

Quick Start Guide

3500 AquaVent 5

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**Please read this document carefully
before using the AquaVent 5.**

Note: For information on using your AquaVent 5 logger with MODBUS or SDI-12 protocols, see separate User Guides.

Getting Started

1. Download the software from: www.solinst.com/downloads and install Levellogger Software on your PC.
2. Install the Wellhead batteries. The Wellhead uses 4 user-replaceable 1.5V AA lithium batteries.
3. Connect the Wellhead and logger to the Vented Cable:

Wellhead and logger alignment pin



Vented Cable alignment socket



Line up the socket and the pin. Gently push the Wellhead and Vented Cable together and twist slightly until you feel/hear a **small click** when the properly aligned connection is made.



Hold Wellhead Still

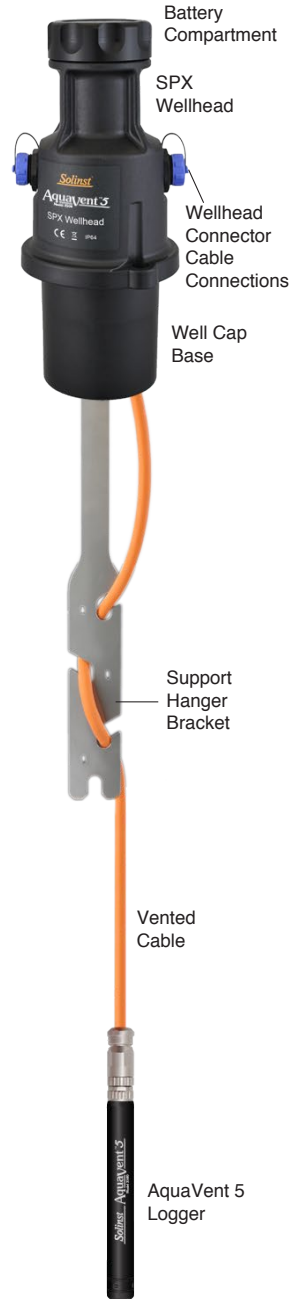
Hold Vented Cable Still

Only Turn Coupling

Only tighten the coupling while holding the Vented Cable and Wellhead still. Tighten the coupling until it seats. There should be no threads showing at the Wellhead connection. **Do not twist the Vented Cable or Wellhead.**

Follow the same procedure when connecting the logger to the Vented Cable.

Note: See page 6 for instructions to install the Support Hanger Bracket, as shown at right.



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4. Connect the USB Connector Cable to the 10-Pin (Solinst Protocol) connection on the Wellhead, then plug the USB Connector Cable into your computer.



Programming AquaVent 5 Loggers

Note: Ensure you are using the latest software and firmware versions for your AquaVent 5 logger and Wellhead. Visit www.solinst.com/downloads or use the update notifications in the software for help.

1. Start the Levelogger Software, and select the appropriate Com Port for the connected device.
2. In the Datalogger Settings tab, click the 'Retrieve Settings' icon. This will display the current programmed settings for the connected AquaVent 5.
3. You can now customize the AquaVent 5 Project ID, Locations, sampling regime, and start and stop times.

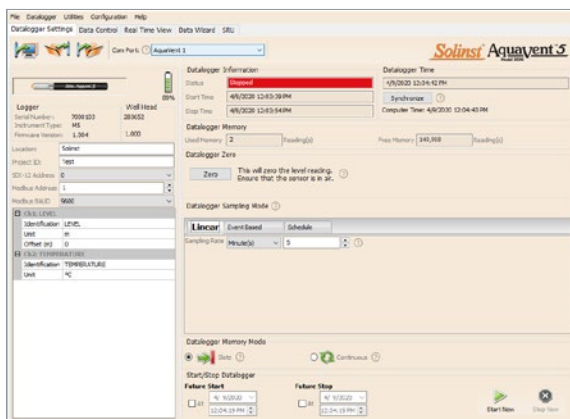
Tip

If a number of AquaVent 5 loggers are to be programmed with identical inputs, clicking the "Save Default Settings" icon will create a template.



Tip

The 'Future Start' and 'Future Stop' options are ideal for synchronizing the data collection of multiple loggers.



AquaVent 5 Datalogger Settings Window

Note: Clicking on the  in the software will provide you with a short explanation of that feature, e.g. Com Port, Datalogger Zero, Slate Mode, Time Synchronization, etc.

Starting and Stopping AquaVent 5 Loggers

1. If desired, enter a Future Start and/or Future Stop Time. To start logging immediately, do not fill in a future start time and click the 'Start Now' icon.



Note: When the 'Start' icon is selected, a window will pop-up to indicate how much memory is available. Selecting "Yes" ignores the message and starts the datalogger immediately. Selecting "No" gives you the chance to access the 'Data Control' tab to download and/or delete data files using the 'Download and Delete Files' option, to free-up memory.

2. When "Yes" is selected, all settings are applied to the AquaVent 5 and it will start logging at the specified time.
3. To stop the AquaVent 5 immediately, click the 'Stop Now' icon.



Downloading and Working with Data

1. Click the 'Data Control' tab to access the "Data Control" window. This window is laid out in three sections: datalogger settings, tabular data, and graphical data.
2. To download data from a connected logger, select the 'Download Data from Datalogger' icon. There are four options for downloading data: All Data, Append Data, Partial Download, and Download and Delete Files. The data will be presented in tabular and graphical formats.



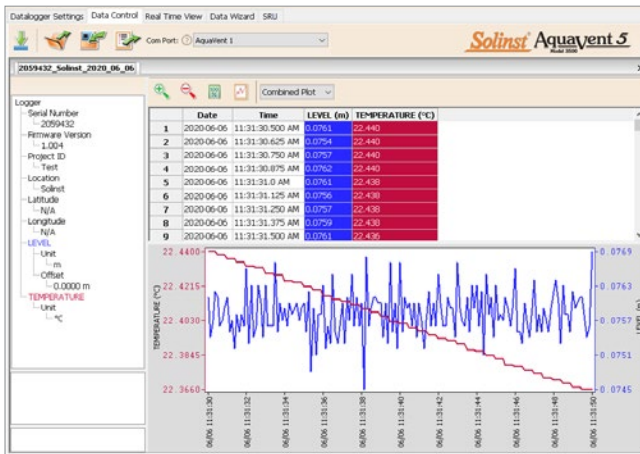
Note: The default directory for downloaded and saved data is:
 <C:\Program Files\Solinst\Levellogger4_6\Data>
 Data is saved as an *.xle file.

3. To save data, click the "Save Data" icon and input the desired name for the saved file.
4. To export the data file for use in other software programs, click the 'Export' icon. The file can be exported as a *.csv or *.xml file.



Note

To change the default directory for downloaded data, use the 'Configuration' menu at the top of the software window. Select 'Application Settings' and input or navigate to a different folder destination. Click 'OK'.



Data Control Window

Tip

The *.csv and *.xml file formats are supported and can be imported by most spreadsheet and database programs.

The data graph can be exported to a *.bmp file or a *.png file by clicking File > Export > Graph.

Real Time View

Real Time View provides on-screen measurement as data is being recorded by the connected logger. A view rate is set independently of the logging period of the AquaVent 5 and does not interfere with internal logging taking place. To take a reading at any specific time, click and that reading will be added to the displayed data. The data can be exported and saved.

Compensate the Data

Click the 'Data Wizard' tab to open the 'Data Wizard' window. In this window the 'Wizard' will guide you through Manual Data Adjustments (elevation or height of water conversions) and Parameter Adjustments (units, elevation, density adjustments) on your open data files. Multiple AquaVent 5 data files can be compensated at once.

Tip

'Manual Data Adjustments' allow you to use manual water level measurements to adjust your data to depth to water readings.

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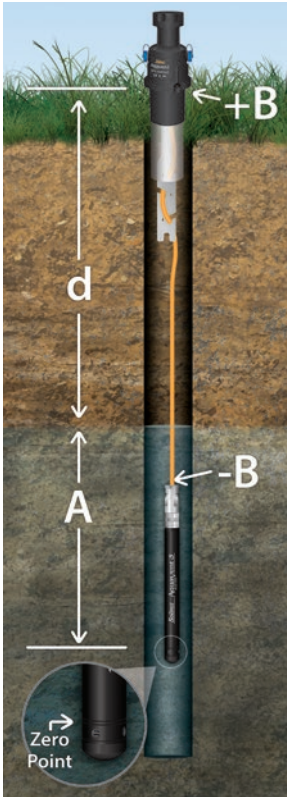
AquaVent 5 Ranges

AquaVent 5 Models are rated to a specific submergence depth. The choice of model depends on the accuracy of the level required and the submergence depth. Most important, your selection should be based on the maximum anticipated water level fluctuation.

| AquaVent 5 Models | Submergence Depth | Accuracy |
|-------------------|-------------------|--------------------------|
| M5 | 5 m (16.4 ft.) | ± 0.3 cm (0.010 ft.) |
| M10 | 10 m (32.8 ft.) | ± 0.5 cm (0.016 ft.) |
| M20 | 20 m (65.6 ft.) | ± 1 cm (0.032 ft.) |

Measurement Fundamentals

AquaVent 5 loggers provide readings (**A**) of the actual pressure of just water above the pressure sensor Zero Point.



AquaVent 5 loggers detect pressure. A vent tube to surface allows barometric effects (**+B**) on the pressure sensor to be eliminated (**-B**).

Note

The AquaVent 5 logger can withstand over-pressurization of 2 times the intended range, e.g. a Model M10 can accommodate a fluctuation of 20 meters or 60 feet and still record pressure. However, over-range accuracy is not guaranteed.

Tip

It is recommended to take a manual water level measurement before installing an AquaVent 5 logger, shortly after installation, periodically during your monitoring interval, and at the end of your measurement period. Use these measurements to verify AquaVent 5 readings, and for data adjustments later on. Ensure you take manual readings as close in time as possible to a scheduled AquaVent 5 reading.

Note

To adjust all readings in your AquaVent 5 data file to depth to water below a well casing (**d**), record a manual water level measurement using a water level meter. This reading should correspond in data and time with an actual AquaVent 5 recording. Use this as a reference datum in the Manual Data Adjustment option in the Software Data Wizard.

Verifying Readings

The best recommendation is to compare AquaVent 5 readings (**A**) with a measured depth to water level value (**d**) (using a Water Level Meter).

AquaVent 5 Field Notes

Before Deployment

Before deployment, make sure you do the following:

- Program your AquaVent 5 logger, using Levelogger Software, with the correct project identification, memory mode, sampling regime, time, etc.

Note: It is useful to synchronize the times of all AquaVent 5 loggers being used for the same project.

- If desired, use the Datalogger Zero option in the Levelogger Software to zero the logger to current atmospheric pressure.
- Set a future start time in the office, or start the AquaVent 5 logger in the field using Levelogger Software and a laptop, or the Solinst Levelogger 5 App Interface.
- Determine borehole depth to ensure AquaVent 5 logger does not touch the bottom of the well (avoid submergence in sediment).

Note: The length of the Vented Cable should not be assumed as the deployment depth, as there may be some slack in the cable, especially when using the hanger bracket

- Use a Solinst Water Level Meter to take a manual depth to water measurement that will be used to verify AquaVent 5 readings
- Determine the minimum and maximum expected water levels, as AquaVent 5 loggers must remain submerged for the entire monitoring period.

Deployment

- The AquaVent system is designed to be conveniently installed on a 2" well casing (4" using an adaptor). However, other installations are acceptable, if proper precautions and recommendations are followed.
- Leave at least 2" (50 mm) of slack in the Vented Cable at surface to allow you to lift the AquaVent Wellhead from the well cap base to provide access for manual depth to water measurements, without disturbing the AquaVent 5 logger from its down hole position.
- The Wellheads have a rating of IP 64 (dust and splash resistant), so should not be submerged at anytime. They can be secured inside an enclosure, however, it must be vented to equalize atmospheric pressure.
- Do not drop the AquaVent 5 logger into the water, carefully lower it into place. Avoid installing in areas where "water hammer" or hydraulic jump" (very sudden, large increases in pressure) may occur.
- Be careful not to nick or bend the Vented Cable during installation (use a maximum 1" (25 mm) bend radius as a precaution).

Note: For tips, precautions, and more information on installations in different environments and applications, see the latest [Vented Dataloggers User Guide](#).

After Deployment

After deployment, make sure you do the following:

- Take a manual depth to water measurement after the well has stabilized (approximately 10 minutes)
- Take another manual depth to water measurement just before removing the AquaVent 5 logger from the well

Support Hanger Bracket Installation



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In-Field Communication

There are two Wellhead Cable options for communicating with AquaVent 5 loggers in the field.

- The USB Connector Cable allows you to connect to a field laptop for communication using Levelogger Software (see image on Page 1).
- The App/DataGrabber Connector Cable allows you to connect to a Levelogger 5 App Interface for communication using the Solinst Levelogger App, a Solinst Readout Unit (SRU) to view and download readings, or to a DataGrabber 5 for downloading data to a USB device.



LED: Wellhead Connection Status

The SPX AquaVent Wellhead has a multicolour LED light which indicates the status and operation of the AquaVent:

- Fast multicolour cycle 3 times: Wellhead is powering-on
- Fast 10 cycles alternating blue/green: Wellhead has successfully connected to the PC using the USB Connector Cable
- Fast 10 cycles alternating blue/red: USB connection has been dropped
- Flashing yellow: The Wellhead is communicating with the PC Software

Note

The SPX Wellhead has additional LED definitions related to MODBUS and SDI-12 operation. For information on communication using MODBUS or SDI-12 Protocols, see separate User Guides.

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.

To ensure the vent tube remains dry, the AquaVent 5 loggers and Wellheads contain permanent desiccants and hydrophobic membranes at the connections to the Vented Cable—there is no need to replace them. Please see our technical bulletin on *Vented Cable Design, Use, and Maintenance* for more details.

Other maintenance tips include (see the Vented Dataloggers User Guide for more details):

- Keep the dust caps on all of the connections, when not in use.
- Store the AquaVent 5 logger in its case, and the Vented Cable on its spool when not in use.
- Ensure connections are clean before assembling. Clean the AquaVent 5 logger as required.
- Replace the Wellhead batteries as required (four user-replaceable 1.5V AA lithium batteries).
- Replace the o-rings at the Vented Cable connections on the AquaVent 5 logger and the Wellhead (newer loggers and Wellheads do not have o-rings on the connections).

| AquaVent 5 Sampling Rate | Battery Life Estimate |
|--------------------------|-----------------------|
| 8 readings per second | 10 days |
| 1 reading per second | 3 months |
| 1 reading per minute | 8 years |

Troubleshooting

Levelogger PC Software:

1. You must have administrator privileges to install software on a computer.
2. The Windows 10 Operating System supports Levelogger Software.

Try the following if your AquaVent 5 is not communicating with Levelogger PC Software, or you are getting a communication error message:

1. Make sure you have installed the batteries correctly:
 - Ensure proper polarity, paying attention to the positive {+} and negative {-} symbols etched in the holder
 - Ensure proper alignment; the spring contacts in the housing should be lined up with the protruding contacts on the bottom of the battery holder
2. Check the Vented Cable connections to the AquaVent 5 logger and Wellhead. Ensure they are lined-up correctly and there is no dirt or debris in the connection.
3. Make sure you are using the correct Wellhead Connector Cable to connect to the PC.
 - You must be using a USB Connector Cable connected to the 10-pin Solinst Protocol connection on the Wellhead. The cable and connection are colour-coded orange.
4. Check that the USB Connector Cable is connected to the same Com Port that is chosen in the upper middle of the Main Window of the Levelogger Software.
5. Try communicating with another AquaVent 5 logger, Wellhead, Vented Cable or USB Connector Cable.
6. Try using a different computer.
7. If problem persists, contact Solinst.

To reset the AquaVent battery indicator, after replacing the Wellhead batteries:

Go to the Diagnostic Utility in Levelogger Software, click “Run Diagnostics”, then click “Reset AquaVent Battery Indicator”.

Note: For diagnostic purposes, you may want to install the end of the Vented Cable with the serial number to the surface connection at the Wellhead.

Vented Cable Compatibility

Older style Vented Cables (sold before 4/16/21 with serial numbers lower than 506326) are not compatible with newer style AquaVent 5 Wellheads (sold after 5/7/21) or AquaVent 5 Loggers (sold after 4/5/21) without a small user modification – contact Solinst for instructions. Newer style Vented Cables are compatible with all versions of the AquaVent Logger – please note, after the new Vented Cable connector is fully tightened, the external o-ring on an old Logger or Wellhead is visible and it is normal not to seat against the connector.