Solinst LevelSender 5 Telemetry System User Guide

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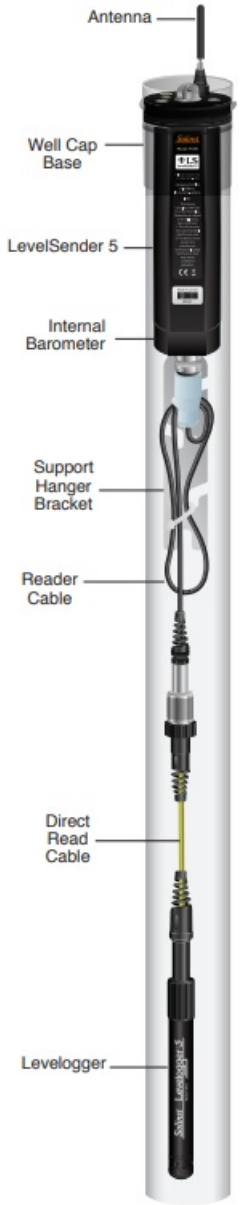
Solinst LevelSender 5 Telemetry System

Solinst
Model 9500
LS5
LevelSender
Solinst Canada Ltd.
+1 (905) 873-2255
Contains FCC ID:
IC 45131A-HE910
IP64
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.
Made in Canada
283647

OVERVIEW



What do you need to consider before setting up a LevelSender 5 Telemetry System?

The equipment needed:

1. A LevelSender 5 (pt#115604 4G) for each monitoring site (includes an antenna, 3 x 1.5V AA lithium batteries, well cap assembly for 2″ OD pipe, and a support hanger bracket).
   Note: The LevelSender 5 has an internal barometer for automatic compensation of Levelogger data, if desired.
2. Up to two Solinst dataloggers (Levelogger 5 or Edge Series, LevelVent 5 or LevelVent) with current firmware.
   Note: If using a Barologger for barometric compensation, one is suggested for each 30 km (20 mile) radius and 300 m (1000 ft) change in elevation.
3. A Splitter (pt#109700) if you are planning to connect two dataloggers to the same LevelSender 5.
4. A Reader Cable (pt#112867) to connect each datalogger.
5. A Direct Read Cable connected to each Levelogger/Barologger (as an option, a L5 Threaded Adaptor (pt#114630) can be used instead for deploying a Barologger 5). The Reader Cable connects directly to a LevelVent 5 Wellhead. See the LevelSender User Guide for a LevelVent installation diagram.

6. A USB to USB-C Programming Cable (pt#115378) for use with LevelSender PC Software – the software is a free download at **www.solinst.com/downloads/**
7. A 4″ Well Adaptor (pt#110235), if you are planning to install in a well larger than 2″ OD

A cellular service plan:

- The LevelSender 5 uses a 4G LTE UE Category M1 device (700/800/850/900/1700/1800/1900/ 2100 MHz), with low power consumption. The
- LevelSender system uses dynamic IPs.
- Data reports are sent from the LevelSender via email, and optionally SMS; therefore, you will need a monthly data plan with text messaging. You do not need voice access or features.

Here are some estimates to help determine the data plan you need:

Sample Rate	Report Rate	# Loggers	Daily Reports	Monthly Reports	Report Data Size (KB)	Total Monthly Data
1 minute	1 hour	2	24	744	23	**4 MB**
5 minutes	12 hours	1	2	62	23	**0.5 MB**
15 minutes	1 day	1	1	30	20	**0.2 MB**
Other data usage: Diagnostic Report: 14 KB, Test Email: 4 KB, Battery Voltage: 4 KB						

Note: Sample Rate is the frequency data is collected from the Leveloggers and Report Rate is how often the data is sent from the LevelSender to the Home Station; 1 minute is the maximum Sample Rate and 5 minutes is the maximum Report Rate.

Data: You can use our online calculator to help determine your data requirements: **https://www.solinst.com/products/dataloggers-and-telemetry/solinst-telemetry-systems/9500-levelsender/levelsender.php**
Texting: if you plan on sending SMS reports, you will also need to make sure your cellular plan includes enough text messages to cover the number of reports you will be sending each month.
Solinst Service Plan: Solinst offers the LevelSender 5 (#115924) pre-programmed with an activated SIM card pre-installed. Contact Solinst to learn more about the low cost, data-only cellular service plan options managed and billed directly through Solinst.

The signal strength at your monitoring site:

- To test if there is adequate cellular signal strength at your monitoring site, use your cell phone. 3 to 4 bars on your phone is excellent; you should not expect any communication issues.
- A signal strength less than 3 bars might require moving the LevelSender 5 to a location with a better signal. You can also consider using an alternate antenna, or adding an antenna extension cable to capture a better signal.

Note: The type of enclosure planned for the LevelSender 5 could affect the signal strength, e.g. a steel protective well casing can cause signal interference. Mounting an optional antenna on the outside of the enclosure could resolve this.

How often you need to replace LevelSender 5 batteries

You should replace the LevelSender 5 batteries when the reported battery information is showing 60% or less. Battery percentage is sent with each report.

Here are some typical battery life estimates:

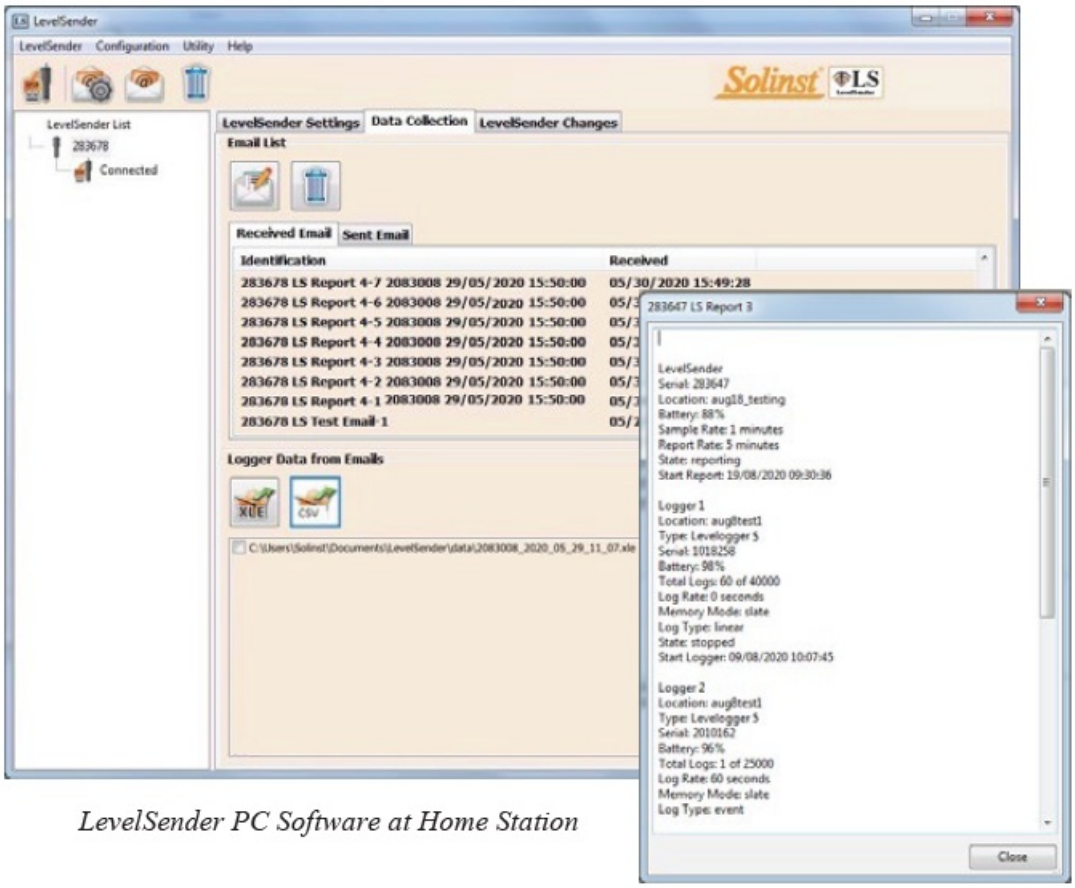
Sample Rate	Report Rate	Battery Life Estimates	
		1 Logger Connected	2 Loggers Connected
1 hour	24 hours	433 days	429 days
1 hour	6 hours	177 days	176 days
15 minutes	1 hour	35 days	35 days

Setting up unique, dedicated email addresses:

- You will require a unique email address for each LevelSender 5, and one for your Home Station PC.
- Multiple LevelSender 5 remote stations can report to one Home Station.

Tip: Set up a unique gmail account for each LevelSender 5, using the serial number of the LevelSender 5 in the email address; e.g. **LevelSender283047@internet.com**

How data is received and organized



LevelSender PC Software at Home Station

Data can be accessed in these ways:

- LevelSender PC Software – email reports to the Home Station can be viewed and data exported as .xle or .csv files
- .xle files for each Levelogger are automatically created and appended on the Home Station PC.
- SQLite database automatically created and appended on the Home Station PC. The SQLite database can be queried by your own macros or applications to automatically check for updates and display the data in your own website or other application of your choosing
- Email – up to 5 recipients can be programmed, including the Home Station recipient.
- Text message – 1 recipient can be programmed

Note: You can also set up file transfer to an FTP server using the Configuration menu in the LevelSender Software

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Documents / Resources

	Solinst LevelSender 5 Telemetry System [pdf] User Guide LevelSender 5 Telemetry System, LevelSender, LevelSender Telemetry System, 5 Telemetry System, Telemetry System

References

- Member Modal For CF Members

Manuals+,