





High Quality Groundwater and Surface Water Monitoring Instrumentation



Installing the Software

To begin using your Levelogger, download the newest version of Levelogger Software and User Guide by visiting: <u>www.solinst.com/downloads/</u>

Installing the Hardware

Connect your datalogger to a computer using either the Optical Reader (Desktop Reader 5 or Field Reader 5) or PC Interface Cable.



Note: If you are using an old style Optical Reader or Direct Read Cable with a Levelogger 5 Series datalogger, you will need to use an L5–Edge DRC Adaptor.

Programming the Levelogger

Note: Ensure the Levelogger is operating with the latest firmware, and that you are using the latest software. Visit the Solinst website (<u>www.solinst.com/downloads/</u>) or use the update notifications in the software for assistance. If older Levelogger versions are used, refer to our Compatibility Chart on the Downloads page.

- 1. Connect the Levelogger to the communications device and start the software.
- 2. Select the appropriate Com Port for the connected communications device from the centre drop-down menu.
- Click the 'Retrieve Settings from Levelogger' icon. This will retrieve and display information about the connected datalogger, and any current programmed settings.



4. You can now customize the Levelogger including your Project ID, Location, Sampling Mode and Rate, and Future Stop and Start times.



Tip: If a number of Leveloggers are to be programmed with identical inputs, clicking the 'Save Default Settings' icon will create a template.

| Image: Status Com Port: Del dogger Traine Image: Status Del dogger Traine Del dogger Traine Image: Status Status Status Del dogger Traine Image: Status Status Status Status Status Image: Status Status <th>Image: Series Automation Datalogger Information Datalogger Time Series Automation Series Automation Series Automation Series Automatic Type: Margin Series Automation Series Automation Type: Type: Margin Series Automation Consulter Time: Margin Series Automation Type: Margin Series Automation Consulter Time: Margin Series Automation Type: Margin Series Automation Consulter Time: Margin Series Automation Datalogger Margin Automation Consulter Time: Series Automation Margin Series Automation Tree Memory Series Automation Tree Memory Used Memory Exercise Automation Datalogger Sampling Mode () Usatalogger Sampling Rode () Unit Interfeation Event Based Schedule Compliang Rate Second(c) 60 ()</th> <th></th> <th>Utilities Configuration Help</th> <th></th> <th></th> | Image: Series Automation Datalogger Information Datalogger Time Series Automation Series Automation Series Automation Series Automatic Type: Margin Series Automation Series Automation Type: Type: Margin Series Automation Consulter Time: Margin Series Automation Type: Margin Series Automation Consulter Time: Margin Series Automation Type: Margin Series Automation Consulter Time: Margin Series Automation Datalogger Margin Automation Consulter Time: Series Automation Margin Series Automation Tree Memory Series Automation Tree Memory Used Memory Exercise Automation Datalogger Sampling Mode () Usatalogger Sampling Rode () Unit Interfeation Event Based Schedule Compliang Rate Second(c) 60 () | | Utilities Configuration Help | | |
|---|---|---------------|---|--------------------------------|------------------------------------|
| Datakaguer Information Datakaguer Information Satus Satus Seriel Number: 700065 Sindurmation 149/2020 9:44:02 AM Sindurmation 149/2020 9:44:02 AM Sindurmation 19/2020 9:44:03 AM Datakaguer Inner 19/2020 9:44:03 AM Sindurmation 19/2020 9:44:03 AM Datakaguer Inner 19/2020 9:44:03 AM Datakaguer Samping Mode © 1000000000000000000000000000000000000 | Image: Second Secon | atalogger Set | tings Data Control Real Time View | Data Wizard Leveloader | |
| Status Status Status 4/9/2020 9:44:02 AM Serial Number: 7000065 Test Test Status 4/9/2020 9:44:03 AM Syndromae O Status 4/9/2020 9:44:03 AM Consulter Time: 4/9/2020 9:44:03 AM Databoger Memory Databoger Memory Status Bathoger Samping Mode Charter O Charter Consulter Time: 4/9/2020 9:44:03 AM Databoger Memory Executive Time: 4/9/2020 9:44:03 AM Databoger Samping Mode Consulter Time: 4/9/2020 9:44:03 AM Unit ma Charter Status Status Status Status Status Charter Status Charter Status Status Status <th>Amazanguerst Status Status Status 949/2020 9-44.02 AM Sendi Namber: 7000055 Status 149/2020 9-44.02 AM Syndromite © Sendi Namber: 7000055 Time 49/2020 9-44.02 AM Computer Time: 49/2020 9-44.03 AM Dotument Trace: MS Time 49/2020 9-44.02 AM Computer Time: 49/2020 9-44.03 AM Datalogoer Memory Bacading(s) Tiree Memory 6 Bacading(s) Offstaton LPEL Used Memory 6 Bacading(s) Offstaton EVEN Event Based Schedule Sompling Rote Sompling Rote 0 0</th> <th>2 😽</th> <th>Com Port: () USB Op</th> <th>otical Reader (373706) V</th> <th>Solinst Levelogger 5</th> | Amazanguerst Status Status Status 949/2020 9-44.02 AM Sendi Namber: 7000055 Status 149/2020 9-44.02 AM Syndromite © Sendi Namber: 7000055 Time 49/2020 9-44.02 AM Computer Time: 49/2020 9-44.03 AM Dotument Trace: MS Time 49/2020 9-44.02 AM Computer Time: 49/2020 9-44.03 AM Datalogoer Memory Bacading(s) Tiree Memory 6 Bacading(s) Offstaton LPEL Used Memory 6 Bacading(s) Offstaton EVEN Event Based Schedule Sompling Rote Sompling Rote 0 0 | 2 😽 | Com Port: () USB Op | otical Reader (373706) V | Solinst Levelogger 5 |
| gene Maniber 990% Start Time 4/9/2023 6%-03.2 AM Synchronize ③ Gene Maniber 900005 Start Time 4/9/2023 6%-04.3 AM Computer Time: 4/9/2023 9%-04.33 AM Start Time 4/9/2023 6%-04.3 AM Computer Time: 4/9/2023 9%-04.3 AM Datalogoet Nemony Start Time 4/9/2023 6%-04.3 AM Computer Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Start Time 4/9/2023 6%-04.3 AM Datalogoet Nemony Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet Test Datalogoet Nemony Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet 1 Test Datalogoet Nemony Chart Livet 0 Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet 1 Datalogoet Nemony Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet 0 Educed Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Time/0 Mode Optimized Time/0 Mode Unit m Optimized Time/0 Mode < | 99% Sort Time 1/9/2023 5-9/2.2 AM Syndromic Serui Namber: 200065 Bolument Trace: MS Dotaloger Memory acation: Wel 2 Used Memory 6 Reading(s) Free Memory 160,094 Chet LAVEL Datalogger Memory Offset (M) 0 Offset (M) 0 Chet RAVEL Datalogger Memory Identification TBM*ENATURE Identification TBM*ENATURE Identification TBM*ENATURE Identification TBM*ENATURE | | | Datalogger Information | Datalogger Time |
| gene Maniber 990% Start Time 4/9/2023 6%-03.2 AM Synchronize ③ Gene Maniber 900005 Start Time 4/9/2023 6%-04.3 AM Computer Time: 4/9/2023 9%-04.33 AM Start Time 4/9/2023 6%-04.3 AM Computer Time: 4/9/2023 9%-04.3 AM Datalogoet Nemony Start Time 4/9/2023 6%-04.3 AM Computer Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Start Time 4/9/2023 6%-04.3 AM Datalogoet Nemony Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet Test Datalogoet Nemony Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet 1 Test Datalogoet Nemony Chart Livet 0 Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet 1 Datalogoet Nemony Educed Start Time: 4/9/2023 9%-04.33 AM Chart Livet 0 Educed Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Start Time: 4/9/2023 9%-04.33 AM Datalogoet Nemony Unit m Optimized Time/0 Mode Optimized Time/0 Mode Unit m Optimized Time/0 Mode < | 99% Sort Time 149/2020 5+0:23 AM Syndromic Serial Number: 2000055 Bolument Trace: MS Datalogger Memory Bataloger Memory | | | Status Stopped | 4/9/2020 9:44:02 AM |
| Serial Number: 2000065 Tabilument Type: MS Timmere Version: 1.000 Datalogger Memory Used Memory 6 Reading(s) Test Chillional Consultation (EPEL Unit m Consultation (EPEL) Unit m Consultation (EPEL) Consultation (EPEL) | Serial Number: 7000065 Disturment Type:: MS Disturment Version: 1.000 Ured Memory 6 Reading(s) Test destification (EPEL Urit m Offset (w) 0 Cita LetVer Destilogger Sampling Mode () Lincar Event Based Serial Schedule Serial Schedule Serial Schedule Serial Schedule Serial Schedule Serial Schedule | | | Start Time 4/9/2020 9-40-23 AM | Contraction (C) |
| Insurance 1/ Type: MS Termwerk Version: Lo00 Loodbacker: Wel 2 Ued Memory € Reading(s) Free Memory 149,091 Reading(s) Test Chill LIVIL Unit m Chill EVEL Unit m Chill EVEL Unit e Unit e Compliager Memory Mode P Start/Stop Datalogger | bistument frame. MS Dataloger Memory Seaton: Wel 2 Used Memory Generation: Wel 2 Used Memory Generation: Generat | | | | |
| Timmare (virsion: 1.000 Uatalogger Hemory wel 2 Used Memory € Reading(s) Free Memory 149,094 Reading(s) Used Memory € Reading(s) Free Memory 149,094 Reading(s) Used Memory € Continuous Execution | Dataloger Memory Dataloger Memory Weil 2 Used Memory 6 Reading(s) Free Memory 100,094 Reading Chit LEVEL Used Memory 6 Reading(s) Free Memory 100,094 Reading Chit LEVEL Used Memory 6 Reading(s) Free Memory 100,094 Reading Chit LEVEL Uset Datalogger Sampling Mode () 0 1 Lincar Event Based Schedule 0 0 0 1 0 <td></td> <td></td> <td>Stop Time 4/9/2020 9:43:48 AM</td> <td>Computer Time: 4/9/2020 9:44:03 AM</td> | | | Stop Time 4/9/2020 9:43:48 AM | Computer Time: 4/9/2020 9:44:03 AM |
| oxatlor: Wel 2 type:LD: Test Chi:LINEL Local LINEL Local LINEL | axatom: VV6 2 Ued Memory 6 Reading(s) Free Memory 149,994 Reading VigeL ID: Test Datalogger Sampling Mode () Unit m () Offict (4) 0 0 Edentification TB/FENJURE Unit << | | | Datalogger Memory | |
| voject ID: Tert Chr.HVNL Unit m Chr.HVNL Unit m Chr.HVNL Unit c Unit c | IngerLID: Test Chi-LiVite Chi-LiVite Chi-Chi-Chi-Chi-Chi-Chi-Chi-Chi-Chi-Chi- | | Well 2 | Used Memory 6 Reading(s) | Free Memory 149,994 Reading(s) |
| Chit LEVEL Datalogger Sampling Mode () Unit m Coffect (w) 0 Lincarj Event Based Schedule () Continuous () Continuous () Datalogger Memory Mode () Optimier Rate () Datalogger Memory Mode () Start/Stop Datalogger () | Chitcheller Datalogger Sampling Mode ⑦ Unit m Offset (m) 0 ChitcherNature Event Based Identification TEMPERATURE Sampling Rate Unit % | | and the second se | | |
| Identification EXER Unit m Officit (m) 0 Ibit THEYRIATURE Event Based Linit %C Minite State Unit<%C | Identification (EPEL Unit m Offict (m) 0 Identification TBMEPATURE Unit ≪ Identification TBMEPATURE Unit ≪ | 100000 | lest |] | |
| Unit m Offect (m) 0 Ch2: THEMERATURE Identification TB/FDATURE Unit cc Unit cc Unit cc Sampling Rate Second(s) v 60 () Uzabagger Memory Mode () Start/Stop Datalogger | Unit m Officet (m) 0 Class TEMPERATURE Identification TEMPERATURE Unit °C | | | | |
| Offset (m) 0 Ch2: TENERATURE Event Based Line arr Event Based Unit PC Statiogram PC Unit PC Statiogram PC Statiogram PC Statiogram PC | Office type 0 Office type 0 Identification TBMPENATURE Unit < | | and the second se | Datalogger Sampling Mode (2) | |
| Identification TB/FENATURE Link < | CA2: TEMPERATURE Identification TEMPERATURE Unit % | | | It in and country of the | |
| Identification TEMPERATURE | Idontification TEMPERATURE | | | [minimum] | |
| Unit *C | Unt C | | | Sampling Rate Second(s) V 60 | ÷ 0 |
| Datalogger Merrory Mode | | | | | |
| Start/Stop Datalogger | Datalogger Memory Mode | | | | |
| Start/Stop Datalogger | | | | Datalogger Memory Mode | |
| | Slate (?) O (2) Continuous (?) | | | | Continuous (?) |
| | Start/Stop Datalogger | | | Start/Stop Datalogger | |
| | | | | Future Start Future Stop | |

Datalogger Settings Window

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

Rainlogger 5 Programming

The Rainfall Calibration Constant 'value' of the tipping bucket rain gauge used with the Rainlogger is required when programming the Rainlogger 5. Consult the Levelogger User Guide for more information on programming the Rainlogger 5.

Levelogger 5 LTC Calibration

Before deploying your Levelogger 5 LTC, be sure to calibrate the instrument. To begin calibration, open the 'Conductivity Cal' tab and follow the steps provided. Consult the Levelogger User Guide for more information, or view the LTC Calibration Video on our YouTube Channel: https://www.youtube.com/user/SolinstCanadaLtd



Starting and Stopping the Levelogger

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 Files' option, to free-up memory.

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

Tip: The 'future start' and 'future stop' options are ideal for synchronizing the data collection of multiple Leveloggers and Barologgers.

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: Levelogger settings, tabular data, and graphical data.
- To download the data from a connected Levelogger, select the 'Download Data from Levelogger' icon. There are four options for downloading data. They are: All Data, Append Download, Partial Download and Download Files. The data will be presented in both tabular and graphical format.

Note: The default directory for downloaded and saved data is in the 'Data' folder: <C:\Program\Files\Solinst\Levelogger 4_5\Data>. Data is saved as a .xle data file.

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

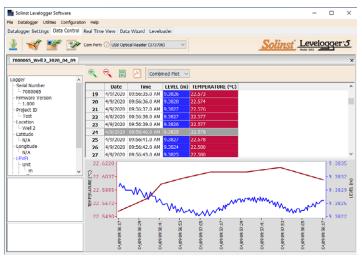
Note: To change the default directory for downloaded data, use the 'Configuration' menu at the top of the software window. Select 'Application Settings' and input or navigate to a different folder destination. Click 'OK'.

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.







Data Control Window

DataGrabber 5

Connect a DataGrabber 5 to an in-field Levelogger via an L5 Direct Read Cable or L5 Threaded or Slip Fit Adaptor, and transfer data to a USB key.



Real Time View

Real Time View provides on-screen measurement as data is being recorded by the connected datalogger. A view rate is set independently of the logging period of the Levelogger and does not interfere with internal logging taking place. To take a reading at any specific time, click set 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 Barometric Compensation, Manual Data Adjustments, and Parameter Adjustments on your open data files. There are two convenient options; Basic or Advanced compensation. This allows you to choose just one, two, or all three types of compensation. Multiple Levelogger files can be barometrically compensated at once, using one open Barologger file.

Tip: 'Manual Data Adjustment' allows you to use manual water level measurements to adjust your data to depth to water readings.



Levelogger Field Measurement

Levelogger 5 Ranges

Each model of Levelogger is rated for a specific submergence depth (Table 1). The choice of model largely depends on the accuracy of the water level required and the submergence depth. The selection, however, should be based on the maximum anticipated water level fluctuation.

| Model | Submergence Depth | Accuracy |
|------------|-------------------|----------------------|
| Barologger | Air only | ± 0.05 kPa |
| 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.) |
| M30 | 30 m (98.4 ft.) | ± 1.5 cm (0.064 ft.) |
| M100 | 100 m (328.1 ft.) | ± 5 cm (0.164 ft.) |
| M200 | 200 m (656.2 ft.) | ± 10 cm (0.328 ft.) |

Table 1 – Levelogger 5 Ranges

Measurement Fundamentals

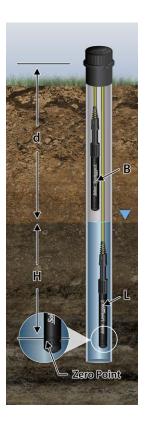
Leveloggers (L) measure the total pressure acting on a transducer at their zero point/sensor. The total pressure is caused by the column of water lying above the Levelogger pressure sensor AND the barometric (atmospheric) pressure acting on the water surface. To compensate for barometric pressure fluctuations and get true height of water column measurements (H), a Barologger (B) is required, i.e.:

Levelogger Reading (L) – Barologger Reading (B) = Height of Water Column (H)

Verifying Readings

The best recommendation is to compare barometrically compensated Levelogger data (H) with a manually measured depth to water level value (d) (using a Water Level Meter).

Tip: To adjust all readings in your Levelogger 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 date and time with an actual Levelogger recording. Use this as a reference datum in the Manual Data Adjustment option in the Levelogger Software Data Wizard.



Note: The Levelogger 5 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.



A single Barologger 5 can be used to compensate all Leveloggers on site, within a 30 km/20 mile radius and with every 300 m (1000 ft.) change in elevation. Ensure that your Barologger will start logging within at least 3 hours of your Levelogger start time.

Levelogger Field Notes

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

Before Deployment

Before deployment, make sure you do the following:

• Program your Levelogger, using Levelogger Software, with the correct project identification, memory mode, sampling regime, time, etc.

Note: It is useful to synchronize the times of all Leveloggers and Barologgers being used for the same project.

- Set a future start time, or start the Levelogger if deploying on a wireline/Kevlar cord (Leveloggers can be started after deployment if using an L5 Direct Read Cable)
- Determine borehole depth to ensure the Levelogger does not touch the bottom of the well (avoid submergence in sediment)
- Determine the minimum and maximum expected water levels, as Leveloggers must remain submerged for the entire monitoring period, and Barologgers must not be submerged
- Use a Solinst Model 101 or 102 Water Level Meter to take a manual depth to water measurement that will be used to verify Levelogger readings





Wireline/Cord Deployment



Direct Read Deployment

Deployment

• Deploy your Levelogger and Barologger using an L5 Direct Read Cable for down-well communication, or use an inexpensive wireline or Kevlar cord.

Note: For information on other types of installations, see the latest <u>Levelogger User Guide</u>.

- Install the Barologger in a similar thermal environment as the Levelogger
- The Barologger should be suspended beyond the frost line and deep enough to avoid large temperature fluctuations
- Ensure the Barologger location is vented to atmosphere

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 Levelogger from the well



Well Caps

The Model 3001 2" (or 4" with Adaptor) Well Cap Assembly provides a secure method of installing your Levelogger using wireline/Kevlar cord or L5 Direct Read Cables. A Support Hanger Bracket is available for supporting and organizing down well wires or cords, or for coiling extra L5 Direct Read Cable lengths.

In-field Communication

If you have installed your Levelogger using wireline/Kevlar cord, you can communicate with your Levelogger via a Field Reader 5 or Desktop Reader 5 and Levelogger Software on a laptop PC (you can also use an older style Optical Reader with an L5–Edge DRC Adaptor).

If you have installed your Levelogger using an L5 Direct Read Cable, you can communicate with your Levelogger via a PC Interface Cable and Levelogger Software on a laptop PC, using a Levelogger 5 App Interface and the Solinst Levelogger App on your mobile device, or connect a DataGrabber 5, without removing the Levelogger from the well.





Note: An L5 Threaded or Slip Fit Adaptor can be used to directly connect a Levelogger to a Levelogger 5 App Interface or DataGrabber 5.



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:

- Inspect regularly, and replace the o-ring at the optical end of the Levelogger if damaged
- Clean the optical eye of the Levelogger with a clean, soft cloth or cotton swab
- Rinse the Levelogger body using a mild, non-residual, non-abrasive household cleaner
- Use a very soft-plastic bristled brush, if needed, to clean the Levelogger body
- Do not insert any object through the circulation holes at the sensor end of the Levelogger
- See the <u>Levelogger User Guide Maintenance Section</u> if simple household cleaners are not sufficient for certain issues, such as hard water build up
- Clean Levelogger 5 LTC conductivity sensor pins before calibration and before/after deployment—see the Solinst Levelogger User Guide
- Stop the Levelogger from recording before storing
- Store Leveloggers with the installation cap on and in the case they were originally provided in
- Store Leveloggers in above-freezing conditions
- Read our Technical Bulletin "Ensuring Proper Use and Maintenance of Leveloggers"

Note: A Solinst Biofoul Screen can be used to protect the Levelogger 5 from biofouling on the pressure sensor, and the conductivity cell of a Levelogger 5 LTC.



Note: All Leveloggers should be deployed and stored with the installation cap or L5 Direct Read Cable attached. This prevents unnecessary battery drainage and protects the optical eye.

Troubleshooting Guide

Levelogger Software:

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

Communication Errors:

"Port Cannot Open", "Check Com Port"

- 1. Reason: Software was started before USB device was connected to computer. Solution: Restart computer, connect USB device, start software.
- 2. Reason: Incorrect Com Port is selected in Com Port selection menu.
- Solution: Check the Com Port location for the installed device, by accessing the 'Device Manager' (through the Control Panel), and selecting the "Ports" section. This will state the Com Port the device is installed on.
- 3. Reason: Another device shares the same Com Port or is causing a communication conflict.
 - Solution: Ensure that software for PDA or other devices, which automatically synchronize, are disabled. Ask your system administrator for assistance.

"Communication Time-Out", "Communication Error"

- 1. Reason: Levelogger, Direct Read Cable, or communications device has failed.
 - Solution: a) Narrow down the failure by using a different Levelogger, Direct Read Cable, or another communications device.
 - b) Clean the optical eye/lens on the Levelogger and Optical Reader (Desktop Reader 5 or Field Reader 5), or L5 Direct Read Cable, with a soft cloth.
 - c) Check that the communication cable is connected to the same Com Port that is chosen in the upper middle of the Levelogger Software window.
 - d) Try using a different computer, to see if this is the cause of the problem.
 - e) If using a laptop (especially in conjunction with a Direct Read Cable) your Com Port may not be powered adequately to receive/transmit data. Try using a desktop computer to test this.
 - f) If problem persists, contact Solinst.

Frequently Asked Questions

(Also see https://www.solinst.com/products/dataloggers-and-telemetry/3001-levelogger-series/ levelogger-faq/levelogger-faq.php)

How can I protect my Levelogger from corrosive or marine environments?

The Levelogger 5 and Levelogger 5 LTC have a corrosion resistant coating. In harsher chemical environments, you can protect the Levelogger using a thick membrane balloon (e.g. helium) filled with non-corrosive/non-toxic fluid (tap water). As pressure changes, the fluid encasing the dataloggers will transmit the pressure differential to the datalogger's pressure transducer, without exposing it to corrosive conditions. Continual monitoring is recommended to assess the effectiveness of the protection at your site.

How do I install my Levelogger in a surface water application?

For installations within rivers, streams, wetlands, lakes and watershed or drainage basin monitoring, the shallow pressure range (M5) Levelogger 5 or Levelogger 5 Junior should be considered. For installation in streams or rivers, stilling wells can be constructed which shield the instrument from the water turbulence. Alternatively, Leveloggers can be lowered into a protective pipe or casing and then attached to a permanent fixture such as a bridge, pier or hand driven marker/rod.

How do I protect my Levelogger from freezing?

To avoid icing/freezing and transducer damage, the easiest method is to lower the transducer to a point in the water column below the frost line or ice formation depth. In water bodies such as shallow streams, wetlands or ponds where icing/freezing may penetrate to the bottom, install the Levelogger in a vented stilling well imbedded into the bottom of the water body beyond the frost line.

If this is not possible, place the Levelogger inside a thick membrane balloon filled with a nontoxic, non-corrosive anti-freeze solution or saltwater solution. Place the balloon in a section of perforated, 30 mm (1.25") ID pipe and install the datalogger in the monitored water. The antifreeze solution will protect the Levelogger from ice expansion at the pressure transducer, yet transmit any pressure and temperature fluctuations that occur.

How do I protect my Levelogger from biofouling?

Use the Solinst Model 3001 Biofoul Screen.

Is Levelogger maintenance required?

Yes, consult the Solinst Technical Bulletin "<u>Ensuring Proper Use and Maintenance of</u> <u>Leveloggers</u>" to maintain the long life of your instrument, based on the monitoring environment specific to your application.

(#114998) Printed in Canada September 1, 2020 [®]Solinst is a registered trademark of Solinst Canada Ltd.

