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Solinst[®]

Level Measurement Devices

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Level Measurement Devices














1982: 101
Water Level Meter

High Quality Workmanship Means Devices are Built-to-Last

The first product produced by Solinst was the Model 101 Water Level Meter, and forty years later, hydrogeologists worldwide are still using it. The Model 101 Water Level Meter first gained popularity among professionals in the United States for its robust design, stretch-resistant tape and special markings in feet and tenths of feet (now 1/100 ft.).

Today, all Solinst Level Measurement Devices feature durable, accurately marked cables and tapes, sturdy, easy-to-use reels, and convenient repair options. The high quality workmanship put into manufacturing each Meter makes them built-to-last in rugged environments, for many years.



| Level Measurement Device | | Description | Probe Diameter | Tape/Cable Lengths |
|---|---|--|--|---------------------------------------|
| 101 P7 Water Level Meter |  | Manually measure depth to water using flat tape marked each mm or 1/100 ft. 101 P7 Meters use laser-marked flat tape. Measure total well depth with a P7 Probe (submersible the full length of the tape). | 16 mm (5/8") | 30 - 600 m (100 - 2000 ft.) |
| 101 P2 Water Level Meter |  | 101 P2 Meters use heat-embossed polyethylene tape. The P2 Probe is simple to clean and repair. | 14 mm (0.55") | 30 - 300 m (100 - 1000 ft.) |
| 101D Water Level DrawDown Meter |  | Manually measure depth to water and monitor drawdown using laser marked flat tape, laser-marked each mm or 1/100 ft. Probe is pressure-proof the full length of the submerged tape. | 16 mm (5/8") | 30 - 600 m (100 - 2000 ft.) |
| 101B Water Level Meter |  | Manually measure depth to water using heat-embossed polyethylene flat tape, marked every centimeter. The P1 Probe is leak-proof. | 12.7 mm (1/2") | 30 m, 60 m, 100 m |
| 102 Water Level Meter |  | Manually measure depth to water using narrow cable, laser-marked each mm or 1/100 ft. | P4: 4 mm (0.157") P10: 10 mm (3/8") | 30 - 300 m (100 - 1000 ft.) |
| 102M Mini Water Level Meter | | | P4: 4 mm (0.157") P10: 10 mm (3/8") | 25 m (80 ft.) |
| 104 Sonic Water Level Meter |  | Uses sound waves to detect the depth to static water level without lowering the probe down the well. | 16 mm (5/8") | 600 m (2000 ft) Detection Range |
| 105 Well Casing & Depth Indicator |  | Detect where metal well casing starts and ends, and measure the total depth of a well or borehole. Measurements are taken using flat tape laser-marked each mm or 1/100 ft. | 22 mm (7/8") | 30 - 600 m (100 - 2000 ft.) |
| 201 Water Level Temperature Meter |  | Manually measure water level and temperature. Water Level measurements are taken from flat tape laser-marked each mm or 1/100 ft. | 16 mm (5/8") | 30 - 600 m (100 - 2000 ft.) |
| 107 TLC Meter |  | Manually measure water level, temperature, and conductivity. Water Level measurements are taken from flat tape laser-marked each mm or 1/100 ft. | 19 mm (3/4") | 30 - 300 m (100 - 1000 ft.) |
| 122 Interface Meter |  | Manually measure water levels and detect oil/water interfaces. Allows measurement of DNAPL or LNAPL layers. Using the standard 122, levels are taken from flat tape laser-marked each mm or 1/100 ft. Using the 122M, levels are taken from cable laser-marked each mm or 1/100 ft. Intrinsically Safe and ATEX Certified. | 16 mm (5/8") | 15 - 300 m (50 - 1000 ft.) |
| 122M Mini Interface Meter | | | 16 mm (5/8") | Cable: 25 m (80 ft.) |
| 103 Tag Line |  | Manually measure well depths using durable cable, laser-marked every 5 cm or 1/10 ft., or flat tape laser-marked every mm or 1/100 ft. (Also a marked support line for samplers, packers, and dataloggers) | 19 mm (3/4") or 13 mm (1/2") | 30 - 300 m (100 - 1000 ft.) |

Level Measurement Devices



101 P2



101 P7

Model 101 Water Level Meters

The Model 101 P2 and P7 Water Level Meters provide the convenience, durability and accuracy that groundwater professionals need to detect water levels in wells, boreholes and standpipes.

Ergonomically designed, they feature two non-stretch flat tape options, sturdy frame and reel, robust electronics, easy-access battery drawer, and complete unit reparability.

The Water Level Meters are powered by one 9V battery. The light and buzzer are activated when the probe reaches water, completing an electrical circuit. They include a sensitivity dial that can be turned down when in cascading water.

The P2 Probe is easy to clean and repair, while the pressure-proof P7 Probe can be submerged to the full length of the tape.

The 101 P2 features heat embossed polyethylene tape (M2 and M3), available in lengths up to 300 m (1000 ft.).

The 101 P7 however, uses durable Solinst laser-marked tape (LM2 and LM3), and is available in lengths up to 1500 m (5000 ft.).

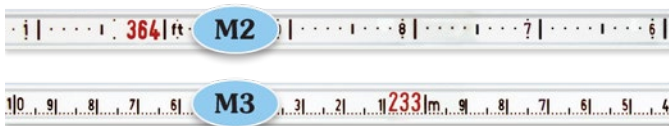
Both tapes are marked accurately each millimeter or every 1/100 ft., certified traceable to national standards.



Standard Length Options:

| | | | | | |
|------------|--------|---------|--------------|--------|----------|
| Small Reel | *30 m | 100 ft. | Medium Reel* | 150 m | 500 ft. |
| | *60 m | 200 ft. | | *250 m | 750 ft. |
| | *100 m | 300 ft. | | *300 m | 1000 ft. |
| | | | Large Reel | 400 m | 1250 ft. |
| | | | X-Large Reel | 500 m | 1650 ft. |
| | | | | 600 m | 2000 ft. |

* Polyethylene tapes are only available in these lengths



M2: Feet and tenths: with markings every 1/100 ft.
M3: Meters and centimeters: with markings every mm



LM2: Feet and tenths: with markings every 1/100 ft.
LM3: Meters and centimeters: with markings every mm



A Tape Guide prevents damage to the tapes and cables, and provides a consistent measurement point.

Power Reels for Water Level Meters can be very useful. They allow faster and less strenuous operation of meters with longer tape lengths, up to 1500 m (5000 ft.). Reels are available with 110V, and 12VDC motors on request.



The 101 Power Winder for Solinst reel-mounted devices allows more effortless deployment of longer tape lengths. The Power Winder is easily adjusted to connect to any size Solinst reel. It is operated using a standard power drill.



Carrying Cases for Water Level Meters are available in mini, small and medium sizes. They are nylon and padded for extra protection. The small and medium cases have a convenient front pocket. All cases feature a grommet in the bottom to prevent moisture build-up and a carrying strap.



Level Measurement Devices

Model 101D Water Level DrawDown Meter



The 101D Water Level DrawDown Meter uses the same ergonomic reel, laser-marked flat tape, durable electronics and probe as the 101 P7 Water Level Meter, but has the added feature of a drawdown mode.

A simple toggle switches between static water level and drawdown measurements. Water level mode allows accurate depth to water measurements; the drawdown function is used to monitor falling hydraulic head.

In water level mode, when the zero point on the probe enters water, an electronic circuit is completed, activating the buzzer and light. In drawdown mode, the circuit is reversed—the buzzer and light are triggered when the probe is in air.

The battery test button can check the circuit in both modes. The electronics are powered by a 9V battery.

The 101D uses the P7 Probe, which is submersible the full length of the tape.



The 101D Water Level DrawDown Meter is ideal for:

- Measuring depth to water in wells, boreholes, standpipes and tanks
- Monitoring drawdown during:
 - Low flow groundwater sampling
 - Well development and purging
 - Dewatering applications
 - Pumping, slug, hydraulic conductivity, step and other aquifer/well tests

Standard Length Options:

| | | | | | |
|------------|-------|---------|-------------|-------|----------|
| Small Reel | 30 m | 100 ft. | Medium Reel | 150 m | 500 ft. |
| | 60 m | 200 ft. | | 250 m | 750 ft. |
| | 100 m | 300 ft. | | 300 m | 1000 ft. |

Lengths available to 1500 m (5000 ft.).



LM2: Feet and tenths: with markings every 1/100 ft.

LM3: Meters and centimeters: with markings every mm



Model 104 Sonic Water Level Meter



The Model 104 Sonic Water Level Meter is a portable instrument that uses sound waves to simply and quickly measure depth to static water level in a well, piezometer, sounding tube, or any closed pipe.

Static water level measurements are recorded without having to put instruments down the well, eliminating any need for decontamination.

The Solinst Sonic Water Level Meter works in straight or crooked pipes, and is ideal for wells with difficult access. Depth measurements to 600 m (2000 ft.) are possible.

The Sonic Water Level Meter consists of a Control Unit and connected Probe. The Control Unit has a clear LCD display, keypad, and 6 AA replaceable batteries. The Sonic Water Level Meter Probe is designed to sit in the vent opening of a standard well cap, or the opening in a Solinst 2" Locking Well Cap.

To account for different water temperatures, well diameters, offsets, well obstructions or features, the Control Unit allows you to input measurement parameters to get the most accurate water level reading possible.

It is supplied with a plastic disc for covering larger well openings and a convenient Solinst Field Bag.



Model 101B Water Level Meter

The Model 101B Water Level Meter features a basic design that is very simple to use. A buzzer and light are activated once the P1 Probe contacts water—there are no controls or buttons to operate.

The robust stainless steel P1 Probe is leak-proof. It is attached to heat embossed polyethylene flat tape. The flat tape is accurately marked each centimeter, in lengths up to 100 m.

The Model 101B Water Level Meter has a durable frame with a sturdy handle that makes winding the tape easy. A brake is included on the frame.

There is a convenient probe holder on the front of the faceplate. The 9V battery that powers the Water Level Meter is easily replaced inside the reel housing.

101B Length Options:

Small Reel: 30 m, 60 m, 100 m



CM3: Meters and tenths: with markings every centimeter.



Level Measurement Devices

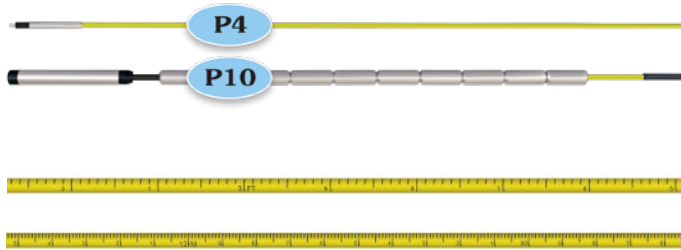
Model 102 Narrow Cable Water Level Meters



The Model 102 Water Level Meters use narrow cable to measure water levels in tight spaces. The segmented P10 Probe offers greater flexibility in angled piezometers and assist in bypassing down-hole restrictions or pumps when measuring draw-down.

The Model 102 Water Level Meters use the same reliable electronics and reel as the Model 101 Water Level Meters; the use of accurately marked cable makes it a more affordable option.

The cable has a tough polyurethane jacket with laser markings each millimeter or 1/100 ft. The braided copper outer conductor provides flexibility, while the stainless steel central conductor reduces stretch and resists corrosion. The cable is easy to repair and splice.



N2: Feet and tenths: with markings every 1/100 ft.
N3: Meters and centimeters: with markings every mm

There are two narrow probe options to choose from. Their probe tip designs minimize false signals in cascading water.

Helpful for reaching greater depths, and for use in the majority of level monitoring applications, the heavier 10 mm x 70 mm (3/8" x 2.75") P10 Probe weighs 6.14 oz. (174 g) with 10 segmented stainless steel weights for easy handling.

For the narrowest applications, the 4 mm x 38 mm (0.157" x 1.5") stainless steel P4 Probe is the choice. It weighs 0.35 oz. (10 g).

The 4 mm P4 stainless steel probe is ideal for measuring in the narrow channels of a Model 403 CMT® Multilevel System and the 10 mm (3/8") open tubes of a Model 401 Waterloo Multilevel System.

The Model 102M Mini Water Level Meter comes with either 25 m or 80 ft. of laser-marked cable on a more compact, portable reel that can fit in a backpack or Solinst mini carry case. The 102M Mini also comes with the choice of a P4 or P10 Probe.

102 Length Options:

Model 102 Water Level Meters are available on reels in the following standard lengths:

| | | |
|-------------------|-------|----------|
| Mini Reel | 25 m | 80 ft. |
| Small Reel | 30 m | 100 ft. |
| | 60 m | 200 ft. |
| | 100 m | 300 ft. |
| | 150 m | 500 ft. |
| | 250 m | 750 ft. |
| | 300 m | 1000 ft. |



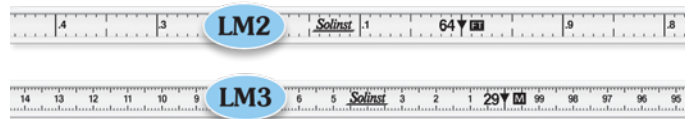
Model 105 Well Casing & Depth Indicator

The **Model 105 Well Casing & Depth Indicator** uses one probe to allow both the detection of metal well casing and measurement of total well depth.

The 105 Probe is made from 316 stainless steel and is submersible the full length of the tape. It contains a strong magnetic assembly to detect metal (e.g. steel) well casing. When the probe is adjacent to magnetic casing a circuit is completed activating the buzzer and light. When the probe is no longer next to the casing, the intermittent signals stop. Well casing detection produces a faster signal compared to the slower signal for total well depth.

A plunger at the bottom of the probe is used to measure total well depth. The light and buzzer activate when the plunger reaches the bottom of a well and is pushed into the probe body completing a magnetic circuit.

Well casing and well depth measurements are read from durable Solinst laser-marked flat tape. Lengths are available up to 600 m (2000 ft.), accurately marked each millimeter or every 1/100 ft.



LM2: Feet and tenths: with markings every 1/100 ft.

LM3: Meters and centimeters: with markings every mm

Well Casing & Depth Indicator Applications

- Measuring total well depth
- Groundwater well installation
- Detecting cracks in well casing
- Installing telescoping well screen
- Packer and downhole instrument installation
- Hydrofracturing
- Confirming existing well construction
- Decommissioning abandoned wells

Standard Length Options:

| | | | | | |
|------------|-------|---------|--------------|-------|----------|
| Small Reel | 30 m | 100 ft. | Medium Reel | 150 m | 500 ft. |
| | 60 m | 200 ft. | | 250 m | 750 ft. |
| | 100 m | 300 ft. | | 300 m | 1000 ft. |
| | | | Large Reel | 400 m | 1250 ft. |
| | | | X-Large Reel | 500 m | 1650 ft. |
| | | | | 600 m | 2000 ft. |



Level Measurement Devices



Model 201 Water Level Temperature Meter

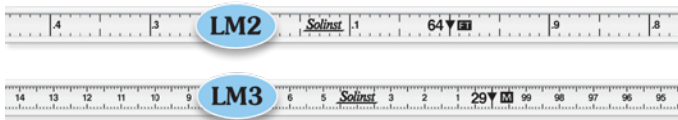
The Model 201 Water Level Temperature Meter (WLT) measures static water levels, as well as temperature; ideal for profiling temperature in wells, boreholes and open water.

Accurate temperature measurements are clearly displayed on an LCD readout on the faceplate. Temperature measurements are read from -20°C to $+125^{\circ}\text{C}$ with an accuracy of $\pm 0.10^{\circ}\text{C}$ from -5°C to $+50^{\circ}\text{C}$ and $\pm 0.50^{\circ}\text{C}$ outside of that range. No user calibration is required.

The LCD menu is easy to operate. When profiling temperature, the buzzer is simple to deactivate as the probe is lowered to depth.

Water level and probe depth measurements are read from the Solinst durable flat tape, which is accurately laser marked each millimeter or every 1/100 ft. Tape lengths are available up to 600 m (2000 ft.).

Electronics are powered by a standard 9V battery, providing 90 hours of on-time. There is an auto-off after 8 minutes of inactivity.



LM2: Feet and tenths: with markings every 1/100 ft.

LM3: Meters and centimeters: with markings every mm

Standard Length Options:

| | | | | | |
|------------|-------|---------|-------------|-------|----------|
| Small Reel | 30 m | 100 ft. | Medium Reel | 150 m | 500 ft. |
| | 60 m | 200 ft. | | 250 m | 750 ft. |
| | 100 m | 300 ft. | | 300 m | 1000 ft. |

Even small temperature fluctuations can have a great effect on the biological activity of aquatic organisms. Temperature also has immediate affects on the chemistry, and therefore the quality of water. As such, temperature is an important parameter to monitor.

The Model 201 Water Level Temperature Meter is ideal for:

- Profiling temperature in wells and open water
- Detecting runoff, points of inflow, or other sources of thermal pollution
- Early warning of changes in water quality, including dissolved oxygen levels and conductivity
- Monitoring and predicting changes in aquatic environments
- Geothermal studies





Model 107 TLC Meter Temperature, Level and Conductivity

The **Model 107 TLC Meter** enables accurate profiling of water temperature and conductivity in aquifers, and open water bodies.

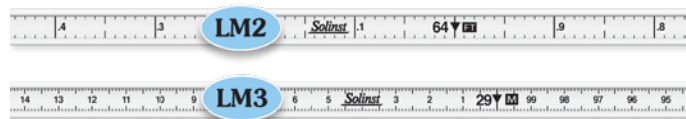
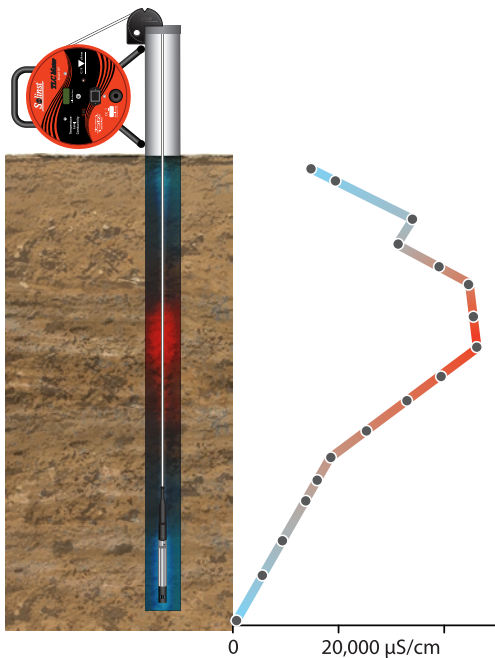
Using platinum electrodes, the 19 mm (3/4") diameter TLC Probe measures conductivity readings from 0 - 80,000 $\mu\text{S}/\text{cm}$. The readings are shown as electrical conductivity standardized to 25°C (Specific Conductance). Accuracy is 5% or 100 μS , whichever is greater.

Conductivity and associated temperature readings, from -15°C to +50°C (23°F to 122°F), are taken from the LCD display on the reel. The display is easy to read in the field.

Profiling depths are read from the Solinst laser-marked flat tape, up to 300 m (1000 ft). The tape is accurately laser marked each millimeter or every 1/100 ft., and is certified traceable to national standards.

A standard 9V alkaline battery gives up to 90 hours of on-time and the electronics have an auto-off after 8 minutes of inactivity. Calibration is simple, with a single, or up to 4-point calibration option.

Salinity issues are prevalent worldwide, including saltwater intrusion due to over-pumping of wells and road salt contamination of municipal drinking water wells. The TLC meter is ideal to use in monitoring these situations, or for providing a general indication of water quality in any application.



LM2: Feet and tenths: with markings every 1/100 ft.

LM3: Meters and centimeters: with markings every mm

107 Length Options:

| Small Reel | 30 m | 100 ft. | Medium Reel | 150 m | 500 ft. |
|------------|-------|---------|-------------|-------|----------|
| | 60 m | 200 ft. | | 250 m | 750 ft. |
| | 100 m | 300 ft. | | 300 m | 1000 ft. |

The Model 107 TLC Meter is ideal for profiling conductivity in wells.



Level Measurement Devices



Model 122 Interface Meters



122 Length Options:

| | | | | | |
|------------|-------|---------|-------------|-------|----------|
| Small Reel | 30 m | 100 ft. | Medium Reel | 150 m | 500 ft. |
| | 60 m | 200 ft. | | 250 m | 750 ft. |
| | 100 m | 300 ft. | | 300 m | 1000 ft. |



LM2: Feet and tenths: with markings every 1/100 ft.

LM3: Meters and centimeters: with markings every mm

The **Model 122 Oil/Water Interface Meter** is designed to measure floating or sinking hydrocarbon layers in water (LNAPL and DNAPL).

The Model 122 P8 16 mm (5/8") narrow pressure-proof probe clearly detects when it enters product or water, with an accuracy of 1 millimeter or 1/200 ft. It is excellent in almost all product monitoring applications.

It uses optical refraction and electrical conductance to determine product and water interfaces. A continuous light and tone indicate non-conductive product. Water is indicated by intermittent signals.

The depths of detected water and product layers are read off flat tape, which is laser-marked each millimeter or every 1/100 ft. The durable, corrosion-resistant tape is easy to clean and ideal to use when measuring in wells, tanks, at refineries, landfills or remediation sites.

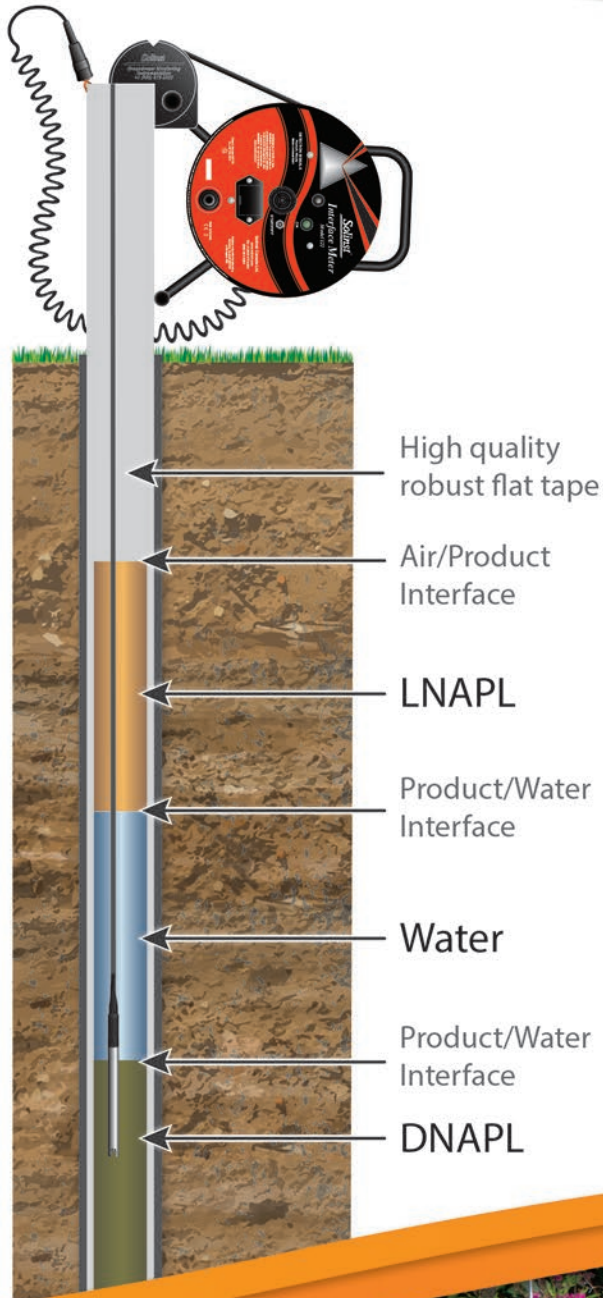
The Model 122 Interface Meters are certified intrinsically safe for use in explosive environments, and are ATEX certified.

One 9V battery provides a minimum 120 hours of life. The electronics have automatic circuitry testing and they shut off after 5 minutes.

Laser Marked Replacement Tapes

Solinst measurement devices that use laser-marked flat tape, also use the same tape seal plug/probe connection. Therefore, replacement tapes are interchangeable and can be used with the 101 P7 Water Level Meter, 101D Water Level DrawDown Meter, 201 Water Level Temperature Meter, 107 TLC Meter, 122 P8 Interface Meter, and 105 Well Casing & Depth Indicator.





A **Model 122M Mini Interface Meter** has a small reel, designed for portability. It uses narrow 3 mm (0.12") cable with a durable laser-marked jacket, in lengths of 25 m or 80 ft.

The compact reel to fit easily in a backpack. The Model 122 Mini electronics provide up to 300 hours of use with one 9V battery. It uses the same P8 Probe as the Model 122.



LN2: Feet and tenths: with markings every 1/100 ft.

LN3: Meters and centimeters: with markings every mm

Once an oil layer is detected, a sample can be taken using the Solinst Model 425 Discrete Interval Sampler. The 425 Discrete Interval Sampler is excellent for obtaining no purge water samples from below and above product layers, and from within the actual product.



Level Measurement Devices



Model 103 Tag Line



The **Model 103 Tag Line** is a convenient option for measuring well depth during well construction and backfill layers during monitoring well completion. It is an ideal tool to measure sand and bentonite layers when installing Model 403 CMT® Multilevel Systems or Model 401 Waterloo Multilevel Systems.

The Tag Line uses a tag weight attached to a durable PVDF-coated stainless steel wireline, or PVDF flat tape, mounted on a sturdy freestanding reel. Cables are accurately laser-marked every 5 cm or 1/10 ft. Tape markings are each millimeter or every 1/100 ft.

The cable has a minimum break strength of 270 lbs (122 kg), and comes in lengths up to 300 m (1000 ft). The tape has a break strength of greater than 220 lbs (100 kg), and also comes in lengths up to 300 m (1000 ft.).



Cables are accurately laser-marked every 5 cm or 1/10 ft.

The 316 stainless steel tag weight comes in two sizes. The standard 19 mm x 30 cm (3/4" x 1 ft.) tag weighs 1.5 lbs (0.68 kg) and the narrow 13 mm x 30 cm (1/2" x 1 ft.) tag weighs 0.65 lbs (0.30 kg).

The weights can be clipped on and off the cable. This allows the reel-mounted, marked cable to be used as a support to accurately lower dataloggers, packers, bailers, pumps, or other sampling devices to specific depths in a well. The marked cable improves sampling efforts and the wireline provides a safe suspension system that is easy to deploy and retrieve.

Standard Length Options:

| | | | | | |
|--------------------|-------|---------|--------------------|-------|----------|
| Small Reel* | 30 m | 100 ft. | Medium Reel | 150 m | 500 ft. |
| | 60 m | 200 ft. | | 250 m | 750 ft. |
| | 100 m | 300 ft. | | 300 m | 1000 ft. |

*All standard length Tag Lines with cable come on a small reel. Longer custom lengths may come on larger reels.



Standard 19 mm (3/4") tag and Narrow 13 mm (1/2") tag



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