



High Quality Groundwater and Surface Water Monitoring Instrumentation

(5)



# 1) Getting Started

Before you can begin using your LevelSender, you need to set up the following:

- An account with a cellular service provider to receive a SIM card and setup information for your LevelSender (data usage service plan for a GSM network, including text messaging)
- Separate, dedicated email addresses for the Home Station and your LevelSender

# 2) Install the Batteries

A LevelSender uses three 1.5V AA user-replaceable lithium batteries. To install the batteries:

- 1. Unscrew the stainless steel cap from the LevelSender.
- $\ensuremath{2}.$  Install the three batteries with the positive ends first/down.
- 3. Replace the stainless steel cap.

# 3) Connect the Antenna

- 1. Use a Phillips screwdriver to remove the three screws from the top of the LevelSender.
- 2. Pull off the top cap of the LevelSender.
- 3. To attach the antenna, line up the connector and screw it onto the connection on the top of the LevelSender. (The antenna bends to accommodate well cap installation.)

# 4) Install the SIM Card

- 1. Insert the SIM card into the slot in the top of the LevelSender, as shown in the photo.
- Replace the top cap (over the installed antenna), push into place and secure using the three screws.

**Note:** You can leave the top cap open if you will be programming the LevelSender (see Step 8).

# 5) Connect Dataloggers

Each LevelSender has a single port to connect one datalogger, or a Splitter. A Splitter provides a second datalogger connection.

- 1. Ensure the pins are lined up, and connect the Reader Cable directly to the LevelSender or Splitter.
- 2. Connect the Reader Cable to a Direct Read Cable with a Levelogger or Barologger connected, or to a LevelVent Wellhead or AquaVent Wellhead Connector Cable.









Note: When using a Splitter,

the number 1 or 2 will identify the dataloggers in LevelSender

labeled directly on the Splitter.

Software. The numbers are

# LevelSender Ouick Start Guide

## 6) Download LevelSender Software

Download the newest version of LevelSender Software on your home station PC, at: www.solinst.com/downloads/

The Software Installation Wizard will guide you through the installation process.

Default Directory is <C:\Program Files\Solinst\ LevelSender>

Sender Configuration U		Calinat ALC
<u>6</u>		Solinst #LS
evelSender List	LevelSender Settings Data Collection LevelSender Changes	
Connected	LevelSender Information	
	Location: Wel 2	
	Status: Stopped	
	Primare Version: 1.000	
	Parmare Personi 1.000	
	Cellular Status: Registered	
	Signal Strength:	
	LevelSender Phone Number +19058731992	
	LevelSender Setup	
	Sampling Rate: 1 Minute(s) Reporting Rate:	30 Minute(s)
	Start Time: 24/10/2016 = 11:46:58 AM	
	Number of Loggers attached	
	One Datalogger Two Dataloggers	

LevelSender Software Main Window - LevelSender Settings Tab

## 7) Set Up Home Station Email

To enable your Home Station to receive email/data, and send remote updates, you must set up a Home Station email. Multiple LevelSenders can report to one Home Station email.

To set up your Home Station email, open the LevelSender Software and click

Once you have set up your Home Station email, you can test that the settings you entered are correct by clicking



This will open the LevelSender Email Client. You can access the LevelSender Email Client at any time to view all email received and sent by the Home Station, including test emails.

Connecting to mail server Checking email from POP3 account Email Total: 4 Subject: 283646 L5 Test Email' Received email number 1 of 4 Subject: 283046 L5 Test Email' Received email number 2 of 4 Subject: 283046 L5 Report 1° Received email number 3 of 4 Subject: 283046 L5 Report 2° Received email number 4 of 4	
Checked Home Station Email Successfully	

LevelSender Email Client

User Information		
oper anormation		
Email Addr	ress: home@solinst.com	
POP3 Server Inform	ation	
Account Type:	POP3 - 🕤	
Incoming Mail server:	incoming.solinst.com	0
Outgoing Mail server	outgoing.solinst.com	0
Login Information		
User Name: ho	me@solinst.com Password: •••••	
	cure Password Authentication (SPA)	
My outgoing server (SM	(TP) requires authentication 🕜	
	s my incoming mail server	
	s my incoming mail server	
Use same settings as		
Use same settings as Dog on using Ifor/ Name		
Use same settings as Dog on using Ifor/ Name	Paceword:	
Use same settings as Log on using User Name Require Secure P	Paceword:	

Enter your Email Server and Login Information in the Home Station Email Setup Window

## 8) Connect LevelSender to PC

For initial setup and direct communication with LevelSender PC Software, the LevelSender must be connected to the PC using a mini USB cable. The connection is accessed by loosening the antenna at its base and removing it along with the top cap (see Step 3).





## 9) LevelSender Setup Wizard

When connecting a new LevelSender, the LevelSender Setup Wizard will start automatically if the LevelSender Software is open, or click is to start the Wizard.



SMS Centre Number +17057969300

LevelSender Email Setup Email Address: LS1@solinst.com Carl Enable Remote Configuration Mail Server Incoming Mail server: Incoming.solinst.com Outgoing Mail server (SMTP): outgoing.solinst.com Login Paceword: .... User Name: LS1@solnst.com Require logon using Secure Password Authentication (SPA) Outgoing Server Why outgoing server (SMTP) requires authentication 🛞 Use same settings as my incoming mail server C Log on using Require Secure Password Authentication (SPA) Server Port Numbers Incoming server (POP3): 110 Require SSL Outgoing server (SMTP): 25

LevelSender Setup Wizard		
	Data Recipient Setup	
	Home Station Email:	home@solinst.com
	🕑 E-mail Recipients	
	Email Address:	bob@solinst.com
	First Name:	bob
	Last Name:	smith
	Add	beb geolinet.com
	Remove	
	Short Message Serv	
	Phone Number:	19058732255
		eg. 19058732255

- 1. The LevelSender Setup Wizard first detects/retrieves the settings from the connected LevelSender. Click **Next** to continue the Setup.
- Enter the SIM Card settings obtained from your cellular service provider.

**Note:** User Name, Password, and DNS may not be required if your carrier uses a public account.

3. Setup the LevelSender email it will use to send data and receive remote updates. To enable the LevelSender station to receive remote updates from the Home Station, ensure you check **Enable Remote Configuration**.

**Note:** Each LevelSender must have a unique, dedicated email address. Solinst recommends creating a new email address for each LevelSender.

 Enter the data recipients, including the Home Station Email, email addresses, and SMS number. You can enter up to five email addresses and one SMS number.

**Note:** Ensure you have added all required recipients, as you can only make changes to the list when the LevelSender is connected to the PC.

LevelSender Setup Wizard				
	Number of Datalogg	well 2 1 ************************************	Minute(s) •	
LeelSender Setup Wirad	Pre-Start Diagne Test LevelSender I Test Mobile Conne Send Test Email Send Test SMS Test DataLogger I	Battery 🗸 ection 🖌		
		< <u>B</u> ack	Start Lev	elSender <u>C</u> ancel

 Enter the sampling and reporting rate, start time, and number of dataloggers connected.

**Sampling Rate:** the rate that the LevelSender station collects data from the connected datalogger(s).

**Reporting Rate:** the rate that the LevelSender station reports collected data via email/SMS. If enabled (in step 3), it also checks for remote updates from the Home station

 Diagnostic tests are automatically performed after you have entered all of the setup information.

When all the diagnostics tests are passed, click **Start LevelSender** to complete the setup of your LevelSender. It will start reporting at the set start time.

**Note:** You can set the dataloggers to record independently in their internal memories using the LevelSender Changes tab.

#### 10) LevelSender Installation

The LevelSender is designed to be discreetly installed inside a 2" well casing (4" with an adaptor). Each LevelSender comes with a 2" Well Cap Assembly and Support Hanger Bracket.



**Note:** If you are connecting a LevelSender to a Levelogger already installed in the field with a Direct Read Cable and Solinst Well Cap Assembly, remove the installation from the well.



The following are guidelines for installing one Levelogger in a 2" well:

- 1) Install the well cap base on the well casing.
- 2) Wrap the Reader Cable around the Support Hanger Bracket, leaving about 6" of slack above the top of the bracket. Use zip ties to secure the cable to the bracket.

**Note:** Providing enough slack at the top of the well allows you to lift the LevelSender from the well cap base, in order to accommodate periodic depth to water measurements, without disturbing the datalogger(s) from the downhole position.

3) Connect the Levelogger to the Direct Read Cable. Connect the Direct Read Cable to the Reader Cable. Slowly lower the Levelogger down the well.

**Note:** See the LevelSender User Guide for more details if installing a Barologger in the same well, or if installing a LevelVent or AquaVent.

- Lower the assembly until the Support Hanger Bracket seats on the shoulder in the well cap base.
- 5) Connect the top end of the Reader Cable to the LevelSender.
- 6) Carefully push the excess Reader Cable down the well, while lowering the LevelSender into position. The LevelSender has a flat side so it fits alongside the Support Hanger Bracket.
- 7) With the antenna in a bent position, you can install the well cap onto the well cap base.

## Maintenance

As with any monitoring project, you should select the proper equipment and determine a maintenance schedule based on the environment specific to your application.

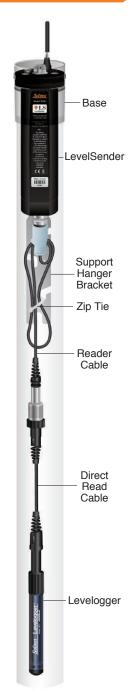
Maintenance tips include:

- See the Levelogger or Vented Dataloggers User Guides for tips on maintaining and cleaning your dataloggers
- Keep the dust cap on the LevelSender datalogger connection, when not in use
- Remove the batteries and SIM card, when the LevelSender is not in use
- Replace the batteries as required (three 1.5V lithium batteries)

**Note:** Battery percentage remaining for the LevelSender is sent with each report.

Sample Rate	Report Rate	Battery Life
Every Hour	Every Day	3.3 Years
Every Hour	Every 6 Hours	11 Months
Every 15 Minutes	Every Hour	1.8 Months

**Note:** Estimates are based on three 1.5V lithium batteries, with two dataloggers connected.



#### **Remote Updates**

To make changes to a remote LevelSender station, use the LevelSender Changes tab.

From here, you can update the Sampling Rate, Reporting Rate, and Stop or Start a LevelSender. You can also set connected dataloggers to record independently in their own internal memory.

evelSender Configuration Util	ty Help	Solinst PLS
LevelSender List 28846 Geneeted	Exercisioner settings     Data colocition     EventSinder Changes       LevelSender Statut     LevelSender Statut     LevelSender Statut       LevelSender Statut     Reserving for     LevelSender Statut       Reserving for LevelSender     Reserving for     LevelSender Statut       Reserving for LevelSender     Reserving for     LevelSender Statut       Statut     Statut     LevelSender Statut     LevelSender Statut	(* (Muse)) • Dataloger 2
	Select Logger LT Edge -	Select Logger None
	V Brable Start/Stop Datalogger 1	Enable Start/Stop Datalogger 2
	Location Solinst	
	Sample Rate Minute(s) • 15	Sariole Rate Meute(s) + 1
	@ Start DataLogger 1 24/10/2016 3* 11/45/01 AM	@ Start Data.ogger 2 24/30/2016 07 11:45:01 AM

Click **Send**, the changes will be applied to the remote LevelSender station at its next scheduled report interval.

**Note:** If you Stop a LevelSender, it will stop sampling/reporting, but will continue to check for remote email updates (e.g. a new start time) from the Home Station at the set reporting rate.

## Data Collection

Data sent in each LevelSender report can be viewed/accessed in an email, SMS (text) message, LevelSender Software, and in a dynamic database on the Home Station PC.

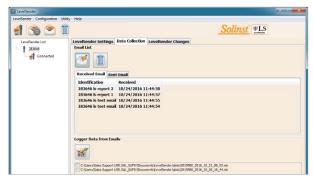
LevelSender Changes Tab for Remote Station Updates

Along with the data, each report includes information about the LevelSender – including battery life, and information about connected dataloggers.

To access email and data files using LevelSender Software, use the **Data Collection** tab. The data files are also automatically saved on the Home Station PC in this default location:

<C:\Users\Name\Documents\LevelSender\Data>

Select an \*xle file and click to export and save the \*.xle file to a different location.



LevelSender Data Collection Tab for Viewing Email and Data

283647 LS Report 1 LevelSender Serial: 283647 Location: Well 2 Battery: 89% Sample Rate: 1 minutes Report Rate: 5 minutes State: reporting State: Reporting State: Report: 19/08/2016 12:03:20 Logger 1 Location: aug8test1 Type: Levelogger Gold Serial: 1018258 Battery: 98%

Total Logs: 60 of 40000 Log Rate: 0 seconds Memory Mode: slate Log Type: linear

LevelSender Report Example

Data from each report is placed in a SQLite database on the Home Station computer. Typical default directory: <C:\Users\Name\ Documents\LevelSender\db>

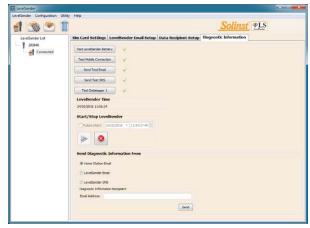
The database can be queried by your own macros or applications to automatically check for updates and display the data in your own program.

## Diagnostics

The **Diagnostic Information** tab can be used to perform individual diagnostic tests when the LevelSender is connected to the PC with the USB cable.

You can test the LevelSender battery, mobile connection, LevelSender Email and dataloggers.

You can also Stop or Start a LevelSender immediately, or set a future start time.



**Note:** After performing all of the tests, you can send a diagnostic report from the Home Station email, LevelSender Email, or LevelSender SMS, to an email recipient of your choice.

The report can be used for your own purposes, or sent to Solinst for further assistance.

LevelSender Diagnostics Tab for a USB Connected LevelSender

## Compatibility

The LevelSender is compatible with the following Solinst dataloggers, using the most recent firmware versions:

Datalogger	Firmware Version
Levelogger Edge	3.004
Barologger Edge	3.004
Levelogger Junior Edge	3.004
LTC Levelogger Edge	1.003
Rainlogger Edge	3.001
LevelVent	1.000
AquaVent	1.000
Levelogger Gold	2.007
Barologger Gold	2.007
Levelogger Junior	2.007
LTC Levelogger Junior	2.005
Rainlogger	2.000

**Note:** Ensure you are always using the most recent LevelSender Firmware and Software versions. Visit: www.solinst.com/downloads/ to check your compatibility. See the LevelSender User Guide for firmware update instructions, if required.

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