



HERON
INSTRUMENTS
Groundwater Monitoring **INC.**

dipperLog and barLog USER MANUAL

DIPPERLOG SPECIFICATIONS

Transducer	Piezoresistive Silicon 316 LSS
Ranges	Min. 35/ft. Max 400ft/120m
Accuracy (Typical)	0.05% net FS
Accuracy (Max. error)	0.01% net FS
Resolution	0.024% net FS
Temperature sensor	IC Temp. Sensor
Temperature Accuracy	+/- 0.5%
Temperature Resolution	0.0625 Deg. C
Transducer Temp. Comp. Range	-20 Deg.C to +85 Deg.C
Temperature Response Time	10 Seconds
Battery Life	10 yrs (use dependant)
Clock Accuracy	+/- 1 minute month
Operating Temperature	-20Deg.C to +80 Deg.C
Communication	USB, RS232
Variable Sampling Intervals	Linear, R/T, Rapid R/T (10 readings / sec.). Seconds, minutes, Hours. 1sec to 255hrs Log time. (increases readings by By 1sec every reading 255 times)
Maximum Data Samples Between Downloads	32000 sets date/time, static head Of water and temperature
Memory	Non – volatile eeprom
Barometric Compensation	Semi automatic or fully automatic When used with a barLog.
Dimensions	8.5in (215mm) x 0.75in (20mm) Weight 246 grm
Wetted Material	Electro Polished corrosion resistant Stainless Steel and Delrin
Certifications	FCC Emissions compliant CE compliant EN 61326-1:2006 Electromagnetic Emissions and Immunity IEC/EN 61010-1:2001 Safety.



also available the dipperLog
TAP "N" TELL

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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

The Heron dipperLog software is compatible with Windows 95, 98, ME, NT, XP, 2000, VISTA, 7.

Follow these steps to install the Heron dipperLog software.

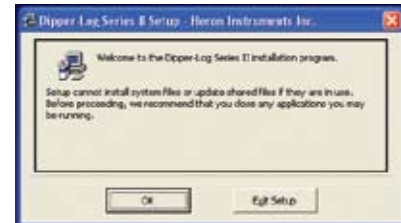
1. Insert the provided software CD into the computer.
2. Or download from heroninstruments.com



3. Wait for the set-up screen to appear.
4. Double click on the text indicating the type of operating system it has detected.



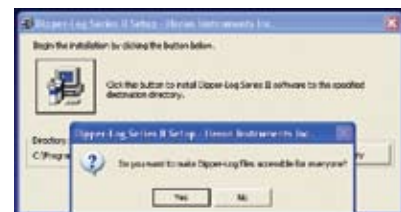
5. Double click on button "Install HERON Instruments"



6. Click on the "OK" button to begin the installation



7. Click on the button with the image of the computer to continue.



8. Click "Yes" on the message box.



9. Click "Continue" then click "OK" on the next message box to complete installation.

USB READOUT DRIVER INSTALLATION

In order for the USB Readout cable to function properly, a software driver will need to be installed. The software driver is located on the dipperLog software disc.

IMPORTANT

The driver software must be installed before the cable is connected to your computer.

To install the driver software follow these instructions.

1. Insert the dipperLog software disc into the CD drive, and close any windows that appear.
2. Go to "My Computer" and right click on the CD drive, then choose "explore".
3. Open the folder "USB DRIVER".
4. Double click "USBDriverInstallerV2.0.0.exe".
5. Click "OK" on the message box that appears.
6. Connect the USB Readout cable to your computer.
7. Allow Windows time to install additional files.
8. If start new hardware wizard appears, choose to install from a specific location, and browse to the folder named CDM 2.00.00 located on the dipperLog software disc.

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:

- By default, the barLog will synchronize its 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.



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



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.



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".



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

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.



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".



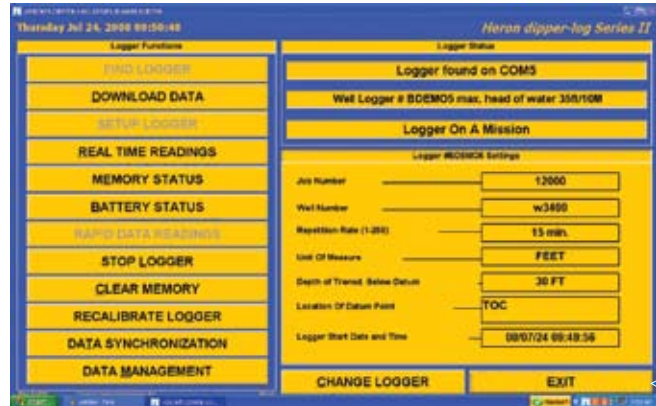
SETTING UP THE dipperLog TO TAKE READINGS CONTINUED

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

NOTE:

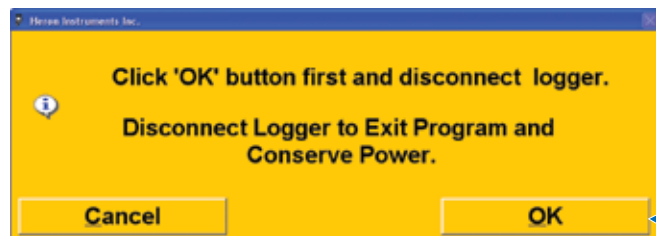
Ensure that the logger is working, go to “memory status” and check number of readings taken or go to “real time readings” and get a reading of head of water above transducer.

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".

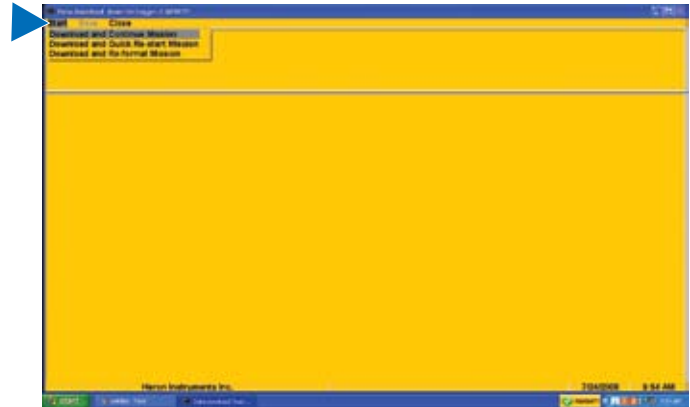


3. Once the Logger is found click "DOWNLOAD DATA". This will take you to the download data screen.

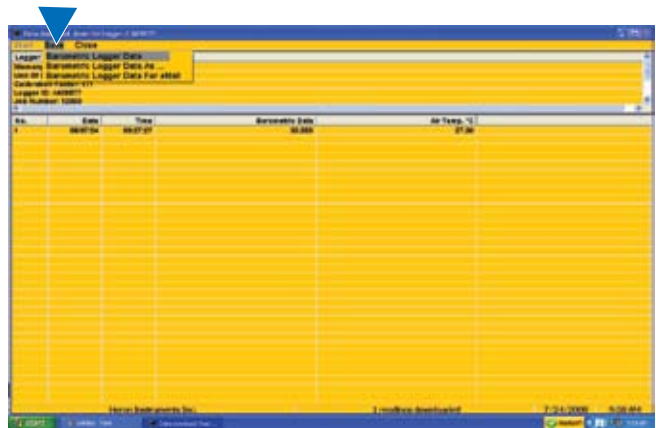


DOWNLOADING AND SAVING dipperLog DATA CONTINUED

4. In the top left corner of the screen click "Start" then "Download and Continue Mission"



5. Once the data is downloaded, click "Save" then "Barometric Logger Data"



6. Once the Barometric data is saved, a brief message appears to confirm.
7. Click "Close" to return to the main screen.
8. Click "CHANGE LOGGER" and disconnect your readout cable from your Barometric Logger.

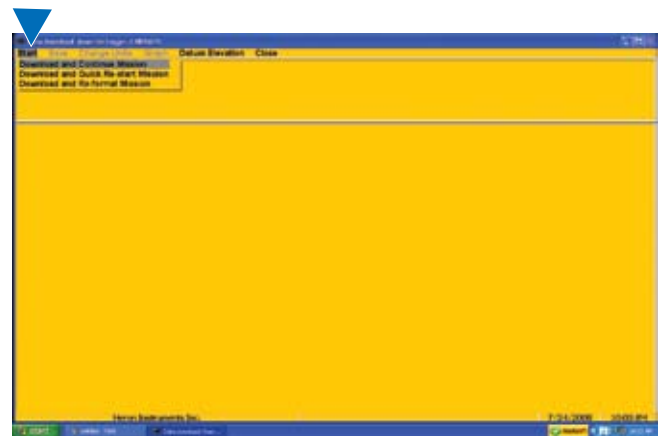


DOWNLOADING AND SAVING dipperLog DATA CONTINUED

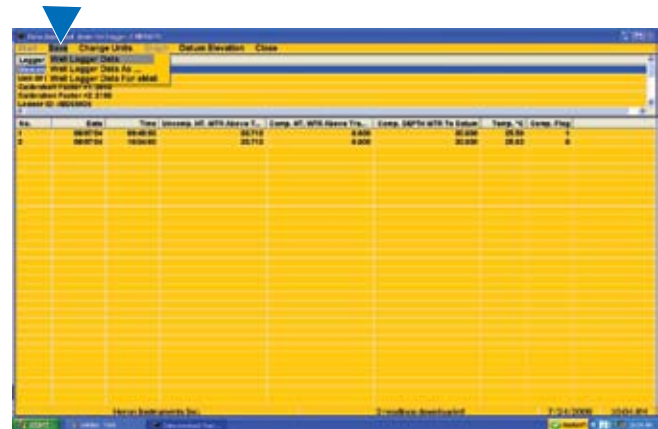
9. Connect the readout cable to the dipperLog and click "FIND LOGGER"
10. When the logger is found click "DOWNLOAD DATA" to take you to the dipperLog download screen.



11. Click "Start" then "Download and Continue Mission".

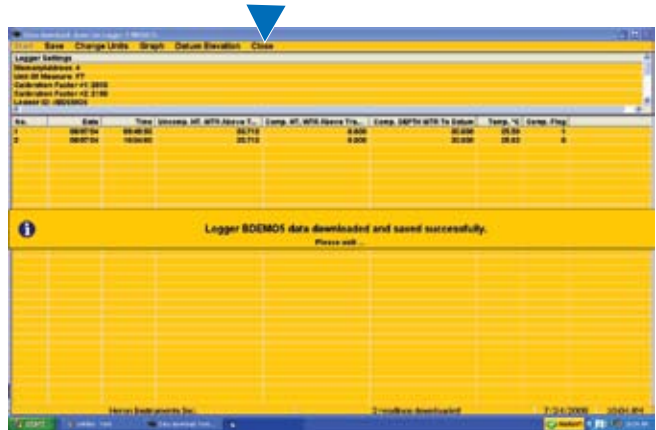


12. Once the data has been downloaded click "Save" then "Well Logger Data".



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 +/- 0.05% FS
All dipperlogs have a resolution of +/- 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.

TROUBLE SHOOTING

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

info@heroninstruments.com

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 alldata".
7. Return to "Main Screen" then "Exit"
8. Restart the dipperLog series II software and download relevant logger data.