



LevelSender Remote Station

- ① Antenna
- ② Battery Compartment
- ③ LED Activity Light
- ④ Serial Number
- ⑤ Datalogger Connection
- ⑥ Opening to Internal Barometer



1) Getting Started

Before you can begin using your LevelSender 5, you need to set up the following:

- An account with Solinst, or a cellular service provider, to receive a SIM card and setup information for your LevelSender 5 (data usage service plan for a 4G LTE-M network, including text messaging)
 - Separate, dedicated email addresses for the Home Station and your LevelSender 5
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2) Install the Batteries

A LevelSender 5 uses three 1.5V AA user-replaceable lithium batteries. To install the batteries:

1. Unscrew the stainless steel cap from the LevelSender 5.
 2. Install the three batteries with the positive ends first/down.
 3. Replace the stainless steel cap.
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3) Connect the Antenna

1. Use a Phillips screwdriver to remove the three screws from the top of the LevelSender 5.
2. Pull off the top cap of the LevelSender 5.
3. To attach the antenna, line up the connector and screw it onto the connection on the top of the LevelSender 5. (The antenna bends to accommodate well cap installation.)



4) Install the SIM Card

Note: If you ordered a LevelSender with a Solinst SIM card, it will ship pre-installed.

1. Insert the SIM card into the slot in the top of the LevelSender 5, as shown in the photo.
2. 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 5 (see Step 8).



5) Connect Dataloggers

Each LevelSender 5 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 5 or Splitter.
2. Connect the Reader Cable to a Direct Read Cable with a Levellogger 5 connected, or to a LevelVent 5 Wellhead.



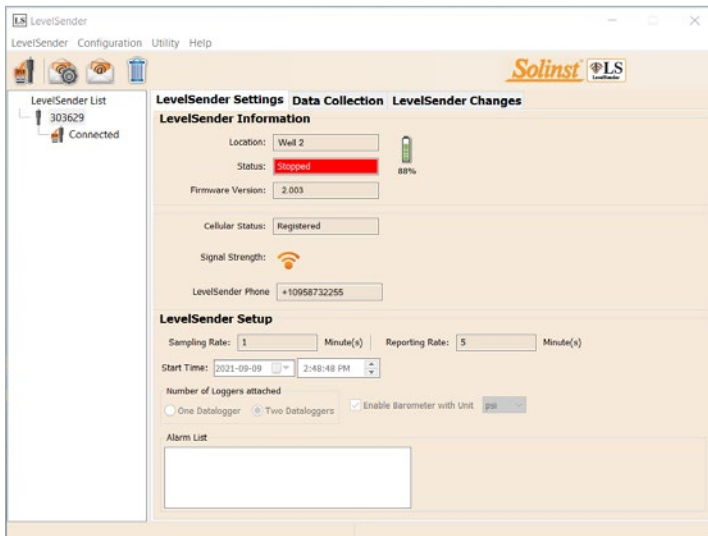
Note: When using a Splitter, the number 1 or 2 will identify the dataloggers in LevelSender Software. The numbers are labeled directly on the Splitter.

6) Download LevelSender Software

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

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


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




LevelSender Software Main Window – LevelSender Settings Tab

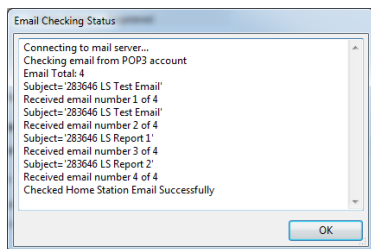
7) Set Up Home Station Email

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.

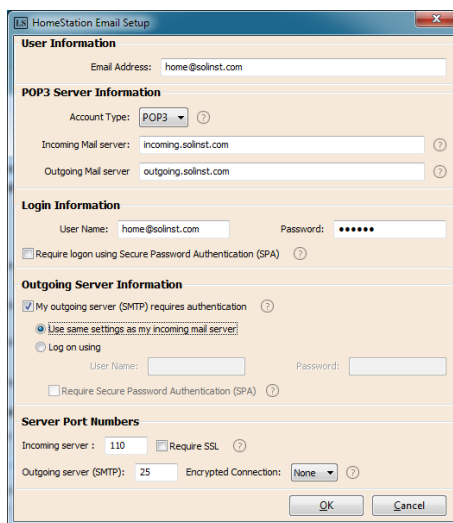
To set up your Home Station email, open the LevelSender Software and click .

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.



LevelSender Email Client

The screenshot shows the "HomeStation Email Setup" window. It has several sections: "User Information" with "Email Address: home@solinst.com"; "POP3 Server Information" with "Account Type: POP3", "Incoming Mail server: incoming.solinst.com", and "Outgoing Mail server: outgoing.solinst.com"; "Login Information" with "User Name: home@solinst.com" and "Password: *****"; "Outgoing Server Information" with "My outgoing server (SMTP) requires authentication" checked, and "Use same settings as my incoming mail server" selected; and "Server Port Numbers" with "Incoming server: 110" and "Outgoing server (SMTP): 25". There are "OK" and "Cancel" buttons at the bottom right.


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

8) Connect LevelSender 5 to PC

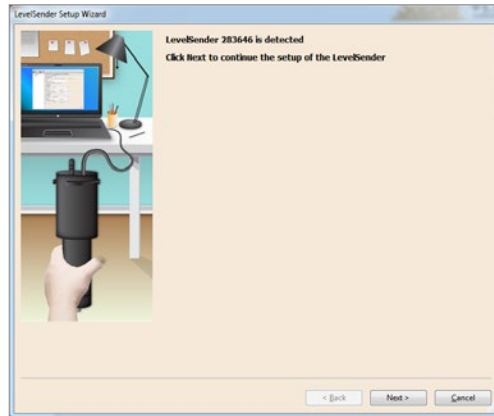
For initial setup and direct communication with LevelSender PC Software, the LevelSender 5 must be connected to the PC using a USB to USB-C cable. The connection is accessed by loosening the antenna at its base and removing it along with the top cap (see Step 3).



9) LevelSender 5 Setup Wizard

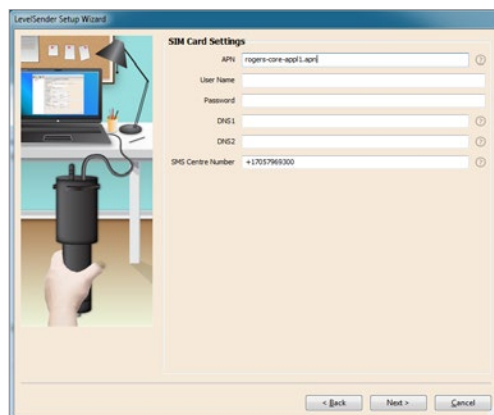
When connecting a new LevelSender 5, the LevelSender Setup Wizard will start automatically if the LevelSender Software is open, or click  to start the Wizard.

1. The LevelSender Setup Wizard first detects/retrieves the settings from the connected LevelSender 5. Click **Next** to continue the Setup.



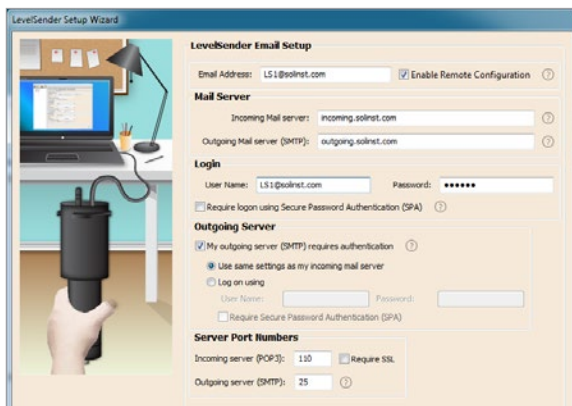
2. If using a cellular service provider other than Solinst, enter the SIM Card settings obtained. Settings for a LevelSender purchased with a Solinst SIM card are pre-programmed.

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 5 must have a unique, dedicated email address. Solinst recommends creating a new email address for each LevelSender 5.

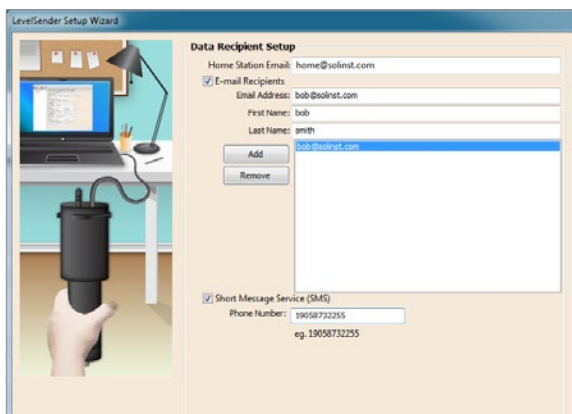


The screenshot shows the 'LevelSender Setup Wizard' window, specifically the 'LevelSender Email Setup' tab. On the left is an illustration of a LevelSender 5 device connected to a laptop. The main area contains the following fields and options:

- Email Address:** LS1@solinst.com (with a help icon).
- ☒ **Enable Remote Configuration** (with a help icon).
- Mail Server:**
 - Incoming Mail server:** incoming.solinst.com (with a help icon).
 - Outgoing Mail server (SMTP):** outgoing.solinst.com (with a help icon).
- Login:**
 - User Name:** LS1@solinst.com
 - Password:** *****
 - ☐ **Require login using Secure Password Authentication (SPA)** (with a help icon).
- Outgoing Server:**
 - ☒ **My outgoing server (SMTP) requires authentication** (with a help icon).
 - ☒ **Use same settings as my incoming mail server**
 - ☐ **Log on using:** (with fields for User Name and Password).
 - ☐ **Require Secure Password Authentication (SPA)**
- Server Port Numbers:**
 - Incoming server (POP3):** 110 (with a help icon).
 - ☐ **Require SSL**
 - Outgoing server (SMTP):** 25 (with a help icon).

4. 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 5 is connected to the PC.




The screenshot shows the 'LevelSender Setup Wizard' window, specifically the 'Data Recipient Setup' tab. On the left is the same illustration of the LevelSender 5 device connected to a laptop. The main area contains the following fields and options:

- Home Station Email:** home@solinst.com
- ☒ **E-mail Recipients:**
 - Email Address:** bob@solinst.com
 - First Name:** bob
 - Last Name:** smith
 - Add** button
 - Remove** button
 - A list box containing: bob@solinst.com
- ☒ **Short Message Service (SMS):**
 - Phone Number:** 19058732255 (with a help icon)
 - eg. 19058732255

5. Enter the sampling and reporting rate, start time, number of dataloggers connected, optionally, set the connected dataloggers to record independently in their memories and enable the internal LevelSender barometer to compensate the reported water level readings.

LevelSender Setup Wizard



LevelSender Setup

Location: Well 2

Sampling Rate: 1 Minute

Reporting Rate: 5 Minute

Start Time: 2021-09-09 2:48:48 PM

Number of Dataloggers attached
☐ One Datalogger ☒ Two Dataloggers

Datalogger 1
 Select Logger: Levellogger 5
☐ Start Datalogger 1
 Location:
 Sample Rate: 1 Minute(s)
 Start Time: 2021-09-09 2:47:55 PM

Datalogger 2
 Select Logger: Levellogger 5
☐ Start Datalogger 2
 Location:
 Sample Rate: 1 Minute(s)
 Start Time: 2021-09-09 2:47:55 PM

☐ Enable Barometer with Unit: psi

Note: The attached Levelloggers will be restarted upon the LevelSender start-up. If the attached dataloggers are already logging, they will stop and restart following the settings entered above. It is recommended to download any existing data in the Levelloggers before start-up the LevelSender. Not entering settings above would avoid independent logging (Levellogger status stopped) after LevelSender start-up.

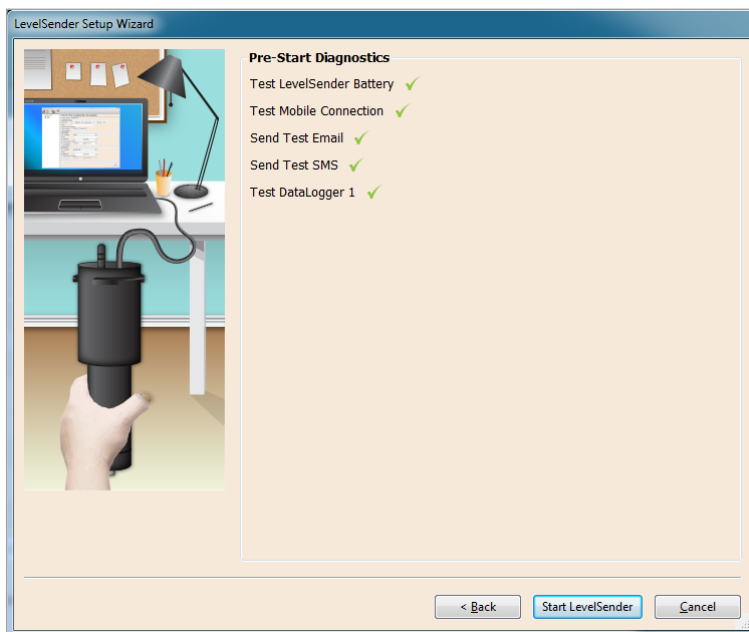
< Back Next > Cancel

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.

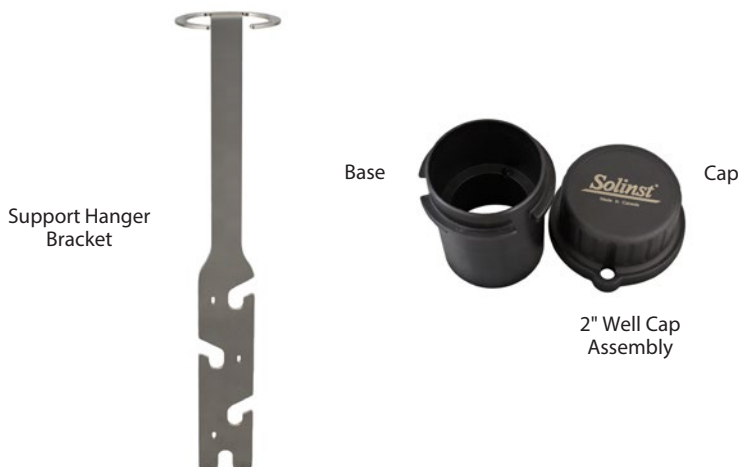
6. Optionally, set up alarm conditions for each attached datalogger.
7. Diagnostic tests are automatically performed after you have entered all of the setup information.

When all the diagnostics tests are passed, click Start LevelSender to complete the setup of your LevelSender 5. It will start reporting at the set start time.



10) LevelSender 5 Installation

The LevelSender 5 is designed to be discreetly installed inside a 2" well casing (4" with an adaptor). Each LevelSender 5 comes with a 2" Well Cap Assembly and Support Hanger Bracket.



Note: If you are connecting a LevelSender 5 to a Levellogger 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 Levellogger in a 2" well:

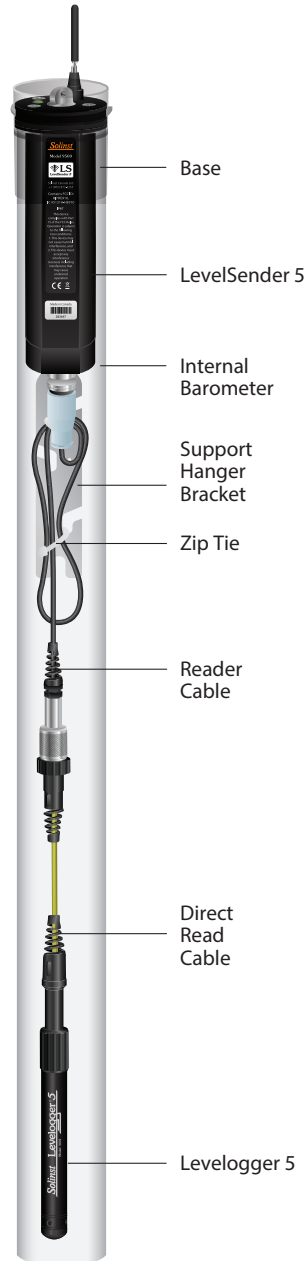
1. Install the well cap base on the well casing.
2. Wrap the Reader Cable around the Support Hanger Bracket, leaving about 6" of slack above the top of the bracket. Use zip ties to secure the cable to the bracket.

Note: Providing enough slack at the top of the well allows you to lift the LevelSender 5 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 Levellogger to the Direct Read Cable. Connect the Direct Read Cable to the Reader Cable. Slowly lower the Levellogger down the well.

Note: See the LevelSender 5 User Guide for more details if installing a Barologger in the same well, or if installing a LevelVent.

4. 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 5.
6. Carefully push the excess Reader Cable down the well, while lowering the LevelSender 5 into position. The LevelSender 5 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 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 Levellogger or Vented Dataloggers User Guides for tips on maintaining and cleaning your dataloggers
- Keep the dust cap on the LevelSender 5 datalogger connection, when not in use
- Remove the batteries and SIM card, when the LevelSender 5 is not in use
- Replace the batteries as required (three 1.5V lithium batteries)

Note: Battery percentage remaining for the LevelSender 5 is sent with each report.

Sample Rate	Report Rate	Battery Life
Every Hour	Every Day	429 Days
Every Hour	Every 6 Hours	176 Days
Every 15 Minutes	Every Hour	35 Days

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

Remote Updates

To make changes to a remote LevelSender 5 station, use the **LevelSender Changes** tab.

From here, you can update the Sampling Rate, Reporting Rate, and Stop or Start a LevelSender 5.

You can also update or set connected dataloggers to record independently in their internal memory.

Click **Send**, the changes will be applied to the remote LevelSender 5 station at its next scheduled report interval.

The screenshot displays the LevelSender software interface. On the left, a 'LevelSender List' shows a single entry '303629' with a 'Connected' status. The main window has three tabs: 'LevelSender Settings', 'Data Collection', and 'LevelSender Changes', with the latter being active. The 'LevelSender Changes' tab contains a 'LevelSender Setup' section with a 'Retrieve Current Settings from Database' button. Below this, there are checkboxes for 'Enable Start/Stop LevelSender', 'Start LevelSender', 'Stop LevelSender', and 'Enable Barometer with Unit'. The 'Sampling Rate' is set to 1 Minute(s) and the 'Reporting Rate' is 5 Minute(s). The 'Location' is 'Test'. The 'Max. Number of Alarm Notifications' is 3. There are two 'DataLogger' sections, 'DataLogger 1' and 'DataLogger 2', each with a 'Select Logger' dropdown set to 'Levellogger 5'. Each logger has a 'Logging Setup' section with a 'Logging Setup' button, a 'Logging Setup' checkbox, and a 'Start DataLogger' button. The 'Start DataLogger' buttons are set to '2021-09-09' and '2:58:09 PM'. A 'Send' button is located at the bottom right of the interface.

LevelSender Changes Tab for Remote Station Updates

Note: If you Stop a LevelSender 5, 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 5 report can be viewed/ accessed in an email, SMS (text) message, LevelSender Software, and in a dynamic database on the Home Station PC.

Along with the data, each report includes information about the LevelSender 5 – 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>

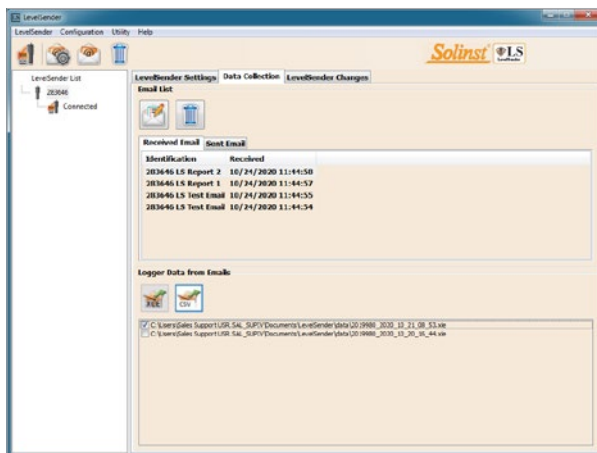
Select an *.xle file and click  to export and save the *.xle file to a different location. You can also select to export to a *.csv file.

283647 LS Report 1

LevelSender
Serial: 283647
Location: Well 2
Battery: 89%
Sample Rate: 1 minutes
Report Rate: 5 minutes
State: reporting
Start Report: 19/08/2021 12:03:20

Logger 1
Location: aug8test1
Type: Levellogger 5
Serial: 1018258
Battery: 98%
Total Logs: 60 of 40000
Log Rate: 0 seconds
Memory Mode: slate
Log Type: linear

LevelSender 5 Report Example



LevelSender Data Collection Tab for Viewing Email and Data

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.

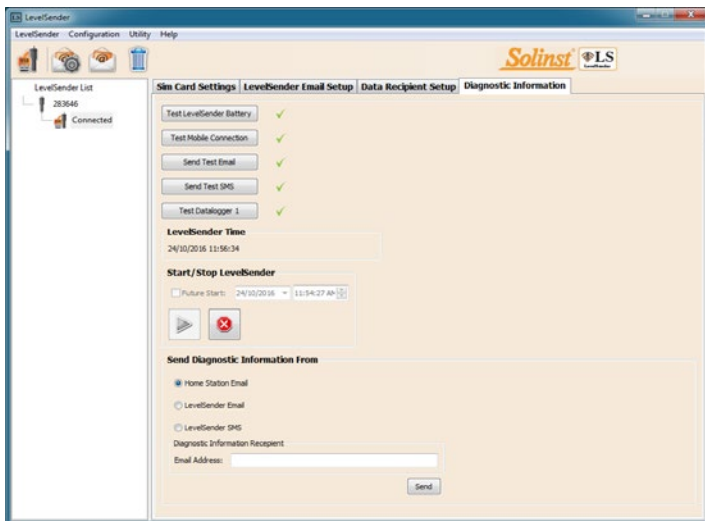
Note: You can also set up data transfer to an FTP server using the Configuration menu.

Diagnostics

The **Diagnostic Information** tab can be used to perform individual diagnostic tests when the LevelSender 5 is connected to the PC with the USB to USB-C cable.

You can test the LevelSender 5 battery, mobile connection, LevelSender Email and dataloggers.

You can also Stop or Start a LevelSender 5 immediately, or set a future start time.



LevelSender Diagnostics Tab for a USB Connected LevelSender

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.

Compatibility

The LevelSender 5 is compatible with the following Solinst dataloggers, using the most recent firmware versions (and up):

Datalogger	Firmware Version
Levellogger 5	1.005
Barologger 5	1.005
Levellogger 5 Junior	1.005
Levellogger 5 LTC	1.005
Rainlogger 5	1.005
LevelVent 5	1.005
Levellogger Edge	3.004
Barologger Edge	3.004
Levellogger Junior Edge	3.004
LTC Levellogger Edge	1.003
Rainlogger Edge	3.001
LevelVent	1.000

Note: Ensure you are always using the most recent LevelSender 5 Firmware and Software versions.
 Visit: <https://downloads.solinst.com> to check your compatibility.
 See the LevelSender 5 User Guide for firmware update instructions, if required.