STS Telemetry Systems

Model 9100 Data Sheet

Solinst Telemetry Systems

The STS is a simple telemetry system designed for use with the Solinst Levelogger Series. It offers two-way communication and control from your own desktop. You choose the Levelogger, the best communication method to suit your site, access the intuitive software to create sampling and reporting schedules, then view and manage data on your Home Station computer in any way you choose.

The flexible systems can be set up using radio, digital cellular, or satellite wireless communications. STS Systems are powered by a sealed lead-acid 12V battery, lasting up to 12 months, with optional solar trickle charging or direct AC power.

STS Telemetry is suitable for both small and large networks. Hundreds of remote stations can report to a single Home Station computer. Diagnostic reporting and firmware updates can be performed remotely on both individual STS Systems and Leveloggers. New modems can be installed and set up easily, as technologies evolve, or if service providers change.

Advantages

- Time and cost savings
- Reliable data transfer direct to your desktop
- Manage the data yourself
- No data hosting fees
- Flexible options to suit site/application conditions
- Low maintenance
- Enhanced power management
- Data is sent from the site to you, no timing issues

Applications

Water level, temperature and/or rainfall monitoring for:

- Faster, easier access to data
- Remote or difficult-to-access locations
- Hazardous or critically important sites
- Long-term applications
- Drought and water taking management
- Watershed management
- Landfill supervision
- Flood and stormwater management

Why Use Telemetry?

In the past, telemetry systems were seen as complicated and too expensive to use. Now, as the benefits of telemetry are needed more and more, it is becoming a common tool.

Solinst has created a simplified system with standardized hardware, flexible communication options, and intuitive software that make the system easy to set-up, operate and manage the data.

Telemetry provides an economical and efficient method to access remote data instantly, saving time and costs by eliminating manual data collection, time spent traveling and costly data hosting.

Added features such as alarm notification, remote diagnostic reporting and firmware updating make it easy to maintain your system, while simplifying data collection. Now there is no reason not to use telemetry.

Leveloggers

STS Telemetry Systems are dedicated to the Levelogger Series of data loggers. This provides the advantage of combining a user-friendly telemetry system with high quality data loggers, using their own independent memory as a back-up.

Up to 4 Solinst data loggers can be attached to one STS System, in any combination of the Levelogger Gold, Levelogger Junior, Barologger, or Rainlogger. (See Model 3001 and 3002 Data Sheets)

Solinst Leveloggers are ideal for remote monitoring, with independent user-defined logging schedules as a back-up. They have long battery life, power surge protection and a non-volatile memory. The warrantied Leveloggers record regardless of the status of the STS System.

Leveloggers are low maintenance, absolute data loggers. There is no need to deal with vent tubes or cumbersome equipment. One Barologger can provide accurate barometric data for a 20 mile (30 km) radius.

These reliable, durable data loggers have intuitive software with many useful features, such as self-tests and a firmware upgrade utility. STS Systems allow for remote upgrades to the Levelogger firmware from the Home Station.

Communication Options

With the choice of radio, digital cellular, or satellite, STS Systems provide communication options to suit your site and application. To determine the best communication method to meet your requirements you need to evaluate the options available in your area i.e. cellular carriers, and the physical conditions of your site, including topography, nearby buildings, trees, etc.

Radio

If you have no cellular service available, or you are setting up a local network, then radio may be the option for you. Radio communication provides the advantage of free airtime and no long distance fees, making it a very affordable option.

Cellular

If your telemetry network is within an area of good cellular coverage, then GSM or CDMA wireless communication may be your method of choice. Because data is 'pushed' through the system, power requirements to send data are low.

Satellite

Satellite is an option in very remote areas where there is no cellular service available and radio transmission is not possible.

Once the best communication method is determined, setting up the STS System is quick and easy. Solinst technical support is always available to ensure you get the STS System that works for you.

Internet Connectivity

Choosing to communicate using digital cellular or satellite gives the advantage of IP addressability. IP (Internet Protocol) allows a reliable method of data transfer using an internet connection, which saves you time and money. An IP Network allows all Remote Stations to send data to the Home Station at the same time, without disruptions or time scheduling.

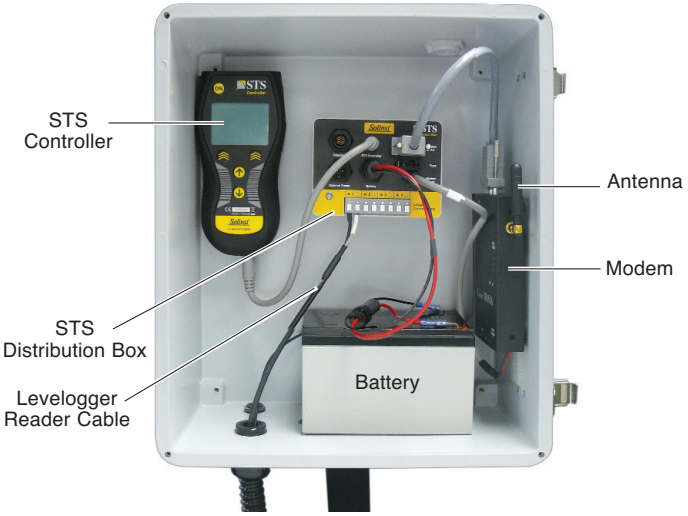
Data Self-Management

STS software allows you to always be in control of your own data.

Data retrieved from each Levelogger is placed in an Access database on the STS Home Station computer. New data is added to the existing database. The convenient STS Software can be used for a quick check of the latest readings. You can export your data as .lev or .csv files for use in your preferred database or modeling package. You can display formatted data on web pages by accessing the database directly with your own software. Data self-management provides flexible options, and ongoing cost savings, without being tied to a proprietary data hosting service.

STS Systems

STS Systems come with standardized equipment configurations, including your choice of communication device to meet the needs of your application. The STS Remote Station consists of an STS Controller, Distribution Box, Battery, and Modem with a connected Antenna, protected within a weatherproof Nema 4X box.



STS NEMA 4X Enclosure

The Distribution Box allows the connection of up to 4 data loggers. It controls the modem and manages the power supply.

The STS Controller powers-up the Remote Station for initial set-up and testing. It collects, stores, and sends data from the remote data loggers to the Home Station.

As the data is 'pushed' from the Remote Station to the Home Station, there are no dial-up or timing issues. Data cannot be lost due to cellular or satellite signal issues, as the STS Controller stores the data in its memory until it has been successfully uploaded by the Home Station. With each communication, system information on battery level, Levelogger status, modem signal strength and status are sent to the Home Station, allowing remote diagnostics.

As Simple as 1-2-3 ...

1. Set-up your system in the office.
2. Install easily in the field.
3. Start collecting data.

... and you'll receive data on your desktop, under your control.

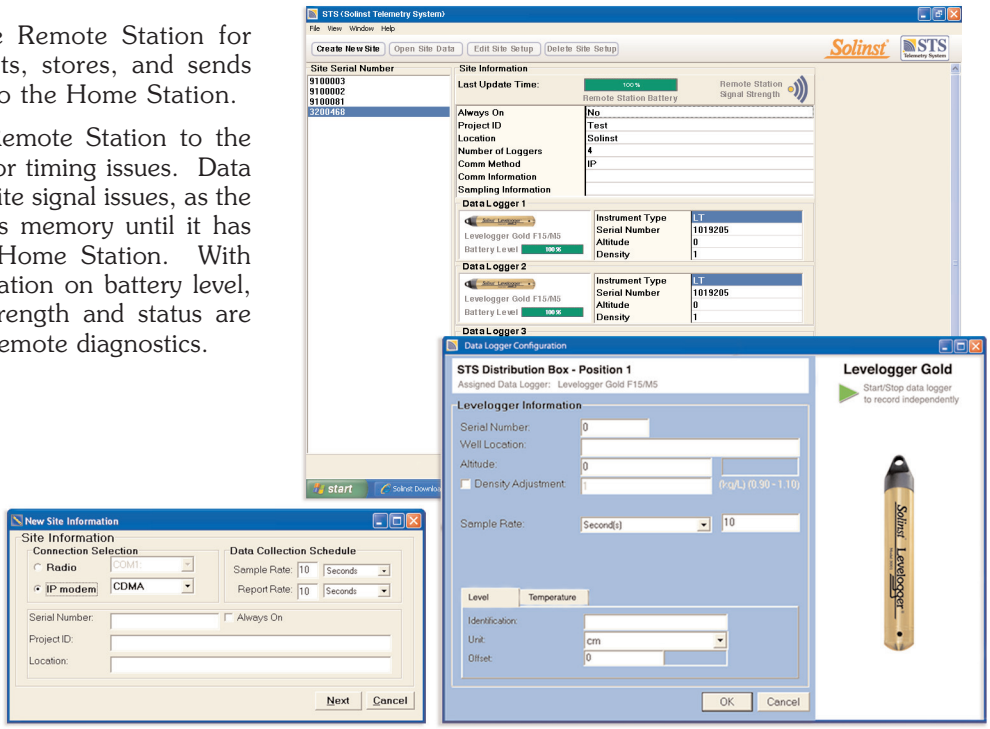
STS Software

It is easy to set up the intuitive STS software with site information, sampling and reporting schedules, and alarm notifications.

A linear 'Sample Rate' is set at which the STS Controller records a real-time reading from each attached logger. A 'Report Rate' is set to establish the frequency that the data is sent from the STS Controller to the Home Station.

Also the Leveloggers, themselves, are set up to record independently of the System, either on the same or a different schedule. This provides a reliable backup, if circumstances require it.

Remote Telemetry Station



STS Software Set-up Screens

Alarm Settings

An alarm notification will automatically be sent to the Home Station, if a non-communication or low battery condition is detected at an STS Remote Station, when a reading is taken. The Home Station then sends out cell phone or email alerts, as set up in the software.

High, low and percent change alarms can also be set for any monitored parameter (e.g. water level, temperature, rainfall, or conductivity).

SMS or E-mail Alarm Notification

Update Remote Station firmware from your Home Station PC and automatically receive System diagnostics

System Diagnostics

The STS is a very reliable system, which requires minimal maintenance, simplified further by diagnostic reporting. Each data report from an STS Controller to the Home Station, includes System information on battery level, modem operation, signal strength and Levelogger status. This information can help prevent data disruptions and also 'pin-point' which component of the STS may be the cause, if necessary.

Remote Firmware Updates

If new firmware becomes available, a firmware update can be performed from the Home Station using the update utilities supplied with the STS Software. New firmware is made available free via the Solinst website.

STS Systems also allow modem parameters to be reset remotely from the Home Station and changes made to the report and sampling rates.

Power Supply

The STS System is designed to avoid power issues. Each STS comes standard with a 12V battery that can last up to 12 months before replacing or recharging, depending on reporting frequency. The low power electronics of an STS are designed to only use power when there is a scheduled transmission of data, and very little power when it is in standby mode.

Solinst provides optional kits that enable solar power or direct AC mains connection as a power source, as well as a battery charging kit.

Specifications	Radio	Digital Cellular (CDMA & GSM)	Satellite
Why Use?	• smaller applications • closed loop network at any location in the world	• cellular coverage available • topography not suitable for radio • send data over the Internet	• too remote for cellular • send data over the Internet
System Differences	• free airtime, no long distance fees • you control the network • scheduled data transmission times • medium power needs	• monthly carrier fees • no scheduling conflicts for data transmission • low power needs	• satellite service available anywhere • no scheduling conflicts for data transmission • larger power needs
Suggested Applications	• monitoring mine sites • agricultural studies • landfill supervision • golf course management	• flood and stormwater management • watershed management • drought monitoring	• glacial melt monitoring • hard-to-reach, isolated areas
Remote Station Support	• 900 MHz radio • 20 mile (30 km) line of site • 115200 bits/sec	• CDMA or GSM IP enabled modem • dynamic IP Address • 115200 bits/sec	• IP enabled modem • dynamic IP Address • 115200 bits/sec
Home Station Support	• 2nd Radio required with RS232 connection • STS Software	• static IP Address • no extra hardware • STS Software	• static IP Address • no extra hardware • STS Software
Antenna	6" (15 cm) half wave, (2.1dBi) non-articulating	Dual Band Dipole	Included
Optional Antenna	896-960 MHz	Dual Band, Omni Directional	N/A
No Data Hosting Fees	√	√	√
Remote Firmware Upgrades	√	√	√
Remote Diagnostic Reporting	√	√	√
Power	12V sealed lead-acid battery		
External Power and Charge Accessories	• Solar power connection package (for user supplied solar panel) • AC power/battery charger assembly		

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For further information contact: Solinst Canada Ltd.
Fax: +1 (905) 873-1992; (800) 516-9081 Tel: +1 (905) 873-2255; (800) 661-2023
35 Todd Road, Georgetown, Ontario, Canada L7G 4R8
Web Site: www.solinst.com E-mail: instruments@solinst.com