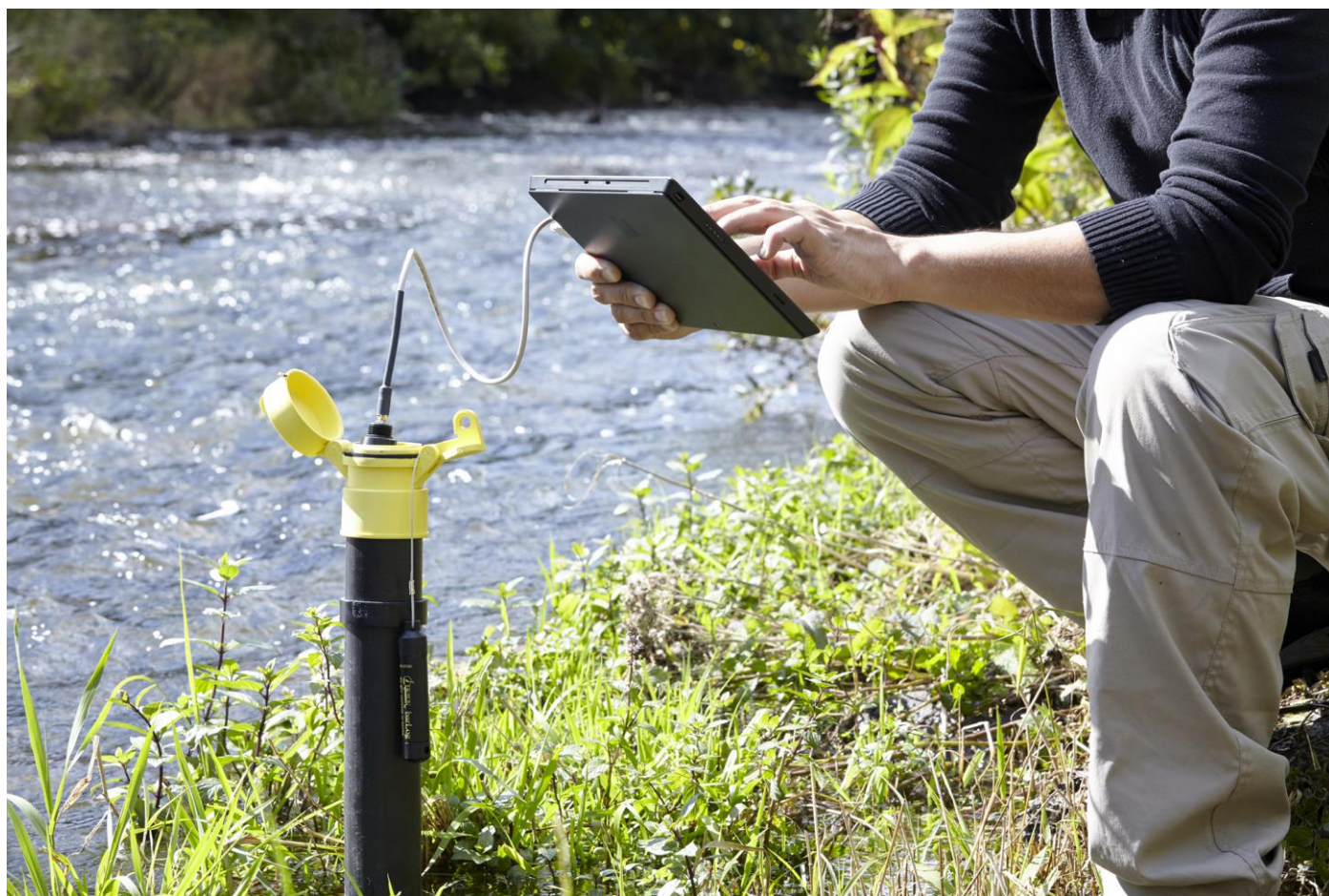




dipperLog and barLog User Manual



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Please visit our website www.heroninstruments.com for more information on the complete Heron line.


 Made in Canada

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Technical Specifications

Transducer	Piezoresistive Silicon 316LSS
Construction Material	All Delrin (corrosion resistant Engineered Thermoplastic) or Stainless Steel and Delrin combination
Hydrostatic depth range	120m/400ft
Accuracy (Typical)	0.05% net FS
Accuracy (Max. error)	0.1% net FS
Resolution	0.006% net FS
Temperature Sensor	IC Temp Sensor
Temperature Accuracy	+/- 0.5 Deg. C
Resolution	0.0625 Deg C
Transducer Temp Compensation Range	0 Deg. C to + 50 Deg. C
Temp Response Time	10 Seconds
Battery Type	3.6 volt Lithium
Battery life	Approx. 7 Years @ 5 Minute readings
Clock accuracy	+/- 1 Minute per Month
Long Term Stability	+/- 0.2% FS/year
Operating Temperature	-20 Deg C to +80 Deg C
Memory	Non – Volatile EEPROM
Max. Readings Between Downloads	32,000 Sets – Water Depth and Temperature
Communication	USB RS232 SDI 12
Download Speed	1.5 minutes (32,000 data sets)
Dimensions	100mm (4in) long x 22.5 mm (0.875 in) Diameter
Weight	Delrin -70grams Effective Specific Gravity 2 Stainless Steel – 135 grams Effective S.G 4
Wetted Materials	Stainless Steel, Viton, Engineered Thermoplastic (Delrin)

Sampling Modes	Linear – Real Time -“log” Time (see below)
Logging Intervals	Seconds, Minutes, Hours – Minimum 1sec, Max 255hrs
Download Speed	19.2 k/bits per Second
Units of Measure	ft /M of Water (head) in normal mode. Any units when saved as CSV file
Antifouling Screen	Weight 22g Length 50mm Dia 25mm. Material Phosphor Bronze (98% copper)
Note. In “Log time” mode the dipperLog NANO increases the readings from 1 second by an additional 1 second for 255 readings. The final reading interval is 4 min and 14 secs and the logger then stops logging. This mode logs for a total of 9 hours before stopping.	
Barometric Compensation	Automatic compensation when using a designated barLog. Self compensating when using vented version. Manual compensation in Excel. One real time reading taken during launch procedure and used for all readings unless a barLog is used.
Direct Read Cable	3.5mm diameter Polyurethane jacket with 3 Mylar wrapped, Teflon insulated stranded tinned copper conductors. Woven copper shielding and reinforced stretch resistant Kevlar. Weight 12 grams per meter.
Vented Cable	6.25mm diameter Polyurethane jacketed. 4 stranded. Insulated T.C conductors. 1 stranded T.C drain line 2.5mm Nylon vent tube. Reinforced with Kevlar and an Aluminium shield. Weight 34 grams per meter.

dipperLog & barLog OVERVIEW

If a barLog is used on the job it will take barometric readings every hour on the hour. This interval cannot be changed.

The barLog should preferably be set up and started before the dipperLog.

Installation Kit for Well Head Readout Version

Each dipperLog includes an installation Kit. The Kit is simple to install and instructions are included.

General Tips

Disconnect the readout cable from the well head readout unit as soon as possible. This conserves battery power in the dipperLog.

Keep dirt and moisture out of the wellhead readout unit and always replace the protective cap firmly.

Do not attempt to remove the filter unit from the bottom of the transducer. Damage to the transducer may occur.

To remove dirt from the outside of the filter, lightly flush the end of the filter under running water.

In freezing conditions, do not allow the transducer section to freeze while water remains between the filter and the transducer. Shake the dipperLog lightly to expel any water. Do not remove the filter.

TO ENSURE A SUCCESSFUL INSTALLATION OF THE dipperLog SYSTEM PLEASE READ THIS INSTALLATION GUIDE

To set up a dipperLog system the following information will be required:

- Datum point i.e. top of casing, ground level etc.
- Depth to ground water below the datum point.
- Job number.
- Well number.
- Optional. Logger start date and time.
- Maximum height of water expected above the dipperLog transducer.
- Sampling interval.

Some equipment that would be useful during the installation:

- Water level meter. (The Heron dipper-T is strongly recommended).
- 100ft or 30m measuring tape.
- 10ft or 3m carpenters steel tape.
- Portable electric drill with a ¼ inch bit if installing dipperLog readout bracket in steel casing.
- Roll of electrical tape or 2 inch plastic cable ties.

The dipperLog Program:

Load the dipperLog program. Follow instructions on the screen.

The barLog

THE barLog MUST NEVER BE IN WATER

If a barLog is being used on the site it is advisable to set up the barLog before the dipperLogs. The barLog must use the same job number as all the dipperLogs on the jobsite.

Set up the barLog by following program steps. The barLog will only recognize dipperLogs that share exactly the same job number (well numbers may vary).

Deploying The dipperLog

Set up dipperLog by following the program steps. The dipperLog must not be in the groundwater at this stage.

Note:

The point at which the dipperLog may be put into the groundwater occurs at the setup screen.

dipperLog Installation

Measure the groundwater level in the well from the datum point. (i.e. top of casing, ground level etc.)

Note this measurement.

We recommend using a Heron dipper-T water level meter.

Decide the depth below groundwater level that you want to set the dipperLog transducer. (monitoring level)

What You Need to Get Started

The Heron dipperLog system consists of five main components. It would be useful to familiarize yourself with names given for each component to better follow the instructions given in this manual. Below is the main components labeled.



1. dipperLog data logger

2. Direct read well head with mounting kit

3. Software with PC communication cable

Long Term Monitoring

For long term monitoring it is recommended to use a dipperLog barLog barometric data logger in conjunction with a dipperLog well data logger. Since the Heron dipperLog uses absolute pressure transducers, it is necessary to compensate for barometric pressure fluctuations over a period of time. The following is a check list for the necessary equipment needed for a long term monitoring project.

- 1 dipperLog (submersible or Direct Read)
- 1 barLog barometric Logger
- 1 Software and PC communication cable
- 1 Windows based PC with an available USB port

Short Term Monitoring

For short term monitoring you can use the dipperLog without a barLog. During the setup procedure the dipperLog takes a one time barometric pressure reading and subtracts it from subsequent pressure measurements. This allows accurate, short term measurements of water levels without the need to subtract barometric pressure. The following is a check list for the necessary equipment needed for a short term monitoring project.

- 1 dipperLog (submersible or direct read)
- 1 Software and PC communication cable
- 1 Windows based PC with an available USB port

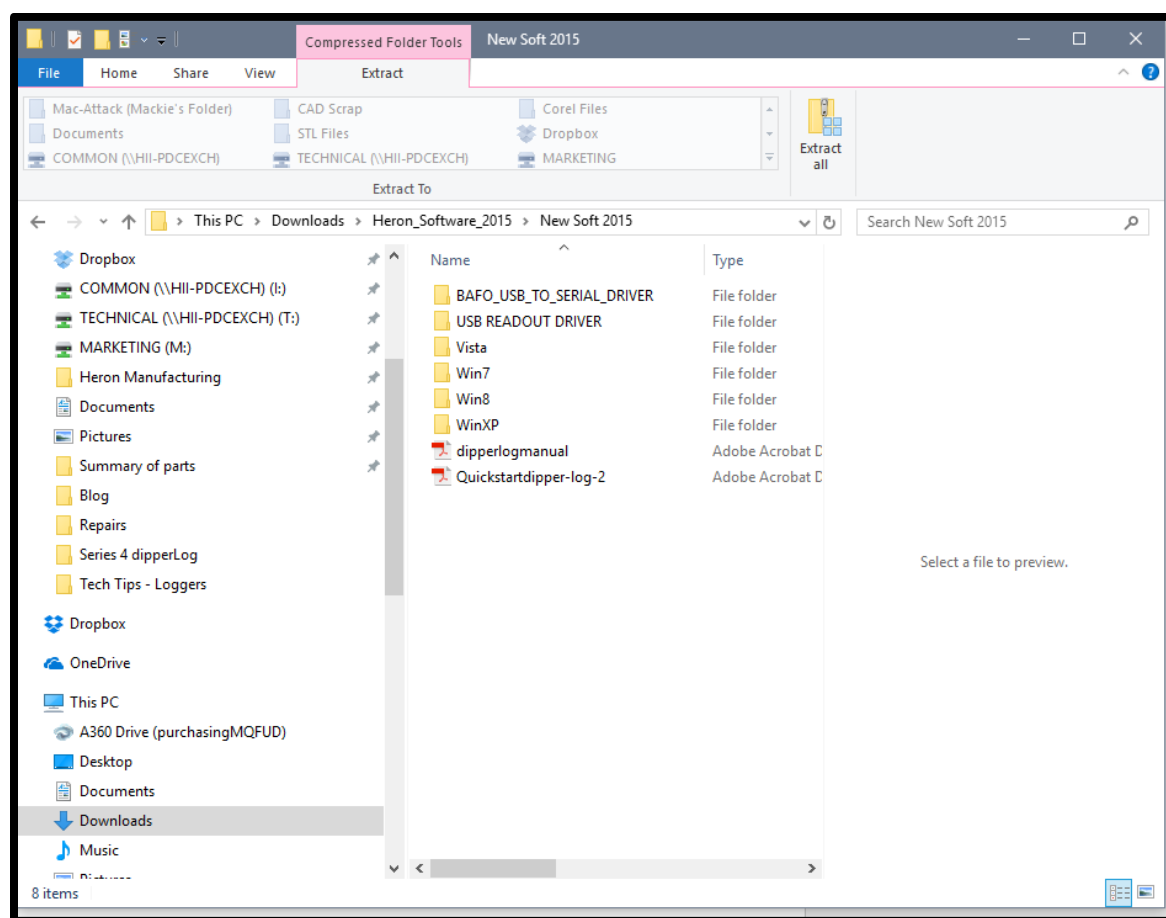
Inspect the contents of your package to be sure you received what you ordered. Package contents will vary depending on what was purchased.



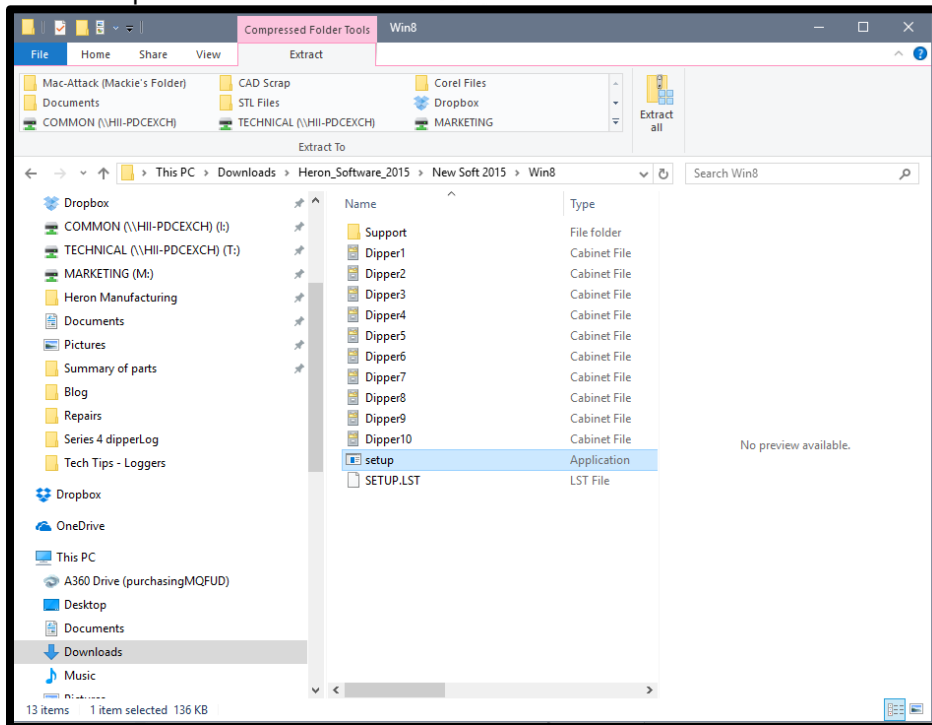
Software Installation

How to find our software:

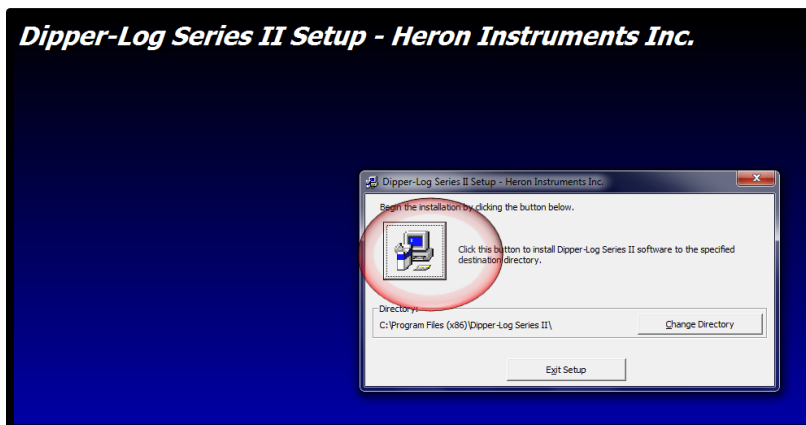
- USB memory stick - supplied by Heron instruments with a new unit purchased
 - Web download - <http://www.heroninstruments.com/product/dipperlog-nano/>
- **DO NOT** connect PC Communication to computer before software is successfully installed
 - Download software from USB or from Heron Instruments website
 - If the software is downloaded from Heron website you will need to decompress the file before use
 - Open folder once download is complete
 - Open the folder that corresponds to the operating system you are using
- *If you are running Win. 10 install the "Win8" version*



Run the setup as indicated in the screen shot below



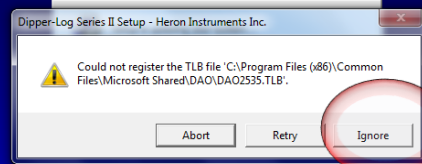
- **Message:**
 - Welcome to the dipperLog Installation Program
 - Click OK to continue
- Begin the installation by clicking the button below



OR by default installation will be done under C:\ProgramFiles(86), choose file installation location

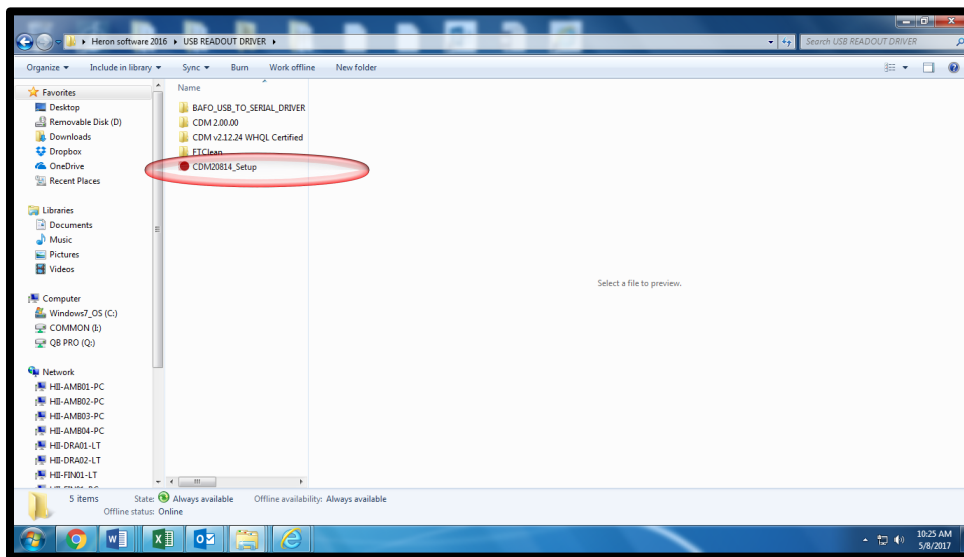
- **Message:**
 - Do you want to make the dipperLog files accessible to everyone?
 - Click Yes to continue
- **Message:**
 - Could not register the TIB File C:\ProgramFiles(x86)\CommonFiles\Microsoftshare\DAO\DA02535.TLB'

Dipper-Log Series II Setup - Heron Instruments Inc.

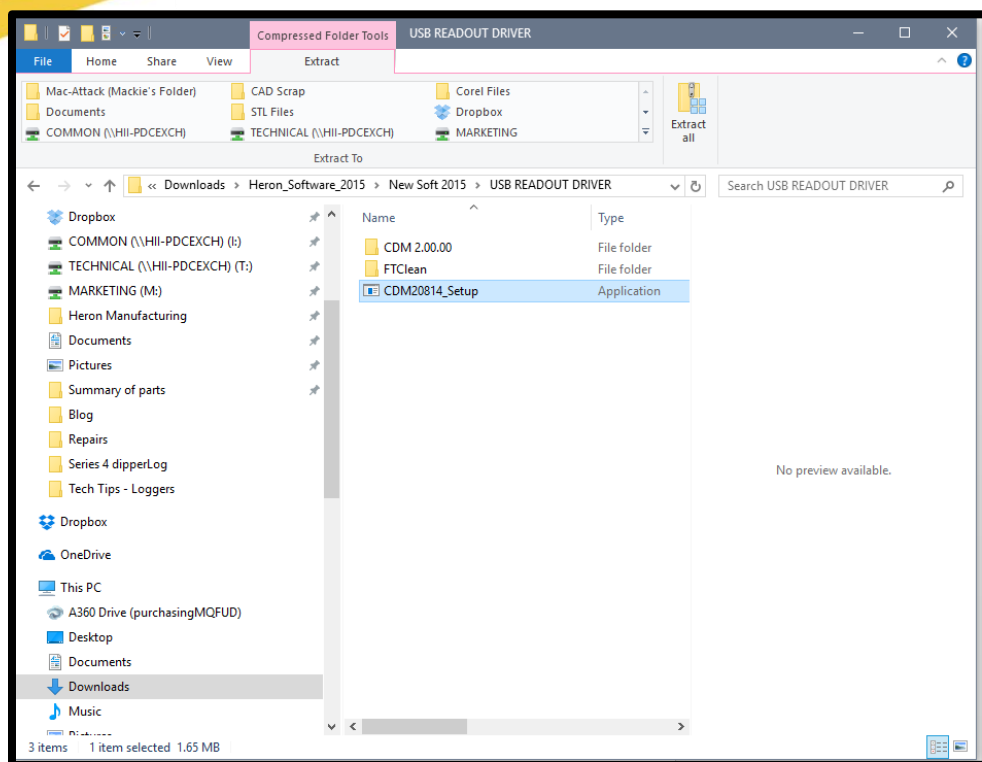


USB Readout Driver Installation

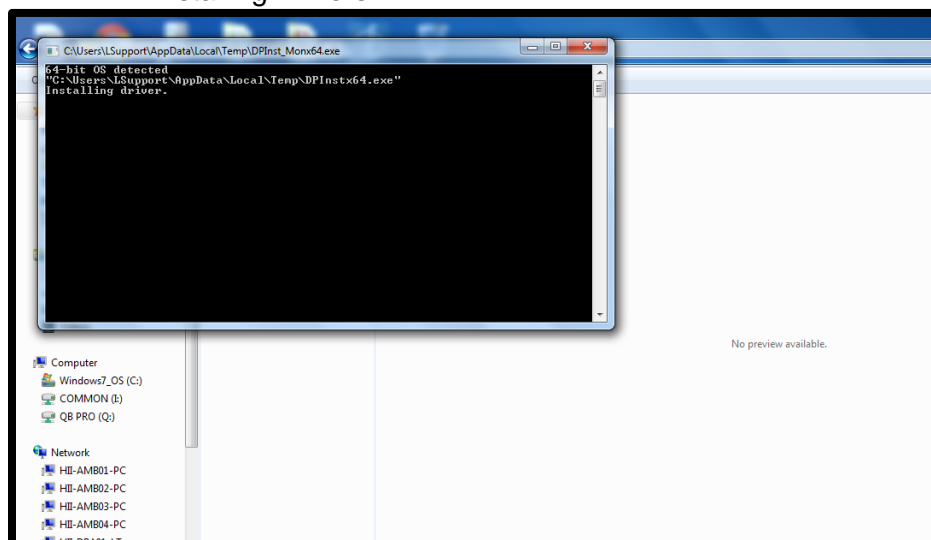
- Return to the first download screen and open the "USB Readout Driver" folder



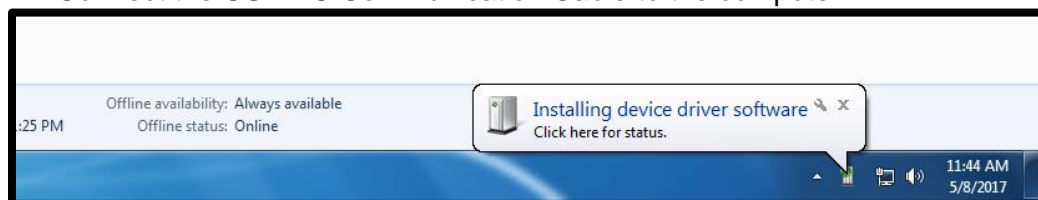
- Run the CDM20814 setup indicated in the screen shot below



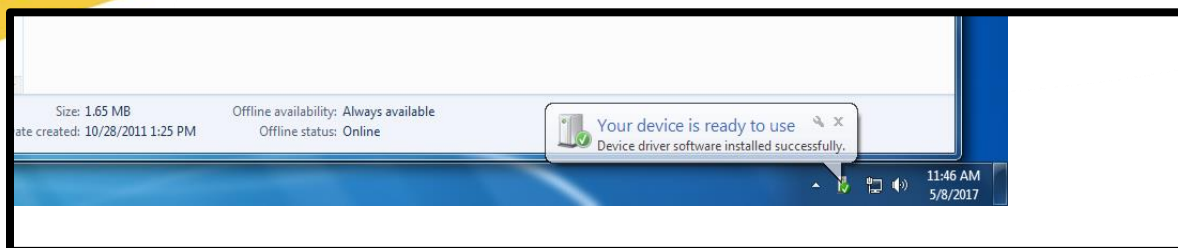
- **DOS MESSAGE:**
 - Installing Drivers



- Once the window closes, installation is complete
- Connect the USB PC Communication Cable to the computer

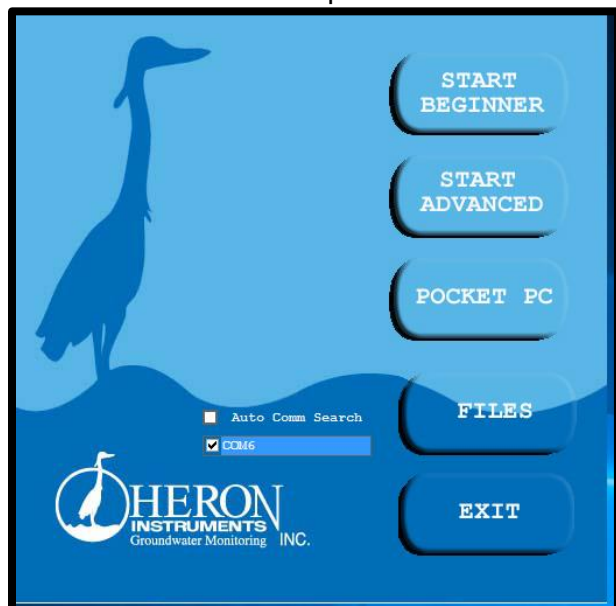


- Found new hardware, wait for "device is ready" to use message



Launch the Heron software

- Remove checkmark from "Auto Comm Search"
- Select the last comport shown on list



- Connect PC Communication cable to dipperLog
- "Start" software

Note: Become familiar with the software before deployment in the field

dipperLog to Computer Connection

In order to successfully connect to a dipperLog, care must be taken in the connection order.

Recommended order for connecting to a dipperLog

1. Connect USB Readout cable to the computer.
2. Connect the dipperLog to the readout cable.
3. Start the dipperLog software.
4. Click "Start beginner" or "Start advanced".

Recommended order for disconnecting a dipperLog

1. Click either "EXIT" or "CHANGE LOGGER" button.
2. If "EXIT" was chosen, then click "OK" then unplug the readout cable from the dipperLog. Do not disconnect the USB connector from the computer.
3. If "CHANGE LOGGER" was chosen, then unplug the readout cable from the dipperLog. Do not disconnect the USB connector from the computer.

Failure to follow the above procedure, may result in "LOGGER NOT FOUND".

Setting Up the barLog to Take Readings

Start Screen:

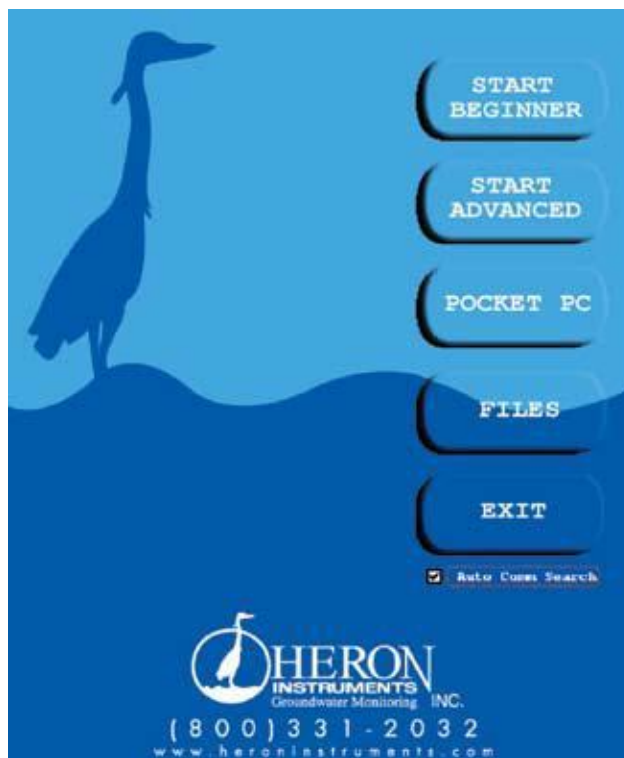
1. Start the dipperLog Series II program. You should see the start screen.
2. Connect the readout cable to your barLog.
3. Click "START BEGINNER". The Main screen should now appear.

Note:

All the information required by the boxes on the set up screen must be entered before the logger can be started.

For initial set up, use the beginners screen. If you are uncertain about any of the boxes, click on the adjacent "?" and an explanation will appear.

It is strongly recommended that new users familiarize themselves with the set up and functions of the loggers before deploying them in the field.



Main Screen:

4. The program will search for the Logger, and automatically connect and retrieve the settings if any.
5. Click "OK" on the message box indicating that the logger memory is cleared and it is not on a mission.
6. Click "SETUP LOGGER" to enter the barLog setup screen.



Setting Up the barLog to Take Readings continued

DATE & TIME Screen:

7. By default, the barLog will synchronize it's time with your PC's clock. The "Job Number" is the only information needed to setup your logger. Make sure the Job number is only letters and/or numbers. The job number is important because it links all the well loggers that share the same job number together and compensates them automatically. The Job number must be the same for the barLog and all well loggers.

The screenshot shows the 'HERON BAROMETRIC LOGGER SETUP' window. It has a yellow background and a blue border. At the top, it says 'Date and Time' with two radio buttons: 'PC Time' (checked) and 'Manual'. Below this are two rows of digital displays for time: 'Y Y M M D D' showing '0 8 0 7 2 4' and 'H H M M S S' showing '0 9 2 0 4 8'. Below the time displays is a 'Job Number' section with a digital display showing '1 2 0 0 0'. At the bottom, there is a large yellow box with the text 'LOGGER STOPPED' and 'MEMORY CLEARED'. At the very bottom, there are two buttons: 'Return to Main Screen' and 'Load Info. Into Logger'.

8. Once you have entered the Job Number, click "Load Info. Into Logger", and click "Yes" on the message box that appears.

This screenshot is similar to the previous one, but with a small dialog box overlaid in the center. The dialog box is titled 'Heron Instruments Inc.' and contains the text: 'Are you certain all settings are correct? If no, click on NO and review or change settings'. It has two buttons: 'Yes' and 'No'. A blue arrow points from the 'Yes' button to the 'Load Info. Into Logger' button in the background. The background window shows the same 'Date and Time' and 'Job Number' fields, but the time displays now show '0 8 0 7 2 4' and '0 9 2 2 4 6'. The 'LOGGER STOPPED' and 'MEMORY CLEARED' text is still visible at the bottom.

Setting Up the barLog to Take Readings continued

9. Once you have loaded the information into the barLog, click "Start Logger" and answer "Yes" to the message to start the logger. The barLog is now taking one reading every hour. Click "Return to Main Screen" to go back to the main screen.

HERON BAROMETRIC LOGGER SETUP

Date and Time

☒ PC Time ☐ Manual

Y Y M M D D H H M M S S

0 8 0 7 2 4 0 9 2 0 4 8

Job Number

1 2 0 0 0

LOGGER STOPPED

MEMORY CLEARED

Return to Main Screen **Load Info. Into Logger**

10. The Main Screen will now be updated with the barLog settings.
11. Click "CHANGE LOGGER" and disconnect the readout cable from the barLog.
12. Connect the readout cable to the dipperLog and click "FIND LOGGER".

Thursday Jul 24, 2008 09:29:11

Logger Functions

FIND LOGGER
DOWNLOAD DATA
SETUP LOGGER
REAL TIME READINGS
MEMORY STATUS
BATTERY STATUS
RAPID DATA READINGS
STOP LOGGER
CLEAR MEMORY
RECALIBRATE LOGGER
DATA SYNCHRONIZATION
DATA MANAGEMENT

Logger Status

Logger found on COM4
Logger # A05877 Barometric
Logger On A Mission

Logger #A05877 Settings

Job Number: 12000
Real Number:
Maximum Rate (Hz): 1.000
Data Off/Resume:
Check all values before saving
Save to File:
Logger Start Date and Time: 08/07/24 09:27:27

CHANGE LOGGER **EXIT**

All dipperLogs using the same job number as the barLog will be automatically compensated during the dipperLog data downloads.

Setting Up the dipperLog to Take Readings continued

MAIN SCREEN:

13. Once the dipperLog is found, click "OK" on the message box.



14. Click "SETUP LOGGER" to enter the dipperLog setup screen. Make sure the well Logger is NOT in the water at this point.



Setting Up the dipperLog to Take Readings continued

SETUP SCREEN: INPUT

the dipperLog may be lowered into the water at this stage

15. As with the barLog, the dipperLogs time will by default be synchronized with the computer clock.
16. Enter the Job number. Make sure it's the same as the barLog Job number to ensure it will be compensated.
17. Enter the Well number. It can be any letter and/or number combination. It is used to identify that particular well.
18. Enter the sampling interval and repetition rate. These two settings tell the logger how often to take a reading. For example if the sampling interval is set to seconds and the repetition rate is set to 15, then the logger will take and store a reading every 15 seconds. Keep in mind that the dipperLog can store up to 32000 readings. Once the memory is full it stops taking readings. In the above example, the dipperLogs memory will be full in about 133 hours. The repetition rate can be set from 1 to 255.
19. Enter the Transducer Depth below Datum Point. This number is the distance from the datum ring engraved around the base of the dipperLog to the Datum point. The Datum point is the reference point that you are taking your readings from. Some examples of a Datum point are the top of the well casing, or ground level.
20. Enter Location of Datum point. This is just a text description of what your Datum point is. For example Top Of Casing or TOC.
21. The delayed start date and time is optional. It is only to be used if you want your dipperLog to start at a certain date and time in the future. You don't need to enter any information in this part.

The screenshot shows the 'SETUP SCREEN: INPUT' for the dipperLog. It features several input fields and a confirmation message. The fields are as follows:

- Date and Time:** A digital display showing '08/07/24 09:47:40'.
- Transducer Depth Below Datum Point:** A digital display showing '0030.00F'.
- Job Number:** A text input field containing '12000'.
- Well Number:** A text input field containing 'W3400'.
- Sampling Interval:** A dropdown menu set to 'Seconds'.
- Repetition Rate (1-255):** A digital display showing '15'.
- Log Time:** A checkbox that is currently unchecked.
- Location of Datum Point:** A text input field containing 'TOC'.
- Delayed Start Date and Time (optional):** A digital display showing '08/07/24 09:47:40'.
- Confirmation Message:** A large text area displaying 'LOGGER STOPPED MEMORY CLEARED'.
- Buttons:** Two buttons at the bottom: 'RETURN TO MAIN SCREEN' and 'LOAD INFORMATION INTO LOGGER'.

Note:

Ensure that the logger depth will not exceed the hydrostatic limit of the logger.

Setting Up the dipperLog to Take Readings continued

22. Now load the information into the dipperLog by clicking “LOAD INFORMATION INTO LOGGER”. Click “Yes” on the message box.



23. Click “START LOGGER” and click “Yes” on the message box.
24. Click “RETURN TO MAIN SCREEN”.



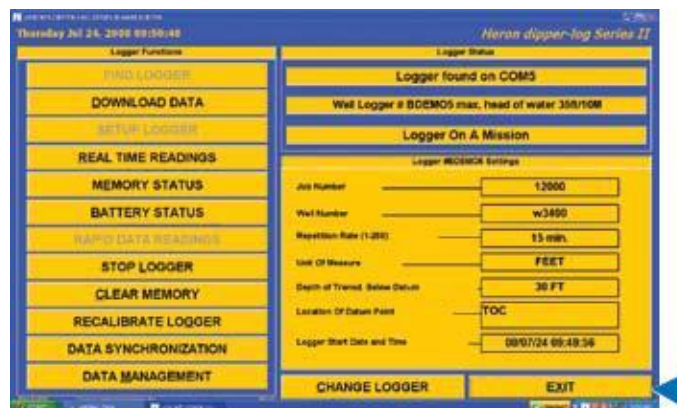
Setting Up the dipperLog to Take Readings continued

25. The main screen will now be updated with the settings of the dipperLog.

Note:

Ensure that the logger is working, go to “memory status” and check number of readings taken or go to “real time readings” and get a reading of head of water above transducer.

26. Click “EXIT”



27. Click “OK” and disconnect the readout cable from your dipperLog. The program should now close.

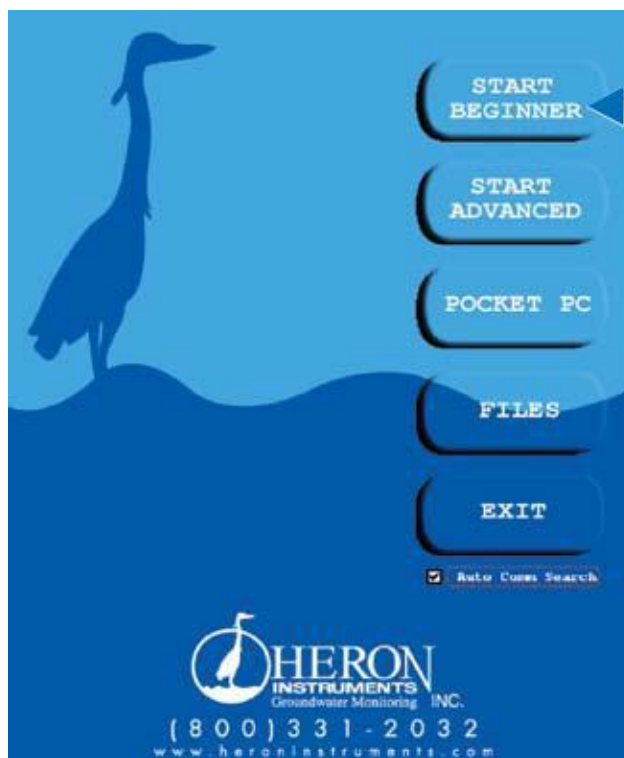
The dipperLog is now on a logging mission.



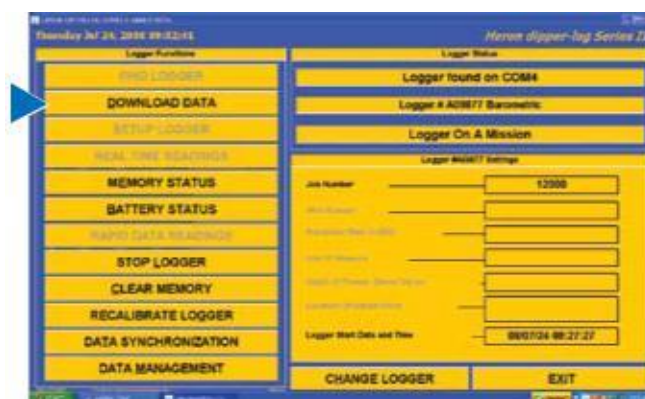
Downloading and Saving dipperLog Data

Start Screen: barLog

1. Connect the readout cable to the barLog and start the dipperLog Series II program.
2. On the start screen click "BEGINNER".



3. Once the Logger is found click "DOWNLOAD DATA". This will take you to the download data screen.



-
- The screenshot shows a Windows XP desktop with a blue taskbar. A yellow window titled "Download and Install Windows" is open, displaying the following text:
- Download and Install Windows
 - Download and Click to start Windows
 - Download and the Format Windows
- The taskbar at the bottom includes the Start button, several application icons, and a system tray showing the date and time as 9:54 AM on 1/1/2008.

- [illegible]

-
- The screenshot shows a web application interface for downloading and saving data from a logger. At the top, there are tabs for "Data" and "Events". The "Data" tab is selected, and the "Logger settings" section is visible. Below this, a table displays the data for the selected logger (80077). The table has columns for "Ap.", "Date", "Time", "Recorded data", and "Ap. Type". The first row shows data for "1" on "08-07-04" at "04:27:27", with "00.000" recorded data and "07.00" as the Ap. Type. Below the table, a message states "Logger 80077 data downloaded and saved successfully." and "Please wait". At the bottom, there is a progress bar showing "1 recording downloaded" and a time of "00:00:00".
- | Ap. | Date | Time | Recorded data | Ap. Type |
|-----|----------|----------|---------------|----------|
| 1 | 08-07-04 | 04:27:27 | 00.000 | 07.00 |
- Logger 80077 data downloaded and saved successfully.
Please wait
- 1 recording downloaded 00:00:00

-
- Thursday Jul 24, 2005 09:56:04
- Logger Functions**
- Find Logger
 DOWNLOAD DATA
 SETUP LOGGER
 REAL TIME READINGS
 MEMORY STATUS
 BATTERY STATUS
 WARNING DATA & READINGS
 STOP LOGGER
 CLEAR MEMORY
 RECALIBRATE LOGGER
 DATA SYNCHRONIZATION
 DATA MANAGEMENT
- Logger Status**
- Logger found on COM5
 Well Logger & BODEMS max. head of water 206/109
 Logger On A Mission
- Logger MODBUS Settings**
- Job Number: 12000
 Well Number: w2400
 Repetition Rate (1.000): 13.000
 Unit Of Measure: FEET
 Depth of Travel Before Datum: 30 FT
 Location Of Datum Point: TOC
 Logger Start Date and Time: 08/01/04 08:49:56
- CHANGE LOGGER EXIT

-
- Virtual Machine Manager - Windows
- File View Process Device Emulation Close
- Downloaded and Configured Windows (10)
- Downloaded and Configured Windows (10)
- Downloaded and Configured Windows (10)
- Downloaded and Configured Windows (10)
- Windows 10 (x64) - 10.0.17134.0 10/10/2018

-
- The screenshot shows the Windows Event Viewer application. The left pane displays the 'System' log. The right pane shows the details of a selected event, which is an error (red icon) with ID 1000. The description of the event is: 'The system has been shut down. The system will restart automatically.'

Downloading and Saving dipperLog Data continued

13. A brief message will appear to confirm the save.
14. Click "Close" to return to the main screen.



15. Click "EXIT" then "OK". Now disconnect your dipperLog and the Program should close.
16. By default your data will be saved in your computer on the C: drive>Program files>Dipper-Log Series II folder.



dipperLog Depth Ranges

dipperLog type. Max. ht water column.

A	Barometric (barLog)	
B	30ft	10m
C	100ft	30m
D	200ft	60m
E	400ft	120m

All dipperlogs have a typical accuracy of $\pm 0.05\%$ FS
 All dipperLogs have a resolution of $\pm 0.024\%$ FS

The serial numbers of individual loggers is laser etched on the logger body.
 When the dipperLog is connected to the computer and communication is established, the type prefix and the serial number together with the maximum allowable head of water is displayed on the screen.

The maximum head of water should not be exceeded. If the value is exceeded the data sets on the download screen will be flagged "maximum pressure exceeded"

The dipperLog should then be tested against a known head of water.
 If the correlation between the observed height of the water column from the datum ring around the base of the logger is unacceptable return to the main page, click on Recalibrate Logger and follow the steps.
 If the recalibration fails, the logger will automatically recognize a faulty procedure and return the unit to the initial factory calibration.

The initial calibration is done in the units, either feet or meters specified by the customer.

These units cannot be changed in the dipperLog. The units can be changed on the Download screen.
 Download the data and then click on Change Units at top of the screen.

Logger not found / communication problem detected.

1. Com. port selected not correct.

Remedy.

Choose auto com search.

Check computer device manager to determine correct com.port.

Or:

2. USB drivers not installed for USB cable or incorrect drivers installed.

Remedy.

Install correct USB drivers found on dipperLog program CD.

Or:

3. USB cable not installed in correct sequence.

Remedy.

Re-connect USB readout cable as follows.

First. USB connector to computer.

Next. Connect logger to readout cable.

Or:

4. Readout cable connected to the computer after the program has been started.

Remedy.

Exit program. Connect USB readout cable to computer as 3 above. Re start program.

Or:

5. Inspect all cables and connections.
Check for moisture, corrosion or breakages.
6. battery may be low. See next paragraph.

dipperLog has stopped taking readings.

1. Memory is full.

Remedy.

Check memory status.

If full, download and restart logger.

2. Logger battery may be low.

Remedy.

Check battery status.

If low, contact Heron Instruments.

3. Physical damage.

Remedy.

Check for moisture in connections and loose or broken fittings.

Unable to download / save data.

Data file has been removed or deleted.

Remedy.

Go into Data Management section of the software.

Go to Logger Management tab.

Select logger from Logger List and delete logger.

Exit program.

Restart program.

Download data and save.

If the above does not provide a solution, contact Heron at

loggersupport@heroninstruments.com

NOTE: Battery is **NOT** field replaceable. Contact Heron for battery service.

Addendum

Graphing:

When the program is asked to graph the data it checks for the maximum head of water in the accumulated data. The program then divides that maximum figure into ten equal sections and enters the values on the vertical (ht or depth of water) scale.

This scale will vary from situation to situation.

The screen will not scale to less than 1m. (10cm intervals)

The date/time interval scale will always fill the horizontal scale whether two or 32000 readings are graphed, but the graph will only plot 100 points.

That means that if you download 32000 data sets each point on the graph will be the average value of 320 data sets.

Not all time date readings are displayed on the screen for reasons of space.

We call it a trend graph for the above reasons.

The graphing features can be enhanced in the data management section as follows.

1. Click on FILES on the front page or select data management on the main screen.
2. Click on plot trend chart tab.
3. 2xclick on the required logger in the logger list.
4. 2xclick well logger data in data table list.
5. Check box beside first record.
6. 2xclick in box on left of date column on number of record table for first data point.
7. Check box beside last record.
8. 2xclick in box on left of date column on number of record table for last data point.
9. Select chart type (depth of water from datum or ht of water above datum).
10. Select create chart.

Data can also be saved as a CSV file and exported to EXCEL as follows.

First method.

1. Go to data management or FILES as above.
2. Click on explore logger data.
3. Select logger from the left hand list and 2xclick on.
4. Check box under name
5. Click on save as CSV file.
6. Give file a name and save location.

Second method.

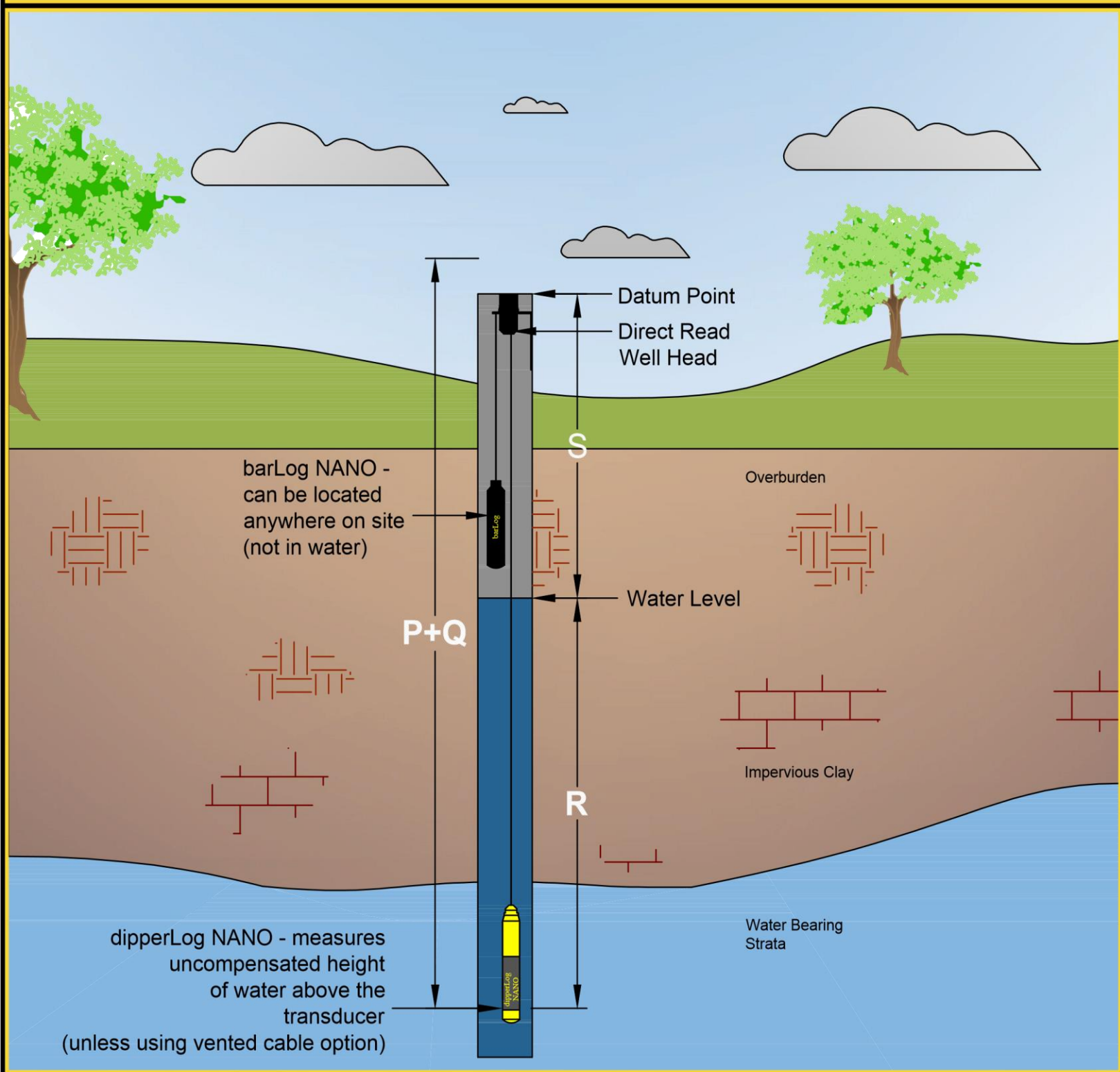
This method can be used to export to EXCEL during logger download.

1. Download data.
2. Choose save.
3. Select well logger data as...
4. In Save as window change, save as type to CSV file.

Unable to Save and/or Download data:

1. Disconnect dipperLog from computer.
2. This will return to "Main Screen"
3. From "Main Screen" click on "data management" or from Start Screen click "files."
4. Click on Logger(s) Management.
5. Double click on the logger ID # that you are unable to download or save from the file list.
6. Click "delete logger and all data."
7. Return to "Main Screen" then "Exit"
8. Restart the dipperLog series II software and download relevant logger data.

COMPLETE **dipperLog NANO** WATER LEVEL SYSTEM



Upon download, your system will automatically calculate the following:

P - Uncompensated height of water above transducer

Q - barLog atmospheric pressure (Automatic)

R - Compensated height of water above transducer

S - Compensated depth of water below datum (top of casing)

PRESSURE RANGES

dipperLog NANO B (30ft/10m)

dipperLog NANO C (100ft/30m)

dipperLog NANO D (200ft/60m)

dipperLog NANO E (400ft/120m)