (-25 to +65 °C)
	Operation: 14 to 131 °F (-10 to +55 °C)
	Climatic Class: 2
Power	Batteries: 4 x 1.5 V alkali-manganese batteries, type AA
	Operational Life: approx. 3000 operating hours
	Mains: The following applies to all plug-in power supplies:
	Connection max. overvoltage category II
	Input: 100 to 240 V ~ / 50 to 60 Hz / 400 mA
	Output: 9 V = / 1.5 A
Weight	0.7 lbs (0.3 kg)
Size	6.8x3.1x1.5 in (172x80x37 mm)
IP Rating	IP-66 & 67
Certifications	cETLus, CE
Electrical Safety	Protective class III

Applications
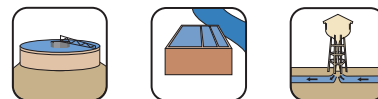
Ideal for drinking water, wastewater, salt water, wine.

Ordering & Options

Order No.	Description
pH/Ion 3400i	Ion Selective Electrode Analyzer
SenTix 21	pH Electrode w/ 3.3 ft (1 m) of cable and no temp comp
SenTix ORP	ORP Electrode w/ 3.3 ft (1 m) of cable
ISE Electrodes	See page 77

WQ301 Conductivity Sensor
Rugged Water Conductivity Sensor
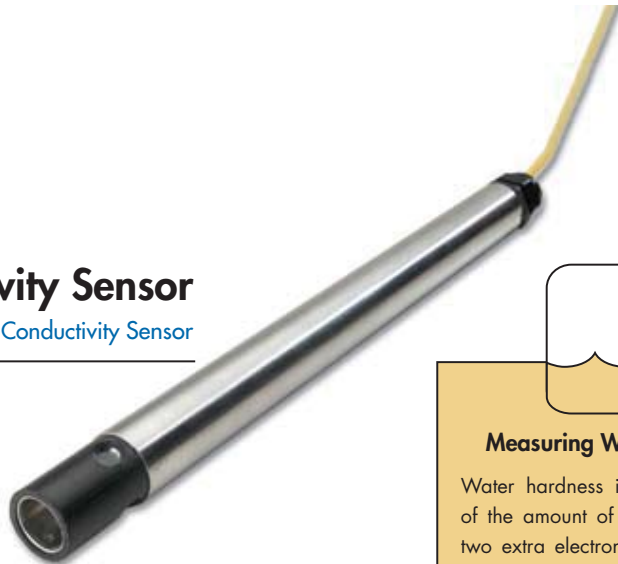
Description

Global Water's WQ301 Conductivity Sensor is a rugged and reliable water conductivity measuring device. The WQ301 offers a rapid and non-destructive way to measure the ion content in a solution. The conductivity sensor is molded to 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The conductivity sensor's output is 4-20 mA with a three wire configuration. The unit's electronics are completely encapsulated in marine grade epoxy within a stainless steel housing.

Record and Control

As with all of Global Water's 4-20 mA output sensors, you can add recording and controlling capabilities to the WQ301 Conductivity Sensor with the GL500 Datalogger and PC300 Controller. The GL500 (on page 122) connects to the conductivity sensor's 4-20 mA output to record data. Global Water's PC300 Controller (on page 132) connects to the conductivity sensor's output to control pumps or alarms.

Specifications

Output	4-20 mA
Ranges	0 to 500, 0 to 2,000, 0 to 5,000, 0 to 10,000, 0 to 20,000, 0 to 40,000 µS
Accuracy	1% full scale
Maximum Pressure	50 psi
Operating Voltage	12 VDC (± 5%)
Current Draw	0.8 mA plus sensor output
Warm-up Time	3 seconds minimum
Operating Temp	-40 to +131°F (-40 to +55°C)
Temperature Compensation	2% per °C
Electrodes	316 stainless steel
Size of Probe	Open Water: 1 inch dia. x 12 in long (3.175cm dia. x 30.5cm) Online: 2.5 inch dia. x 15.5 in long (6.35cm dia. x 39.4cm)
Weight	Open Water: 8 oz (227 g) Online: 22 oz (624 g)

Features

- Fully encapsulated electronics
- 4-20 mA output
- Marine grade cable with strain relief
- Stainless steel housing

Applications

Ideal for stream and lake monitoring, aquaculture studies, baseline analyses, mitigation monitoring, and other environmental applications.

Ordering & Options

Conductivity Sensors for Open Water[1]

Order No.	Conductivity Range (µS)
WQ301A	0 to 5,000
WQ301B	0 to 10,000
WQ301C	0 to 20,000
WQ301D	0 to 2,000
WQ301E	0 to 40,000
WQ301F	0 to 500

1) Sensors include 25 ft of cable.

Online Conductivity Sensors[2]

Order No.	Conductivity Range (µS)
WQ301A-O	0 to 5,000
WQ301B-O	0 to 10,000
WQ301C-O	0 to 20,000
WQ301D-O	0 to 2,000
WQ301E-O	0 to 40,000
WQ301F-O	0 to 500

2) Online sensors include 1-1/4 inch NPT thread and 25 ft of cable.

Cable

Order No.	Description
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

Please call us for calibration standards.

You may also like . . .

392 Industrial Conductivity Transmitter
Durable conductivity transmitter with 4-20 mA output and LCD display.
Page 91

EC400 Conductivity Testers
Handheld meter for fast and easy conductivity mesuarements.
Starting on Page 85

Measuring Water Hardness

Water hardness is the measurement of the amount of ions that have lost two extra electrons (divalent cations) dissolved in a sample. The more divalent cations dissolved in the water the "harder" the water. Generally, the most common divalent cations are calcium and magnesium, however other divalent cations may contribute to water hardness. Water hardness can be expressed in many different units, including ppm, mg/L CaCO3, Clark degrees, and French degrees.

Total dissolved solids (TDS) refers to a measure of all inorganic solids dissolved in the water, including ions that contribute to water hardness (like calcium) as well as those that do not (like sodium). Water hardness can be roughly calculated from TDS by dividing the ppm (parts per million) measurement of the TDS by 10. This gives a hardness value with an error of only 2-3 French degrees. TDS measurements can also be derived from a relative conductivity measurement.

Conductivity is a measure of the ability of a substance to conduct an electric current. Conductivity increases with increasing ion content, which means that it can provide a good approximation of TDS using the conversion factor of 1 ppm = 2 µS/cm. Conductivity is temperature sensitive and is typically standardized to 25°C. While con-ductivity is a convenient way to get an approximation of water hardness, it does have the drawback of combining all ions in the measurement, including those that do not contribute to the water's hardness. This hardness ap-proximation gives an error similar to the TDS measurement of 2-3 French degrees of hardness.

COND 3110/3210
Handheld Conductivity Meters

Handheld conductivity meter for field measurements

Features

- Robust shock and water resistant design
- Easy to use interface
- Wide range of applications
- Accurate and reliable TetraCon® probe

> "Water helped ancient man learn those first lessons about the rights of others and responsibility to a larger society… It became part of the moral and mental legacy parents passed on to their children."
>
> – M. Meyer,
> *Water in the Hispanic Southwest*

Description

Useable anywhere, the Cond 3110 and Cond 3210 handheld conductivity meters are robust, easy to operate and provide assured accurate readings. From the monitoring of on-line process systems to field studies, handheld conductivity meters will meet all your water, wastewater and environmental measurement needs. Both meters meet IP66/67 standards – no worrying about using it in the rain and mud, or accidentally dropping it in the water. The meters have a sealed silicone keypad which offers real button response, yet allows for easy cleaning.

Cond 3110

This easy to use meter will meet all your day-to-day demands. With only 6 keys, the Cond 3110 provides easy error-free measurement with temperature measurement, automatic temperature compensation and 4-electrode measuring technology. Typical applications for the Cond 3110 include simple conductivity measurements or use in high schools and universities.

Cond 3210

Loaded with additional features, the Cond 3210 includes parallel temperature display, integrated datalogger, good laboratory practice (GLP) supporting functions, automatic and manual temperature compensation with linear temperature function and a non-linear function for ultra-pure water and natural waters according to EN 27 888. The meter's temperature compensation can be switched off; either 68 °F or 77 °F (20 °C or 25 °C) can be selected as the reference temperature. The Cond 3210 has a continuous measurement control (CMC) function that alerts you when your meter is reading outside of the calibrated range.

Specifications

Range	Conductivity (both meters): 0.0 to 1000 mS/cm
	Conductivity (3210 only): 0.00 to 19.99 uS/cm (for K=0.1 cm-1), 0.000 uS/cm to 1.999 uS/cm (for K=0.01 cm-1)
	Temp (both meters): 23 to 221 °F (-5.0 to +105.0 °C)
	Salinity (both meters): 0.0 to 70.0
	TDS (3210 only): 0 to1999 mg/l
	Specific Resistance (3210 only): 0.00 to 20 Mohm cm
Accuracy	Conductivity: ±0.5% of value
	Temperature: ±0.2 °F (+0.1 °C)
Reference temp	68 or 77 °F (20 or 25 °C), selectable
Cell constant	Both meters: Fixed 0.475 cm^{-1} , 0.1 cm^{-1}
	0.450 to 0.500 cm^{-1}, 0.585 to 715 cm^{-1}
	0.800 to 1.200 cm^{-1}, Standard: 0.01 mol/L KCl
	3210 meter only: adjustable 0.090 to 0.110 cm^{-1}
Temperature compensation	3110: nLF
	3210: none, nLF, 0.000 to 10.00 %/°K
Memory	3210 only: 200 manual datasets
Power	Four 1.5 V AA batteries or four 1.2 V NiMH
Battery Life	3110: Up to 1000 hours
	3210: Up to 800 hours w/o backlight, 150 hours w/backlight
Dimensions (LxWxH)	7x3.15x2.17in (180x80x55mm)
Weight	0.88 lb (0.3kg)

Applications

Ideal for ground water, surface water, food industries, and pharmaceutics.

Ordering & Options

Order No.	Description
Cond 3110 Set	Handheld Conductivity Meter Kit Includes TetraCon 325
Cond 3210 Set	Handheld Conductivity Meter Kit Includes TetraCon 325
TetraCon® 325	Conductivity Meter Probe on 9.8 ft (3m) of cable

COND 1970i Portable Conductivity Meters

Portable conductivity and TDS meter for field measurements.

Description

The Cond 1970i conductivity meter combines everything you want in a portable conductivity meter for water, wastewater and environmental monitoring. The meter is nearly indestructible with both hose down proof (IP 66) and submersible (IP 67) ratings as well as being accurate, capable and easy to use. Along with an 800 data point datalogger, a real time clock and recorder output, the meter conforms to all GLP requirements.

Features

- Nearly indestructible, water proof housing
- Large, easy to read display
- Long lasting rechargeable NiMH batteries
- Measurements up to 300 feet deep with submersible cell

Specifications

ProfiLine Cond 1970i	Range/Resolution: Conductivity: 0.0 uS/cm to 500 mS/cm in 5 measuring ranges or autorange, 0.00 uS/cm to 19.99 uS/cm (for K=0.1 cm^{-1}), 0.000 uS/cm to 1.999 uS/cm (for K=0.01 cm^{-1})
	Temp: 23 to 221 °F (-5.0 to +105.0 °C)
	Salinity: 0.0 to 70.0
	TDS: 0 to1999 mg/l
Accuracy	Conductivity: ± 0.5% of value
	Temperature: ± 0.1 K
Reference temp	68 to 77 °F (20 or 25 °C), selectable
Cell constant	Calibratable 0.450 to 0.500 and 0.800 to 1.200 cm^{-1}, fixed: 0.01 cm^{-1} freely adjustable 0.25 to 2.5 cm^{-1} and 0.09 to 0.11 cm^{-1}

Temperature comp	Automatic, can be switched off
Power	Rechargeable NiMH batteries (approx. 600 hrs per full charge)
AC power	Wide-range power supply 100-240 VAC 50/60 Hz (included)
Dimensions (LxWxH)	3.54x7.87x7.48 in (90x200x190 mm)
Weight	3.3 lb (1.5 kg) (without plug-in power supply)
Ingress Protection	IP 67
Electrical Safety	Protective class III
Ambient conditions	Operation: 14 to 131°F (-10 to 55°C)
	Storage: 13 to 149°F (- 25 to 65°C)
Test certificates	cETLus, CE

Ordering & Options

Order No.	Description
Cond 1970i	Portable Conductivity Meter Conductivity probe not included
TetraCon® 325	4-electrode cond sensor with integrated temp sensor
TA 197 LF-25	Conductivity probe w/ 82 ft (25 m) of cable and field armor

NOTE: Other lengths availabel for TA 197 LF sensor.

VARIO 2X00 Cond Meter

Waterproof Conductivity Meter for Simple Operation and Easy Handling

Description

The VARIO Cond provides a powerful and robust conductivity meter in a package that will fit in your pocket. This easy to use meter is ideal for use in water and wastewater process control, environmental field monitoring or anywhere a small, accurate meter is needed. At home in harsh field conditions or in the demanding plant environment the meters are waterproof (IP65) and have firm-grip rubber armoring. With the meter and a suitable sensor module you can measure the conductivity, specific resistance, salinity or TDS (total dissolved solids) of a solution easily.

Specifications

Conductivity	µS/cm: 0.00 to 19.99 (when using module LR01 V), 0.0 to 199.9, 0 to 1999
	mS/cm: 0.00 to 19.99, 0.0 to 199.9
	Salinity: 0.0 to 70.0 (per IOT)
	TDS (mg/l): 0 to 1999
	Temp: 41 to 221°F (5.0 to 105.0°C)
Reference temp	68 or 77 °F (20 or 25 °C), selectable
Power	One 1.5V AA (apprx. 500 hr operation)
Ambient conditions	Storage: 13 to 149°F (- 25 to 65°C)
	Operation: 14 to 131°F (-10 to 55°C)
Dimensions	5.5x3.15x1.3 in (140x80x33 mm) (without sensor module)
Weight	4 oz (115 g) (without sensor module & battery)

Features

- Accurate, easy to use and full of features
- Innovative touch screen interface
- Stands up to the harsh demands of field use

Ordering & Options

Order No.	Description
2X00-001A	VARIO Cond Meter TetraCon V Kit
2X00-001B	VARIO Cond Meter LR01 V ultrapure water cell
301990	TetraCon V 4-electrode cond sensor with integrated temp sensor
LR01 V	Ultrapure water cond cell with integrated temp sensor

EC400 Conductivity Meter

Specifications

Cond Range	0 to 19.99 mS, 3 ranges
TDS/Salinity Range	0 to 9.99ppt (g/L), 3 ranges
Temp Range	32° to 149°F (0° to 65°C)
Resolution	±1 digit, 0.1°F/ °C
Accuracy	±2%FS, , ±1.8°F/1°C

Ordering & Options

Order No.	Description
EC400	Includes meter and conductivity cell, protective sensor cap, sample cup with cap, four SR44W button batteries, and 48in (1.2m) neckstrap.

FL700 Fluoride Meter

Specifications

Range	0.1 to 9.99 ppm (mg/L)
Resolution	0.1 ppm
Accuracy	0.01ppm; 0.1°F/°C
Temperature Range	±10% of reading ±0.01ppm; ±1.8°F/±1°C
Temp. Resolution	0.1°F/ °C
Temp. Accuracy	+1.8°F/1°C

Ordering & Options

Order No.	Description
FL700	Includes Fluoride electrode, TISAB reagent tablets, sensor cap, four 3V batteries, and a 48in (1.2m) neckstrap

DO600 Dissolved Oxygen Meter

Specifications

DO Range	0 to 200.0% / 0 to 20.00ppm (mg/L)
Temp Range	32° to 122°F (0° to 50°C)
Max. Resolution	0.1%, 0.01ppm (mg/L), 0.1°F/ °C
Accuracy	+2.0%FS, 0.4 ppm (mg/L), +1.8°F/1°C

Ordering & Options

Order No.	Description
DO600	Includes DO electrode, protective sensor cap, spare membrane cap, electrolyte, four 1.5V SR44W batteries, and a 48in (1.2m) neckstrap

EC500 Conductivity/ pH Meter

Specifications

Cond Range	0 to 19.99 mS, 3 ranges
TDS/Salinity Range	0 to 9.99ppt (g/L), 3 ranges
pH Range	0.00 to 14.00pH
Temp Range	32° to 149°F (0° to 65°C)
Resolution	±1 digit, 0.1°F/ °C
Accuracy	±2%FS, ±0.01pH, ±1.8°F/1°C

Ordering & Options

Order No.	Description
EC500	Includes electrode, protective sensor cap, sample cup with cap, four 1.5V SR44W batteries, and a 48in (1.2m) neckstrap.

CL200 Chlorine Meter

Specifications

ppm Range	0.01 to 10.00ppm (10 to 50ppm using dilution method)
Temperature	23° to 194°F (-5° to +90°C)
Max. Resolution	0.01ppm; 0.1°F/°C
Accuracy	±10% of reading ±0.01ppm; ±1.8°F/±1°C

Ordering & Options

Order No.	Description
RE300	Includes ORP electrode, sample cup with cap, batteries, and 48in (1.2m) neckstrap

RE300 Handheld ORP Meter

Specifications

Range	-999 to 999mV
Max. Resolution	1mV
Accuracy	+4mV

Ordering & Options

| Order No.	Description
RE300	Includes ORP electrode, sample cup with cap, batteries, and 48in (1.2m) neckstrap

WQ-FDO shown with stainless steel armor

Features

- Extremely fast and precise optical DO sensor – outstanding for field and lab applications
- Proven green light technology for long operation life of sensor
- Beveled membrane repells interference that can be caused by air bubbles
- Universal protective armoring available
- Low power consumption and low maintenance
- Simple to integrate and operate
- One year sensor life

Applications
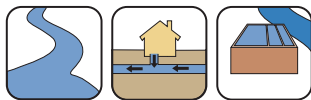
Long and short term monitoring for streams, rivers, lakes, aquaculture, thermocline profiling, industrial outfalls, wastewater, scientific research, homeland security, the food and wine industry, and more.

Specifications

Output	SDI-12 or 4-20 mA (with converter)
Accuracy	1% of reading or 0.02 ppm, whichever is greater
Resolution	0.01% saturation, 0.001 ppm
Range	0.00 to 25.0 ppm
Repeatability	0.01 ppm
Response Time	90% in less than 60 seconds
Temperature Compensation	Compensated 32 to 122°F (0 to 50°C)
Sensor Drift	Less than 1% per year
Temperature	Accuracy: ±0.2°F (±0.1°C) Resolution: 0.02°F (0.01°C) Range: 32 to 122°F (0 to 50°C)
Depth Rating	Maximum 30m water depth
Operating Voltage	9 to 15 VDC
Current Draw	10 mA during measurement, 0.5mA standby

WQ-FDO Optical Dissolved Oxygen Sensor
Highly Accurate and Stable Optical Dissolved Oxygen Sensor

Description

The WQ-FDO Optical DO Sensor is an instrument designed for measuring DO concentrations in liquids. The optical DO sensors were developed to meet the requirements ranging from surface water monitoring programs to harsh waste water applications. The WQ-FDO has been specifically designed to meet the demanding requirements of the environmental monitoring and scientific research sectors, providing long term, accurate and reliable dissolved oxygen measurement. The sensor has extremely low power requirements and a 4-20 mA output making it ideal for incorporation into remote environmental monitoring installations.

How it works

The WQ-FDO Optical DO Sensor's measuring technology is based on an attenuated fluorescent signal measured in a defined time frame. A fluorescent dye is stimulated in the sensor's membrane by a short wave length light source. By falling back into the passive state, long wave light is emitted, which is recorded as a measurement signal. If oxygen contacts the dye by diffusing through the membrane the period of back scattering light is shortened according to the oxygen concentration of the sample. The optical DO measurement is more or less a highly precision time measurement. In order to process this time measurement as precisely as possible, the sensor optics are calibrated to the speed of light.

Advantages

The WQ-FDO Optical DO Sensor has many advantages over traditional DO sensors. Unlike conventional Galvanic and Polargraphic

Sensor Construction	Acetate, stainless steel, cast epoxy
Cable	4 core, 20 AWG, shielded, EPDM jacket
Size	1.89 inch dia. x 6.17 inch long (48mm dia. x 156mm long)
Weight	1 lb (453.5 g)

DO sensors, WQ-FDO sensors have no consumable cathodes or anodes that require replacement, minimizing servicing requirments. Neither do the sensors consume oxygen. Consequently the measurement of DO by the sensor is unaffected by water flow. The WQ-FDO can even be deployed in stagnate groundwater bores. The sensors also have extremely stable electronics – a calibration interval of 1 year is typical.

The measuring and reference path optical components are identically designed inside the sensor. Natural aging processes of the sensor's optical components can therefore be compensated by the reference path and accordingly compensated in the measuring path. As a result, the sensor provides accurate DO measurements over long periods of time without the need for re-calibration. Additionally by stimulating the fluorescent reaction in the membrane with low energetic green-light, the fluorescent dye in the sensor membrane won't be bleached out.

The WQ-FDO can be used to monitor DO in almost any liquid, including wines, beer, and milk. The sensors are not affected by color of the liquid and with the beveled membrane design, bubbles or aeration do not affect the sensor's measurements either. The sensors can also be mounted in process lines for quality assurance.

Ordering & Options

WQ-FDO Sensors

Order No.	Output Type
WQ-FDO	Includes 25 ft of cable. Does not include armoring.
201310	Replaceable Membrane
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

Accessories

Order No.	Description
903836	Plastic Armor Housing
903837	Stainless Steel Armor Housing

Please call us for calibration standards.

WQ401 Dissolved Oxygen Sensor
Rugged Dissolved Oxygen Sensor

Description

Global Water's WQ401 Dissolved Sensor is a rugged and reliable water oxygen measuring device. The WQ401's sensor is attached to 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The sensor's output is 4-20 mA with a three wire configuration. The sensor's electronics are completely encapsulated in marine grade epoxy within a stainless steel housing. The unit uses a removable shield and dissolved oxygen element for easy maintenance.

Record and Control

As with all of Global Water's 4-20 mA output sensors, you can add recording and controlling capabilities to the WQ401 with the GL500 Recorder and PC300 Controller. The GL500 (on page 122) connects to the dissolved oxygen sensor's 4-20 mA output to record data, and the PC300 Controller (on page 132) connects to the sensor's output to control pumps or alarms.

Features

- Measure dissolved oxygen in situ
- Fully encapsulated electronics
- 4-20 mA output
- Marine grade cable with strain relief
- Stainless steel housing
- Replaceable dissolved oxygen element

Applications

Ideal for stream and lake monitoring, aquaculture studies, baseline analyses, mitigation monitoring, and other environmental applications.

Specifications

Output	4-20 mA
Range	0 to 100% saturation, 0 to 8 ppm, temperature compensated to 77°F (25°C)
Accuracy	±0.5% full scale
Maximum Pressure	40 psi
Operating Voltage	10 to 36 VDC
Current Draw	15.5 mA plus sensor output
Warm-up Time	10 seconds minimum
Operating Temp	-40 to +131°F (-40 to +55°C)
Membrane	0.001 FEP Teflon (standard)
Combined Error	2% full scale
Size of Probe	Open Water: 1 ¼ inch dia. x 11 in long (3.2cm dia. x 27.9 cm long) Online: 2 inch dia. x 12 in long (5cm dia. x 30.5cm long)
Weight	1 lb (454 g)

Ordering & Options

Order No.	Description
WQ401	Dissolved Oxygen Sensor for Open Water (includes 25 ft cable)
WQ401-O	Online Dissolved Oxygen Sensor (with 1 inch NPT thread and 25 ft cable)
00-740	DO Element Replacement
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

Please call us for calibration standards.

You may also like . . .

DO600 DO Portable Probe
Handheld meter with LCD screen for fast and easy DO and temperature measurements.
Page 85

OXI 3205 Handheld Dissolved Oxygen Meters
Meter with LCD screen that displays oxygen concentrations and temperature.
Page 70

Why Measure DO?

Dissolved oxygen (DO) is the amount of oxygen (O_2) dissolved in water. DO provides one of the best indicators of the health of a water ecosystem, as oxygen is a necessary element for all forms of life, including aquatic life.

Oxygen enters water at the water surface through direct exchanges with the atmosphere. It is also produced as a byproduct of plant and phytoplankton photosynthesis.

A decrease in DO levels is typically associated with an organic pollutant. DO is used by plants and animals for respiration, and by aerobic bacteria in the process of decomposition. When organic matter (such as animal waste or improperly treated wastewater) enters a body of water, algae growth increases. As the plant material dies off and decomposes, dissolved oxygen levels decrease. If the water at the surface is not mixed with deeper water layers, the water's DO levels can become stratified. Dissolved oxygen levels can also vary according to the time of day, weather, and temperature.

DO in water can range from 0-18 parts per million (ppm), but most natural water systems require 5-6 ppm to support a diverse population. As DO levels drop below 5.0 mg/l, aquatic life is put under stress. As dissolved oxygen levels decrease, pollution-intolerant organisms are replaced by pollution-tolerant worms and fly larvae. If oxygen levels fall below 1-2 mg/l for a few hours, large fish kills can result.
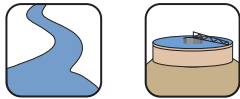
OXI 3205/3210
Handheld Dissolved Oxygen Meter

Handheld DO meter for field measurements

Features

- Robust shock and water resistant design
- Easy to use interface
- Extremely long battery life

Applications

Ideal for fish farming, surface water, control measurements, wastewater treatement plants.

Description

Useable anywhere, the Oxi 3205 and Oxi 3210 meters are robust, easy to operate and provide assured accurate readings. These meters have incorporated a sealed silicone keypad which offers real button response, yet allows for easy cleaning. In combination with galvanic oxygen meter probes DurOx® 325 or CellOx® 325 (no polarization time required) the meters are ready for immediate use anywhere, especially in fish farming applications.

Oxi 3205

This easy to use meter will meet all your day-to-day demands. It has a simplified keypad, with no memory function and no manual input facilities. When used in combination with the DurOx® 325 probe and its protective hood the handheld DO meter is particularly suitable for measurements in fish-farming applications.

Oxi 3210

The compact precision Oxi 3210 enables you to carry out oxygen (DO) measurements rapidly and reliably. It provides the maximum degree of operating comfort, reliability and measuring certainty for all applications. Loaded with additional features, the DO meters include automatic temperature and air pressure compensation, salinity correction, GLP-supporting functions and built in datalogger. The meters also have auto ranging and auto read function, which checks the stability of the input signal, for ease of use and data reproducibility. The meters have a continuous measurement control (CMC) function that alerts you when your meter is reading outside of the calibrated range. The meter's large memory allows you to manually store 200 datasets.

Specifications

Measuring Range (both meters)	O_2 Concentration*: 0.00 to 19.99 mg/l or 0 to 90 mg/l
	O_2 Saturation*: 0 to 199.9% or 0 to 600%
	Temp*: 32 to 221 °F (0 to +105.0 °C)
	* Depending on sensor
Resolution (both meters):	O_2 Concentration: 0.01 or 0.1 mg/l (CellOx 325), 0.1 or 1 mg/l (DurOx 325)
	O_2 Saturation: 0.1 or 1 % (CellOx 325), 1 % (DurOx 325)
	Temp: 0.2 °F (0.1 °C)
Accuracy (both meters):	O_2 Concentration: ± 0.5 % of measured value at ambient temperature of 41 to 86 °F (5 to 30 °C)
	O_2 Saturation: ± 0.5 % of measured value when measuring in the range of ± 10 K around the calibration temperature
	Temperature: ±0.1
Temp Correction	Accuracy better than 2 % at 32 to 104 °F (0 to 40 °C)
Salinity Correction	35 SAL

Air Pressure Correction	Automatic through installation of pressure sensor in the range 500 to 1100 mbar
Operational Temp	14 to 131 °F (-10 to 55 °C)
Storage Temp	-13 to 149 °F (-25 to 65 °C)
Power	Four AA 1.5 V batteries or four 1.2 V NiMH
Battery Life	3205: Up to 1000 hours w/o backlight, 150 hours w/ backlight
	3210: Up to 800 hours w/o backlight, 100 hours w/ backlight
Dimensions (LxWxH):	7x3.15x2.17in (180x80x55mm)
Weight	0.88lb (0.4kg)
IP Rating	IP 66/67
Certification	CE

DurOx 325-3

Measuring Range	0 to 50 mg/l O_2
Electrode Material	POM
Shaft Material	POM
Cable Length	9.8 ft (3 m)
Temp Range	32 to 104 °F (0 to 40 °C)
Min/Max Immersion Depth	1.6in to 65ft (6cm to 20m)
Shaft Length	4.33 in (110 mm) w/hood
Diameter	0.70 in (17.5 mm)
Weight	7.8 oz (220 g)

Ordering & Options

Order No.	Description
Oxi 3205 Set	Handheld Dissolved Oxygen Meter DurOx 325 Set
Oxi 3210 Set	Handheld Dissolved Oxygen Meter CellOx 325 Set
CellOx 325-3	DO probe on 9.8 ft (3m) cable
DurOx 325-3	DO probe on 9.8 ft (3m) cable w/protective hood

"The wise man of Miletus thus declared the first of things is water."

– J.S. Blackie

WQ730 Turbidity Sensor

Rugged Submersible Turbidity Sensor

Features

- In situ turbidity measurement
- Simple and convenient to use
- 4-20 mA output
- Marine grade polyurethane jacketed cable with strain relief
- Rugged stainless steel and Delrin® housing
- Removable light and debris shield
- Ideal for a variety of applications

Specifications

Range	0 to 50 NTU and 0 to 1000 NTU
Accuracy	±1% full scale
Output	4-20mA (Both ranges)
Method	Nephelometer with correction
Operating Voltage	10 to 36 VDC @ 40 MS
Current Draw	30 mA plus sensor output
Warm-up Time	5 seconds minimum
Operating Temperature	14 to 122°F (-10 to +50°C)
Materials	306 stainless steel, Delrin®, polyurethane jacketed cable
Maximum Pressure	30 psi
Light Source	Infrared LED, 880nm
Cable Length	25 ft (7.6 m) standard (optional up to 500 ft (152 m)
Size of Probe	1 ½ inch dia. x 8.5 in long (3.8 cm dia. x 21.6 cm long)
Weight	1 lb (454 g)

Description

Global Water's WQ730 Turbidity Sensor is a highly accurate submersible instrument for in situ environmental or process monitoring. The sensor is ideal for a variety of applications, including river monitoring, stream measurement, reservoir water quality testing, groundwater testing, water and wastewater treatment, effluent and industrial control, and more.

How it Works

In accordance with USEPA Method 180.1 for turbidity measurement, the WQ730 is a 90 degree scatter nephelometer. The sensor directs a focused beam into the subject water. The light beam reflects off particles in the water, and the resultant light intensity is measured by a photodetector positioned at 90 degrees to the light beam. The detected light intensity is directly proportional to the turbidity of the water. The turbidity sensor uses a second light detector to correct for light intensity variations, color changes, and minor lens fouling.

For environmental monitoring, simply place the sensor directly in the water and position it where the turbidity is to be monitored. For process monitoring, you can place the sensor into a low-pressure pipe for online monitoring using a standard 1.5 inch compression coupler.

Record, Control, and Display

For handheld turbidity monitoring, the WQ770-B Turbidity Meter (page 72) combines the WQ730 with a digital display that reads in either NTU or ppm. You can add recording capabilities to the WQ730 with the GL500 Datalogger (page 122), and you can use the sensor to control external devices with the PC300 Controller (page 132).

Applications
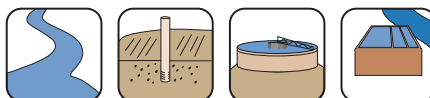
Ideal for river monitoring, stream measurement, reservoir water quality testing, groundwater testing, water and wastewater treatment, effluent and industrial control, and more.

Ordering & Options

Order No.	Description
WQ730	Turbidity Sensor for Open Water (includes 25 ft (7.6 m) cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft (152 m))

Please call us for calibration standards.

You may also like . . .

WQ770-B Turbidity Meter
Turbidity sensor and display for simple handheld monitoring.
Page 72

TURB 430 Portable Turbidity Meter
Portable water sample analyzer for accurate turbidity measurements.
Page 73

"The highest good is like water. Water gives life to the ten thousand things and does not strive. It flows in places men reject and so is like the Tao."

– Tao Te Ching

WQ750 Self-Cleaning Turbidity Sensor

Submersible Turbidity Sensor with Analog Output

Description

The WQ750 Self-Cleaning Sensor is an excellent choice for turbidity measurements in applications involving surface water, wastewater effluent, raw source water, industrial discharge, and aquaculture.

The heavy-duty WQ750 is constructed of 316 stainless steel with scratch-resistant quartz optical lenses to provide a long, dependable service life. The unit ships complete with 42 feet (12.8 m) of cable and a wiper actuation board.

Reliable Sensing and Transmittal

The WQ750 uses a reliable optical sensing system, which produces an analog signal that is enhanced by on-board temperature and ambient light processing. This robust 4-20 mA analog signal is compatible with a host of monitoring and control systems including the PC300 process controller (see page 132) and GL500 dataloggers (starting on page 122).

Innovative Self-Cleaning

The WQ750 maintains its accurate and reliable measurements via a mechanical cleaning device that prevents contamination of the measuring windows. The wiper cycle is controlled by an external contact and allows the WQ750 to match the cleaning cycle to the application. The control board is designed to work with our Global Water GL500 dataloggers (starting on page 122).

Features

- Reliable optical measuring process
- Built in wiper to keep sensing surfaces clean
- Directly submersible into basins, channels or open water
- Isolated 4-20 mA output
- Rugged stainless steel sensor body
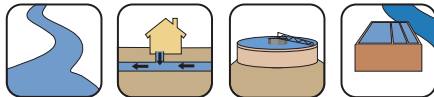
Applications

Ideal for monitoring water quality in lakes, rivers, streams, plant effluent, wastewater recycling and discharge, and aquaculture applications.

Specifications
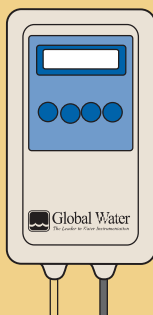
Measuring Principle	90° scattered light with pulsed infrared light
Wavelength	880 nm
Measuring Range	1 to 1000 FNU
Maximum Error	< 1% of measuring range
Repeatability	<1%
Analog Output	4–20 mA, isolated
Signal Filter	10 sec
Control Signal for Wiper	Pulse duration 5 sec / O V
Power Requirement	10 to 24 VDC, max 3W
Sensor Current	~220mA @ 12 VDC
Wiper Current	50 mA
Operating Temp	32 to 122 °F (0 to +50 °C)
Operating Pressure Maximum	87 psi (200 ft (61 m) of water)
Sensor Body	316 stainless steel
Wiper	Rubber
Optical Windows	Quartz glass
Cable	42.5 ft (13 m), submersible, 6-wire w/shield
Dimensions	1.5 inch dia. x 5.75 in long (38 mm dia. x 146 mm long)
Weight	2 lbs (0.9 kg)

Ordering & Options

Order No.	Description
WQ750	Turbidity Sensor (with 42 ft (12.8 m) cable & wiper control)

Please call us for calibration standards.

You may also like . . .

PC300 Controller
Use the WQ750 to control external devices.
Page 132

GL500 Datalogger
Add recording capabilities to the WQ750.
Page 122

Global Water
The Leader in Water Instrumentation

Features

- In situ turbidity measurement
- Portable unit with completely submersible sensor
- Simple and convenient to use
- Factory calibrated for immediate long-term use (recalibration not required for 6-12 months)
- Marine grade cable with strain relief
- Rugged stainless steel and Delrin® sensor housing
- Removable light and debris shield

> "The cure for anything is salt water - sweat, tears, or the sea."
>
> – Tagore, a Bengali poet and novelist

> "Civilization has been a permanent dialogue between human beings and water."
>
> – Paolo Lugari, Founder of the Gaviotas Community in Colombia

WQ770-b Turbidity Meter

Portable Turbidity Meter with Sensor, LED Screen, and Control Panel

Description

Global Water's WQ770-b Turbidity Meter is a highly accurate instrument ideal for a variety of environmental or process applications without a permanent installation. The meter combines a highly accurate submersible turbidity sensor connected to a handheld display with 25 ft of marine-grade cable (optional cable lengths up to 100 ft are available).

Accurate Sensing

In accordance with USEPA Method 180.1 for turbidity measurement, the meter's turbidity sensor is a 90 degree scatter nephelometer. The sensor directs a focused beam into the subject water. The light beam reflects off particles in the water, and the resultant light intensity is measured by a photodetector positioned at 90 degrees to the light beam. The detected light intensity is directly proportional to the turbidity of the water. The turbidity sensor uses a second light detector to correct for light intensity variations, color changes, and minor lens fouling.

Capable Display and Control

The handheld meter features a six digit LED screen, a 4-button control panel, and an internal lithium battery. The screen will display readings directly in either nephelometric turbidity units (NTU) or parts per million (ppm). The meter also includes an automatic shutoff feature to conserve battery power.

Factory Calibrated

The WQ770-b is factory calibrated to the highest standards and should not require recalibration for six to twelve months. User calibration, when required, is very easy and involves a step-by-step process directed by the display unit.

Applications
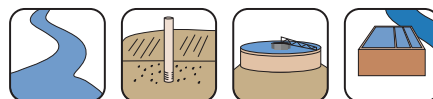
Ideal for river monitoring, stream measurement, reservoir water quality testing, groundwater testing, water and wastewater treatment, effluent and industrial measurement, and more.

Specifications

Range	0 to 50 NTU or 0 to 1000 NTU, selectable
Accuracy	±1% full scale
Resolution	12 bit
Method	Nephelometer with correction
Power	9 VDC titanium battery (included)
Operating Temp	32 to 122°F (0 to +50°C)
Materials	306 stainless steel, Delrin, Polyether jacketed cable
Pressure	0 to 30 psi
Light Source	Infared LED, (880 nm)
Cable Length	25 ft standard (optional to 100 ft)
Size of Probe	1 ½ inch dia. x 8.5 inch long (3.8cm dia. x 21.6cm long)
Weight	2 lbs (907 g)

Ordering & Options

Order No.	Description
WQ770-b	Turbidity Meter (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 100 ft)

Please call us for calibration standards.

You may also like . . .

WQ730 Turbidity Sensor
Turbidity sensor with 4-20 mA output.
Page 64

U-50 Multi-parameter Water Quality Meter
Meter for monitoring pH, conductivity, DO, turbidity, salinity, and temperature.
Page 81

Turb 430 Portable Turbidity Meter

Portable turbidity meter for accurate laboratory or field studies.

Description

With the new portable turbidity meters Turb 430 T and Turb 430 IR, the user now has the choice to perform nephelometric measurements at 90° scattered light according to the application and standard required. The Turb 430 IR meter meets the DIN 27027/ISO7027 requirements, the Turb 430 T those of US EPA 180.1. The meter's measuring range is from 0 to 1100 NTU/FNU and is identified automatically. Accurate measurements by the meters in the lower range, e.g. in drinking water are no problem!

The Turb 430 Meters have menu driven 3 point calibration and all measurement functions are easy for even the most inexperienced operator to perform accurate and precise measurements. The calibration is via an AMCO® standards set (0.02-10-1000 NTU). The quality of the measurement results are supported by adjustable calibration intervals with documentation.

The meters are not only a field measuring instruments (especially with the practical field case), but also a "small lab instrument" for applications up to 1100 NTU/FNU and with optimum data management.

Which Light Source Do You Need

An infrared light source minimizes the influence of coloration in a solution, because there is practically no absorption at a wavelength of 860 nm. The detection sensitivity for small particles, on the other hand, is somewhat lower at this wavelength because of the generally lower light scattering of small particles. White light has a higher sensitivity for small particles, however with this source the inherent coloration of the solution has a stronger disturbing effect on the measurement. The IR measurement source is required for portable turbidity meters to meet DIN ISO standards, while turbidity meters using a tungsten white light measuring source are required by the US EPA.

Features

- Meets ISO 7027/EPA 180.1 for Turbidity Meters
- Highly precise and accurate at low levels
- Lab accuracy & comfort in a portable field instrument
- Supports multiple languages

Applications
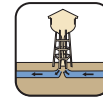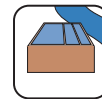
Drinking water, wine industry, process control, laboratory use

Specifications

	Turb 430 IR	Turb 430 T
Measuring Principle	Nephelometric measurement according to DIN EN ISO 7027	Nephelometric measurement according to US EPA 180.1
Light Source	Infrared LED	White light tungsten lamp
Measuring Range:	0.01 to 1100 FNU/NTU	0.01 to 1100 FNU/NTU
Resolution	0.01 from 0.01 to 9.99 NTU/FNU	0.01 from 0.01 to 9.99 NTU/FNU
	0.1 from 10.0 to 99.9 NTU/FNU	0.1 from 10.0 to 99.9 NTU/FNU
	1 from 100 to 1100 NTU/FNU	1 from 100 to 1100 NTU/FNU
Accuracy	±0.01 or ±2% of the measured value	±0.01 or ±2% of the measured value from 0 to 500 NTU, ±3% of the measured value from 500 to 1100 NTU
Reproducibility	0.5% of the measured value	1% of the measured value
Response Time	4 seconds	7 seconds

Calibration	Automatic 3-point calibration
Display	Graphic LCD

Languages	English, French, Spanish, and German
Operating Temp	32° to 122°F (0° to 50°C)
Storage Temp	13° to 149°F (-25° to 65°C)
Allowable Relative Humidity	Yearly mean 75%
Power Source	4 x 1.5 V AA batteries
Battery Life	~3000 measurements (Turb 430IR), ~2000 measurements (Turb 430T)
Size (LxWxH)	9.3x3.4x4.6 inches 236x86x117 mm
Weight	1.3 lb (0.6kg) (without batteries)
Ingress protection	IP 67
Test certificates	cETLus, CE, FCC

Ordering & Options

Order No.	Description
Turb 430T	Portable Turbidity Meter (EPA)
Turb 430IR	Portable Turbidity Meter (ISO)
600561	Turb 430T Calibration kit Includes 0.02, 10, and 1000 NTU solution
600560	Turb 430IR Calibration kit Includes 0.02, 10, and 1000 NTU solution

"In an age when man has forgotten his origins and is blind even to his most essential needs for survival, water along with other resources has become the victim of his indifference."

– Rachel Carson

Multi 1970i Portable Multiparameter Meter

Portable multiparameter meters that combines handheld convenience with benchtop features

Features

- Robust, water proof and field ready

- Up to three deep water probes can be used at once

- Long life and powerful NiMH rechargeable batteries

Applications

Ideal for ground water, surface water, fish farming, wastewater.

Specifications

Range	pH: -2 to 19.99
	mV: -1999 to 1999
	O_2 conc.: 0.00 to 19.99 mg/l, 0.0 to 90.0 mg/l
	O_2 saturation.: 0.00 to 19.99 %, 0.0 to 600 %
	Conductivity: 0.0 μS/cm to 500 mS/cm in 4 ranges
	Salinity: 0.0 to 70.0
Accuracy (±1 digit)	pH: ±0.01 pH
	mV: ±1.0 mV
	O_2 conc.: ±0.5% of value
	Conductivity: ±1.0% of value
Temp Comp	pH: Automatic: 23 to 221 °F(–5 to 105.0 °C)
	Manual: -4 to 266 °F(–20 to 130 °C)
	Oxygen: Automatic: via IMT compensation 32 to 104 °F(0 to 40 °C)
	Conductivity: Non-linear function for ultra-pure and natural waters to EN 27 888
Air Pressure Comp	Automatic with built-in pressure sensor for dissolved oxygen measurements
Salinity Correction	Automatic or manual for dissolved oxygen measurements
Ref. Temperature	68 °F/77 °F (20 °C/25 °C) selectable for conductivity measurements

Description

The robust and user friendly WTW Pro-fiLine Multi 1970i Portable Multiparameter Meters are both hose down-proof (IP 66) and submersible (IP 67). With its recorder output, real-time clock and 500 data file data logger standard, the rugged meters conform to all GLP requirements. Designed for multitasking to make your job quicker and easier, the Multi 1970i allows the simultaneous connection of pH, conductivity and oxygen sensors. An intuitive user interface makes it easy for the meter to measure a parameter and store in memory. Field ready, the Multi 1970i features powerful NiMH rechargeable batteries (up to 600 hours or operation per charge) and is equipped with a carrying/support handle and carrying strap as standard.

Ambient Conditions	Storage: -13 to 149 °F (-25 to 65 °C)
	Operation: 14 to 131 °F (-10 to 55 °C)
	Climatic Class: 2
Output	RS-232
Display	Multi-line LCD
Electrical Safety	Protective class III
Ingress Protection	IP 67
Power	Rechargeable NiMH battery
Battery life	Apprx. 600 hr per charge with power pack/charger
Dimensions	3.54x7.87x7.48 in (90x200x190 mm)
Weight	3.3 lb (1.5kg) (without plug-in power supply)
Certifications	CE

Ordering & Options

Order No.	Description
Multi 1970i	Portable Multiparameter Meter
TA 197 Oxi-25	Deep water oxygen sensor w/82ft (25m) cable
TA 197 pH-25	Deep water pH sensor w/82ft (25m) cable
TA 197 LF-25	Deep water cond sensor w/82ft (25m) cable
ADA/TA 197 pH	Connection accessory for up to three sensors

Deep Water Measurement of Oxygen, pH and Conductivity

The Multi 1970i Portable Multiparameter Meters have a convenient built-in pream-plifier to work with the WTW deep water sensors for single-parameter operation at depths down to 330 ft (100 m). Up to three deep water sensors can be simultaneously connected to the meters using the adapter ADA/TA 197 pH. The WTW deep water sensor assemblies are pressure resistant up to 145 psi (10 bar), have an integrated temperature measurement, steel armoring, a screw-on protective hood and are available with up to 330 ft (100 m) of cable with a waterproof plug (IP 67). These compact sensors will even fit small monitoring wells down to 2 inch (50 mm). Choose one or all three: TA 197 Oxi oxygen probe, TA 197 pH pH probe or TA 197 LF 4-electrode conductivity probe.

> "Rain is a blessing when it falls gently on parched fields, turning the earth green, causing the birds to sing."
>
> – Donald Worster, *Meeting the Expectations of the Land*

Multi 3500i Portable Multiparameter Meter

Multiparameter meter for monitoring pH, mV, oxygen, conductivity and ISE

Description

With its ability to measure pH, mV, oxygen, conductivity and ISE, the Multi 3500i, Portable Multiparameter Meters are the perfect choice for all of your water, wastewater and environmental field measurement needs. Like all WTW field instruments, the Mult 3500i is designed to stand up to the rigors of daily plant and field conditions while being accurate and easy to use. The meter's bright backlit screen can display pH, oxygen, conductivity and temperature simultaneously.

Easy to use, the Multi 3500i feature a high resolution, high precision, simple, menu-driven user interface. The meter has a datalogger, memory for 1,800 data sets and a real-time clock that support good

laboratory practice (GLP) requirements. The Multi 3500i will not let you down with their built-in NiMH rechargeable battery for up to 500 hours of continuous measurements (AC adaptor included). Combined with the MPP 350 multiparameter probe the digital multiparameter meter is ideal for environmental field measurements. But the Multi 3500i are also at home in your lab when used with the ConOx conductivity/oxygen sensor. In addition, all the currently compatible WTW pH, combination ion specific, oxygen and conductivity sensors can be used to extend the usefulness of the portable multiparameter meter.

Applications

Ideal for ground water, surface water, fish farming, wastewater.

Specifications

pH/ORP Range/ Resolution	pH: -2.000 to 20.000 / 0.001 -2.00 to 20.00 / 0.01 mV: -999.9 to +999.9 / 0.1 -2000 to +2000 / 1 Temp.: 23 to 221 °F (-5.0 to 105.0 °C) / 0.1 (0.1)
Oxygen Range/ Resolution	O_2 Concentration: 0.00 to 19.99 mg/l / 0.01 0.0 to 90.0 mg/l / 0.1 O_2 Saturation: 0.00 to 199.9% / 0.1 0.0 to 600% / 1 Temp: 32 to 122 °F (0.0 to 50.0 °C) / 0.1 (0.1)
Conductivity Range/Resolution	Conductivity: 0 to 1999 uS/cm / 1 0.00 to 19.99 mS/cm / 0.01 0.0 to 199.9 mS/cm / 0.1 0 to 500 mS/cm / 1 Salinity: 0.0 to 70.0 according to the IOT table / 0.1 Temp: 23 to 221 °F (-5.0 to 105.0 °C) / 0.1 (0.1)
ISE Range/Resolution	ISE: 0.000 to 2000 mg/l in 4 ranges / 0.001 to 1 in 4 ranges
Serial Interface	Baud Rate: Adjustable: 1200, 2400, 4800, 9600, 19200 Type: RS232, data output Data Bits: 8 Stop Bits: 8 Parity: None Handshake: RTS/CTS Cable Length: Max. 49 ft (15 m)

Ambient Conditions	Storage: -13 to +149 °F (-25 to +65 °C)
	Operation: 14 to 131 °F (-10 to +55 °C)
	Climatic Class: 2
Power	Rechargeable Batteries: 4 x 1.2 V nickel metal hydride (NiMH), type AA
	Operational Life: up to 500 h with one battery charging
	Plug-in Power Supply (Charging Device):
	Input: 100 to 240 V ~ / 50 to 60 Hz / 400 mA
	Output: 9 V = / 1.5 A
	Connection max. overvoltage category II
IP Rating	IP-66
Certifications	cETLus, CE
Electrical Safety	Protective class III
Weight	0.7 lbs (0.3 kg) (without plug-in power supply)
Size	6.8x3.1x1.5 in (172 x 80 x 37 mm)

Features

- Accurate, rugged and easy to use
- Displays three parameters at once
- Works with the new MPP 350 multi-parameter probe

Ordering & Options

Order No.	Description
Multi 3500i Kit	Portable Multiparameter Meter
MPP 350-3	Combined pH-, oxygen-, conductivity probe, without pH sensor
ConOx-3	Cond/O_2 combination sensor

NOTE: Other cable lengths available, please call

> "Don't you realize that the sea is the home of water? All water is off on a journey unless it's in the sea, and it's homesick, and bound to make its way home someday."
>
> – Zora Neale Hurston

PHOTOFLEX Portable Photometers

Portable photometers for measuring a wide variety of samples in the field

Description

The pHotoFlex portable photometers offer decisive advantages for water, wastewater and environmental monitoring. The portable photometers have a bright, easy to read backlit display with auto-off that displays user-friendly on screen guidance for easy operation. The pHotoFlex offers a large selection of test sets to meet most requirements. The portable photometers can have their software and methods updated via the Internet. Integrated pH measurement with automatic temperature compensation makes the pHotoFlex portable photometer much more versatile than standard photometers. The portable photometers can store 100 user-defined routine measurements. The pHotoFlex portable photometers use 4 AA batteries to make approximately 3000 measurements.

The pHotoFlex portable photometers are capable of performing a variety tasks in water, wastewater, and environmental monitoring. The portable photometers feature a highly robust optical system, which is optimally suited for mobile applications under changing conditions. The portable photometer's LEDs plus filters for 6 wavelengths have remarkably low power consumption and deliver accurate measuring results. The intuitive menu guidance of the pHotoFlex allows for smooth operation, even without studying the manual. Dilution functions and timer, ease work in special cases.

The pHotoFlex smart adapter solution

The pHotoFlex portable photometers feature an ingenious integrated cuvette adapter. Just slide the magnetic lid up on the portable photometers and insert the included 28mm cuvette, or simply flip up the adapter to use any 16mm round cuvette with a height of 91 to 104 mm. This allows the portable photometers the flexibility of several different test sets.

Features

- Bright, easy to read backlit display
- Large selection of test sets
- Stores 100 user-defined routine measurements
- User-friendly on screen guidance for easy operation

pH function

The pHotoFlex portable photometers include an integrated pH function with automatic buffer recognition (TEC/NIST) and auto temperature compensation. WTW's MultiCal® provides automatic calibration with up to 3 calibration points. The low-maintenance SenTix® 41 pH electrode is perfect for field use with the pHotoFlex portable photometer.

Applications
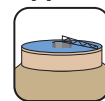
Ideal for wastewater, drinking water, and environmental analysis.

Specifications

Light source	LED
Wavelengths nm	436, 517, 557, 594, 610, 690
User-defined methods	100
Timer	3
Data storage	1000 data sets
pH range	0-16
Turbidity (pHoto Flex Turb)	0-1100 NTU/FNU
Accuracy	Photometry: < 2nm wavelength accuracy, 0.005 abs. reproducibility
	pH: ±0.01 pH
	Turbidity (pHotoFlex Turb): 0.01 NTU/FNU or ±2% of the measured value
Auto-zero adjustment/calibration	Photometry: With start of new method
	pH & turbidity: 3 point
Interface	RS 232, USB via adapter (optional)
Measuring parameters	Photometry, pH Photometry, pH, Turbidity
Power	AA batteries 4x1.5 V, for approx. 3000 measurements
Certifications	cETLus
Warranty	2 years

Ordering & Options

Order No.	Description
pHotoFlex/SET Portable photometer with pH	Includes field case with table insert to hold instrument, stand and cuvettes; pH electrode SenTix® 41 and Pipette KK/VAR5000 with tips, adjustable, 5 ml. Accessories: empty cuvettes 16+28 mm, cleaning tissues, stand, buffer solutions pH 4.01 + 7.00, beaker, screw driver, and PC cable.
pHotoFlex Turb/SET Portable Photometer with pH and Turbidity	Includes field case with table insert to hold instrument, stand and cuvettes; pH electrode SenTix® 41 and Pipette KK/VAR5000 with tips, adjustable, 5 ml. Accessories: empty cuvettes 16+28 mm, calibration kit for turbidity, cleaning tissues, stand, buffer solutions pH 4.01 + 7.00, beaker, screw driver, PC cable.
pHotoFlex Portable Photometer	LED filter photometer with integrated pH functions for field use. Meter only, no electrodes.
pHotoFlex Turb Portable Photometer with Turbidity	LED filter photometer with integrated turbidity measurement and pH functions for field use. Meter only, no electrodes.
FC pHotoFlex Portable Photometer Case	Field case with table insert to hold pHotoFlex®, stand and cuvettes for easy field handling. Additional space to hold accessories and pipette.
SenTix 41 Field pH Meter Electrode	Replacement plastic body electrode w/auto temp, waterproof connector, and 3.3ft (1m) cable

C-1100V Series Metering Pumps
Digital Diaphragm Metering Pumps for Chemical Injection

Description

The C-1100V Series Metering Pumps are state of the art, digitally controlled diaphragm pumps designed for precise chemical metering. The C-1100 pumps are loaded with advanced features including: a user friendly touch pad and LCD display, external control inputs, stroke length and speed control, ±1% full scale repeatability, and injection into piping systems against pressures up to 150 psi (10.3 bar).

Reliable Operation

The C-1100V is designed for reliable and consistent operation with oversize PVDF double-stage check valves, a built in priming/degassing valve, and a durable powder coated aluminum housing.

Pump Control and Alarm Relay

The C-1100V includes a front-mounted mechanical flow rate adjustment, and is also equipped with an external input control circuitry that allows the pump to be controlled externally by either a 4-20 mA input signal or a pulsed input signal. The C-1100V includes a diaphragm failure detection system that with shut down the pump and trigger an alarm long before you get a troublesome chemical spill. In addition, the C-1100V is compatible with an exclusive Flow Verification System (FVS). The FVS Micro-Flow device (see page 99) will shut down the pump and trigger an alarm if the flow of chemical stops because of an empty tank, clogged valve, or anything that might prevent the flow of liquid through the pump system.

What's in the Box

Each C-1100V pump ships complete with 10 ft (3 m) of suction and discharge tubing, a suction strainer/foot valve with ceramic weight, and an injection/check valve assembly. Please note that you should always check for chemical compatibility with the wet end materials before ordering a pump.

Specifications

Max. Working Pressure	175 psig (12.1 bar)
Max. Fluid Temperature	130°F (54°C)
Max. Ambient Temperature	14 to 115°F (-10 to 46.1°C)
Output Adjustment Range	5 to 100% in 1% increments
Duty Cycle	Continuous
Maximum Viscosity	1,000 Centipoise
Maximum Suction Lift	15 ft water, 0 psig (4.5 m, 0 bar)
Enclosure	NEMA 4X, (IP66)
Shipping Weight	29 lbs (13 kg)
Dimensions	10-1/2 x 6-1/4 x 10 inch (26.7 x 15.9 x 25.4 cm)

Materials

Diaphragm	Teflon® (Teflon coated hypalon)
Pump Head & Adapters	PVDF (natural)
Injection/Check Valve	Body & insert: PVDF (natural) Check Ball: Ceramic Spring: Hastelloy C-276
Elastomers (O-ring)	Viton® (optional EP)
Footvalve/Strainer	PVDF/Polypropylene (natural)
Suction Tubing	PVC (clear)
Enclosure & Pump Head Cover	413 aluminum (powder coated)
Cover Screws	300 stainless steel
DFD System Sensor Pins	Hastelloy C-276
Power Cord	3 conductor, SJTW-A Water-resistant
Mounting Brackets	Stainless steel

Ordering & Options

C1100V 115 VAC/60 Hz Models

Order No.	Max gpd [1]	Max psi [2]
C-11V141X000V00	38.0	150
C-11V344X000V00	57.7	150
C-11V341X000V00	73.0	150
C-11V444X000V00	119.7	150
C-11V441X000V00	155.9	150
C-11V544X000V00	260.8	100

Features

- User friendly touch pad controls and LCD display
- Built in diaphragm failure detection system
- Highly accurate and repeatable chemical dosing
- Can be externally paced by a flowmeter, analyzer, or other device
- Works with a Flow Verification System

Applications
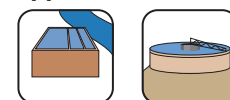
Ideal for water treatment and conditioning, wastewater treatment, rural water systems, and cooling tower and boiler treatment.

C1100V 220 VAC/50 Hz Models

Order No.	Max lph [1]	Max bar [2]
C-11V151X000V00	6.0	10.34
C-11V354X000V00	9.1	10.34
C-11V351X000V00	11.5	10.34
C-11V454X000V00	18.9	10.34
C-11V451X000V00	24.6	10.34
C-11V554X000V00	41.1	6.9

1) Maximum liquid output at zero backpressure.
2) Maximum pressure output.

Replacement Parts

Order No.	Description
C-406VT-15N	Diaphragm, Teflon Coated EP
C-535A6-6	Pump Head Kit w/Valves & Diaphragm
C-535	Pump Head
K-568A-6A	Inlet & Outlet Valve Kit
C-340A	Foot Valve/Suction Strainer
A-014N-6A	Injection/Anti-siphon Valve Assembly
K-568A-4	4-pack of Check Balls for Inlet/Outlet Valves
700000-638	5 ft Suction Tubing w/Flow Indicator

A-100NE Pumps

Fixed Speed Digital Persitaltic Pumps

Description

A-100NE Series Peristaltic Pumps are loaded with features that make them the ideal choice for a variety of water, wastewater, and industrial chemical metering applications. Most features are shared with the A-100NV, the main difference being that the A-100NE is a fixed speed metering pump with digital timer control.

Digital Timer Control

The A-100NE has four operationg modes including manual on time per cycle adjustment, pulse input batching, 4-20mA on time per cycle adjustment, and 0-10VDC on time per cycle adjustment. The repeating interval on time cycle timer is programmable in seconds, minutes, hours, and days resulting in a near infinite turndown ratio. The 4-20mA on time per cycle adjustment mode allows you to control the cycle adjustment via 4-20mA input signal. The digital interval timer allows you to set up a high frequency of small injections per minute.

Specifications

| Max. Working Pressure	100 psig (6.9 bar)
Max. Fluid Temperature	130°F (54°C)
Max. Ambient Temperature	14 to 110°F (-10 to 43°C)
Output Adjustment Range	Adjustable 0.1 to 99 seconds
Duty Cycle	Continuous
Maximum Viscosity	5,000 Centipoise
Maximum Suction Lift	30 ft water, 0 psig
Maximum Solids	50% by volume
Enclosure	NEMA type 3R, (IP23)
Shipping Weight (Approx.)	10 lbs (4.5 kg)
Dimensions	6-1⁄8 x 10-1⁄8 x 9 inch (15.6 x 25.7 x 22.9cm)

Materials

Same as A-100NV.

Features

- Auto-detects tube failure
- Self priming
- Programmable repeating interval on-time cycle timer
- Digital interval timer for high frequency of small injections per minute

Applications
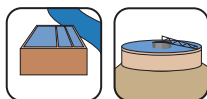
Ideal for a variety of water, wastewater, and industrial chemical treatment applications.

Ordering & Options

A-100NE 115 VAC/60 Hz Models

Order No.	Max GPD [1]	Max PSI [2]	Tube OD (inch)
A1N10E-4T	4.9	100	1⁄4
A1N20E-4T	8.0	100	1⁄4
A1N10E-6T	16.0	100	3⁄8
A1N20E-6T	24.0	100	3⁄8
A1N10E-7T	52.5	50	7⁄16
A1N30E-7T	95.1	50	7⁄16

A-100NE 220 VAC/50 Hz Models

Order No.	Max [1] ml/min	Max BAR [2]	Tube OD (cm)
A1N11E-4T	13	6.9	0.635
A1N21E-4T	21	6.9	0.635
A1N11E-6T	42	6.9	0.953
A1N21E-6T	63	6.9	0.953
A1N11E-7T	138	3.4	1.11
A1N31E-7T	250	3.4	1.11

1) Maximum liquid output at zero backpressure.
2) Maximum pressure output.

Replacement Pump Tubes

Order No.	Pump Suffix	Tube OD
A-002N-4T	-4T	1⁄4 inch (0.635 cm)
A-002N-6T	-6T	3⁄8 inch (0.953 cm)
A-002N-7T	-7T	7⁄16 inch (1.11 cm)

Replacement Parts

Order No.	Description
A-014N-6A	Injection/Check Valve Assembly for 3/8 in (0.953 cm) OD tubing
C-340A	Strainer/Foot Valve Assembly for 1/4 in (0.635 cm) or 3/8 in (0.953 cm) OD tubing

Flow Verification System

Sensor for Monitoring Chemical Flows

Features

- Detects loss of chemical flow
- Installs directly on A-100NE, A-100NV, and C-1100V metering pumps
- Easy, three-wire connection made in the pump's junction box
- No special connectors to buy and no calibration required

Description

The Micro-Flow Flow Verification System (FVS) can be connected directly to A-100NE, A-100NV, C-1100V, and C3 (pages 96-99) metering pumps to verify that a chemical is actually flowing. The FVS works with the pump's sophisticated electronics to constantly monitor chemical flow. If the chemical should fail to inject, the pump will stop and an alarm relay will close allowing for remote alarm indication or initiation of a back-up injector pump.

Specifications

Max. Working Pressure	150 psig (10.3 bar) @ 70°F (21°C)
Max. Fluid Temp	200°F (93°C) @ 0 PSI
Material	PVDF (Body, Paddle, Axle, Connector)
O-Ring Seals	Viton
Compression Seal to Pump	PVC
Weight	1 lb (0.45 kg) (Approx. Shipping)

Ordering & Options

| Order No.	gpd	ml/min
FV-100-6V	11.4 to 114	30 to 300
FV-200-6V	38.0 to 380	100 to 1000
FV-300-6V	76.0 to 760	200 to 2000
FV-400-6V	114 to 1140	300 to 3000
FV-500-6V	190 to 1900	500 to 5000
FV-600-6V	266 to 2660	700 to 7000

CHEM-PRO™ C3 Series Pumps

Digital Chemical Diaphragm Metering Pumps

Features

- High capacity chemical metering to 833 gpd (131.4 lph)
- Output pressures to 175 PSI
- Precise digital control system with LCD display
- Built-in Diaphragm Failure Detection (DFD) system
- Compatible with an exclusive Flow Verification System
- Rugged and reliable design

Applications
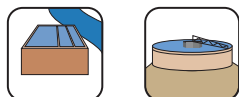
Ideal for applications including water and wastewater treatment, agriculture, plating and metal finishing, larger HVAC systems, and more.

Specifications

Max. Working Pressure	175 psig (12.1 bar)
Max. Fluid Temperature	130°F (54°C)
Max. Ambient Temperature	14 to 115°F (-10 to 46.1°C)
Output Adjustment Range	5 to 100% in 1% increments
Duty Cycle	Continuous
Maximum Viscosity	1,000 Centipoise
Maximum Suction Lift	15 ft water, 0 psig (4.5 m, 0 bar)
Enclosure	NEMA 4X, (IP66)
Shipping Weight (Approx.)	29 lbs (13 kg)
Dimensions	13-18 x 9 x 8 inch (32.3x22.8x20.3 cm)

Materials

Enclosure	413 aluminum (powder coated)
Pump Head Cover	413 aluminum (powder coated)

Cover Screws	300 stainless steel
DFD System Sensor Pins	Hastelloy C-276
Power Cord	3 conductor, SJTW-A Water-resistant
Mounting Brackets	Stainless steel
Diaphragm	Teflon (teflon coated hypalon)
Pump Head & Adapters	PVDF (natural)
Injection/Check Valve	Body & insert: PVDF (natural) Check Ball: Ceramic Spring: Hastelloy C-276 Elastomers (O-ring): Viton
Footvalve/Strainer	PVDF/Polypropylene (natural)
Suction Tubing	PVC (clear)
Warranty	2 year

Description

CHEM-PRO™ C3 Series pumps are designed for accurate and reliable high capacity chemical metering. The C3 pumps are well suited for many applications, including water and wastewater treatment, agriculture, plating and metal finishing, and larger HVAC systems.

The C3 features precise digital control and a user friendly digital touch pad with a large backlit LCD display. Built to be rugged and reliable, the C3 pumps have oversized PVDF double ball valves, a priming/degassing valve built into the PVDF pump head, and a weather-resistant housing made of durable, powder coated aluminum.

Chemical Spill Alarming

The C3 pumps feature a built in Diaphragm Failure Detection (DFD) system, which senses chemical leakage in the pump head and shuts off the pump before you have a troublesome chemical spill. The DFD system triggers a relay that may be connected to an external alarm or autodialer, such as Global Water's AD200 Voice Alarm Autodialer (see page 138).

The C3 pumps also accept an exclusive Flow Verification System (FVS). The optional FVS Micro-Flo sensor (see page 99) will shut down the pump and trigger an alarm if the chemical flow stops because of an empty tank, clogged valve, or anything that might prevent the flow of liquid through the pump system.

What's in the Box

Each CHEM-PRO C3 pump ships complete with a priming valve/pressure relief valve (located on pump head), pump head adapters, foot valve/strainer with ½ inch ceramic ball and ½ inch barbed adapter, injection/check valve fitting with ½ inch ceramic ball and one ½ inch barbed adapter, 10 feet of ½ inch clear PVC suction tubing, and mounting brackets with screws.

Please note that you should always check for chemical compatibility with the wet end materials before ordering a pump.

Ordering & Options

C3F 115 VAC/60 Hz Models

Order No.	Max gpd [1]	Max psi [2]
C3F141XVA	118	175
C3F241XVA	270	150
C3F142XVA	350	150
C3F242XVA	833	80

C3F 220 VAC/50 Hz Models

Order No.	Max lph [1]	Max bar [2]
C3F161XVA	18.6	12
C3F261XVA	42.6	10.3
C3F162XVA	55.2	10.3
C3F262XVA	131.4	5.5

1) Maximum liquid output at zero backpressure.
2) Maximum pressure output.

Replacement Parts & Accessories

Please call us for parts and accessories.

WE800-900 Weather Stations

Systems for Monitoring Multiple Weather Parameters
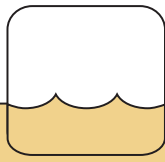
Description

Global Water's WE800 and WE900 Weather Stations are fully assembled, easy to use, and economical systems for monitoring many weather conditions. The WE800 comes integrated with our multichannel datalogger for weather data recording and reporting. The WE900 is a 4-20 mA station that you can easily integrate with your existing data recording or control system. Both systems include four rugged 4-20 mA sensors for measuring wind speed, wind direction, temperature, and humidity. In addition, both systems include a protective solar shield for the temperature and humidity sensors, and a 1 inch stainless steel mounting frame to ensure a sturdy installation. To customize your Weather Station for your application, you can select additional sensors to monitor parameters such as barometric pressure, solar radiation, leaf wetness, evaporation, rainfall, and more.

Rugged Weather Sensors

The Weather Station comes standard with four rugged, 4-20 mA output weather sensors, including our wind speed sensor, wind direction sensor, temperature sensor, and humidity sensor. The sensors' electronics are completely encapsulated in marine-grade epoxy within stainless steel housings. Each precision sensor outputs a 4-20 mA signal. For more information about our sensors, please see the WE550 and WE570 on page 107, and the WE600 and WE700 on page 108.

Smart Datalogger & Software (WE800)

Global Water's WE800 Weather Station includes the GL500 Global Logger, Windows™-based Global Logger II software, Windows™ CE-based PDA software, and a RS-232 cable (for communication between the logger and your computer).

The WE800's datalogger offers state-of-the-art technology for continuous datalogging, storage, and retrieval of weather station information. The logger features 7 analog channels, 2 pulse channels, and both USB and serial communication ports. The durable and powerful datalogger is enclosed within a sturdy weatherproof case. You can view real-time data via the datalogger's screen, or you can download recorded data to your computer (programming and calibration are not required).

The WE800 includes Windows™-based Global Logger II software, which makes accessing stored data and setting options easy. The software provides many useful features, such as real time readout, measurement interval and engineering unit selection, station ID setting, and sensor calibration. The WE800 also includes Windows™ CE-based PDA software for simple data collection in the field. Data downloaded from the recorder can easily be opened in any PC spreadsheet program for analysis and graphic presentation.

The WE800's datalogging unit includes a 12VDC 2A-H rechargeable battery for use in remote applications. The data logger will operate for several months before its internal 12VDC battery requires recharging. When used in conjunction with our solar panels and smart charger (see Ordering & Options), the Weather Station's datalogger can be powered continuously. Please see the GL500-7-2 on page 122 for additional information about the datalogger component.

Applications

Ideal for agriculture, education, environmental studies, landfills, reclamation, wastewater facilities, water conservation, and more.

Customize for your Application

To customize your Weather Station, you can select additional components from Global Water's rugged weather line. The WE800's datalogger can accept up to three additional analog sensors and two digital sensors. In addition, we offer solar panels, a smart charger, and a mounting tripod to customize your installation. See the Ordering & Options section below for additional information.

If you require a unique weather monitoring system to meet the needs of your specific weather application, Global Water can work with you to design a factory-integrated custom system. Please contact Global Water regarding this option.

WE800

Features

- Monitor wind direction, wind speed, humidity, and temperature, and customize with additional sensors

- Fully assembled, easy-to-use, and economical

- High quality, rugged, industrial grade sensors

- Sensors are fully encapsulated in marine grade epoxy

- Powerful and durable datalogging (WE800)

Specifications

Weather Sensors (WE800 and WE900)
Please see specifications for the WE550 Wind Speed Sensor and the WE570 Wind Direction Sensor on page 107 and for the WE600 Humidity Sensor, WE700 Temperature Sensor, and WE770 Solar Shield on page 108.

Datalogger (WE800)
Please see specifications for the GL500-7-2 Global Logger on page 122.

Analog Sensor Inputs	4-20 mA (0-5VDC as factory option)
	Resolution: 12-bit, 4096 steps
	Channels: 7 input channels + battery voltage monitor
	Sensor Warm-up Time: Programmable, 0-60 sec

Mounting Frame (WE800 and WE900)

Material	Stainless steel tube, 1 inch dia.
Dimensions	6 ft tall x 3 ft wide (1.8x0.9 m)

> "Sunshine is delicious, rain is refreshing, wind braces us up, snow is exhilarating; there is really no such thing as bad weather, only different kinds of good weather."
>
> – John Ruskin

WE800-900

Ordering & Options

Weather Stations

Order No.	Description
WE800 [1]	Datalogging Weather Station
WE900 [2]	4-20 mA Weather Station

1) Includes wind speed sensor, wind direction sensor, temperature sensor, humidity sensor, solar shield, mounting frame, datalogger, software, USB cable, and RS-232 cable. Unless otherwise specified, sensors and datalogger will be mounted to mounting frame.

2) Includes wind speed sensor, wind direction sensor, temperature sensor, humidity sensor, solar shield, and mounting frame for integration with existing system. Unless otherwise specified, sensors will be mounted to mounting frame and wires will be terminated inside an included junction box.

Accessories

Order No.	Description
WE830	Mounting Tripod
WE100	Barometric Pressure Sensor, see page 106
WE300	Solar Radiation Sensor, see page 106
WE710	Surface Temperature Sensor, see page 112
LW100	Leaf Wetness Sensor, see page 110
AT210	Soil Moisture Sensor, see page 110
EP180	Evaporation Pan, see page 111
WL400-003-025	Water Level Sensor (3 ft range, 25 ft cable), see page 6
RG200	Rain Gauge 6 inch, see page 109
RG600	Rain Gauge 8 inch, see page 109
BC100	Smart Charger, see page 128
SP101	Solar Panel (2 watt), see page 128
SP102	Solar Panel (5 watt), see page 128
PDAWL16	PDA Package
RM100	Wireless Communication System, see page 126
SIT65	Satellite Internet Telemetry, see page 127
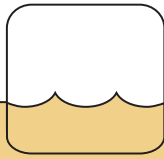
WE100 Barometric Sensor

Rugged Barometric Pressure Transmitter

Features

- Accurate 4-20 mA output
- Marine grade cable with strain relief

Description

Global Water's highly accurate WE100 Barometric Pressure Sensor covers a pressure range from 800 to 1100 mb (23.6 to 32.5 Hg). The transmitter is temperature compensated within an operating range of -40° to 149°F (-40° to 65°C). It is attached to 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The sensor's output is 4-20 mA with a two wire configuration, which, like all of our 4-20 mA sensors, is compatible with Global Water's GL500 Global Logger (see page 122) and PC300 Process Controller (see page 132).

Specifications

Output	4-20 mA
Range	800 to 1100 mbar, 23.6 to 32.5 inHg
Accuracy	± 1% full scale
Linearity/Hysteresis	± 0.1%
Operating Voltage	10 to 36 VDC
Current Draw	Same as sensor output
Warm-up Time	3 seconds minimum
Operating Temp	-40 to +131°F (-40 to +55°C)
Sensor Size	3 x 2 x 1 inch (7.6 x 5.1 x 2.5 cm)
Weight	0.13 lb (59 g)

Ordering & Options

Order No.	Description
WE100	Barometric Pressure Sensor (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

WE300 Solar Radiation Sensor

Rugged Solar Radiation Transmitter

Features

- Accurate 4-20 mA output
- Marine grade cable with strain relief
- Precision mounting equipment included

Description

Global Water's WE300 Solar Radiation Sensor is a precision pyranometer that uses a high stability silicon photovoltaic detector (blue enhanced) to obtain accurate readings. The WE300 includes a bubble level, leveling screws, and mounting hardware for a quality installation. The sensor is attached to electronics by 10 ft of cable, and the electronics are attached to 25 ft of marine grade cable, with lengths up to 500 ft available. To ensure moisture protection, you can enclose the sensor and electronics in a protective housing. The sensor's output is 4-20 mA with a two wire configuration.

Specifications

Detector	High-stability silicon photovoltaic detector (blue enhanced)
Output	4-20 mA
Range	0 to 1500W/m²
Spectral Response	400 to 1100 nm
Accuracy	± 1% full scale
Operating Voltage	10 to 36 VDC
Current Draw	Same as sensor output
Warm-up Time	3 seconds minimum
Operating Temp	-40 to +131°F (-40 to +55°C)
Sensor Size	3 inch dia. x 1½ in long (7.6 cm dia. x 3.8 cm long)
Weight	0.25 lb (114 g)

Ordering & Options

Order No.	Description
WE300	Solar Radiation Sensor (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

WE550 Wind Speed Sensor
Rugged Wind Speed Transmitter

Features

- Fully encapsulated electronics
- Accurate 4-20 mA output
- Marine grade cable with strain relief

Description

Global Water's highly accurate WE550 Wind Speed Sensor is constructed of high-impact materials, ensuring its durability and ruggedness even in severe weather conditions. The sensor has a very low threshold, so it responds accurately to subtle changes in wind speed. The sensor is molded to 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The sensor's output is 4-20 mA with a two wire configuration. The unit's electronics are completely encapsulated in marine grade epoxy within a rubber sleeve.

Specifications

Type	Three cup anemometer
Threshold	<=3 mph (1.35 m/s)
Output	4-20 mA
Range	0 to 110 mph (0 to 50 m/s)
Accuracy	0.2 mph over the range 11 to 55 mph (0.09 m/s from 4.9 to 24.6 m/s)
Operating Voltage	10 to 36 VDC
Current Draw	Same as sensor output
Warm-up Time	3 seconds minimum
Operating Temp	-40 to +131°F (-40 to +55°C)
Sensor Size	7 inch dia. x 8½ inch (18 cm dia. x 21.6 cm tall)
Weight	1 lb (0.5 kg)

Ordering & Options

Order No.	Description
WE550	Wind Speed Sensor (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

WE570 Wind Direction Sensor
Rugged Wind Direction Transmitter

Features

- Fully encapsulated electronics
- Accurate 4-20 mA output
- Marine grade cable with strain relief

Description

Global Water's highly accurate WE570 Wind Direction Sensor is designed to accurately measure wind direction even in the harshest environments. The WE570 is molded to 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The unit's electronics are completely encapsulated in marine grade epoxy within a rubber sleeve. The output is 4-20 mA with a two wire configuration, which is compatible with Global Water's GL500 Global Logger (see page 122 and PC300 Process Controller (see page 132).

Specifications

Type	Wind vane with potentiometer
Output	4-20 mA
Range	0 to 360° (352° electrical, 8° open)
Sensitivity	1 m/s (2.2 mph)
Accuracy	1% full scale
Operating Voltage	10 to 36 VDC
Current Draw	Same as sensor output
Warm-up Time	3 seconds minimum
Operating Temp	-40 to +131°F (-40 to +55°C)
Sensor Size	8½ inch dia. x 10½ inch (21.5 cm dia. x 26.7 cm)
Weight	1 lb (0.5 kg)

Ordering & Options

Order No.	Description
WE570	Wind Direction Sensor (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

in watts per square meter (W/m^2) or joules per square meter (J/m^2).

Why Measure Wind Speed/Direction?
Wind speed and direction are determined by air pressure gradients, or the regions between weather fronts, as air moves in the direction of a low pressure system. The steeper the gradient, the stronger the wind. In addition, wind speed and direction are determined by many other factors including the Coriolis effect, friction, and land topography. In the US, wind speed is typically reported in meters per second or miles per hour. For shipping or boating, wind speed can be reported in knots (a knot equals one nautical mile per hour or approximately 1.15 miles per hour). Wind direction is always stated as the direction the wind is coming from. For example, a wind out of the east is given as an east wind, with a wind direction of 90 degrees.

Wind speed sensors, such as Global Water's WE550, and wind direction sensors, such as Global Water's WE570, are used for many applications, including: meteorology, aviation, shipping, industry, construction, and more. Specifically, wind speed and direction data are often used to predict weather forecasts, determine the safety of operating mechanical equipment like cranes and lifts, estimate the efficiency of wind power generation, safely operate ships and aircraft, and control odor from wastewater treatment and landfill sites.

WE600-700 Humidity & Temperature Sensors

Rugged Humidity and Temperature Transmitters with Solar Shield
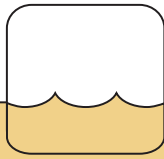
Why Measure Relative Humidity?

Air moisture content is typically described by a relative humidity measurement. Relative humidity is the ratio of the water vapor content in the air to the highest possible concentration of water vapor that the air can hold. A reading of 100 percent relative humidity means that the air is totally saturated with water vapor and cannot hold any more, creating the possibility of rain. The amount of water vapor that the air can hold increases with temperature, therefore relative humidity will decrease with increasing temperature if the actual amount of water vapor stays the same.

Relative humidity can cause effects such as discomfort in people and animals, damage of materials in storage facilities, reduced production capacity, impact on quality of construction materials, and more. Relative humidity readings made by instruments such as Global Water's WE600 allow people to prepare for and control these effects.

Why Measure Temperature?

Air temperature is measured for numerous applications. Temperature is affected by solar radiation, latitude, the movement of air masses, solar radiation, and nearby bodies of water or land. Temperature is measured in degrees Celsius or Fahrenheit. To accurately measure temperature, a temperature sensor like Global Water's WE700 should be shielded from direct sunlight and precipitation and should be adequately ventilated.

Description

Global Water's WE600 Humidity Sensor and WE700 Temperature Sensor are precise, durable instruments. The electronics for both sensors are completely encapsulated in marine grade epoxy and enclosed within stainless steel housings. The WE600 Humidity Sensor is composed of a solid state capacitive element with a linear amplifier. The WE700 Temperature Sensor is precision RTD calibrated to US National Standards. Both sensors have a 4-20 mA output, the humidity sensor with a three wire configuration, and the temperature sensor with a two wire configuration. Each sensor is mounted on 25 ft of marine grade cable, with lengths up to 500 ft available upon request.

Our WE770 Solar Shield is a ventilated sun shield with high reflectiveness, low heat retention, and low thermoconductivity. The unit is designed to protect the humidity and temperature sensors from direct sunlight, which may affect the accuracy of the sensor output.

Features

- Accurate 4-20 mA output
- Marine grade cable with strain relief
- Fully encapsulated electronics
- Protective solar shield optional (WE770)

Specifications

WE600 Humidity Sensor

Type	Capacitance
Output	4-20 mA
Range	0 to 100% RH
Accuracy	± 2% RH
Operating Voltage	10 to 36 VDC
Current Draw	3mA plus sensor output
Warm-up Time	3 seconds minimum
Operating Temp	-40 to +131°F (-40 to +55°C)
Sensor Size	1-1/8 inch dia. x 7 in long (2.9 cm dia. x 18 cm)
Weight	0.5 lb (227 g)

WE700 Temperature Sensor

Type	Precision RTD
Output	4-20 mA
Range	-58 to +212°F (-50 to +100°C)
Accuracy	±0.2°F (±0.1°C)
Operating Voltage	10 to 36 VDC
Current Draw	Same as sensor output
Warm-up Time	5 seconds minimum

Sensor Size	3/4 inch diameter x 4-1/2 inch (2 cm diameter x 11.4 cm)
Weight	0.5 lb (227 g)

WE770 Solar Shield

Size	4 inch diameter x 8-1/2 inch (10 cm diameter x 21.6 cm)
Weight	1 lb (454 g)

Ordering & Options

Order No.	Description
WE600	Humidity Sensor (includes 25 ft cable)
WE700	Temperature Sensor (includes 25 ft cable)
WE770*	Solar Shield
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

* We recommend the purchase of a Solar Shield with purchase of a humidity and/or temperature sensor.

RG200 Tipping Bucket Rain Gauge

Rugged 6 inch Plastic Rain Gauge for Monitoring Rainfall

Description

Global Water's RG200 Tipping Bucket Rain Gauge is a durable, accurate instrument constructed of high impact UV-protected plastic. With minimal care, the reliable, low-cost RG200 will provide many years of service. The RG200 is simple to use, ensuring trouble-free operation. For each 0.01 inch or 0.25 mm of rainfall through the RG200's 6 inch orifice, the rain gauge's sensor mechanism activates a sealed reed switch that produces a contact closure. The RG200 is shipped complete with mounting brackets and 50 ft of two-conductor cable.

To add recording capabilities to the RG200, select Global Water's GL500-2-1 (see page 123). The GL500-2-1 datalogger connects to the rain gauge's pulse output to record data. We also offer the RG700 Pulse to Current Converter Module (see Ordering & Options) so that you can convert the rain gauge's pulse output to a current output for use with your 4-20 mA recording system. This module converts 32 pulses per minute to 20mA. For an industrial heavy-duty rain gauge, see the RG600 below.

Specifications

Capacity	Unlimited
Accuracy	3% up to 4 in/hr
Dimensions	6 x 15 inches (15 x 38 cm)
Weight	3 lbs (1.4 kg)

Features

- Constructed of high impact UV-protected plastic
- Reliable and highly accurate
- Simple to operate
- Durable and low-cost

Ordering & Options

Order No.	Description
RG200	Tipping Bucket Rain Gauge, 6 inch
RG700	Pulse to Current Converter Module (4-20 mA Output)
GL500U-2-1	USB Global Logger, see page 123
GL500S-2-1	RS-232 Serial Global Logger, see page 123

RG600 Heavy Duty Rain Gauge

Rugged 8 inch Aluminum Tipping Bucket Rain Gauge for Monitoring Rainfall

Features

- Constructed of anodized aluminum
- Reliable, highly accurate, and simple to operate
- Rugged and long lasting

Specifications

Capacity	Unlimited
Accuracy	±1% at 1 inch per hour
Average Switch Closure Time	135 ms
Maximum Bounce Settling Time	0.75 ms
Maximum Switch Rating	30 VDC @ 2A, 115 VAC @ 1 A
Operating Temperature	32 to +123.8°F (0 to +51°C)
Dimensions	10-1/8 x 8 inches (26 x 20 cm)
Weight	8 lbs (3.6 kg)

Description

Global Water's RG600 Heavy Duty Tipping Bucket Rain Gauge was designed by the National Weather Service to provide a low-investment, reliable, industrial tipping bucket rain gauge. This durable instrument will provide many years of service with minimal care. The RG600's design ensures a trouble-free operation and accurate rainfall measurements. For each 0.01 in or 0.25 mm of rainfall through the RG600's 8 inch orifice, the rain gauge's sensor mechanism activates a sealed reed switch that produces a contact closure. The unit is shipped complete with mounting brackets and 60 ft of two-conductor cable. It can be pole mounted or bolted to a level plate.

For a heated rain gauge, select the AC powered RG650 (see Ordering & Options). To add recording capabilities to the RG600, select Global Water's GL500-2-1 Global Logger (see page 123). The GL500-2-1 datalogger connects to the rain gauge's pulse output to record data. We also offer the RG700 Pulse to Current Converter Module (see Ordering & Options) so that you can convert the rain gauge's pulse output to a current output for use with your 4-20 mA recording system. This module converts 32 pulses per minute to 20mA.

Ordering & Options

Order No.	Description
RG600	Tipping Bucket Rain Gauge, 8 inch
RG650	Heated Tipping Bucket Rain Gauge, 8 inch
RG700	Pulse to Current Converter Module (4-20 mA Output)

LW100 Leaf Wetness Sensor
Transmitter for Leaf Moisture and Rainfall

Features

- Monitor leaf wetness and detect rainfall
- Easy to install within plants
- Durable and reliable

Description

The LW100 Leaf Wetness/Rainfall Sensor can be used to monitor leaf moisture and detect rainfall. The sensor is easy to install directly within a plant: simply hang the sensor within the plant from its cable at the location where leaf wetness needs to be monitored. The angle of the sensor should be set to approximately the same angle as that of the leaves that are being monitored. The sensor has 25 ft of cable and a 0-5 VDC output that is compatible with our WE800-900 Weather Stations (see page 104) and the GL500-2-1 Global Logger (see page 123).

Specifications

Power Requirements	12 VDC @1.0 mA
Output	0 to 5 VDC
Instrument Connections	Black: Ground
	Red: +12VDC
	Brown: Signal Out 0 to 5 VDC
Size	3 x 5.5 inches (7.6 x 14.0 cm)
Shipping Weight	2 lbs (907 g)

Ordering & Options

Order No.	Description
LW100	Leaf Wetness/Rain Sensor (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

AT210 Soil Moisture Sensor
Accurate Transmitter for Monitoring Soil Moisture
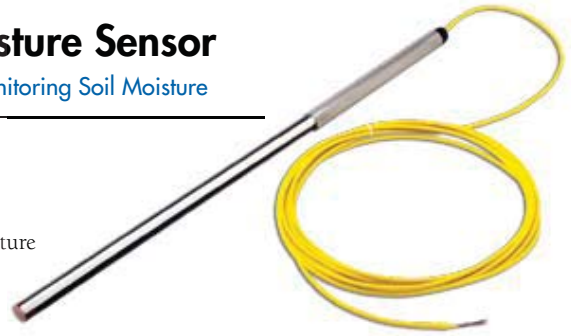
Description

Global Water's AT210 Soil Moisture Sensor provides reliable and accurate soil moisture monitoring for applications including bioremediation, wastewater reclamation, landfill management, and agriculture. The AT210 sensor measures the dielectric constant of the soil, which is directly related to the water content of the soil. The sensor uses time domain reflectometry (TDR) for direct soil moisture measurement.

Flexible Installation and Measurements

When installed vertically, the sensor can be used to obtain average moisture readings throughout a soil column. When installed horizontally, the sensor can be used to measure moisture at a specific soil depth.

Datalogging and Control

The soil moisture sensor has a high-level 4-20 mA output signal for direct interface with a variety of control, datalogging, and telemetry systems. Global Water offers remote monitoring and control products

Specifications

Output	4-20 mA
Range	0 to 100% saturation
Accuracy	± 2%
Power Requirements	12 VDC ± 20% @ 40 mA
Operating Temperature	-40 to +131°F (-40 to +55°C)
Sensor Size	3/4 inch diameter x 30-1/2 inch long (2 cm dia. x 77.5 cm)
Weight	2.5 lbs (1.1 kg)

Features

- Reliable and accurate
- High-level output signal to connect to datalogging and control instruments
- Install vertically for average moisture of soil column
- Install horizontally to monitor moisture at a specific soil depth

with exceptional capabilities, such as the GL500 Global Logger for data recording (see page 122) and the PC300 Process Controller for controlling external devices (see page 132). In addition, Global Water's WQ101 Temperature Sensor (see page 60) can be used in conjunction with the Soil Moisture Sensor to enhance systems monitoring plant growth and controlling bioremediation.

Applications

Ideal for bioremediation, wastewater reclamation, landfill management, agriculture, and more.

Ordering & Options

Order No.	Description
AT210	Soil Moisture Sensor (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

You may also like . . .

GL500-2-1 Datalogger
Add recording capabilities to the AT210.
Page 122

EP180 Evaporation Pan

Stainless Steel Class A Evaporation Pan with Drain Plug and Stilling Well

Description

Global Water's EP180 Evaporation Pan is a rugged stainless steel pan for measuring daily evaporation. The EP180 is built to be compatible with all standard National Weather Service evaporation pan measurements: it is 10 inch deep and has an inside diameter of 47½ inch. It is a Class A pan that features a drain plug and an attached stilling well. The EP180's stilling well supports easy installation of a low-range water level sensor, such as Global Water's 3 ft WL400 (see page 6) or 3 ft WL16 (see page 2).

Global Water offers a range of water level sensors, water temperature sensors, weather sensors, and datalogging capabilities to complete your evaporation monitoring system (see the Ordering & Options section on this page).

Applications

Ideal for daily evaporation monitoring, water spills, tank failures, pump failures, rising water, floods, and more.

Specifications

Construction	Low carbon stainless steel passivated after welding, heliarc welded
Size	47.5 inch dia. x 10 in deep (121 cm dia. x 24 cm deep)
Weight	48 lbs (22 kg)

You may also like . . .

WL16 Water Level Logger
Monitor the level of water in your EP180.
Page 2

Rain Gauges
Account for precipitation in your evaporation measurements.
Page 109

Features

• Rugged stainless steel pan

• Compatible with standard National Weather Service measurements

• Use with our sensors and dataloggers to establish a complete monitoring system

Ordering & Options

Evaporation Pan*

Order No.	Description
EP180	Evaporation Pan

* Price does not include motor freight shipping charges. Please call Global Water for additional information.

Accessories

Order No.	Description
WL400-003-025	Water Level Sensor (3 ft range, 25 ft cable), see page 6
WL16U-003-025	USB Water Level Logger (3 ft range), see page 2
WL16S-003-025	Serial Water Level Logger (3 ft range), see page 2
RG200	Tipping Bucket Rain Gauge, 6 inch, see page 109
RG600	Tipping Bucket Rain Gauge, 8 inch, see page 109
GL500-7-2	9 Channel Global Logger, see page 122
GL500U-2-1	3 Channel USB Global Logger, see page 123
GL500S-2-1	3 Channel Serial Global Logger, see page 123
WE800	Datalogging Weather Station, see page 104
WE900	4-20 mA Weather Station, see page 104

Measuring Evaporation

Pan evaporation is a measurement that combines or integrates the effects of several climate elements: temperature, humidity, solar radiation, and wind. Evaporation is greatest on hot, windy, dry days; and is greatly reduced when air is cool, calm, and humid.

Evaporation can be measured with several different devices, but evaporation amounts measured with one device are not usually comparable with measurements from other devices. The National Weather Service measures evaporation using a standard evaporation pan called a Class A pan.

A Class A evaporation pan, like Global Water's EP180, is a cylindrical pan with a depth of 10 inches and an inside diameter of 47½ inches. The pan is typically installed on a carefully leveled, wooden base and is often enclosed by a chain link fence to prevent animals from drinking the pan's water.

Evaporation is measured daily as the depth of water evaporates from the pan. The measurement day begins with the pan filled to exactly two inches from the top. After 24 hours, the pan is again filled to exactly two inches from its top.

If precipitation occurs in the 24-hour period, this is taken into account in calculating evaporation. Sometimes precipitation is greater than evaporation, and measured increments of water must be dipped from the pan.

WE710 Surface Temperature Sensor

Flat Surface Temperature Sensors for Remote Monitoring

Features

- Accurate 4-20 mA output
- Marine grade cable with strain relief
- Fully encapsulated electronics

Applications
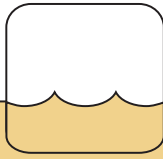
Ideal for many applications including, pipe temperature monitoring, solar panel temperature, water tanks, control panels, battery monitoring, and many others.

Specifications

WE710 Surface Temperature Sensor

Type	100ohm Platinum Class A RTD
Output	4-20 mA
Range	-58 to +185°F (-50 to +85°C)
Accuracy	±0.5°F (±0.25°C)
Sensing Surface	0.75x1.5 inch (19x38 mm) Aluminum
Adhesive	3M #4910 Acrylic
Operating Voltage	10 to 36 VDC
Current Draw	Same as sensor output current
Warm-up Time	3 seconds minimum
Storage Temp	-67 to +195°F (-55 to +90°C)
Housing	2.0x1.1x3.8 inch (5x2.8x9.7 cm)(WxHxL) ABS
Weight	13 oz (368 g) with 25 ft of cable

Description

The Global Water Surface Temperature Sensors are high quality, rugged instruments with a precision RTD calibrated to US National Standards. The sensor's output is 4-20 mA with a two wire configuration. Each of the sensors is mounted on 25 ft of marine grade cable, with lengths up to 500 ft available upon request. The surface temperature sensor's electronics are completely encapsulated in marine grade epoxy within an ABS plastic housing.

Ordering & Options

Order No.	Description
WE710	Surface Temperature Sensor (includes 25 ft cable)
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

"The frog does not drink up the pond in which he lives."

– American Indian Saying

TLC 730 Handheld Infrared Thermometers

Handheld Digital Infrared Thermometer for Field Measurements

Description

The The TLC 730, Handheld Infrared Thermometers function as non-contact infrared and contact thermometers. The user can always toggle between the thermometer's two operating modes. Additionally the instrument has a dual laser pointer that helps the user aim the temperature sensor at the target when they are making measurements.

Non-contact Measurements

The ideal distance in most applications for the digital infrared thermometers is from 2 to 4 inches (5 to 10 cm), measuring a 0.8-2.5 inch (2 to 6.3 cm) diameter circle. As the distance from the object increases, the spot size of the area measured by the thermometer becomes larger. Make sure that the target is larger than the spot size. The smaller the target, the closer you should hold the instrument to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

Infrared thermometer emissivity

Inaccurate readings will result from using the handheld digital infrared thermometers to measure shiny or polished metal surfaces like stainless steel or aluminum. To compensate, cover the surface to be measured with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Use the infrared thermometer to measure the temperature of the tape or painted surface. When measuring a grill, for example, aim the instrument at a portion of the grill that has been blackened by the high temperatures. The thermometers cannot measure through transparent surfaces such as glass or plastic. It will measure the surface temperature of the transparent surface instead. Steam, dust, smoke, etc., can prevent accurate measurement by obstructing the unit's optics. Hold the unit back and at an angle to ensure the most accurate measurements.

NOTE: When measuring liquid products, be sure to stir the product vigorously while using the thermometer to measure the surface of the liquid. Note: DO NOT submerge instrument in water.

Applications

Ideal for fast, simple temperature measurements of liquids, motors, pipes, food, storage containers, received goods, supermarket areas, kitchens, and refrigerated rooms..

Specifications

Measuring Range	-58 to +662°F (-50 to +350°C)
Infrared Accuracy	-58 to -22.2°F (-50 to -30.1°C): ±7.2°F (±4.0°C)
	-22 to -0.58°F (-30 to -18.1°C): ±4.5°F (±2.5°C)
	-0.4 to +31.8°F (-18 to -0.1°C): ±2.7°F (±1.5°C)
	32 to 148.8°F (0 to 64.9°C): ±1.8°F (±1.0°C)
	149 to +662°F (65 to 350°C): ±3.6°F (±2.0°C)
	or 2% of reading whichever is greater
Contact Probe Accuracy	±1.4°F over the range -0.4°F to +248°F (±0.8°C over the range -18°C to +120°C) and 1% for the rest of the measuring range
Resolution	0.1°F (0.1°C)
Operating temp	-13 to +122°F (-25 to +50°C)
Storage temp	-40 to +158°F (-40 to +70°C)
Measuring cycle	Infrared: 0.7s, Probe: 1s
Emissivity	0.1 to 1.0 adjustable
Alarm settings	Yes, optical and accoustic
Battery	2 x AAA
Battery life	approx. 15 hrs continuous use (automatic shutoff after 15 sec)
Optics	8:1
Laser Pointer	2 lasers equal the measured area
IP Rating	IP 55
Sensor Size	6.5x1.8x0.78 in (165 x 45.4 x 19.7 mm)
Weight	3.1 oz. (97 g)

Features

- Non-contact surface temperature measurement with infrared
- Dual laser pointer for measuring spot
- Core temperature measurement with fold-back probe
- C°/F° switchable
- Fast, easy measuring

Ordering & Options

Handheld Infrared Thermometer

Order No.	Description
TLC 730	Handheld Infrared Thermometer

"A lake is the landscape's most beautiful and expressive feature. It is Earth's eye; looking into which the beholder measures the depth of his own nature."

– Henry David Thoreau

RG333 Rain Gauge

Auto-Drain Rain Gauge

Features

- Easy to operate
- Automatically empties every 24 hours
- Minimal maintenance
- Manual mode

Description

Global Water's RG333 Portable Auto-Drain Rain Gauge is a durable weather instrument for monitoring total rainfall. The rain gauge is appropriate for a variety of applications, including stormwater runoff monitoring, rainfall monitoring studies, and soil moisture studies. With minimal care, the RG333 will provide many years of service. The unit's simple and precise design assures trouble-free operation and accurate rainfall measurements. The rain gauge can be pole mounted using its included mounting hardware. Our larger rain gauges are presented on page 109.

Applications

Ideal for stormwater runoff monitoring, rainfall monitoring studies, soil moisture studies, and more.

Specifications

Accuracy	1⁄20th of an inch
Capacity	5 in (12.7 cm) of rainfall
Power	2 AA batteries
Dimensions	Mounting Plate: 11 x 5 inch (28 x 13 cm)
	Tube Depth: 10 inch (25.4 cm)
	Funnel Diameter: 1-3⁄4 inch (4.5 cm)
Weight	1 lb (454 g)

Ordering & Options

Order No.	Description
RG333	Portable Auto-Drain Rain Gauge

TFH 610 Handheld Hygrothermometers

Digital handheld hygrothermometer pen for rapid humidity and temperature measurements.

Description

The TFH 610, handheld hygrothermometer, is a robust and impact resistant field meter that will allow you to measure relative humidity and temperature simultaneously. The unit is highly accurate and comes with a factory calibration certificate. The instrument's large LCD shows both humidity and temperature readings at the same time. You can choose to have it display either °C or °F. In addition to having a battery charge indicator, the hygrothermometers have an automatic shut-off feature to preserve battery power.

Alarm function

The TFH 610, handheld digital hygrothermometer is able to send a visible alarm when the humidity value is outside a desired range specified by you. In this case an alarm bell symbol blinks on the hygrothermometer's screen. The symbol continues to blink until you acknowledge the instrument's alarm.

Applications

The TFH 610, handheld digital hygrothermometer has many applications including field measurements, manufacturing, computer rooms, laboratory, storage, and environmental control.

Applications

Ideal for portable humidity and temperature measurements in music rooms, record storage facilities, libraries, book stores, freezers, and more.

> "A rainy day is the perfect time for a walk in the woods."
>
> – Rachel Carson

Features

- Robust and impact resistant
- Factory calibration certificate
- Battery charge indicator
- High accuracy
- Switchable between °C/°F
- Automatic shutoff

Specifications

Humidity	Range: 0 to 100% rH
	Resolution: 0.1%
	Accuracy: ± 2.5% rH (from 10 to 90%)
Temperature	Range: 32 to 122°F (0 to 50°C)
	Resolution: 0.1°F or °C
	Accuracy: ±0.9°F or ±0.5°C
Sensor Type	Capacitive (Humidity), Thermistor(Temperature)
Operating Temp	32 to 122°F (0 to 50°C)
Storage Temp	-13 to 140°F (-25 to 60°C)
Number of Measuring Channels	2
Measuring Rate	1-15 sec
Power	Lithium button cells, 3.0 V, 1000 mAh
Battery Life	up to 5 years
Housing Material	ABS
Dimensions	4.5x 2.1 x 0.9 inch (115 x 54 x 22mm)
Weight	2.9oz (90g)
IP rating	IP 40
Certifications	CE

Ordering & Options

Order No.	Description
TFH 610	Handheld Hygrothermometer
AH 600	Calibration Kit: Includes 11.1% rH, 52.7% rH, 75.4% rH calibration standards, complete with case.

RH520A Paperless Chart Recorder

Humidity and Temperature Chart Recorder with Graphical and Digital Display

Description

The RH520A Paperless Humidity/Temperature Chart Recorder provides a cost effective recording method that eliminates the need for replacement chart paper and pens. The chart recorder can simultaneously display humidity with temperature or dew point, date/time, min/max, alarm status, and percentage of memory remaining. You can set the vertical and horizontal graphical resolution of the display.

Capable Data Recording

The paperless chart recorder can store up to 49,000 temperature and humidity readings with date/time stamps for later transfer to a PC. This means that you can monitor for over 30 days at 1 minute intervals. You can also easily program the RH520A to monitor at the recording interval of your choice. The chart recorder includes software that allows you to download, analyze, and store data using a Windows™ platform PC.

Convenient Alarming

The RH520A has user programmable high and low alarm limits that trigger a built in audible alarm. The unit will display alarm status, and you can easily jump to previous alarm events.

What's in the Box

The RH520A comes complete with chart recorder, stand, detachable humidity/tem-

Features

- Paperless datalogging
- Graphical and digital display
- 49,000 reading internal memory
- Total monitoring and alarm system
- RS-232 PC interface

Applications

Ideal for monitoring in laboratories, clean rooms, process conditions, freezers, storage areas, and other critical environments.

perature probe with 3 ft (1m) cable, software, RS-232 cable, 110VAC adaptor, and 3 AA batteries. You can easily mount the chart recorder to either the wall or onto a desk. We offer a replacement Humidity/Temperature Probe (Order No. RH522), which does not require recalibration. In addition, you can select an optional relay module (Order No. SL123 or SL124) to trigger external alarms. See Ordering & Options below for additional information.

Ordering & Options

Paperless Chart Recorder

Order No.	Description
RH520A	Paperless Humidity/Temperature Chart Recorder

Accessories

Order No.	Description
RH522	Replacement Humidity/Temperature Probe
SL123	AC Alarm Relay Module, 9 ft (3m) cable
SL124	DC Alarm Relay Module, 9 ft (3m) cable

Specifications

Relative Humidity Range	10.0 to 95.0%
Temperature Range	-20.0 to 140.0°F (-28.0 to 60.0°C)
Accuracy	±3% Relative Humidity ±1.8°F/±1°C
Power	Three AA batteries (included)
Dimensions	5 x 7.7 x 0.9 inch (129 x 195 x 22mm)
Weight	12.6 oz (357g)

WALARM Wind Alarm

Wind Alarm Controller

Features

- Rugged
- Dual set point alarms
- Dual warning lights

Description

The WALARM is a dual set point controller enclosed in a weathertight polycarbonate case. It includes a wind speed sensor, a sensor stubmast, and mounting hardware and can be used to alert you of high or low wind speeds. The WALARM is accurate to ± 2 mph (0.89 m/s) and operates on 12 volts DC, with an AC adaptor optional.

You can easily set the controller's two wind alarm levels with the front panel thumbwheels. When wind speed achieves the first alarm setting, a yellow warning light illuminates and one internal SPDT relay activates. When the wind speed achieves the second setting, a red light illuminates, a 90dB piezo buzzer sounds, and the second internal SPDT relay is activated.

Applications

Ideal for monitoring wind conditions for cranes, water fountains, and other wind sensitive applications.

Specifications

Accuracy	± 2 mph
LED Window	2 digits, 1 x 1 inch window
Cup Type	3 cup generator type
Cable	22 AWG, 2-conductor, Non-PVC jacketed, 60 ft included (NOTE: Sensor will operate on up to 500ft of 22 AWG wire.)
Input Voltage	12VDC, AC adaptor available as an option
Alarm Output	2 SPDT Outputs, Yellow LED, 90dB Piezo Buzzer, Red LED
Dimensions	6.3 x 4.72 x 3.29 inch (16 x 12 x 8.4 cm)
Weight	4.3 lbs (2 kg)

Ordering & Options

Order No.	Description
WALARM*	Wind Alarm Controller
EC0500	AC Power Option

* Specify units when placing order: mph, km/h, or knots.

407119 Hot Wire Anemometer

Portable Air Flow Meter for Air Velocity and Temperature Measurements

Description

The 407119 Hot Wire Anemometer accurately measures air flow and temperature, and displays these measurements on a large LCD screen. The meter has a telescoping probe that extends up to 3 ft (940 mm) and is ideal for measuring air flow in ducts and ventilating systems.

Advanced Features

The 407119 anemometer can measure air velocity in either cubic feet per minute or cubic meters per minute. It can accurately measure air velocities as low as 40 feet per minute. The meter has a 20 point averaging feature, and it can record and recall both minimum and maximum readings. It also has a data hold feature and automatically shuts off after 15 minutes of inactivity.

Datalogging Capabilities

The meter has a built-in RS-232 PC serial connection so that you can interface with an optional datalogger using optional data acquisition software.

The optional datalogger (Order No. 380340) can record up to 8,000 readings with a selectable sampling rate from 1 second to 99 hours.

Using the optional data acquisition software (Order No. 407001), you can capture, display, and store the datalogger's readings onto a PC. The software will also allow you to set the anemometer's sampling time from 1 second to 60 minutes and export data to a standard spreadsheet program. Please see the optional datalogger and data acquisition software in Ordering & Options.

Features

- Measure air velocities as low as 40 feet per minute
- Telescoping probe is ideal for use in ducts and ventilating systems
- Measure air flow plus temperature simultaneously
- Instantaneous or average readings
- Data hold with automatic power off
- Optional datalogger and software
- CE compliant

Applications

Ideal for measuring air flow in ducts and ventilating systems.

Ordering & Options

Hot Wire Anemometer

Order No.	Description
407119	Hot Wire Anemometer

Accessories

Order No.	Description
140001	Hard Vinyl Carrying Case
156119	AC Adapter, 117VAC
156221	AC Adapter, 220VAC
380340	Datalogger
407001	Data Acquisition Software

Specifications

Air Flow	Range: 0 to 1,271,200 ft³/min (0 to 36,000 m³/min) Resolution: 0.01 to 100 cfm (0.001 to 1 cmm) Area: 0.01 to 322.91ft² (0.001 to 30.0 m²)
Air Velocity	Range: 40 to 3346 ft/min (0.2 to 17.0 m/s) Resolution: 1 ft/min (0.1 m/s) Accuracy: ±(5% + 100 digits) ft/min [±(5% + 5 digits) m/s]
Air Temperature	Range: 32° to 122°F (0° to 50°C) Resolution: 0.1°F (0.1°C) Accuracy: ± 1.5°F (0.8°C)
Display	Dual function 5-digit LCD
Measurement Units	Air Velocity: m/s, km/h, ft/min, knots, mph Air Flow: cmm (m³/min) and cfm (ft³/min) Temperature: °C and °F
Data Hold	Freezes displayed reading
Sampling Rate	Display update rate, 1 second (approx.)
Sensors	Air velocity and temperature sensors: thermistor type

Max/Min Memory	Record and view Maximum and Minimum readings
Average Feature	Averages up to 20 readings
Auto Power Off	After 15 minutes
Data Output	RS-232 PC serial interface with 16-bit data stream output
Operating Temp	32° to 122°F (0° to 50°C)
Operating Humidity	Max. 80% RH
Power Supply	Four (4) 'AA' 1.5V batteries or optional AC adaptor
Power Current	70mA DC (approx.)
Weight	1.15 lbs (521g) meter only with batteries installed
Dimensions	Main instrument: 7.9 x 3.0 x 1.5 inch (200.0 x 76.2 x 36.8mm) Telescoping Sensor: 0.5 inch dia. (12.7mm dia.); 8 inch (260mm) min. length; 37 inch (0.94m) max. length; with 5.5 ft (1.7m) cable

45158 Handheld Anemometer
Water Resistant Pocket Air Velocity Meter

Description

The 45158 Handheld Anemometer is reliable and accurate instrument for measuring air velocity, temperature, and humidity. It has a low-powered LCD that displays air velocity and either relative humidity, dew point, temperature, or wind chill. The meter measures temperature and windchill from 0 to 122°F (-18 to 50°C). You can select from a variety of air velocity measurement units, including: ft/min, mph, m/s, km/h, Knots, and Beaufort Force.

Durable Fold-Up Housing

The meter has a fold-up housing for protective storage that extends to 9 inches (23 cm) for better reach. The housing is water resistant, floats, and is drop tested from 6 ft (1.8 m).

Powerful Features

The 45158 Handheld Anemometer lets you select between 5 or 10 second averaging intervals. It also has a maximum recall function that recalls the highest reading and a data hold feature that freezes the most recent display. In addition, the 45158 has an auto shutoff function that powers the device off 20 minutes after the last key is pressed.

Options to Meet Your Needs

The 45158 Handheld Anemometer allows you to measure both temperature and humidity, in addition to air velocity. For only temperature and air velocity measurements, we offer the 45118 Handheld Anemometer. Both meters use replaceable non-corrosive plastic impellers to measure air velocity. Spare impeller assemblies are available (Order No. 45116). For convenient carrying, select the small anemometer case (Order No. 409992). For additional information, see Ordering & Options below.

Features

- Display air velocity and either relative humidity, dew point, temperature, or windchill
- Selectable averaging functions of 5 or 10 seconds
- Replaceable plastic anemometer
- Water resistant housing that floats
- Data hold with automatic power off
- CE compliant

Applications

Ideal for handheld storm monitoring, wind tunnel calibration, cross-checking permanent weather stations, and more.

Specifications

Wind Speed	Range: 1.1 to 62.5 mph (1.8 to 100.6km/h)
	Resolution: 0.2 mph (0.7km/h)
	Accuracy: ± (3% + 0.4 mph) [± (3%+1.4km/hr)]
Temperature	Range: 0 to 122°F (-18 to 50°C)
	Resolution: 0.1°F/C
	Accuracy: ±1.8°F (± 1°C)
Relative Humidity	Range: 10 to 95%
	Resolution: 1%
	Accuracy: ± 5% RH
Dew Point	Range: 32 to 122°F (0 to 50°C)
	Resolution: 0.1°F/C
	Accuracy: ± 3.6°F (2°C)
Display	Dual LCD with low battery and multifunction indicators
Sensors	Sapphire bearing, non-corrosive vane for air velocity
	Precision thermistor for temperature measurements
Average Mode	Choice of 5 or 10 reading averaging (2 second factory default)

Max and Data Hold Displays	Max recalls the highest reading; Data Hold freezes the display
Sample Time	1 reading per second for air velocity and temperature (1 reading per 15 seconds for humidity with 2 second updates)
Water-Resistant	To 3 ft (1m)
Operating Conditions	5 to 122°F (-15 to 50°C) / < 80% RH
Power Supply	Lithium battery (CR-2032 or equivalent)/400 hr life
Dimensions	Handheld Anemometer: 5.25 x 2.75 x 0.75 inch (133 x 70 x 19mm)
	Anemometer Impeller: 1 inch dia. (24mm dia.)
Weight	3 oz. (95 g)

Ordering & Options

Handheld Anemometers

Order No.	Description
45158	Handheld Anemometer for Wind Speed, Temperature, and Humidity Measurements
45118	Handheld Anemometer for Wind Speed and Temperature Measurements

Accessories

Order No.	Description
45116	Spare Anemometer Impeller Assembly
409992	Small Anemometer Carrying Case

"Weather forecast for tonight: dark."

– George Carlin

EBI 20 Temperature/Humidity Dataloggers

Compact, powerful and easy to use temperature and humidity dataloggers.

Description

The EBI 20 temperature\humidity dataloggers are convenient measuring and recording instruments for temperature and relative humidity. The dataloggers have a large display panel (LCD), are operated with a lithium battery and are programmed by using a PC. A datalogger interface is required, along with the Winlog basic software, to program the dataloggers. The interface is connected to the PC by a Universal Serial Bus (USB) cable for convenience.

Optical alarm

The EBI 20 temperature\humidity dataloggers can be programmed so that they signal an optical alarm when the measured value for the temperature or relative humidity deviates from the range (upper and lower limit value) set during programming. In this case the word "Alarm" appears at the top of the datalogger's display panel and a red LED will flash if it was programmed to.

Features

- Programmable sampling rate from 1sec to 24 hrs plus Hi/Lo limits with alarm indication
- 8,000 readings with time and date stamp
- Min/Max values on display
- Waterproof (EBI 20 T only)
- CE compliant

Applications

Ideal for monitoring in clean rooms, refrigerators, freezers, shipping crates, cargo vessels, warehouses, storage areas, and other critical environments.

"We let a river shower its banks with a spirit that invades the people living there, and we protect that river, knowing that without its blessings the people have no source of soul."

– Thomas Moore

Specifications

Temperature measuring range	-22 to 140°F (-30 to +60°C)
Humidity measuring range (EBI 20 TH only)	0% to 100% rH
Temperature accuracy:	±0.9°F (-4 to +104°F) (±0.5°C (-20 to +40°C))
	± 1.5°F (± 0.8°C) for remaining measuring range
Humidity accuracy (EBI 20 TH only)	+ 3% rH (10 to 90% rH)
Memory	8,000 values
Sensor	NTC for temperature/capacitive humidity sensor (EBI 20 TH only)
Operating temperature	-22 to +140°F (-30 to +60°C)
Storage temperature	-40 to +158°F (-40 to +70°C)
Measuring rate	1 min to 24 h
Measuring mode	Immediate loop measurement, measurement from starting point, start immediately until memory full, start/stop measuring, start when button pressed
Battery	3V lithium (CR2450), replacable
Battery life	At least 2 years (at 15min measuring rate @ 77° F (25°C))
Protection class	IP 67/52 (EBI 20 TH)
Housing	ABS
Dimensions	2.7x1.9x0.9in (69x48x22mm)
Weight	1.5oz (45g)

Ordering & Options

Datalogger Kits

Order No.	Description
EBI-20-T-Set	Temperature Datalogger Kit. Includes EBI-20-T datalogger, Winlog.basic software, EBI-20 interface, and USB cable.
EBI-20-TH-Set	Temperature/Humidity Datalogger Kit. Includes EBI-20-TH datalogger, Winlog.basic software, EBI-20 interface, and USB cable.
EBI-20-T	Temperature Datalogger
	NOTE: The Temperature Datalogger cannot function without software and interface station.
EBI-20-TH	Temperature/Humidity Datalogger
	NOTE: The Temperature/Humidity Datalogger cannot function without software and interface station.
EBI-20-IF	Temperature/Humidity Datalogger Interface Station
	Required to program EBI-20 Temperature/Humidity Dataloggers.

"Rainbows apologize for angry skies."

– Sylvia Voirol

EBI 85 and EBI 125 Temperature Data Loggers

Waterproof temperature data loggers for remote monitoring.

Description

The programmable EBI-85 and EBI-125, temperature data loggers are easy to handle and have many applications. With the temperature data logger you can measure and store up to 18,000 temperature values with a sample setting from one second to 8 hours per reading. The sampling rate (interval) and ambient temperature have influence on the life span of the battery. For example at 77 °F (25 °C) if the temperature data logger is set to sample once every second the internal batteries will last about one year, however if the temperature data logger is set to sample once

an hour the batteries will last eight year. The EBI-85 temperature data logger measures up to 185°F (85°C), while the EBI-125 measures up to 257°F (125°C). To program the temperature data loggers the user needs the WINLOG 2000 software and the EBIAE-S temperature data logger interface.

Applications

The EBI-85 and EBI-125, temperature data loggers, have many applications including stream, river, or lake temperature measurements, temperature recording for process monitoring, monitoring autoclaves and temperature chambers, process validation, temperature monitoring during transport, temperature monitoring in laboratories with explosion hazards, and many more.

Specifications

Sensor	Pt 1000
Measuring range with internal temperature sensor	EBI-85 A: -40 to +185°F (-40 to +85°C)
	EBI-125 A: -40 to +257°F (-40 to +125°C)
	Continuous operation: -40 to +257°F (-40 to +125°C)
	Up to 3 hours: at 266°F (130°C)
	Up to 1 hour: at 284°F (140°C)
Operating temperature	EBI-85 A: -40 to +185°F (-40 to +85°C)
	EBI-125 A: -40 to +257°F (-40 to +125°C)
Storage temperature	EBI-85 A: -40 to +185°F (-40 to +85°C)
	EBI-125 A: -40 to +257°F (-40 to +125°C)
Sampling rate	1 s to 8 h
Resolution	0.1°F (0.1°C)
Accuracy	+0.5°F (+ 0.3°C)
Channels	1
Storage memory	approx. 18,000 values
Data output	M-BUS
Battery	lithium 3.6 V
Life span of battery	5 to 8 years depending on sample interval
Casing	Stainless-steel with PEEK ring
Max pressure abs	20 mbar to 20 bar
Protection class	IP 68
Dimensions	Height 1.1 in (28 mm), Diameter 1.9 in (48 mm)
Weight	approx. 3.5 oz (100 g)

Features

- Completely waterproof
- Temperature resistant up to +284°F (+140°C)
- Stainless steel housing
- Standard logger with eyelet for mounting

Applications

Ideal for monitoring in clean rooms, refrigerators, freezers, shipping crates, cargo vessels, warehouses, storage areas, and other critical environments.

Ordering & Options

Datalogger Kits

Order No.	Description
EBI-85 A-OE-Set	Temperature Data Logger Kit. Includes EBI-85 A-OE data logger, Winlog.standard software, EBI-85 interface, and USB cable.
EBI-125 A-OE-Set	Temperature Data Logger Kit . Includes EBI-85 A-OE data logger, Winlog.standard software, EBI-85 interface, and USB cable.
EBI-85 A-OE	Temperature Data Logger
EBI-125 A-OE	Temperature Data Logger
EBI-AE-S	Temperature Data Logger Interface Station
	Interface-Set includes USB for EBI-85 and 125 (without Software).
EBI-WINLOG 2000-S	Temperature Data Logger Software
	Software (Standard Version).

"Water is the one substance from which the earth can conceal nothing; it sucks out its innermost secrets and brings them to our very lips."

– Jean Giraudoux

GL500-7-2 Global Logger

Multichannel Datalogger for Recording a Variety of Sensor Signals

Features

- Includes both USB and serial communication ports
- Four sample modes: 10 times per second, timed, logarithmic, and exception
- Monitor up to 9 sensors at a time in addition to battery voltage
- Battery powered for remote locations
- User friendly Windows™ and Windows™ CE-based PDA software included
- Accepts any 4-20 mA input

Description

Global Water's rugged GL500-7-2 Global Logger offers state-of-the-art technology for continuous datalogging, storage, and retrieval. The logger features 7 analog channels and 2 digital channels for data recording. It also offers USB and serial communication ports for easy communication with a Windows™-based PC or PDA.

Powerful Recording

The GL500-7-2 can record over 40,000 readings and has four unique recording options: fast (10 samples per second), programmable interval (1 second to multiple years), logarithmic, and exception. The datalogger also has a sample on demand input that triggers a recording of special events. Daily start and stop alarm times can be programmed to limit recording intervals.

Smart Software

The GL500-7-2 includes Windows™-based Global Logger II software, which makes accessing stored data and setting options easy. The software provides many useful features, such as real time readout, measurement interval and engineering unit selection, station ID setting, and sensor calibration. The Global Logger also includes Windows™ CE-based PDA software for simple data collection in the field. Downloaded data can easily be opened in any PC spreadsheet program for analysis and graphic presentation.

Compatible with Many Sensors

The Global Logger includes 7 channels that can accept any 4-20 mA sensor, including many of Global Water's level, water quality,

Specifications

Datalogger

Memory	Non-volatile flash memory
Power	4.2 VDC min to 24.0 VDC absolute max Standby current: 70µA typical Logging current: 5mA typical + sensor current
Analog Sensor Inputs	4-20 mA (0-5VDC as factory option) Resolution: 12-bit, 4096 steps Channels: 7 input channels + battery voltage monitor Sensor warm-up time: Programmable 0-60 sec
Digital Inputs	Two independent pulse counters Maximum input voltage: 24VDC Maximum frequency: 100Hz Minimum pulse width: 2mS Maximum count: 65,535 (16-bit)
Sample Now Input	Sample-on-demand input, software enabled Maximum input voltage: 24VDC Minimum pulse width: 2mS
Sample Modes	Fixed Interval: Programmable from 1 sec to >1 yr High Speed: 10 samples per sec Logarithmic Sample Rate: Approximation Exception: Log only on deviation from previous reading
Storage Capacity	40,879 Recordings for all inputs plus time stamp
Data Overwrite	Select memory wrap or unwrap (unwrap will stop logging data once memory is full)

Communication Ports	RS-232 DB9 and USB Type B
Selectable Baud Rates	9600, 19200, 28800, 38400, 57600, 115200
Clock	Synchronizes to the time and date of user's computer
Operating Temperature	Industrial, -40 to +185°F (-40 to +85°C) (battery may not apply)
Enclosure	Expanded UV protected PVC
Dimensions	5 x 2 x 3 in (12.7 x 5 x 7.6 cm)
Weight	1.5 lbs (680 g)

Global Logger II PC Software

Compatibility	Microsoft's Windows™ 98, ME, 2000, NT, XP, and Vista
Features	Tabular display/printout; data in standard spreadsheet format (CSV); programmable alarm start and stop times; field calibration software and help files included

Windows™ CE PDA Software

Compatibility	Microsoft's Windows™ CE and Mobile compatible

Optional Enclosure

Materials	UV protected PVC
Battery	12 Volt, 2.2 A/hr, rechargeable (Gell Cell)
Dimensions	9 x 7.5 x 4.5 inches (22.9 x 19 x 11.4 cm)
Weight	3.5 lbs (1.6 kg) with datalogger

Ordering & Options

Global Logger

Order No.	Description
GL500-7-2	Global Logger (with 7 analog and 2 pulse channels) [1]

1) Includes 7 analog channels, 2 pulse channels, USB and serial communication ports, Windows™ PC and PDA software, and cables. An external 12 VDC power source is required.

Accessories

Order No.	Description
GL450-7-1	Datalogger Enclosure Upgrade [2]
GL500-DISP	Single-Channel Display for Enclosure [3]
GL500-Mod	Modem Package [4]
SP101	Solar Panel (2 watt), see page 128
SP102	Solar Panel (5 watt), see page 128
BC100	Smart Charger, see page 128
PDAWL16	Deluxe PDA Package
AK1500	Bluetooth External Adapter

2) Includes weather-resistant enclosure with 8 ports, rechargeable 12 VDC battery (that fits inside enclosure with datalogger, and a battery charger.

3) Allows user to view one data channel in addition to datalogging. Logger will record data while data is displaying.

4) Includes standard telephone modem and modem adapter cable.

5) Handheld PDA package with a custom serial cable for the Global Logger.

GL500-2-1 Global Logger
Three Channel Datalogger for Data Recording

and weather sensors. The datalogger also includes two scalable digital inputs that accept switch closure signals from rain gauges or relays, as well as pulses from various external monitoring and control devices. The logger provides switched power to analog sensors based on sample interval and sensor warm-up time settings. You can quickly connect sensors to the datalogger's terminal strips, and you can easily calibrate sensors using the Global Logger II software. Please contact Global Water regarding 0-5 volt inputs, which are available as a factory option.

Remote Communication Options
The GL500-Mod Modem Package (see Options & Ordering) and the RM100 Wireless Communication System (see page 126) add remote communication capabilities to your Global Logger, allowing you to access your sensors via a remote modem attached to the GL500's serial communication port. For other remote options, select the SIT65 for satellite-to-web communications (see page 127).

Accessories to Meet Your Needs
We offer solar panels and a battery charger to support your datalogger installation (see page 128). We also offer the optional GL450-7-1 rugged, lockable, and weather resistant enclosure for added protection (a 12VDC rechargeable battery and battery charger are included), as well as an optional display (Order No. GL500-DISP) for the enclosure. In addition, we offer the PDAWL16 Deluxe PDA Package and AK1500, external Bluetooth adapter, for easy data retrieval.

Applications

Ideal for monitoring a variety of environmental parameters, including water level, flow rate and total flow, rain level, weather conditions, and water quality.

Description
The GL500-2-1 Global Logger features two analog channels and one digital channel for recording data. The datalogger records over 81,000 readings and has four unique recording options: fast (10 samples per second), programmable interval (1 second to multiple years), logarithmic, and exception. Start and stop alarm times can be programmed to synchronize multiple loggers, delay sampling until a preset time, or limit the number of recordings during a day. The GL500U-2-1 USB model is great for direct connection to your laptop or desktop PC. The GL500S-2-1 serial (RS-232) model is best for communication via modem, CE-based PDA, or Bluetooth data downloads.

Powerful Monitoring
The GL500-2-1 can monitor two 4-20 mA sensors (0-5 volt inputs are available as a factory option) and features a scalable

Specifications

Power	Two 9VDC alkaline batteries standard. 8 VDC min. to 24.0 VDC absolute max. Standby Current: 65µA typical Logging Current: 5mA typical plus sensor current
Analog Inputs	4-20 mA, 0-5VDC inputs as a factory option Resolution: 12-bit, 4096 steps 2 channels + battery monitor Sensor warm-up time: Programmable 0-60 sec
Digital Input	Switch closure or pulse input Maximum Count: 65,535 (16-bit) Maximum Input Voltage: 24VDC Maximum Frequency: 100Hz Minimum Pulse Width: 2mS
Sample Modes	Fixed Interval: Programmable from 1 sec. to >1 year High Speed: 10 samples/sec. Logarithmic Sample Rate: Approximation Exception: Log only on programmable deviation from previous reading
Storage Capacity	81,759 recordings of all inputs plus time stamp
Communication Port	GL500S-2-1: RS-232 4-pin circular connector GL500U-2-1: USB Type B Selectable Baud Rates: 9600, 19200, 28800, 38400, 57600, 115200
Clock	Synchronizes to user's computer
Data Overwrite	Select memory wrap or unwrap
Operating Temperature	Industrial, -40 to +185°F (-40 to +85°C) (batteries may not apply)
Software	See for GL500-7-2.
Dimensions	3 x 3 x 3 inch (7.6 x 7.6 x 7.6 cm)
Weight	0.5 lb (227 g)

Features
- Rugged and easy to use
- Records over 81,000 readings
- Accepts any 4-20 mA signal
- Battery-powered for remote monitoring
- User friendly Windows™ and Windows™ CE-based PDA software included

digital input that accepts switch closure signals and pulses from various external devices. The logger provides switched power to the sensors based on the programmable sample interval and sensor warm up time settings. Two- and three-wire sensors can be quickly connected to the datalogger's internal terminal strip and calibrated via the included Global Logger II software. The GL500S-2-1 can be accessed through dial-out to an optional remote modem (GL500-Mod) attached to the serial communication port.

Smart Software
The GL500-2-1 includes Global Logger II Windows™ and Windows™-CE PDA software, which allow for easy setup, calibration, upload, and transfer to a spreadsheet program.

Ordering & Options
Global Loggers

Order No.	Communication Port
GL500U-2-1	USB
GL500S-2-1	RS-232 Serial

Accessories

Order No.	Description
GL450-2-1	Weatherproof Enclosure [1]
PDAWL16	Deluxe PDA Package [2]
GL500-Mod	Modem Package [2]
AK1500	Bluetooth External Adapter [2]

1) Additional batteries not included.

2) Compatible only with GL500S-2-1 serial version.

Modular and Integrated Data Recording Solutions

Providing Modular Data Recording Products and Designing Integrated Data Recording Systems

Description

Global Water offers both modular and integrated data recording solutions, including modular products that you can easily put together, as well as fully integrated systems that meet your specific needs.

Our powerful and rugged Global Loggers provide continuous data recording and a user-friendly interface for our highly accurate level, water quality, and weather sensors. An extension package allows you to easily access the Global Logger via a remote modem. Alternatively, we offer a variety of data recorders with built-in cellular, satellite, and radio remote communication capabilities. Our FC200 Open Channel Flow Monitor or PC300 Process Controller can

SOLUTIONS

We offer modular products that you can easily put together, as well as fully integrated systems that meet your specific needs. Our powerful and rugged Global Loggers provide continuous data recording and a user-friendly interface for our highly accurate level, water quality, and weather sensors.

be incorporated for real-time display and capable output signals. These signals can be used to control a variety of external instruments, including our heavy duty samplers and alarms, as well as other devices. We also offer numerous accessories to support your data recording system, including data collection devices, heavy-duty enclosures, and power options such as batteries and solar panels.

Global Loggers

Our rugged GL500-Series Global Loggers offer state-of-the-art technology for continuous datalogging, storage, and retrieval. The loggers have four unique recording options: fast (10 samples per second), programmable interval (1 second to

Ordering & Options*

Monitoring Instrumentation

Order No.	Description
GL500-7-2	Global Logger with 7 Analog and 2 Pulse Channels, see page 122
GL500U-2-1	USB Global Logger with 2 Analog and 1 Pulse Channels, see page 123
GL500S-2-1	Serial Global Logger with 2 Analog and 1 Pulse Channels, see page 123
SIT65	Satellite Internet Telemetry, see page 127
FC200	Open Channel Flow Monitor, see page 26
PC300	Process Controller, see page 132

Remote Communication/Alarm Options

Order No.	Description
GL500-Mod	Modem Package for Serial Global Loggers
RM100-CSK	Client/Server Wireless Communication System, see page 126
AD200-4	Voice Autodialer with 4 Inputs, see page 138
WA400-AC	Strobe and Sounder Alarm with AC Power, see page 137

4-20 mA Sensors

Order No.	Description
WL400	Water Level Sensor, see page 6
WQ101	Temperature Sensor, see page 60
WQ201	pH Sensor, see page 60
WQ301	Conductivity Sensor, see page 61
WQ-FDO	Optical Dissolved Oxygen Sensor, see page 62
WQ401	Dissolved Oxygen Sensor, see page 63 for ranges
WQ730	Turbidity Sensor, see page 64
WE100	Barometric Pressure Sensor, see page 106
WE300	Solar Radiation Sensor, see page 106
WE550	Wind Speed Sensor, see page 107
WE570	Wind Direction Sensor, see page 107
WE600	Humidity Sensor, see page 108
WE700	Temperature Sensor, see page 108
WE710	Flat Surface Temperature Sensor, see page 112

Packaged Systems

Order No.	Description
FSS-STD	Flow Sampling System, see page 46
WQS-STD	Water Quality Sampling System, see page 48
WQMS	Water Quality Monitoring System, see page 58
WE800	Datalogging Weather Station, see page 104
WE900	4-20 mA Weather Station, see page 104

Enclosures and Power Options

Order No.	Description
PDAWL16	Deluxe PDA Download Package
GL450-7-1	Weather-Resistant Enclosure with Battery Pack for GL500-7-2
GL450-2-1	Weatherproof Enclosure for GL500-2-1
BC100	Smart Charger, see page 128
SP101	Solar Panel (2 watt), see page 128
SP102	Solar Panel (5 watt), see page 128
SP140	Solar Panel (40 watt), see page 128

Customization & Integration

Please contact us for more information about customization and integration.

* Please see product pages for specifications and options.

multiple years), logarithmic, and exception. Start and stop alarm times can be programmed to synchronize multiple loggers, delay sampling until a preset time, or limit the number of recordings during a day. The Global Loggers include user-friendly Windows™-based PC and PDA software for easy data collection, data retrieval, and set up.

Remote Communication Options

The GL500-Mod Modem Package and RM100 Radio Transceiver System add remote communication capabilities to your Global Logger, allowing you to access your sensors via a remote modem attached to the GL500's serial communication port. In lieu of the Global Logger, you can drop in one our data monitoring instruments with built-in remote communication capabilities, such as the SIT65 for satellite-to-web communications.

Modular Solutions

Our products are designed to be easily connected together into systems. We attempt to keep most of our products in stock, which means we can ship components to you for immediate or short term delivery. You can easily wire these parts together to customize your own data recording system, and you can reconfigure and expand as required without difficulty.

Integrated Solutions

Many of our clients prefer fully connected and tested systems that will work out-of-the-box with little or no assembly required. Our sales engineers will work with you to design a system to address your application, and our technical engineers will build and test this system at our factory prior to shipment. Please contact us to learn more about factory customization and system integration.

RM100 Wireless Communication System

Wireless Point-to-Multipoint Radio Transceiver System

(Solar panels sold separately.)

Features

- Retrieve data from remote sites
- Works with most Global Water serial loggers
- Easy to use Global Access software included

Specifications

Output Power	1000mW
Transmission Range	Up to 15 miles (32 km) line-of-sight
Receiver Sensitivity	-100dBm typical @ 76.8kbps RF data rate
Frequency	902 to 928, FHSS (USA)*
Network Topologies	Point-to-Point, Point-to-Multipoint
Channels	32
Antenna Connector	RPSMA Jack
Power Consumption	40mA receive, 400mA transmit (@ 12 VDC)
Power Requirement	7 to 18 VDC
Operating Conditions	Temp -40 to +176°F (-40 to +80°C); 10% to 90% humidity (non-condensing)
Serial Connector	DB9
Serial Cord Length	6 feet (183 cm)
Dimensions	4-3/4 x 2-3/4 x 1-1/8 inch (12 x 7 x 2.9 cm)
Weight	7 oz (170 g)

* Transceivers are USA FCC compliant and do not necessarily comply with regulations in other countries.

Ordering & Options

Remote Wireless Packages

Order No.	Description
RM100-SFL	Server Package, Fixed Location
RM100-SMP	Server Package, Mobile
RM100-CSR	Client Package, Short Range
RM100-CLR	Client Package, Long Range
RM100-CSK	Client/Server Kit

Description

Global Water's RM100 Wireless Point-to-Multipoint Communication System uses powerful radio transceivers to seamlessly connect you with your remote monitoring sites from the comfort of your office or vehicle.

Powerful Radio Modem

The RM100 uses a rugged, industrial 2-way radio modem that is designed for seamless communications with Global Water's serial dataloggers (including the WL16S on page 2, the GL500-7-2 on page 122, and the GL500S-2-1 on page 123). The powerful 1-watt, 900mHz radio requires no license and is capable of line-of-site communications of up to 15 miles (24 km) with the proper antenna. Built-in error correction assures accurate data transfer. Each radio unit has a unique address so you never have to worry about cross-talk or interference between one unit and another.

Capable Software

The RM100 includes Global Access communications software, which has an easy to use, intuitive interface. The software's built-in address book allows you to quickly set up your monitoring sites with unique identifiers and names, and you can add new sites at any time. Used in conjunction with our Global Logger datalogging software, you can get a cur-

Accessories

Order No.	Description
AN100-OD6	Omni-directional 6dBi Antenna
AN100-OM5	Omni-directional 5dBi Mobile Antenna w/Magnetic Base
AN100-YA9	Yagi Directional 9dBi Antenna
AN100-YA13	Yagi Directional 13dBi Antenna
RM100-SPMB	Solar Panel Mounting Kit
SP101-SP102	Solar Panels, see page 128
BC100	Smart Charger, see page 128
00-009	12V, 2.2 Ahr Battery for Datalogger

rent reading from any of your sensors, download the logged data, autopoll data, sample continuously, and even reprogram your logger just as though you were right on the site.

Packaged Systems

The RM100 series units are offered in four pre-configured, ready to deploy packages, as well as one convenient starter kit. Everything you need is included to get your system up and running quickly. One server (base) unit and one client (remote) unit are required to make a complete system. Many remote units can report back to a single base. We can also configure a custom system for your application— please call us regarding this option.

- RM100-SFL Server, Fixed Location: This package is the best choice when using an existing enclosure or for an interior installation where AC power is available. The package includes a server modem, RS-232 serial cable, AC adaptor, 25 ft (7.6 m) antenna cable, permanent mount 6dBi omni-directional antenna with 2 inch (5.1 cm) pole mount hardware, 3dBi stubby antenna for testing and setup, manual, and software.

- RM100-SMP Server, Mobile Platform: This package is ideal for short-term monitoring projects where AC power is not available or for doing drive-by data collection. The package includes the server modem mounted inside a weatherproof case, AC charger, RS-232 serial cable, magnetic base 5dBi mobile omni-directional antenna with 4 ft (1.2 m) cable, manual, and software. (For AC powering, we recommend the optional BC100 Smart Charger.)

- RM100-CSR Client, Short Range: This

SIT65 Satellite Internet Telemetry
Datalogger with Satellite Internet Capabilities

package is the perfect choice for applications where your remote monitoring stations are under 10 miles line-of-sight. This package includes a weatherproof case with mounting hardware for 2 inch (5.1 cm) diameter pole, client radio with 5Ahr battery, radio to logger serial cable, smart charger, 15 ft (4.6 m) antenna cable, 9dBi Yagi antenna with 2 inch (5.1 cm) hardware, manual, and software. For long term monitoring we also offer optional solar panels and mounting kits (see Ordering & Options).

• RM100-CLR Client, Long Range: For monitoring sites that are up to 15 miles line-of-sight or shorter range sites where you may have a few obstructions, this package features a higher gain antenna. The package includes a weatherproof case with mounting hardware for 2 inch (5.1 cm) diameter pole, client radio with 5Ahr battery, radio to logger serial cable, smart charger, 15 ft (4.6 m) antenna cable, 13dBi Yagi antenna with 2 inch (5.1 cm) hardware, manual, and software. For long term monitoring we also offer optional solar panels and mounting kits (see Ordering & Options).

• RM100-CSK Client/Server Starter Kit: This kit is ideal for those who have experience in electronic instrumentation. We make it easy for you to install and configure a system to interface with one of our Global Water serial dataloggers (see pages 122 and 123). The RM100-CSK includes one server, one client, two 6 inch (15.2 cm) rubber coated stubby antennas, RS-232 serial cable, radio to logger serial cable, 2 AC adaptors, manual, and software.

Description
Global Water's SIT65 Satellite Internet Telemetry provides the easiest and most economical way to collect environmental data remotely. The remote telemetry system uses the latest satellite and Internet technologies to bring data to your computer in near real time. The system includes a data transmitter and a rechargeable battery enclosed in a rugged, rain proof, and lockable enclosure; a ground-to-satellite antenna; and mounting hardware.

Flexible Inputs and Outputs
The SIT65 system will interface with most sensors, including all of Global Water's rugged 4-20 mA sensors. The system includes up to eight analog inputs, five factory programmable status/accumulator inputs, and up to five open collector outputs.

Simple Installation and Operation
The SIT65 is simple to set up and operate: just hook up your sensors, point the antenna to the sky, and turn on your telemetry equipment. Satellite service is available anywhere in the world. Data is

Features
• Remote data and control guaranteed!
• Receive data by Internet
• Near real time data and control
• Text alarms to your cell phone or e-mail
• Easy installation
• Low cost/economical

transmitted based on programmed time intervals and/or alarms and is transferred via satellite and Internet to a dedicated web page. You can monitor and collect data anywhere you have web access.

Power Options
The SIT65 includes a 5 AH gel cell battery and a NEMA 4 enclosure. For long term AC power, we recommend the AC Charger. We also offer solar panels to support your remote installation. A Smart Charger is recommended for all solar powered installations (see Ordering & Options below).
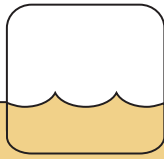
Specifications

Inputs	Up to 8 analog (4-20mA, 0-1mA, 0-500uA, 0-5VDC or 0-10VDC)
	Up to 3 digital status or accumulator inputs
	Dedicated Battery Voltage Monitor
Outputs	Up to 2 open collector control outputs
Powery	12VDC
Battery	Rechargeable 12V 5AH Gel Cell
Current Draw	5mA minimum standby
	80mA receiving
	2A transmitting
Operating Temperature	-40 to +140°F (-40 to +60°C) Battery may not apply
Humidity	0-100% non-condensing
Antenna Cable	16 ft standard
Dimensions	Interior: 10 x 12 x 6 in (25.4 x 30.5 x 15.2 cm)
	Outer Lid: 12 x 14 in (30.5 x 35.5 cm)
Weight	21 lbs (9.5 kg) shipping weight

Ordering & Options

Order No.	Description
SIT65	Satellite Internet Telemetry [1]
FM0100	Subscription Service
SIT65-CBL	Additional Antenna Cable
FE0400	AC Charger [3]
BC100	Smart Charger [4], see page 128
SP101	Solar Panel (2 watt), see page 128
SP102	Solar Panel (5 watt), see page 128
SP140	Solar Panel (40 watt), see page 128

1) Includes a transmitter, antenna with 12 ft cable, rugged NEMA 4 enclosure, a rechargeable 5 AH gel cell battery, and mounting hardware.

2) Subscription service costs can vary. Please call us for pricing.

3) Use the AC Charger for continuous AC operation to maintain the charge to your SIT65's battery.

4) A Smart Charger is recommended for all solar panel installations.

SP-Series Solar Panels
2 or 5 Watt Supplemental Power

Description

Our rugged 2W SP101, 5W SP102 , and 40W SP140 Solar Panels are easy to install and offer reliable solar charging for your remote monitoring station.

Specifications

Power	SP101; 2 watt, 15 volt minimum
	SP102: 5 watt, 15 volt minimum
	SP140: 40 watt, 15 volt minimum

Ordering & Options

Order No.	Description
SP101	Solar Panel (2 watt)
SP102	Solar Panel (5 watt)
SP140	Solar Panel (40 watt)

BR100 Boost Regulator
12 to 24 Volt Boost Regulator

Description

The high quality, compact, and durable BR100 powers 24 volt sensors in 12 volt systems and includes a shutdown mode to conserve power.
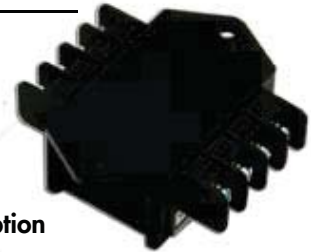
Specifications

Input Voltage	8 to 16 VDC
Output Voltage	24 VDC
Continuous Output Current	200 mA
Current Limit	230 mA
Shutdown Current	<1 µA
Shutdown Input Voltage	Vin < 2 VDC
Short Circuit Protection	5 seconds maximum
Dimensions	3 x 2.2 x 1.2 in (7.6 x 7.1 x 3 cm)
Weight	3.1 oz (96 g)

Ordering & Options

Order No.	Description
BR100	Boost Regulator

CS100 Signal Splitter
Divides Single 4-20 mA Signal

Description

The high quality, compact, and durable CS100 divides a single 4-20 mA signal into two separate non-isolated 4-20 mA outputs.

Specifications

Supply Voltage	10 to 30 VDC
Input Voltage	0 to 21 mA
Supply Current	5mA plus both output currents
Output Accuracy	± 0.1%
Output Load	100 to 400ohms
Dimensions	3 x 2.8 x 1.2 inch (7.6 x 7.1 x 3 cm)
Weight	3.4 oz (106 g)

Ordering & Options

Order No.	Description
CS100	4-20 mA Signal Splitter

BC100 Smart Charger
Overcharge Protection

Description

The compact, and durable BC100 Smart Charger prevents overcharging of batteries during continuous charging or in solar applications.

Specifications

Input Voltage	15 to 30 VDC
Output Float Voltage	13.8 VDC
Overcharge Threshold	14.2 VDC
Bulk Charge Threshold	12.8 VDC
Maximum Output Current	0.75 A
Power Dissipation	10 Watts
Supply Current	<2.5mA
Dimensions	3.0 x 2.2 x 1.2 in (7.6 x 7.1 x 3 cm)
Weight	3.1 oz (96 g)

Ordering & Options

Order No.	Description
BC100	Smart Charger

4015 Converter
SDI-12 to Analog Converter

Features

- 0-1mA, 0-20mA, 4-20 mA, or 0-5V outputs
- Master or "listen only" modes
- Programmable full scale and zero values
- High conversion accuracy
- DIN rail mountable

Description

The 4015 SDI-12 to Analog Converter provides a highly accurate interface between an SDI-12 serial communications bus and an analog measurement system. The converter can either act as a SDI-12 master by polling a sensor on a timed basis, or it can act as a "listen only" external recorder that polls the sensor. Each 4015 responds to a single SDI-12 address and parameter, and multiple converters can be used to translate several sensor parameters. The 4015 can be configured to provide a 0-1mA, 0-20mA, or 4-20 mA current output with 0-5 volt output always available.

Specifications

Communication	SDI-12 (version 1.1 compliant)
Resolution	12 bit
Accuracy	Better than 0.1%
Wire Size	#24-#14 AWG
Connections	Screw terminal
Mounting	DIN rail (35mm)
Power Supply	10 to 33 VDC; 8mA + output (max) during read
Operating Temp	-22 to 140°F (-30 to 60°C)
Dimensions	3.5 x .75 x 2.1 inch (89 x 19 x 53 mm)
Weight	1.9 oz (54 g)

Ordering & Options

Order No.	Converter Type
4015	SDI-12 to Analog

4046 Converter
Analog to SDI-12 Converter

Features

- Convert two analog sensors and one pulse counter
- Programmable slopes and offsets
- Monitor battery voltage and temperature
- DIN rail mountable

Description

The 4046 Analog to SDI-12 Converter provides a highly capable interface to convert inputs from two analog sensors and one pulse counter to an SDI (serial data interface). The 4046 also provides internal measurements of battery voltage and ambient temperature (the temperature scale can be set in either °F or °C). The unit responds to all basic SDI commands and enters into a low power sleep state when it is not being polled. The 4046 also has user programmable slope and offset values, as well user programmable sensor warm-up time settings.

Specifications

Communication	Gnd, +12VDC, (2) Analog 0-5VDC, Tipping Bucket (contact closure to ground)
Inputs	12 bit
Wire Size	#24-#14 AWG
Connections	Screw terminal
Mounting	DIN rail (35mm)
Sensor Power	12VDC or 5VDC (jumper selectable)
Power Supply	12 VDC, <200µA during sleep, <1A for sensor power
Operating Temp	-22 to 140°F (-30 to 60°C)
Dimensions	3.5 x .75 x 2.1 inch (89 x 19 x 53 mm)
Weight	1.9 oz (54 g)

Ordering & Options

Order No.	Converter Type
4046	Analog to SDI-12

eral seconds, and then records and/or transmits the data. Call this the ON CURRENT. The AVERAGE CURRENT = STANDBY CURRENT + ON CURRENT x % ON time. The STANDBY CURRENT and ON CURRENT can be calculated from instrument and sensor specifications.

For example, if the STANDBY CURRENT = 10 mA, the ON CURRENT = 1 A , and the site is at high power (ON) for 10 seconds every 10 minutes, we will have 10mA continuous plus 1 A for 10 seconds out of 600 seconds. Or, 1A/ 60 = 17mA. So your AVERAGE CURRENT is 10mA + 17mA = 27mA. Batteries are rated in Ampere Hours (AH). A 1 AH battery will supply one ampere for one hour. In our example, we want to power a site drawing 0.027A for 3 days (72 hours) or 0.027A x 72 hours = 1.9 AH. So we will need a 2 AH battery at minimum, but a 4 or 5 AH battery would be sensible

Sizing the solar panel for your remote monitoring site is a lot easier. To take into account weather, latitude, season, night time loss, etc., the rule of thumb is to size the panel 10 x the AVERAGE CURRENT. In the case of our earlier example, the AVERAGE CURRENT (.027A) x 10 = 270mA. So a 300 or 350mA panel will cover you, and you may want a slightly bigger solar system if your monitoring site is in the far north or south.

You should face the panel south at a 45° angle. Any panel size above 80mA will need a voltage regulator or smart charger so that you don't damage the battery by over charging.

PC300 Process Controller

System for Measurement and Control of a Variety of Parameters

Features

- Control a variety of external devices based on a variety of sensor types
- Digital LCD screen
- Easy to use 4 button interface with user selectable sensor types
- 4-20 mA analog output for recorders or displays
- Two independent output relays with parallel open collector signal lines
- Water resistant enclosure
- Environmental enclosure optional

Description

Global Water's PC300 Process Controller is a highly reliable and accurate measurement and control device for all of our 2 and 3 wire 4-20 mA sensors. The PC300 comes pre-programmed for use with 10 sensors and 14 engineering units. The PC300-C can also be custom programmed at the factory to monitor any sensor in any units selected by the customer, including sensors with voltage outputs. Please contact Global Water regarding this option.

Accurate Control

The PC300 includes two separate relays for controlling all types of external devices, including samplers, alarms, mixers, pumps, control valves, floodgates, and telemetry systems. Each relay is independently programmable to trigger on maximum and/or minimum levels in one of three different modes.

Capable Display

The PC300 includes an LCD display that shows the type of sensor that is being monitored, the data reading, and the engineering units. The display also indicates if either of the PC300's two relays have been

triggered since last reset, and if so, which relay was triggered and whether the maximum or minimum limit was exceeded.

Easy Installation

The Process Controller is enclosed in a rugged case that can be easily secured to a wall, panel, or different types of mounting hardware. Please note that, while the case is watertight and will resist moisture, Global Water does not recommend mounting the PC300 outdoors without additional protection. For outdoor use, select the FCBAT Environmental Enclosure option, which includes an enclosure, battery, and battery charger.

Datalogging Options

For combined control and datalogging capabilities, you can select the PC300-DS (for serial communication) or the PC300-DU (for USB communication). These options include a process controller and an internal datalogger. (For datalogger specifications, please see the GL500-2-1 on page 123.)

Specifications

Power	90-240 AC or 12VDC
	60mA DC normal, 150mA maximum
	120µA average during sleep mode
Sensor Reading	5 digits + decimal point
Analog Sensor Input	4-20mA, 0-1V, 0-5V
Input Resolution	0.005mA, 0.24mV, or 1.2mV
Relay Contacts	Voltage: 30VDC
	Current: 5A/30VDC
	Max Capacity: 150W
	Relay 1, 2nd Output: NPN to ground, 1.0Kohm pull-up resistor
	Relay 2, 2nd Output: NPN to ground, open-collector
Analog Output	4mA minimum, 20mA maximum
	Resolution: 0.005mA

Sensor Types/Units	Water Level (feet/meters), Temperature (°F/°C), pH (no units), Dissolved Oxygen (%), Turbidity (NTU/ppm), Conductivity (µS), Wind Speed (mph/kph), Wind Direction (°), Soil Moisture (%), custom sensor (any of the above, mA, mV or custom programmed units)
Sensor Data Ranges	0.000 to 60,000 (60000 in the display with 4 different decimal point positions)
Relay Time	Range: 1-60,000 seconds (16.7 hours)
	Resolution: 1 second increments
Sleep Time	Range: 1 to 240 minutes (4 hours); Resolution: 1 minute increments
Operating Temp	32 to 122 °F (0 to 50 °C)
Storage Temp	-4 to 158 °F (-20 to 70 °C)
Enclosure	4.7 x 7.9 x 3 inch, (12 x 20 x 7.5 cm) NEMA 4X
Weight	31 oz (879 g)

Ordering & Options

Process Controllers

Order No.	Description
PC300	Process Controller
PC300-DS	Process Controller with Serial Datalogger
PC300-DU	Process Controller with USB Datalogger
PC300-C	Custom Controller

Accessories

| Order No.	Description
FCBAT	Environmental Enclosure, Battery, and Battery Charger

LevCon™ Level Controller

Set Point Controller for Monitoring Water Level and Controlling Two Pumps

Features

- Two versions to meet any level monitoring & control need

- Accepts most 4-20mA level transmitters

- LS version controls 2 pumps with alternation and lead/lag functions

- SP version provides 6 configurable relay outputs

- Logs pump run times, cycles and alarm events (LS version)

Applications
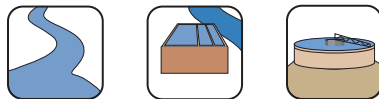
Ideal for monitoring water levels and controlling pumps for a variety of environmental, water, and wastewater applications, including lift stations, clear wells, pump and valve control, and more.

Specifications

Controller Type	Microprocessor based level monitor/controller
Analog Input	4-20mA, scaleable span
Display	16 character x 2-line LCD w/backlight
Keypad	15 sealed membrane keys
Relay Outputs	Up to 6 relay outputs, each rated 5A @ 250 VAC
Relay Functions	LS version: Four: 0 = pump 1, 1 = pump 2, 2 = low alarm, 3 = hi alarm Preprogrammed functions: pump down, lead/lag/alternation SP version: Six: user configurable for on/off functions

Description

Two versions

The versatile LevCon-SP set point liquid level controllers provide up to 6 user configurable relay outputs. Each relay has an ON and OFF level, making it perfect for many liquid level control applications. The LevCon-SP may be used for on/off control of pumps, valves, chemical feed systems and alarms.

The LevCon-LS lift station liquid level controller provides an impressive list of features including: automatic alternation, 2 pump control outputs, 2 high/low level alarms, pump call to run status, simulation mode, and data logging of pump run times/cycles for each pump. At any time you can scroll through up to 7 days of pump run times and cycle events for each pump. The LS model is for pump down applications only and comes with the 4 relay functions preprogrammed for quick and easy setup.

Liquid Level Controller Inputs and Outputs
The liquid level controllers high resolution 4-20mA analog input channels provide for submersible pressure sensors, ultrasonic and radar transmitters, and other analog level sensing devices. NOTE:

Clock	Real-time clock functions (date and time)
Power	20.4-28.8 VDC
Enclosure	¼ DIN, IP65 front
Mounting	DIN rail (35mm) or panel mount (¼ DIN)
Dimensions	3.78 x 3.78 x 2.52 inch (96 x 96 x 64mm)
Optional Enclosure Dimensions	12 x 10 x 6 inch (30 x 25 x 15 cm)
Certifications	UL/cUL Listed

A 4-20mA level sensor must be connected to the liquid level controller for it to work properly. The LevCon-SP controller's 6 relay outputs are completely user configurable. The LevCon-LS lift station controller's 6 relays are preprogrammed for one of four modes to provide alternation and lead/lag functions for two pumps as well as a number of outputs for high/low level alarms, pump status alarms and even control for chemical feed pumps or some other system.

Liquid Level Controller User Interface
Both versions of the liquid level controllers feature an easy user interface with a keypad and a bright 2-line by 16 character LCD display for level, pump status monitoring and operation set up. Both LevCon™ controllers have a simulation mode that allows you to check all your control and alarm functions without having to manually cycle your pumps or wait for the levels to change. The controllers have user selectable units that allow you to display the level in: inches, feet, centimeters, meters or no unit (blank).

Ordering & Options

Level Controller

Order No.	Description
LevCon-SP	Set Point Controller
LevCon-LS	Lift Station Controller

Accessories

Order No.	Description
PS5R-SC24	24 VDC Power Supply
WL400-015-025	Level Sensor, 0-15 ft range, 25 ft cable, see page 6
WL430-034	Wastewater Level Sensor, 34 ft cable, see page 9
FE1100	Enclosure with 12V Power Supply and Cord
FE1150	Enclosure with 12V Power Supply, No Cord

3675 pH Controller

Controller for Monitoring and Controlling pH

Description

Global Water's 3675 pH Controller is a precise instrument for measuring and controlling pH and mV (ORP). The 3675 includes two output relays for ON/OFF control. The unit requires a Pt-100 ATC probe (sold separately) or a simulation resistor for automatic temperature compensation.

Capable Operation

The 3675 pH Controller's isolated 4-20 mA analog output covers the input control range of 0 to 14 pH and 0 to 1400 mV. The controller includes dual SPDT Hi/Lo relays, manual set points, and calibration potentiometers set into the front of the controller's panel. It also includes an external pH/ORP select switch.

Accurate Output and Display

The 3675 pH Controller features a highly accurate isolated 4-20 mA current output for printers, computer interfacing periph-erals, and recorders like Global Water's GL500 Global Logger (see page 122). The pH Controller's display is a large, easy to read 1/2 inch LCD screen.

Easy Installation

The pH Controller is housed in a ¼ inch DIN panel mount controller box that fits into standard panel cutouts. The enclosure also provides industrial moisture protection for your pH control system.

The separately sold 600E-ORP ORP Electrode is compatible with this unit. The controller also requires a Pt-100 ATC probe (see Ordering & Options below) or a simulation resistor for temperature compensation. Sensors are easily attached using the controller's BNC input and spade lug screw type connector block.

Features

- High performance pH control
- Automatic temperature compensation
- Dual ON/OFF relays
- Large LCD screen
- Front panel adjustment

Applications
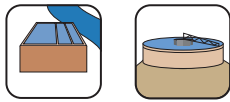
Ideal for controlling pH in process water and wastewater applications.

Specifications

Controller Range	pH: 0 to 14.0 pH
	mV: ± 1999 mV
Controller Resolution	pH: 0.01 pH
	mV: 1.0 mV
Controller Accuracy	pH (± digit): ±0.01 pH
	mV (± digit): ±0.1 %
Input Range of Relay Outputs	pH: 0 to 14.00 pH
	mV: ± 1999 mV
Input Range of Current Output	pH: 0 to 14.00 pH
	mV: 0 to 1400 mV
Relay Outputs	Maximum rated load: 5 Amp at 115 VAC, 2.5 Amp at 230 VAC resistive load
	Isolated 4-20 mA output
	Range: Over input span
Accuracy	0.1% of span
Isolation Voltage	500 VDC minimum
Load Resistance	550 Ohms minimum

Input Impedance	>10^{12} ohms
Temperature Compensation	Auto 0.0 to 100.0°C
Temperature Sensor	PT-100, Alpha = 0.00385
Readout	½ inch high LCD display
Power Source	115 VAC, 230 VAC ± 15% 50/60 Hz
Mounting	1/4 inch DIN
Dimensions	3.75 x 3.75 x 4.75 inch (96 x 96 x 119.3mm)
Weight	2 lbs (0.77 kg)

Ordering & Options

pH Controller*
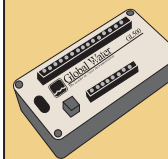
Order No.	Description
3675	pH Controller

* pH/reference electrode and ATC probe sold separately.

Accessories

Order No.	Description
600E-ORP	ORP Electrode (epoxy with BNC connector)
600P	pH/Ref Electrode (epoxy with BNC connector)
600A-ST	Pt-100 ATC probe (stainless steel, epoxy with BNC connector)

Please call for enclosure options.

You may also like . . .

GL500 Global Logger
Record data from the 3675 pH Controller's 4-20 mA output.

Page 122

3101 Conductivity Controller

Controller for Monitoring and Controlling Conductivity

Description

Global Water's 3101 Conductivity Controller is a high performance digital indicating controller. The 3101 has a dual set point, ON/OFF controller for use with a temperature compensated K=1.0 cell constant conductivity probe (sold separately).

Capable Control

The 3101 Conductivity Controller has a front panel cell adjustment potentiometer. The controllers' overall conductivity indication and control range is 0 to 200 mS/cm. Multiple ranges can be selected via internal DIP switches, including: 0 to 99.9 mS/cm, 0 to 9.99 mS/cm, 0 to 200 mS/cm, and 0 to 999 S/cm.

Accurate Output and Display

The controller features a highly accurate linearized analog voltage output of 1 mV/LSD for printers, computer interfacing peripherals, and recorders like Global Water's GL500 Global Loggers (starting on page 122). The conductivity controller's high efficiency bright red LED display is a large 0.56 inches.

Easy Installation

The 3101 controller is packaged inside of a 1/8 DIN front panel mount enclosure, which can easily be bracketed to a mounting panel.

The 3101 is designed for use with conductivity probes of 1.0 cell constant, such as the 3101CC-01 Conductivity Probe, which is sold separately (see Ordering & Options below). The probe can easily be connected to the 3101's spade lug type connectors. All conductivity controllers are heat cycled 100 hours prior to shipment. The probe should be calibrated with standard solution before use. Calibration using the 3101 is a simple process.

Features

- High performance conductivity control
- Programmable wide measurement range
- Automatic temperature compensation
- Set points on front panel
- Large bright red LED screen
- Dual heavy duty output relays
- Easy front panel mounting
- 1/8 DIN front panel mount enclosure

Applications

Ideal for controlling conductivity in process water and wastewater applications.

Specifications

Range	Resolution
0-200 mS/cm	1 mS/cm
0-99.9 mS/cm	0.1 mS/cm
0-9.99 mS/cm	0.01 mS/cm
0-999 µS/cm	1 µS/cm

Accuracy	± 1% of span ± 1 digit
Automatic Temperature Compensation	41 to 131°F, 2%/°F (5 to 55°C, 2%/°C)
Cell Constant	1.0 front panel cell constant adjustment
Control Range	Over 0 to 900 count
Control Action	On/Off
Controller Relay Output	8 Amp at 115 VAC, 4 Amp at 230 VAC, resistive load

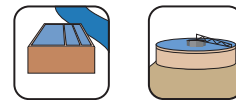|	
Recorder Output	1mV/LSD, ±0.5%, ±1 mV
Decimal Point	Internal DIP switch selectable
Relay Output	8 Amp at 115 VAC, 4 Amp at 230 VAC
Readout	0.56 inch high efficiency red LED display
Power Source	115 VAC, 230 VAC ± 15% 50/60 Hz
Mounting	1/8 inch DIN
Dimensions	3.75 x 2 x 6.625 inch (96 x 48 x 167mm)
Weight	1.5 lbs (0.69 kg)

> "A waster of water is a waster of better."
>
> – Old Irish Adage

Ordering & Options

Conductivity Controller*

Order No.	Description
3101	Conductivity Controller

* Conductivity probes sold separately.

Conductivity Probe

Order No.	Description
392-120	SS Conductivity Probe Platinum, 0 to 1000 uS, 10-ft cable, ABS Plastic Body, 3/4 inch MNPT mounting, Tinned Leads
392-121	SS Conductivity probe, Platinum, 0 to 5000 uS, 10-ft cable, ABS Plastic Body, 3/4 inch MNPT mounting, Tinned Leads

Please call for enclosure options.

3671 ORP Controller

Controller for Monitoring and Controlling ORP

Description

Global Water's 3671 ORP Controller is a high performance instrument for measuring and controlling ORP. The 3671KB is a complete ORP Controller Kit, including a controller, pH/reference electrode, and a Pt-100 ATC probe. We also offer the stand-alone controller (Order No. 3671), with the reference electrode and ATC probe sold separately. The controller uses an all solid state design to achieve low power consumption and reduced internal heating.

Capable Features

The 3671 ORP Controller features dual SPDT Hi/Lo relays, manual set points, and calibration potentiometers set into the front of the panel. In addition, the 3671 includes an internal ORP select switch, automatic temperature compensation from 32 to 212°F (0 to 100°C), and set points that cover the entire ORP sensor span.

Accurate Output and Display

The ORP controller features a voltage output for use with a data recorder such as Global

Specifications

| Controller Range	pH: 0 to 14.0 Temp: 32.0 to 212.0 °F (0.0 to 100.0 °C) mV: -1990 to +1990
Controller Resolution	pH: 0.1 Temp: 1.8 °F (1 °C) mV: 10
Controller Accuracy	pH (± digit): 0.1 (relative) when standardized within 2 pH Temp (± digit): 1 mV (± digit): +0.1 %
Input Impedance	>1012 ohms
Temperature Compensation	Auto 32.0 to 212.0 °F (0.0 to 100.0 °C)
Recorder Output (Full Range)	pH: 1400 mV Temp: 1000 mV mV: ± 1990mV
Dual Point ON/ OFF Control	pH or ORP with internal select switch
Dead Band	± 0.1 pH for each set point
Relay Output	8 Amp at 115 VAC, 4 Amp at 230 VAC
Readout	0 .56 inch, high efficiency, red LED display
Power Source	115 VAC, 230 VAC + 15% 50/60 Hz
Dimensions	3.75 x 2 x 6.75 inch (96 x 48 x 172mm)
Weight	1.5 lbs (0.69 kg)

Features

- High performance ORP control
- Automatic temperature compensation 0-100° C
- Set points on front panel
- Large bright red LED screen

Water's GL500 Global Logger. The controller also has a large, 0.56 inch display that uses a high efficiency bright red LED for easy reading.

Easy Installation

The 3671 is housed in a 1/8 DIN panel mount controller box that fits into standard panel cutouts. The 3671KB Kit includes an ATC sensor (required for temperature compensation) and a pH/Ref electrode. Other sensors are sold separately (see Ordering & Options below). The sensor can easily be connected to the controller's BNC input and spade lug screw type connector block.

Applications
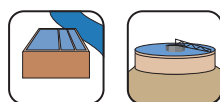
Ideal for controlling ORP in process water and wastewater applications.

Ordering & Options

ORP Controller and Kit

Order No.	Description
3671KB[1]	ORP Controller Kit
3671[2]	ORP Controller

1) Kit includes ORP controller, pH/Ref Electrode, and ATC probe.

2) pH/reference electrode and ATC probe sold separately.

Accessories

Order No.	Description
600E-ORP	ORP Electrode (epoxy with BNC connector)
3671A	ATC Phono Plug
WQ620 Series	ORP Electrodes, see page 109

Please call for enclosure options.

WALARM Wind Alarm

Wind Alarm Controller

Features

- Rugged
- Dual set point alarms
- Dual warning lights

Description

The WALARM Wind Alarm Controller is a dual set point controller enclosed in a weathertight polycarbonate case. It includes a wind speed sensor, a sensor stubmast, and mounting hardware and can be used to alert you of high or low wind speeds. The WALARM is accurate to ± 2 mph and operates on 12 volts DC, with an AC adaptor optional.

You can easily set the controller's two wind alarm levels with the front panel thumbwheels. When wind speed achieves the first alarm setting, a yellow warning light illuminates and one internal SPDT relay activates. When the wind speed achieves the second setting, a red light illuminates, a 90dB piezo buzzer sounds, and the second internal SPDT relay is activated.

Applications

Ideal for monitoring wind conditions for cranes, water fountains, and other wind sensitive applications.

Specifications

Accuracy	± 2 mph
LED Window	2 digits, 1 x 1inch window
Cup Type	3 cup generator type
Cable	22 AWG, 2-conductor, Non-PVC jacketed, 60' included (NOTE: Sensor will operate on up to 500ft of 22 AWG wire.)
Input Voltage	12VDC, AC adaptor available as an option
Alarm Output	2 SPDT Outputs, Yellow LED, 90dB Piezo Buzzer, Red LED
Dimensions	6.3 x 4.72 x 3.29 inch (16 x 12 x 8.4 cm)
Weight	4.3 lbs (2 kg)

Ordering & Options

Order No.	Description
WALARM *	Wind Alarm Controller
EC0500	AC Power Option

* Specify units when placing order: mph, km/h, or knots.

WA400 Strobe and Sounder Alarm

Strobe and Sounder for Alarm Notification

Description

Global Water's WA400 Strobe and Sounder Alarm is robust and easy to install anywhere you need reliable alarm notification. The WA400 features a weather-resistant PVC enclosure for outdoor applications, a bright flashing strobe light and loud siren for alarm notification, and a choice of versions and accessories. The WA400 is compatible with our WA100 Float Switch (see page 15) and WA600 Water Alarm Sensor (see page 15) for water level alarming, as well as any contact closure.

Options to Meet Your Needs

The WA400-DC battery powered version may be quickly deployed in temporary emergency applications or anywhere you need an alarm where no AC power is available. The unit will strobe and sound for up to 12 hours on its eight standard 1.5 volt AA batteries.

The WA400-AC externally powered version allows you to the use the alarm with water level sensors, any standard float switch, or any contact closure. Our WA400-BU version includes an automatic battery backup in addition to standard AC power– a great feature if your AC power source may be unreliable.

Augment with Accessories

Our rugged WA600 Water Alarm Sensors (see page 15) provide high and low water level detection capabilities for the WA400-AC unit. (Please note that the WA600 sensor should not be used with the WA400-DC model.) Our specially designed WA100 low current float switch (see page 15) is compact and self-weighted for quick and easy installation, and it works on any of the WA400 units. Also, the WA100 may be configured for NO (normally open) high level actuation or NC (normally closed) low level actuation. The WA400 Strobe and Sounder Alarm may also be used on other equipment such as our PC300 Process Controller (see page 132), or any device that has a dry contact switch output including pump panels and security switches.

Features

- Weather resistant housing
- Self-powered model to stand alone
- Bright strobe and loud sounder
- Easy to install just about anywhere
- Robust and reliable
- Choose the power option that best suits your application
- Integrates well with our water detection sensors, float switches, and controllers

Specifications

Input	Contact switch closure, 40mA load
Outputs	12 VDC (switched) power terminals, 25mA maximum
	External NO relay contact: 5A @30VDC
Power	WA400-AC: 115 VAC
	WA400-DC: Eight 1.5 volt AA batteries (apprx. 12 hr continuous)
	WA400-BU: 115 VAC with eight 1.5 V AA batteries as backup
Visual Alarm	Strobe w/red lens (apprx. 1 Hz)
Audible Alarm	95dB, 2900 Hz sounder (@ 10 cm)
Enclosure	PVC, weather resistant w/wall brackets
Dimensions	14 inch long x 2½ inch dia. (35.5cm long x 6.4cm dia.)
Weight	2.5 lbs (1.1kg)

Ordering & Options

Strobe and Sounder Alarms

Order No.	Description
WA400-AC	Alarm, AC Powered
WA400-DC	Alarm, Battery Powered
WA400-BU	Alarm, AC w/ Battery Backup

Accessories

Order No.	Description
WA100	Float Switch, see page 15
WA600*	Water Alarm Sensor, see page 15

* Please note that the WA600 sensor should not be used with the WA400-DC model.

Applications
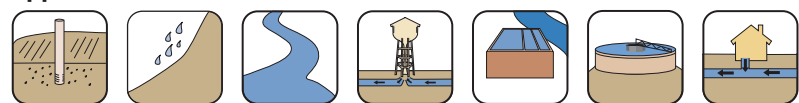
Ideal for alarm notification for a variety of applications and a range of environments.

You may also like . . .

WA600 Water Alarm Sensor
High and low water level detection sensor that works with the WA400-AC or -BU units.
Page 15

WA100 Float Switch
Compact and self-weighted float switch that works with any of the WA400 units.
Page 15

PC300 Process Controller
The WA400 can be integrated into a PC300 system for alarm notification of a variety of conditions.
Page 132

AD200-4 and AD200-1 Voice Autodialers
Autodialers for Easy Voice Alarming

Description

Global Water's AD200 Voice Alarm Auto-dialers provide cost-effective notification of emergency conditions such as high water levels, equipment failures, and security breaches. For applications without a land line, see the CP200 accessory, which adds a cellular interface for remote AD200 applications.

Multiple and Single Alarm Models

The AD200-4 accepts 4 alarm inputs and will store and dial up to eight numbers, including numbers for standard (voice) phones, most cell phones, and pagers. For single alarm applications, the low-cost AD200-1 accepts one alarm input and will dial up to four phone and pager numbers. When either model senses an alarm, it begins to dial out, sending your own pre-recorded alarm messages– voice messages to your phone list and numeric codes to your pager list.

Easy Operation

The AD200 dialer is easy to program via the on-board keypad, LCD display, and built-in speaker. Any NO (normally open) or NC (normally closed) contact or low voltage input may be used to trigger the AD200; including float switches, door switches, water sensors, and motion detectors (see Ordering & Options below).

Flexible Power

The AD200-1 includes provision for back-up power via a standard 9 volt battery. For the AD200-4, we offer an optional auto-charge battery pack that will maintain operation for up to 24 hours in the event of an extended power failure. Both models include an AC adapter for normal operation.

Features

- Records your own voice message for each alarm input
- Calls up to eight numbers in any combination of telephones or pagers
- Sends voice message to phones or numeric code to pagers
- Easy to install and program
- Non volatile memory protects program against power failures
- Programmable exit and entry delay
- Internal 9V battery backup (AD200-1)
- Three-year limited warranty
- 1/8 DIN front panel mount enclosure

Specifications

|	
Number of Inputs	AD200-4: Four
	AD200-1: One
Activation	Dry contact: NO or NC, momentary or continuous
	Voltage: 0 to +V (NC) or +V to 0 (NO), 5 to 28 VDC
Phone Number Storage	AD200-4: Up to 8
	AD200-1: Up to 4
Maximum Digits	28 (including up to 10 pauses)
Power	9 to 18 VDC (AC adapter included)
Battery Backup	AD200-4: Original battery pack
	AD200-1: 9VDC battery (not included)
Enclosure Type	Indoor
Dimensions	6 x 4 x 1.5 inch (15.2 x 10.2 x 3.8 cm)
Optional Enclosure Dimensions	12 x 10 x 6 inch (30 x 25 x 15 cm)
Weight	0.8 lb (0.4 kg)

Ordering & Options

Autodialers

Order No.	Inputs	Dial Out
AD200-4	4	8 Ph/Pgr
AD200-1	1	4 Ph/Pgr

Accessories

Order No.	Description
AD200-BKUP	Backup Power Pack for AD200-4
AD200-AC	Extra AC Adapter
AD200-DS	Door Switch, heavy duty magnetic
FE1000	Optional Enclosure
WA600	Water Alarm Sensor, see page 15
WA100	Float Switch, see page 15

Applications
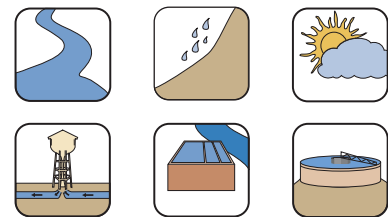
Ideal for cost-effective notification of emergency conditions such as high water levels, equipment failures, and security breaches for a variety of applications.

"You could not step twice into the same rivers; for other waters are ever flowing on to you."
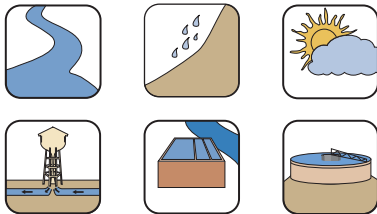
– Heraclitus of Ephesus

CVD-2000 Cellular Autodialer USP

Autodialers for Easy Voice Alarming

Features

- Alarm notification anywhere there is cell phone service
- Fast, simple installation •

  No cell phone contract required •

  Includes up to 400 minutes of prepaid cellular service

- Weather resistant enclosure included

Description

Perfect for Residential, Commercial or Industrial applications, the CVD-2000PS Cellular Autodialer is designed for direct, immediate notification of emergency situations. Because the cellular autodialer doesn't require a land line, you can install it wherever it is needed and call out using a cellular connection. The compact and rugged Cellular Autodialer is easy to install and configure. The Cellular Autodialers operate on AC power, but are rechargeable battery capable for remote monitoring locations where power is not available. The cellular autodialer includes everything you need to start using the system, including the AD200-4 autodialer,

cellular phone, 400 prepaid minutes good for one year, and AC adapter, so you can rest assured that if something happens, you will be notified. Note: Prepaid service is through AT&T Wireless. The cellular autodialer only works where AT&T provides wireless service.

The CVD-2000PS Cellular Autodialers are easy to program via the on-board keypad, LCD display, and built-in speaker. Any NO (normally open) or NC (normally closed) contact or low voltage input may be used to trigger the cellular autodialers, including float switches, door switches, water sensors, and motion detectors.

Applications

Ideal for monitoring construction sites, lift stations, remote water pumping sites, trailers, any site without land lines, and many others.

Specifications

Communications	Standard cellular phone w/AT&T wireless service
Power	AC adapter included (Optional rechargeable 12VDC battery)
Number of Inputs	Four
Activation Dry contact	NO or NC, momentary or continuous
Voltage	0 to +V (NC) or +V to 0 (NO), 5-28 VDC
Phone Number Storage	Up to 8
Maximum Digits	28 (including up to 10 pauses)
Enclosure Dimensions (LxHxD)	14x14x8in (35.5x35.5x20.3cm)
Weight	17.0 lb (7.7 kg)

Ordering & Options

Cellular Autodialer Interface & Accessories

Order No.	Description
CVD-2000PS	AD200-4 autodialer, cellular phone, 400 prepaid minutes, and AC adapter
CVD-2000P	AD200-4 autodialer, cellular phone, and AC adapter.
00-010	12V 5AH Rechargeable Battery
BC100	Smart Charger Maintain constant battery voltage and increase battery life, see page 128
SP101	Solar Panel (2 watts, 80mA minimum), see page 128