

# *Solinst*



*High Quality Groundwater and  
Surface Water Monitoring Instrumentation*

## Solinst Canada Ltd.

**Solinst Canada Ltd.** has been providing clients with high quality groundwater instrumentation since 1980, when company founder Doug Belshaw recognized the need for innovative and easy-to-use instrumentation for the growing hydrogeology field.

First, Solinst introduced its Model 101 Water Level Meter. The sturdy design, stretch-resistant tape and special markings in feet and tenths of feet (now 1/100 ft) proved ideal. The Meter gained in popularity and soon became the Water Level Meter of choice for groundwater monitoring.

Since then, hard work, listening to our customers, and thinking creatively has enabled Solinst to flourish. We now offer a broad range of durable and practical equipment, used by hydrogeologists and hydrologists around the world. The range still features Water Level Meters, but has expanded to a full range of Level Measurement Devices, Dataloggers and Telemetry Systems, Groundwater Samplers, Multilevel Systems, Remediation Devices, and Drive-Point Piezometers.

Solinst is dedicated to the manufacture of high quality instruments, designed for accuracy, ease-of-use and to give reliable results over the long-term. Behind our full range of instruments is the cumulative expertise of experienced hydrogeologists, engineers, geotechnical, manufacturing and electronic professionals and technicians.

We place great importance on a steady improvement in the product line and the continual development of up-to-date instrumentation. We have a careful quality control program for all of our manufacturing technologies, and ensure we always use the highest quality materials.

In-house technical sales representatives provide fast and friendly service with a high level of expertise and know-how. They are available to discuss your next project, and ensure you get the equipment best suited to your application.

This brochure briefly describes our product line. For more information please contact our office, or visit [www.solinst.com](http://www.solinst.com)



## **Our Products**

### **Level Measurement Devices**

Solinst Level Measurement Devices feature durable, accurately marked cables and tapes, convenient and easy-to-use reels, and full unit repairability. The Meters are ideal for use in rugged environments, excellent for well drillers and environmental field studies for determining depth to static water level, oil/water interface, profiling temperature and conductivity, and for measuring total well depth or top of backfill layers during well completion.

### **Dataloggers & Telemetry**

The Levellogger Series of dataloggers is ideal for short or long-term hydrogeological studies, or for continuous monitoring applications. The Levellogger Series features water level, temperature, conductivity, and rainfall level dataloggers. All Levelloggers are able to integrate into Solinst STS and RRL Gold Telemetry Systems for remote monitoring projects.

### **Groundwater Samplers**

Solinst offers a variety of groundwater sampling options that suit any environment or application, from pumps that provide low flow capabilities, pumps suited to VOC sampling, inexpensive bailers, grab samplers and inertial pumps, to discrete interval samplers. Accessories such as Control Units, 12V Compressors, and Packers are also available.

### **Multilevel Systems & Remediation**

Solinst Multilevel Groundwater Monitoring Systems are engineered to provide detailed, accurate subsurface data for high resolution site interpretation and assessments, resulting in more effective, and less expensive remediation. Solinst also offers an effective bioremediation enhancement option for cleaning up contaminated groundwater.

### **Drive-Point Piezometers**

Solinst Drive-Point Piezometers provide easy to install wells for long or short-term monitoring applications. Piezometers can be pushed into suitable sediments, or installed with a drill rig for accurate vertical profiling. Drive-Point Piezometers are ideal for initial site investigations and geotechnical studies, and help determine the optimum placement of permanent piezometers or remediation equipment.



# Level Measurement Devices



**The 101 Water Level Meters** are very sturdy and give easy-to-read, consistently accurate water level measurements in wells, tanks, and boreholes. The flat tape is permanently marked each 1/100 ft or each millimeter.

There are two versions to choose from. The Model 101 P7 Water Level Meter features a pressure-proof probe and laser marked PVDF flat tape. The Model 101 P2 Water Level Meter features an easy-to-repair probe and heat embossed polyethylene flat tape.

Each well balanced reel has a carrying handle, an easy-access battery drawer, and an excellent brake and tape guide. A 9V battery powers the buzzer and light, which activate when static water is reached.

**Power Reels** for Water Level Meters can be very useful. They allow faster and less strenuous operation of meters with long tape lengths. Reels are available with 110V and 12VDC motors, on request.



**Level Measurement Devices are accurately marked and provide manual measurements of:**

- Water levels in wells and narrow applications
- Oil/water interface and thickness
- Temperature and conductivity
- Total well depth



**The 102 Water Level Meter** uses the same electronics and reel as the 101, but uses accurate, laser marked coaxial cable. It is ideal for use in narrow diameters or when snaking past down-well pumps.

The flexible cable has a heavy duty polyethylene jacket and markings permanently laser etched every 1/100 ft or each millimeter. A stainless steel central conductor adds strength and limits stretch.

The probes are designed with segmented weights for flexibility. The stainless steel P1 probe is 1/4" (6.4 mm) in diameter, ideal for accessing narrow diameters. The heavier brass P2 probe is 3/8" (10 mm) in diameter, ideal for greater depths.

**The 102M Mini Water Level Meter** is a very compact meter in 80 ft and 25 m lengths. The reel is light-weight and fits easily into a backpack or a mini carrying case. The cable is marked every 1/100 ft or each millimeter, with a choice of a P1 or P2 probe.





**The 107 TLC Meter** (Temperature, Level, Conductivity) displays accurate measurements of conductivity and temperature on an LCD display that rotates for ease of use. Water levels are read off the accurately laser marked Solinst PVDF flat tape when the light and buzzer are triggered.

It is ideal for profiling salt-water intrusion, road salt impairments, tracer tests and to give a general indication of chemical contamination levels. The TLC Meter uses a 'smart' conductivity sensor to read Specific Conductance (displayed as EC).

The tape is permanently laser marked to each 1/100 ft or each millimeter and is available in lengths up to 1000 ft (300 m). A carrying case and tape guide are included.



**The 122 Interface Meter** measures product level and thickness accurately to 1/100 ft or 1 millimeter. It measures both floating and sinking hydrocarbon, non-aqueous product layers (LNAPL and DNAPL). The 122 is certified safe for use in explosive environments by the Canadian Standards Association (CSA - Class 1, groups C & D).

A steady tone and light indicate product and intermittent signals indicate water. Readings are taken from accurate Solinst flat tape up to 1000 ft (300 m). The Interface Meter is rugged, field durable and is easy-to-use. A carrying case and tape guide are included.

**The 122M Mini Interface Meter** is a more portable version. It is small enough to fit in a backpack, yet rugged and reliable. Available in 65 ft or 20 m lengths.



**The 103 Tag Line** is used to measure the depth to the top of backfill sand or bentonite layers during the completion of a well and to measure the depth to the bottom of a well.

The Tag Line uses polyethylene coated, permanently marked, stainless steel wireline and a 3/4" stainless steel weight, mounted on a Solinst reel. Other sizes and weights are available. Cable markings are accurately laser etched every 1/4 ft or 5 cm. Ideal for use when installing Solinst 403 CMT Multilevel Systems or 401 Waterloo Multilevel Systems.

The weights can be clipped on and off the cable. This allows for the reel mounted, marked cable to be used as a support line (i.e. for bailer, pump and packer deployment).



# Dataloggers & Telemetry

**Levellogger®**  
Model 3001

## Stand-alone Dataloggers

- Ideal for groundwater characterization studies
- Excellent for long-term water monitoring in wells, tanks, and coastal and surface water bodies
- Use for remote monitoring applications



**The 3001 Levellogger® Edge** is a highly accurate water level and temperature datalogger. It is ideal for recording water levels in monitoring and production wells, boreholes, lakes, rivers, tanks, harbors, etc.

The Levellogger Edge has 24 bit resolution, an accuracy of 0.05% FS and a memory capacity for up to 120,000 sets of readings using the data compression option. The datalogger, 10-year battery, Hastelloy pressure sensor and temperature sensor are all factory-sealed in a 7/8" x 6.25" (22 mm x 159 mm) housing with Titanium-based coating for corrosion resistance. The sealed design makes maintenance and cleaning a snap, and offers protection from power surges caused by pumps or lightning.

User-defined schedule, linear, and event-based sampling modes, in intervals from 0.125 seconds upwards for the Levellogger Edge. The Barologger Edge and the data compensation wizard offer the most accurate and easy method to account for barometric pressure.

**The 3001 Levellogger Junior Edge** is an inexpensive alternative for measuring water levels. It features a memory capacity for 40,000 sets of water level and temperature data points. Accuracy is 0.1% FS. The battery will last up to 5 years.

**The LTC Levellogger Junior** (Level, Temperature, Conductivity) combines a datalogger, 5-year battery, pressure transducer, and temperature and conductivity sensors within a small waterproof housing, 7/8" x 7.5" (22 mm x 190 mm). The 4-electrode platinum conductivity sensor auto-ranges from 0 to 80,000  $\mu\text{S}/\text{cm}$  with an accuracy of 2% of the reading between 500 and 50,000  $\mu\text{S}/\text{cm}$ . It is simple to clean and calibrate. The memory stores up to 16,000 sets of readings.

**The Levellogger** can be installed with a direct read cable for instant communications, or suspended on inexpensive wireline/cord from a lockable well cap. Levelloggers can also connect to Solinst Telemetry Systems or an SDI-12 network using the Solinst SDI-12 Interface Cable.

**The 3002 Rainlogger** is used with Levellogger Software and most standard tipping-bucket rain gauges with a reed switch output. The event time stamp and total rainfall per time period is logged in non-volatile memory, with up to 60,000 readings. It is excellent for use along side Levelloggers to measure the local precipitation.



*Programming data collection schedules, downloading and viewing data, and data compensation is quick and easy using intuitive Levellogger Software and high speed Optical Reader*

®Levellogger is a registered trademark of Solinst Canada Ltd.



## Remote Monitoring Options



**The 9100 STS Gold Telemetry System** combines high quality dataloggers, intuitive software, and a choice of wireless communication options to create a remote monitoring solution. It offers two-way communication and control of Levelloggers from your own desktop. Cellular, satellite, landline and radio options give the flexibility to suit any project and network size. The STS is designed to save costs by enabling the self-management of data, as well as remote collection of the data. Alarm notification, remote firmware upgrades and diagnostic reporting make system maintenance easy.



**The 9200 RRL Gold Radio Telemetry System** is a wireless system, designed to collect Levellogger data, and send it via radio to your computer. The RRL hardware is interchangeable, making it ideal for small, closed loop monitoring well networks such as at landfills or mine sites. RRL Stations can communicate up to 20 miles (30 km); using some stations as relays can increase the distance. RRL Stations are scheduled using a convenient software wizard, simplifying setup and data collection.



**The 3001 Levellogger Gold** is a rugged, waterproof data transfer unit designed for use with all versions of the Solinst Levellogger, Barologger, and Rainlogger. It is used to download multiple data files, or to reprogram Levelloggers in the field.

The 8 Mb FLASH memory stores up to 1,390,000 LT readings, 930,000 LTC readings, or 34 full Levellogger downloads.

Simply use the cables provided for attachment to a Levellogger, or to a direct read cable, to allow downloading or reprogramming of the Levellogger settings in the field. It comes with cables for USB and RS232 connection to a PC for data transfer.



# Groundwater Samplers



Portable reel units and dedicated wellheads are available for Bladder Pumps and Double Valve Pumps.

**The Solinst 407 Bladder Pump** has a durable Teflon® bladder ideal for dedication, and ensures no air/water contact during groundwater sampling. Inexpensive, disposable LDPE bladders are also available for short term applications.

Solinst offers 316 stainless steel pumps in diameters of 1" and 1.66" (25 mm and 42 mm) and PVC Pumps in 1.66" (42 mm). They are ideal for low flow and VOC sampling. Maximum lift capabilities are 500 ft (150 m) with stainless steel models and 100 ft (30 m) with PVC. Dedicated systems come complete with well caps and tubing.

**The 464 Electronic Control Unit** regulates the supply of compressed gas to pneumatic Bladder Pumps and Double Valve Pumps. It uses 4 AA batteries and provides 125 psi (250 psi unit also available). Fully automatic preset sample mode options, and up to 99 unique user-created flow rates can be saved. The Controller can also be operated manually, and without batteries.

**The 12 Volt Compressor** is lightweight and compact, ideal for field use. It uses any 12 Volt DC power source, such as a car or truck vehicle battery. The compressor operates at 125 psi with a 2 US gallon (7.6 liter) air tank rated to 150 psi.

\*Teflon is a registered trademark of DuPont Corp.

**The 408 Double Valve Pump (DVP)** is a gas drive pump suitable for low flow and medium flow applications of almost any depth and narrow diameters. It is available in 316 stainless steel in 1.66" or 5/8" diameter (42 mm or 16 mm) and in PVC in 1.66" (42 mm).

Compressed gas supplied from the Controller pushes down on the water column in the drive line, which is at static level, closing the check valve at the base of the pump, forcing water up the sample line. When operated properly, "drive gas" will never come in contact with the sample water, which produces high quality VOC samples.



**The 408M Micro Double Valve Pump** has a remarkably small and flexible design. It is a pneumatic pump which operates under the same principle as the standard DVP, but uses coaxial Teflon tubing with stainless steel valves and filter. Small enough to fit in 1/2" (13 mm) tubing and all channels of the Solinst CMT System, the Micro DVP is ideal for low flow sampling in narrow applications. A flow rate of 20 to 200 ml/min can be obtained to depths up to 240 ft (73 m).

12V Compressor



464 Electronic Pump Control Unit







**The 410 Peristaltic Pump** operates to the suction lift limit, allowing vacuum pumping or pressure delivery of liquids or gases. It is ideal for vapor or water sampling from shallow wells and surface water. The Pump has reversible flow, a variable pumping rate and allows the use of either 3/8" or 5/8" (10 mm or 16 mm) silicon tubing. The power cable clips to any 12 volt DC supply. It can deliver from 40 ml/min to almost 3.5 liters/min. The pump is water resistant, very compact and simple to use, with a handle and one easy-access control.

**The 425 Discrete Interval Sampler** is excellent for obtaining no purge groundwater samples from below product layers, within product layers, and for sampling at discrete depths in a well. It is pressurized with a hand pump before entering the well. No water flows through the sampler on the way down the well. When the pressure is released, the sampler fills directly from the sampling zone.

**The 404 Inertial Pump** is ideal for dedication. The pump includes a simple footvalve and length of polyethylene tubing, which is very inexpensive. Sampling to depths of 100 ft (30 m) can be performed by hand. The Inertial Pump is suitable for purging, sampling and developing wells. It easily handles heavily laden, silty water.

**The 429 Stainless Steel Point-Source Bailer** has an easy sample release device and dual check valves top and bottom. The check valves prevent water at other depths from mixing with the sample during retrieval. Point-Source Bailers are available in 0.5", 1", 1.5" and 2" diameters (12.7, 25.4, 38.1, 50.8 mm), and lengths from 2 ft to 4 ft (610 mm and 1220 mm). The 103 Tag Line with marked cable can be used to facilitate the raising and lowering of the bailer.

**The 428 BioBailer™** is an all new high density clear PVC bailer that biodegrades and turns into plant food, when placed in a landfill. The BioBailer holds more than one litre of sample (1025ml) and is 1.5" x 3 ft (38 mm x 91.5 cm) in size.

**The 800 Low Pressure Packers** are simple, inexpensive and inflate with a hand pump. They come as single or straddle packers and can be lowered into the well from a rope tether or a rigid PVC pipe. The 103 Tag Line can be used as a marked safety line. Available in sizes to fit wells and boreholes from 1.9" – 4.5" (48.3 – 114.3 mm) to a maximum pressure of 50 psi (345 kPa) for the smaller packer and 30 psi (205 kPa) for the larger packer.

425 Discrete Interval Samplers



404 Inertial Pumps



429 Point-Source Bailers



428 BioBailer



800 Packers



™BioBailer is a trademark of Environmentally Suitable Products (ESP) Ltd.



# Multilevel Systems & Remediation



**The 403 CMT® Multilevel System** provides the simplicity and low cost of a bundle-type installation, with the benefits of backfilling or sealing around a single tube, with no joints.

The CMT System uses continuous polyethylene multichannel tubing which is custom-built on site with screened intervals at desired sampling zones. CMT Systems are inexpensive and easy to install. In-field design flexibility allows the number of monitoring ports, port locations, and monitoring strategy to be finalized right on site.

Monitor up to 7 discrete zones in the 1.7" (43 mm) System and 3 zones in the narrow 1.1" (28 mm) System. Reliable seals and sand packs can be placed using standard backfill methods, or using pre-formed cartridges in the 3-Channel System.

Water levels can be accurately established and samples taken using small diameter portable equipment available from Solinst. Special wellhead seals are also available to allow vapor sampling.

*Patented. ©CMT is a registered trademark of Solinst Canada Ltd*

**Why Multilevels?** Multilevel systems provide groundwater samples from multiple depth-discrete levels (ports) optimizing the amount of information obtained in a single monitoring hole. A transect of Multilevel Systems across a site more clearly identifies the area of maximum concentration.



**The 401 Waterloo Multilevel System** allows detailed groundwater monitoring from many zones in one borehole.

The System is modular to allow ports to be located accurately at desired monitoring zones. The zones are permanently isolated by packers or seals and each port is individually connected to the surface.

Ports can be fitted with dedicated Transducers, Bladder Pumps and/or Double Valve Pumps. Alternatively, a port may be fitted with a monitoring tube that is left open for use with narrow diameter portable equipment, such as the 102 or Mini 102 Water Level Meter and a narrow diameter Inertial Pump, a Peristaltic Pump or the Micro Double Valve Pump.

Ports, packers and casing lengths are assembled, as needed, into a water-tight PVC or stainless steel casing string. The modular Waterloo System allows complete customization to each application. Systems can be installed on an angle or vertically. A drilling rig is not necessarily required during installation. Monitoring is fast and efficient, especially if dedicated equipment is used.

*Patented.*





1.8", 3.8" & 5.8"  
Waterloo Emitters

**The 703 Waterloo Emitter™** is a simple, low cost device for the controlled release of oxygen or other amendments to encourage and sustain the growth of microorganisms, required for in-situ bioremediation of contaminated groundwater.

Ideal for the diffusion of oxygen to enhance the bioremediation of BTEX and MTBE. Emitters provide immediate bioavailability of molecular oxygen for aerobic biodegradation enhancement, with no loss of amendment gas due to bubbling.

Available to fit 2", 4" and 6" (50, 100 and 150 mm) wells and boreholes, the Emitters are easy to install and remove. They do not require constant monitoring and attention or electricity.

*Patented.*

## Drive-Point Piezometers

**The 615 Drive-Point Piezometers** are cost-effective for initial site investigations, plume delineations, and as low-cost mini well points. They are excellent for groundwater or soil gas sampling, underground storage tank monitoring, and as sparge points. The stainless steel piezometer point has a 50 mesh screen and a 3/4" NPT riser pipe. An inner sampling tube can be used if higher quality samples are required.

**The 601 Standpipe Piezometer** is excellent for taking water level measurements. The PVC tip is suitable for pushing into very loose sands at the base of a borehole, or for backfilling in place within test pits and pre-augered holes. It uses a porous polyethylene filter inside a perforated PVC tip which connects to the surface with 3/4" (19 mm) ID PVC extensions.

**The 660 Drive-Point Profiler** allows collection of groundwater samples from multiple points, at discrete zones, in a single drive. This allows a detailed vertical profile with only one drive of the rig. The profiler tip is connected to a Peristaltic Pump which flushes the profiler tip with de-ionized water during driving to prevent cross contamination and is reversed to obtain a sample. It allows detailed plume delineation quickly and inexpensively. An expendable grout tip is available to allow easy decommissioning.



615  
Drive-Point  
Piezometers



601  
Standpipe  
Piezometers



660  
Drive-Point  
Profiler



# Solinst<sup>®</sup>



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