LoLog 450/500 series data logger
Basic User Manual for
installation and use

LoLog LL / 500 / Vista   LoLog 450

Version 1.0

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Introduction

Thank you for choosing an HWM data logger(s), we trust it will provide you with many years of service.
The individual configuration of your logger(s) may differ slightly from the detailed descriptions that follow, but any additional setup information that you need, can easily be obtained from our customer support team.

Unpacking

As you unpack your new logger, please confirm that you have the following parts required to install the equipment. If there are any omissions, please contact our sales team to rectify or supply the missing parts.

- LoLog data logger
- Radwin Software CD-ROM (also available at www.hwm-water.com)
- IR Reader (optional – available in serial or USB types)
- Connection cables (optional)
- Connection hose for a pressure logger (optional)

Please dispose of your waste packaging responsibly.

Before proceeding to site for physical installation, please take the time to configure your logger in an office environment. Most settings can be configured before visiting site and this will save time at the point of install, especially if the weather is bad.

You will need to have:-
A PC with Windows 7/8 installed (Radwin also supports Windows XP & Vista)
A USB to Serial adaptor (if required to use with serial IR reader).
A description and reference number for the installation site:
> The reference number is split into a Zone and Location format to allow for grouping of individual "Locations" into larger regions or "Zones".
> The format of the number is configured during the initial installation of the software but essentially is a 7 character code, e.g. AB123CD

Installing the software

1. Insert the CD-ROM supplied into your CD drive. (If your PC does not have a CD drive, then either copy the files from the CD-ROM onto a memory stick, or download and run the Radwin installation file from the HWM website at www.hwm-water.com)

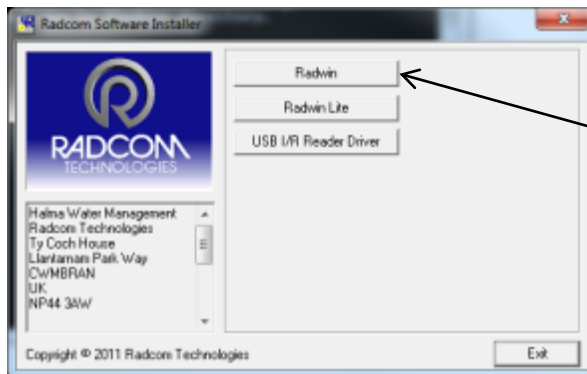2. When prompted:-
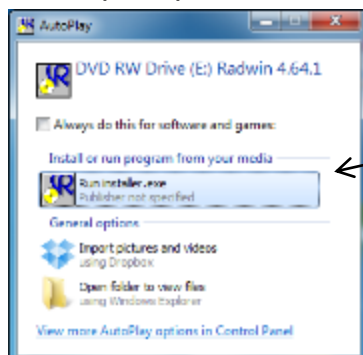
Click <<Run Installer>>

(i) If the prompt does not appear automatically, please open the CR-ROM folder using Windows explorer (My Computer).

Double Click the CD-ROM icon to run the installer

3. Now click <<Radwin>> from the Installer

Click to install Radwin software.

Note Radwin Lite is only for specialist use.

(i) The I/R Driver is normally installed automatically, however, in case it does not in step 0 below, please click the <<USB I/R Reader Driver>> after the main installation is complete.

4. When prompted by the InstallShield Wizard to install:
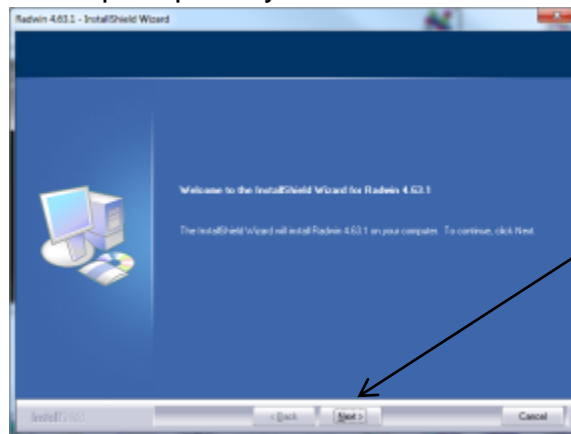
Click <<Next>>

5. Read and agree the terms of the Licence agreement to continue:

Click the <<I accept…>> radio button, then Click <<Next>>

6. Choose the Destination folder you wish to install to by clicking <<Change>>

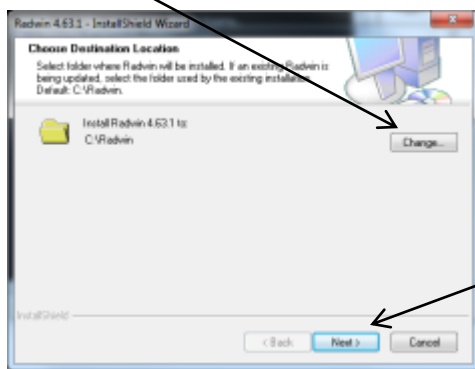 or to accept the default installation (recommended) click <<Next>>

Note: Ensure that you choose a folder that you have read/write access to. Check with your IT team if you are not sure.

7. The installation process now has all the information it needs to proceed so click <<Install>> to continue
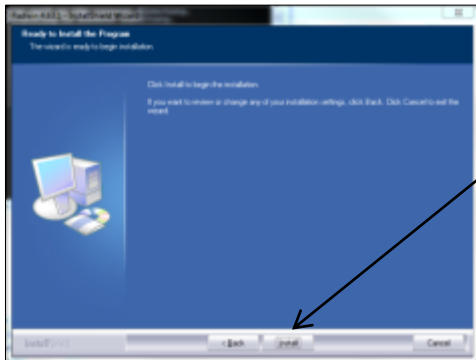
Wait while the installation completes…

and the I/R Driver installs…

8. Finally click <<Finish>> to close the InstallShield Wizard.

9. Then click <<Exit>> to close the Installer.

10. If you have installed from a downloaded file instead of the CD you will see the extra window below.
    The Installation process has now finished so click <<OK>> to confirm.

First time run of Radwin

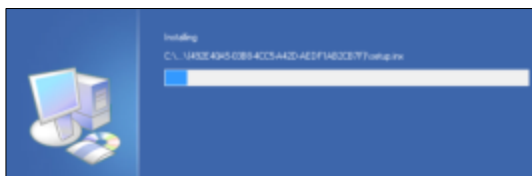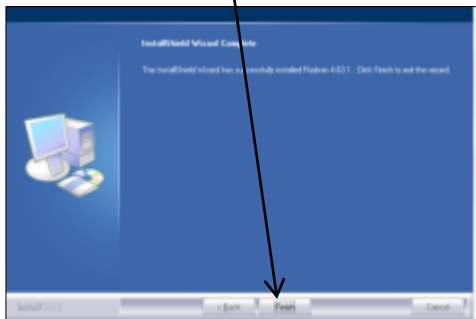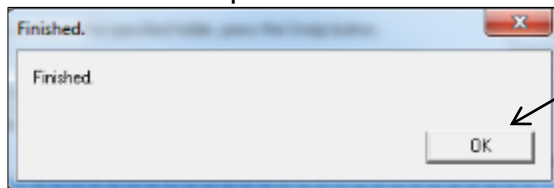Once you have installed Radwin you need to make some initial setup choices and configurations.

Creating your first Database

1. From the start menu, click <<All programs>> and find the program group "Radlog for Windows"

2. Click <<Radlog for Windows>> to expand the group and then click <<Radcom View>>

   You may wish to "Pin" the program to your taskbar for convenience. To do this, **right** click on the Radcom View icon and select "Pin to Taskbar" from the pop up menu.
   The program can now be conveniently started from the taskbar.
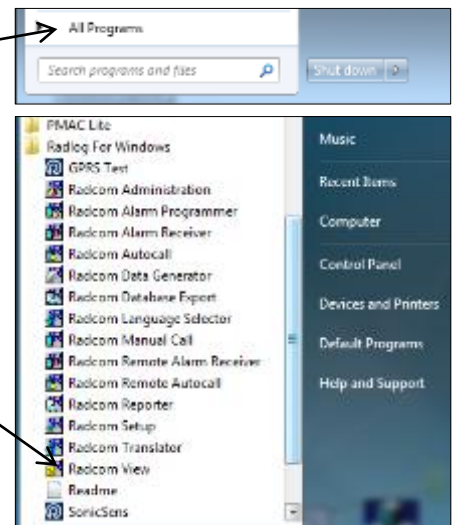
3. After the program starts you will be automatically prompted to set up a new database path
   This is for local storage of configuration information and any data that you may directly download from the logger or from DataGate™ after site installation.
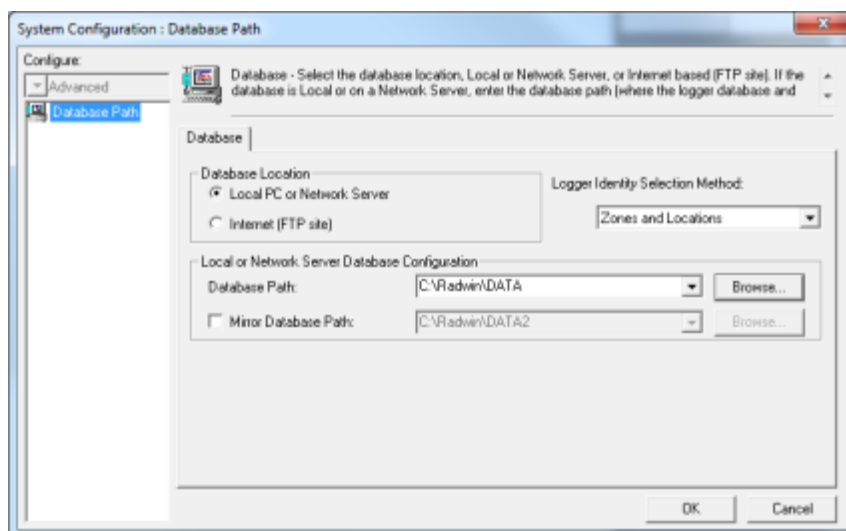
ⓘ ***A note about Logger Identity Selection Method:-***
A logger is identified with a single 7 digit reference ID.
If you select *Single Identity* from the menu then you can use the full 7 digits how you like.
E.g. account no, customer number, etc.

However, when installing a larger fleet of loggers, Radwin allows you to group individual logger *Locations* into larger *Zones*. This allows for geographic regions (*Zones)* to be easily indexed where large fleets are involved.
So, Locations refer to loggers
Zones **contain** Locations (loggers)
Many Zones may be created
Each Zone may contain many Locations (loggers)

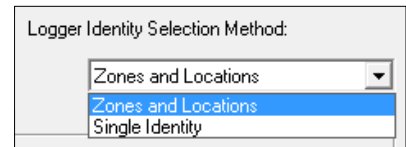For example, split a town up into Zones then split the Zones up into Locations and deploy loggers within each Zone.

If you choose this (default) option you will be prompted (later on) to decide how the 7 digits are allocated. E.g. ZZ/LLLLL means you can have up to 99 zones with 99,999 loggers in each zone, or ZZZ/LLLL gives 999 zones with 9,999 loggers in each and so on.
In this way you can develop an indexing method to allow you to quickly find sites you wish to examine.

4. From the Logger Identity Selection Method, choose the option as described above.
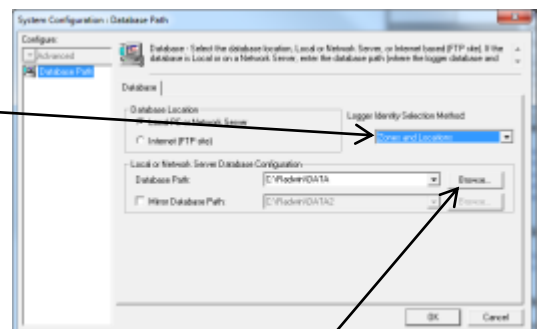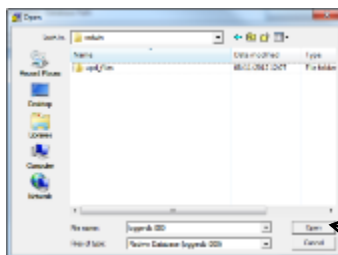
If you wish to change to location of the folder where the database is stored, click <<Browse…>>
Then navigate to the desired folder and click <<Open>> to choose the folder.

When prompted below click <<Yes>> to confirm the folder choice.
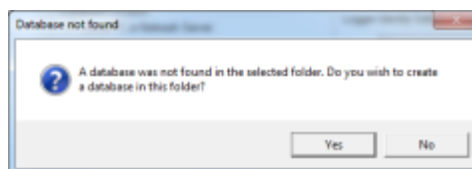
5. Now click <<OK>> to create the database.
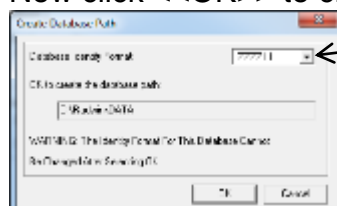
If you chose *Zones and Locations* in step 4, chose your format for the ID number. The default is the UK postcode format, e.g. AB12 3CD

Then click <<OK>> to continue.

Note: The Database format CANNOT be changed from this point. If you need to change it later you will need to delete the \DATA folder and start again.

If you have upgraded to this edition of Radwin from an earlier version, then the database format that was chosen in the previous edition will be maintained.

Setting up the communications cable

Note: The following instructions assume the use of the USB IR Reader connected to a PC USB port (with or without USB /Serial connector) or a Serial IR Reader connected to a PC serial port.

1. Connect the USB plug to a spare USB port on your computer or the Serial plug to a spare Serial port on your computer.

2. Position the reader head on the logger as shown below

Magnetic 'Target' for Infra- Red Reader

IR Window

Input – pressure

Infra-Red Reader

Inputs - pressure & flow

Serial / USB adaptor

Take care to position the head over raised ring area around the window. The reader head will hold onto the logger by magnets in the ring around the window and this helps with positioning.

3. Start Radcom View again (unless already running) and from the menu select <Configuration> and then <Advanced Configuration…>
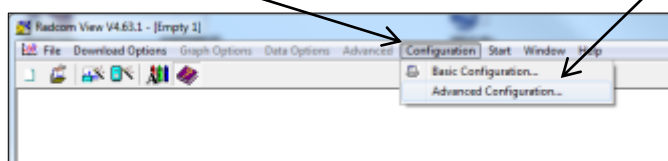
4. The menu below shows details all the setup functions available to Radwin, for the Communications port configuration click the <<Manual Call>> item from the list.
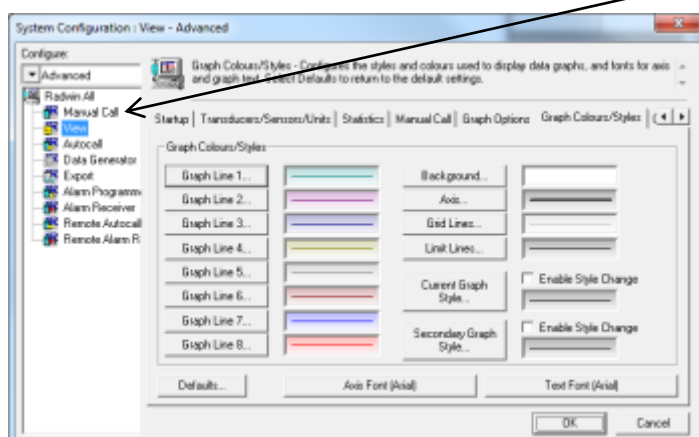
5. The *Manual Call* menu now appears, from the *Direct Cable Port* dropdown list pick the COM port that you will be using.
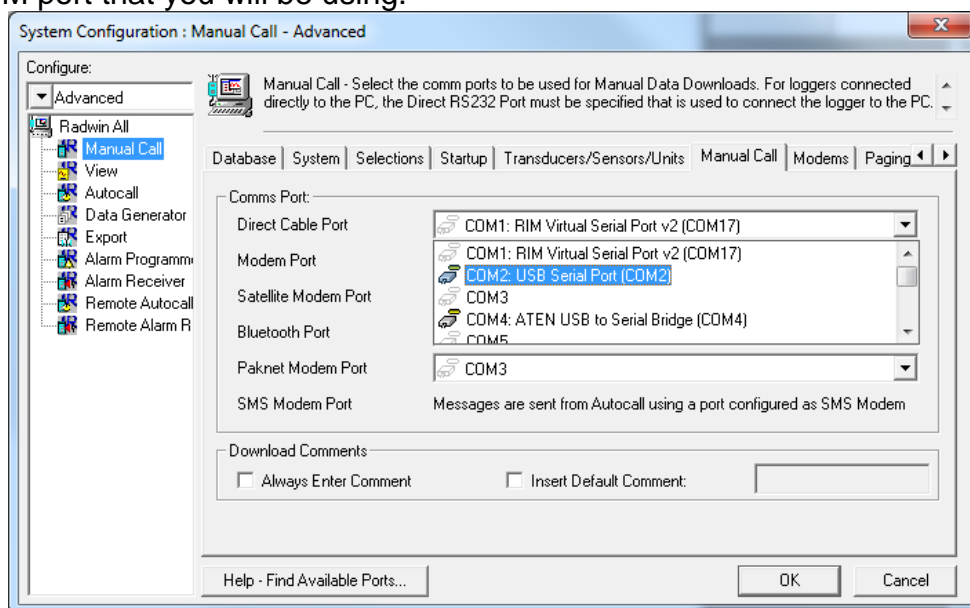
(i) ***A note about COM port choice:***
In the example above of a Laptop, you can see 3 COM ports listed, the numbers and descriptions vary from PC to PC but to summarise the types:-

- *RIM Virtual Serial Port* (e.g. COM1:) should be ignored as Radwin will not communicate via these types of ports. These often have high COM numbers (above 10).
- *USB Serial Port* (e.g. COM2:) is a genuine COM port that can be used with Radwin and is usually the USB Reader cable.
- *USB to Serial Bridge* (e.g. COM4:) is also a genuine COM port that can be used and is generally a USB to Serial adaptor cable.

If you are using a Desktop computer or a Laptop with a docking station, you may also see a *Communications Port*. This is also a valid choice for your *Direct Cable Port*, however there is usually more than one so check the physical indication by the socket on the back of the computer*.

Tip: If you are using a USB connection, you can check you have the right one as follows:-

i. Look down the list and note each COM number that is not empty.
ii. Click <<Cancel>> to close the *System Configuration* menu.
iii. Remove the USB plug from the PC.
iv. Repeat steps 3 to 5 above and look for the one that has disappeared. This is the COM port you need to select in step 5.
v. Click <<Cancel>> to close the *System Configuration* menu again.
vi. Reinsert the USB cable **IN THE SAME PORT AS BEFORE** and repeat steps 3 to 5, selecting the COM port noted in step iv above.

6. There is no need to configure any other ports for this type of logger.
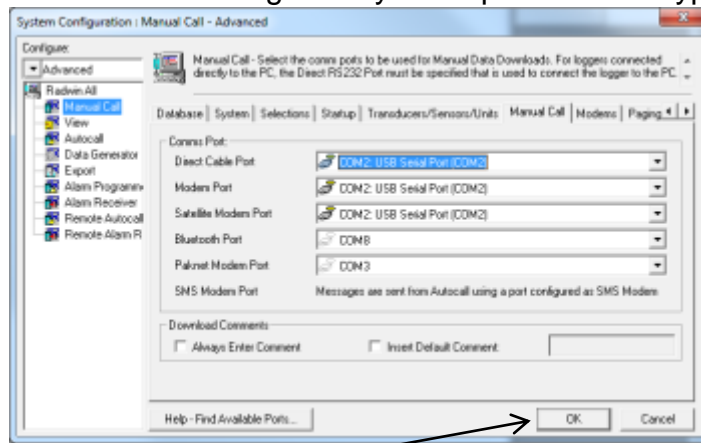
Click <<OK>> to save the configuration.

7. Congratulations, you are now ready to begin configuring your new data logger.

Programming your first logger

With the logger connected to the computer as in the previous section, you now need to run the configuration wizard to set your logger ready to send in data.

Using the Configure Logger wizard

1. If you have not already done so, run the "Radcom View" program.

2. From the menu, click the   button to launch the programming Wizard
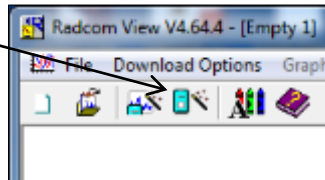
3. Radwin now needs to know the type of logger you are using. You can either select this from the Logger Type drop down menu (LoLog Flash)
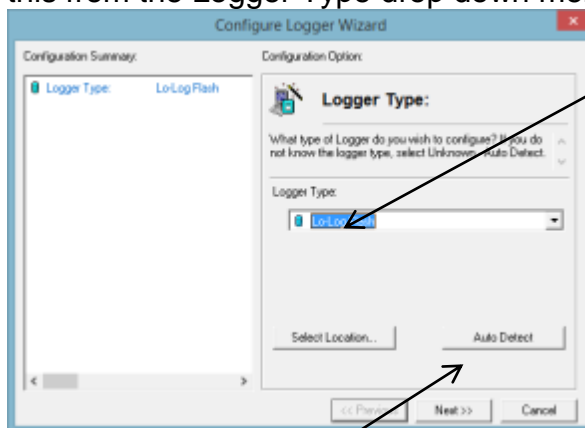
   or click the <<Auto Detect>> button to allow Radwin to discover the type automatically.
   Then click <<Next>> to continue.

4. You need to tell Radwin how the logger is currently connected to the computer. As you are physically connected to the logger, choose the default type, "Direct (Cable)"
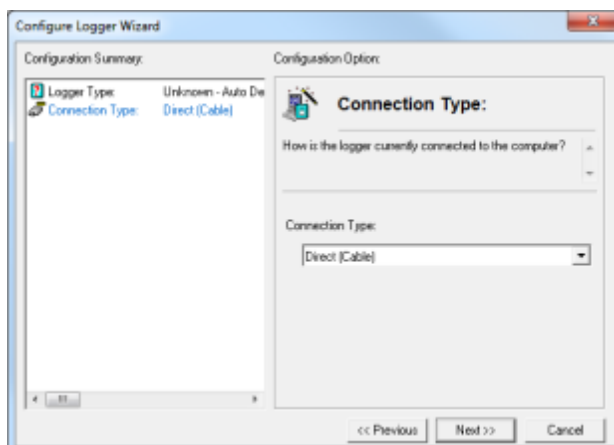
 then click <<Next>>

5. You are now ready to download the current settings from the logger,
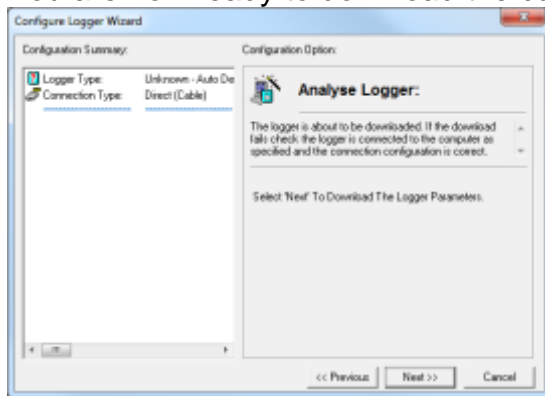
 so click <<Next>> to continue.

6. Radwin will now retrieve the current settings from the logger,

7. You now are able to give your logger a unique identity -
Enter the details in the four fields according to your chosen Zone and Location plan as described on page 8 and then click <<Next>>.
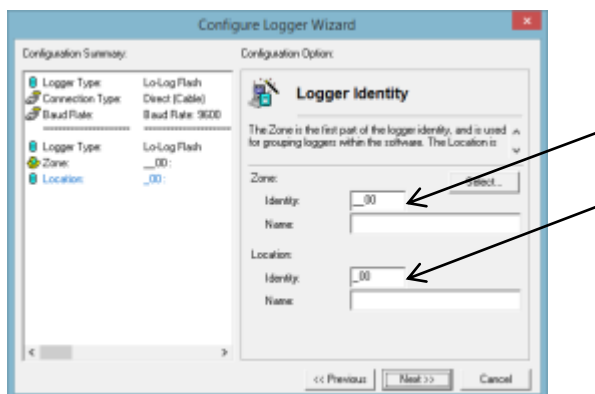
8. You now need to define how the logger will transfer its data for downloading. For this logger it will be by 'Direct Cable'
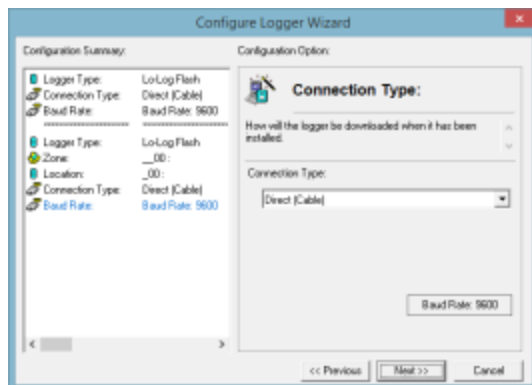
 so click <<Next>> to continue.

9. You now need to configure the channels (1 channel per signal/sensor) that you wish to use.

A note about logger channels:

The LoLog is available in several different configurations for Pressure, Flow and other sensors. Data is presented to the viewer in Channels and Channel numbers are allocated in the factory by priority of sensor type. So, where fitted, analogue sensors, e.g. Pressure transducers, Depth measurement devices and 4-20mA flow sensors, will always come through on CH1; and digital inputs, e.g. pulse counters, will take any remaining channel numbers.

Radwin automatically detects the configuration of the logger and will prompt you according to the type of Transducer appropriate to that input. The following example will set up 1 pressure transducer and 1 flow channel for a logger configured in the factory for 1 pressure and 1 x bi-directional flow.

For more specific details on other variants or if you experience problems, please contact HWM support – cservice@hwm-water.com

10. The Channel 01 configuration menu appears as below:-
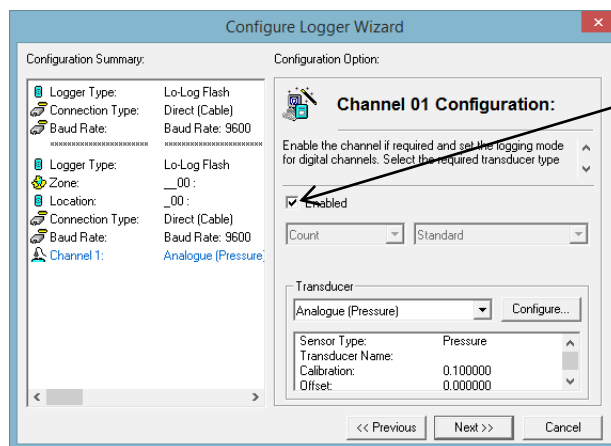
To turn ON the Pressure channel, tick the "Enabled" box. The default transducer is for a pressure transducer with a Calibration factor of 0.1. If you are configuring any other type of sensor, please refer to HWM support.

Click <<Next>> to continue.

11. The Channel 02 configuration menu appears as below:-
Again, tick the "Enabled" box to switch the channel ON.
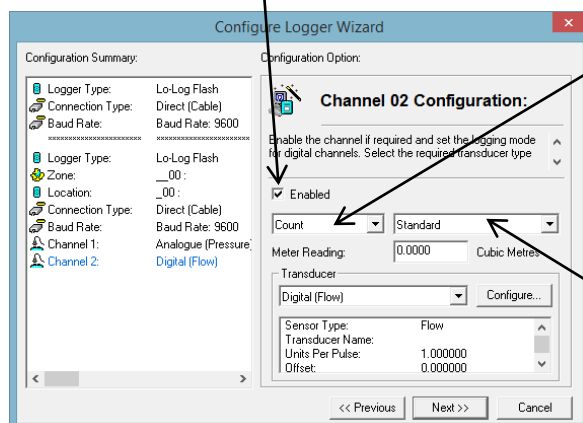
Choose how the logger will measure pulses from the dropdowns, "Count" counts each pulse received by the logger, "Event" converts the time between pulses for slow flow rates.
If you do not wish to count every pulse for high rates,
Choose every "nth pulse".

12. As you are configuring a Digital pulse input, you need to configure the number of Units Per Pulse to match the output from the Pulse Unit on your meter. Check your meter for these details Click <<Configure>> to select your transducer type.
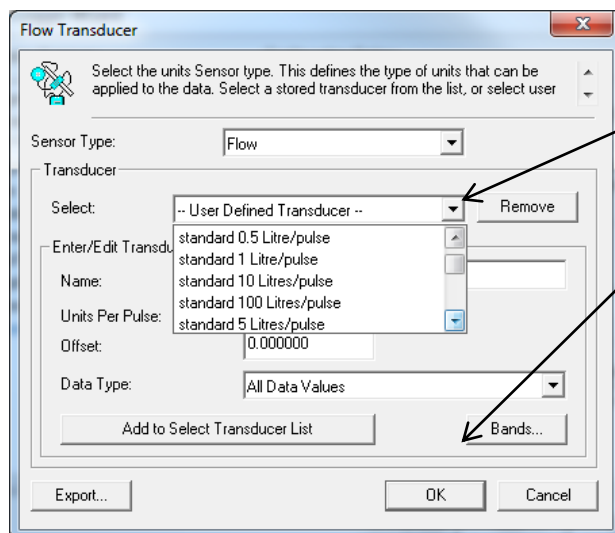
From the drop down list, choose the pulse rate or sensor type that matches the Pulse Unit that is fitted to your meter.

Then click <<OK>> to store this setting and return to the channel menu.

Click <<Next>>.

Note: You can also enter the pulse rate manually, simply click in the Unit Per Pulse box and enter the value, take care over the decimal place.

(i) Note: If you leave an unused channel Enabled (ON) you will simply see flatline data on the viewing platform.

13. Next you need to specify the Sample Rate that you require.
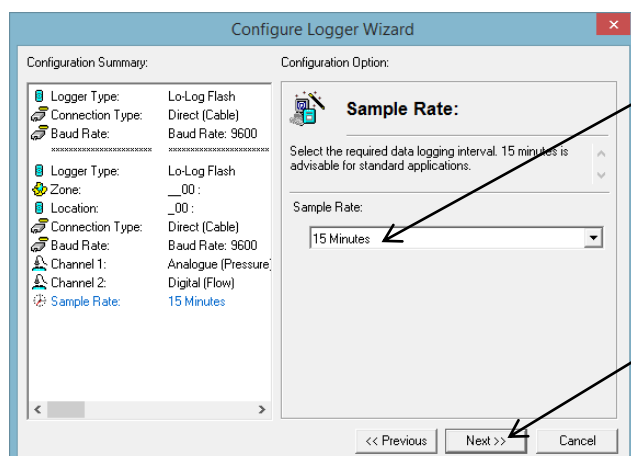
In most cases the default setting of 15 minutes will be sufficient, however, if you wish to change the rate, simply select a period from 1m to 24hrs from the dropdown menu.

Click <<Next>> to move on

(i) *A note about Sample Rates:*
- For a digital input (e.g. flow), the sample rate equates to the number of pulses counted during the period set. So, if 900 pulses were counted over the 15m sample rate set above, this equates to 1 pulse/sec and if you have set 10ltr/pulse in step 12, then the final result is 10litres/sec.
- For an analogue input (e.g. pressure, depth, etc.) the logger takes a background measurement every 30 seconds (or the sample rate, whichever is smaller).
  This background measurement is then averaged across the sample period selected. So if you set a 15m "Sample Rate" above, then the logger will record the average of the 30 readings taken during the 15m period selected.
  If you choose a sample rate faster than 30s, then the background sample period with adjust automatically to match it, **however this will reduce battery life.**

14. You now need to choose how the logger is to record data.
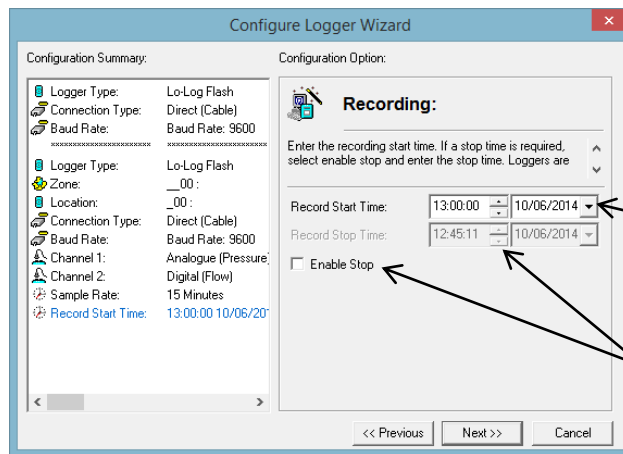
Note:- With a Lolog it will start recording when you upload it – it is not possible to set a start time and/or date in the future. Check the time & date here are before the current time & date.

If you wish to Stop recording at a specific time, tick the "Enable Stop" box and enter the time you wish to stop recording data here.

Click <<Next>> to continue.
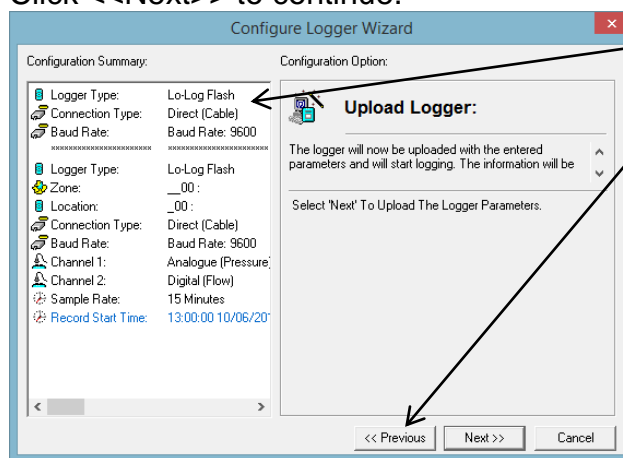
Check your configuration in the summary box.
Click <<Previous>> to return through the menus to make any corrections.

To begin the programming sequence, Click <<Next>>
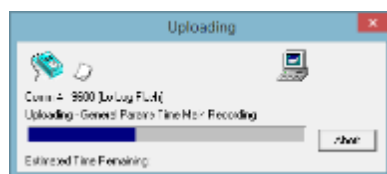
Programming will now take place…
Note that the bar will turn Red once programming begins.
Note: If the programming step fails at this point simply wait 60secs and retry.

15. Radwin has now completed the programming sequence for your logger and stored its details on your computer. It is now recording and will begin logging data.
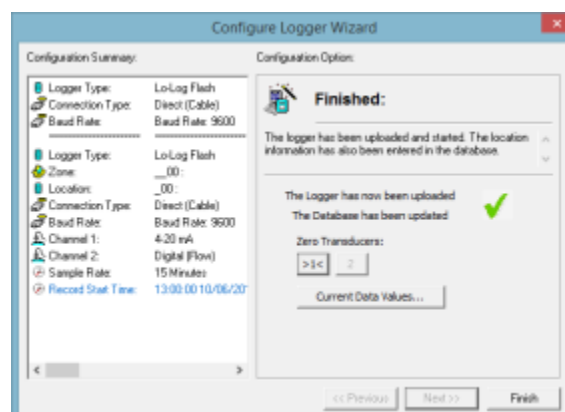
Before you select 'Finish'………….

Select the 'Zero Transducers' Button >1<
This will allow you to ensure the pressure transducer is zeroed at the time you installed it.
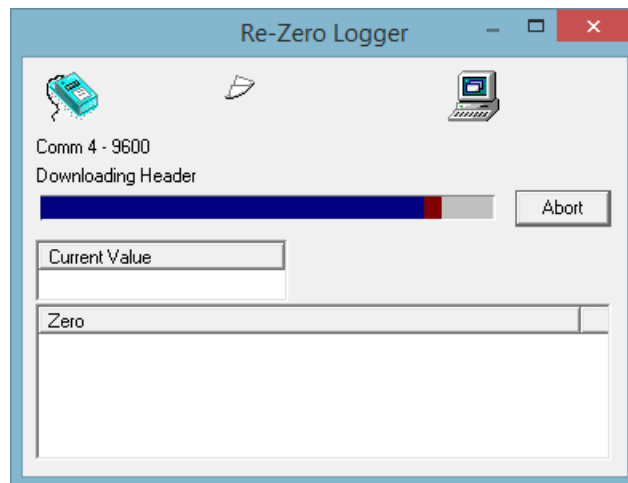
Click **Yes** to continue when the following message appears.
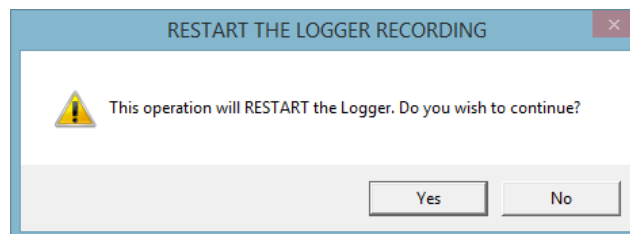
A flow of values will then appear in the **Zero** column of the **Re-Zero Logger** screen. Allow the raw Numbers in the **Zero** column to stabilize.

Click on the **Accept this ZERO VALUE** button when the Zero figure values are acceptable.
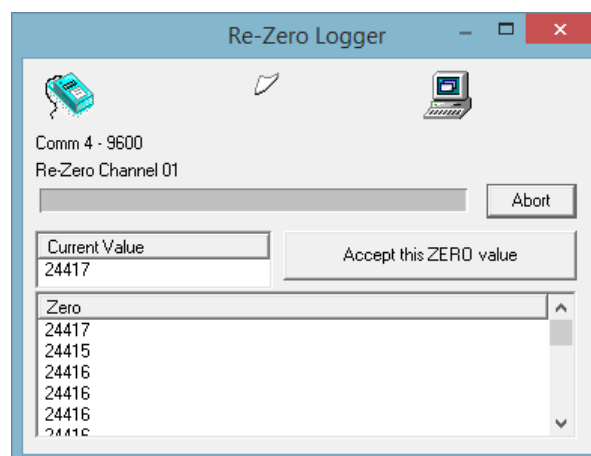
The **Re-Zero Options** screen will then appear allowing the operator the choice of either storing, re-zeroing or aborting the Re-Zero by clicking into the **Channel Options** box and clicking on the **OK** button.
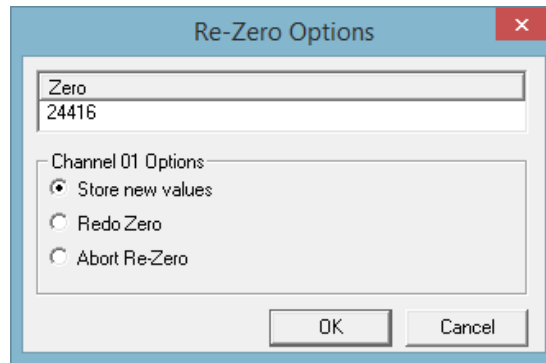
If the **Store New Values** box is checked the **Store the new Zero Value** screen appears. Click on the **YES** button to store the values.
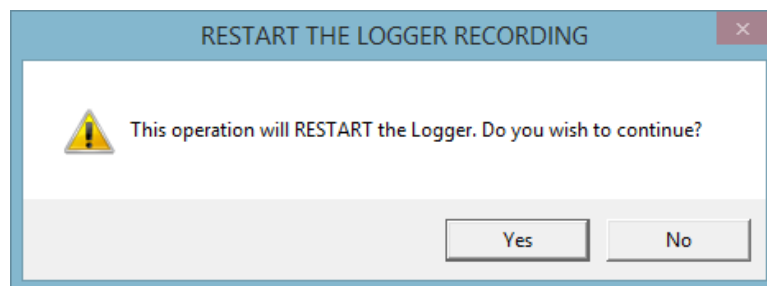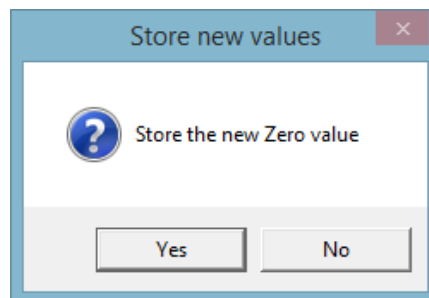
Click on the **YES** button to restart the logger
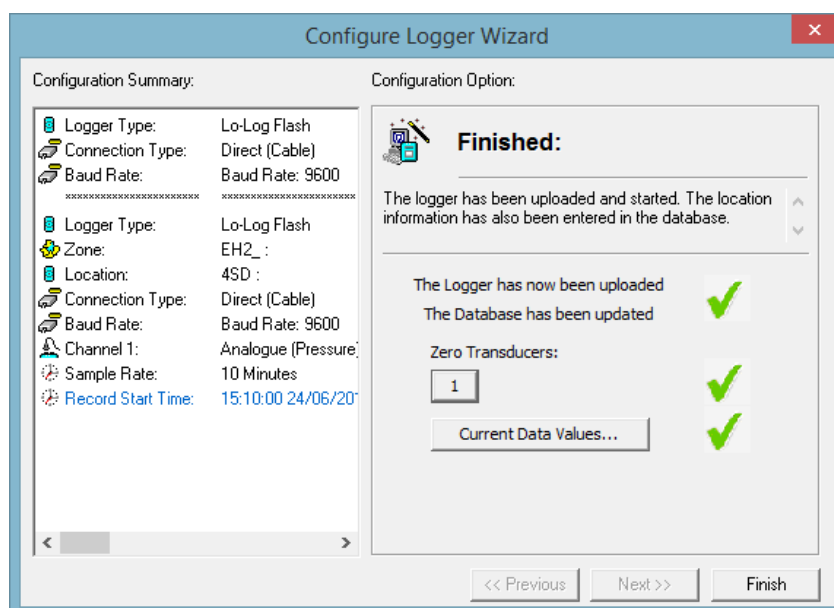
Click <<Finish>> and the Wizard will close.

You are now ready to confirm that the logger is measuring real data from the sensors by taking an Instantaneous Value –

Select the **Current data Values button** to check the instantaneous values the logger is seeing are as expected -
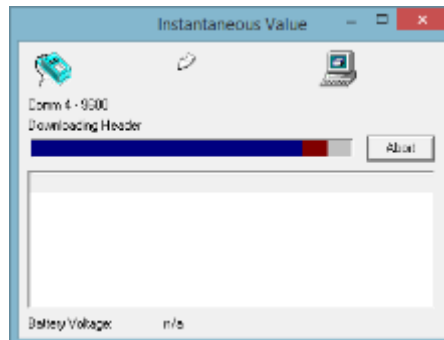
Radwin will now start reading the current sensor values that the logger is receiving, so for our example Pressure and Flow logger, we will see -

Click <<Abort>> when you wish to finish alternatively Radwin will automatically timeout after a period of a few minutes.

Example Ch1 reading Pressure in Meters Head and Ch2 reading water Flow in Litres/Sec.

The reading taken is the average over the sampling period specified, so in our example the last value is 30.16m and 22.0l/s over the last 15m. So if you have just connected your logger, you may have to wait a few minutes for the reading to stabilise. The value in the square brackets [301] & [5] is the raw uncorrected value being measured or counted over 2 seconds.

Note: If the flow readings do not meet your expectations, then check your connections and your calibration factors have all been entered correctly. If you still have incorrect readings, you may have a faulty pulse unit on the meter which will need to be replaced.

Downloading Data from the logger and viewing results

The information that has been recorded by, and stored in, the data logger can be downloaded directly to a PC and viewed by using the Radwin **Download Data Wizard**.

Download Data Wizard

Select the Download data wizard from the Download Options drop-down menu or the wizard icon ![icon] on the title page. Proceed after each option by clicking on the Next button.

Select the type of logger (i.e. *Lo Log Flash*) being used and its location (*from select location*) – Next>>

Select the type of connection to the logger (*Direct RS232*) and the Baud Rate (*9600*) – Next>>

This is similar to the procedure used to configure the logger.

After making the above selections, the **Download Data** screen will appear.

Download Data

The logger is about to be downloaded. If the download fails, check the logger is connected to the computer as specified and the connection configuration is correct.

Click the **Next** button for the software to download the logger parameters.

(i) **Note -**

1) An easy-to-use Help Menu is opened by default and contains all the necessary information to operate the software.

2) All of the configuration information can be seen on the left side of the screen of the **Configuration Summary** box of the Configure Logger Wizard screen -
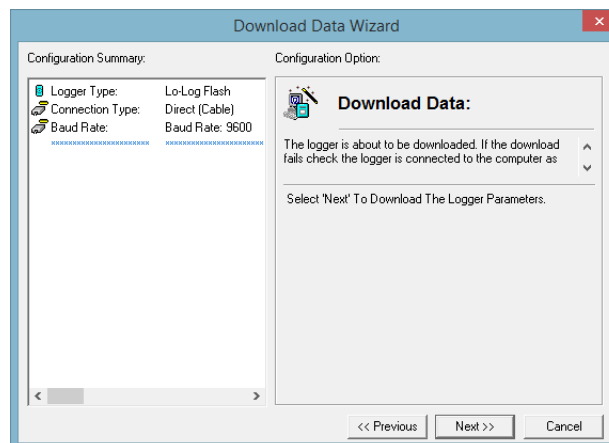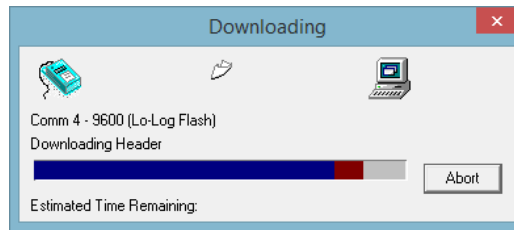
The above screen will now appear to show the Logger Parameters are being *downloaded*.

The wizard then allows the operator the opportunity to change the transducer configuration for the data downloaded from each channel of the logger. Follow the procedures used to configure the logger if changes are required.

Proceed through the logger configuration screens until you arrive at the **Data Filename** screen.

Data Filename

The Data Filename screen assigns a filename for the data to be stored, but allows the operator to insert a text comment into the **Comment** field (i.e. date of transfer, logger identity) that will be stored as part of the file.
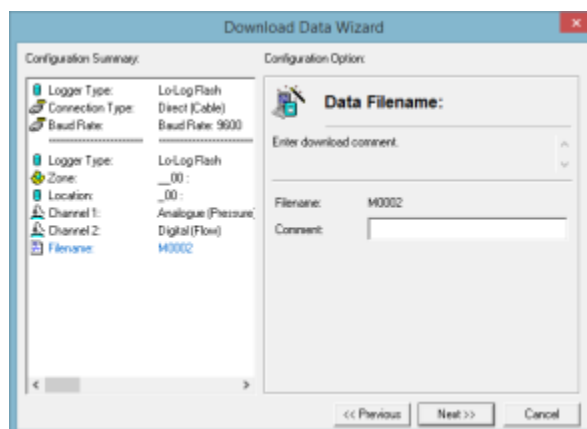
Store Data

The recorded data will now be stored into the selected location shown in the Configuration Summary panel –
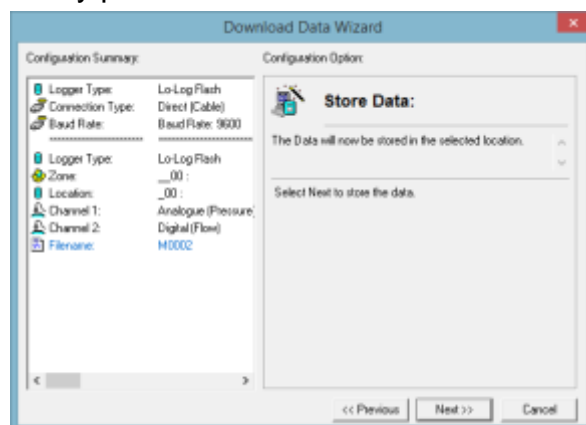
Click **Next** to store the data.

The Finish Screen will now appear.
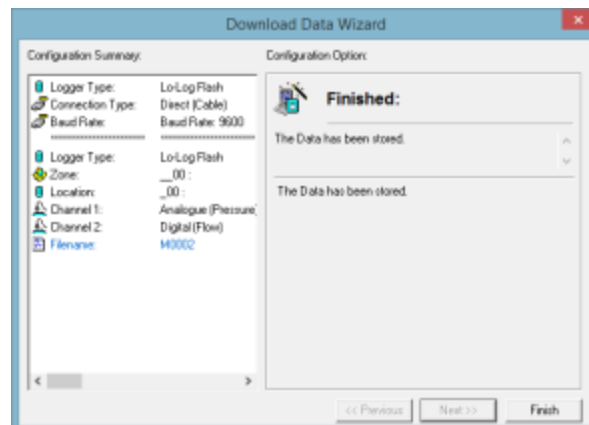
Click the **Finish** button to exit the Download Logger Wizard.

After the Finish button has been clicked and the data downloaded, the recorded data will be displayed as a graph and data table

Graph and Data Table Manipulation

The graph and data table can be manipulated to display information for either channel. The type of graph and the format of the displayed data can be altered either by using the drop-down menu, the toolbars or by right clicking on the mouse.

(i) Note - An easy-to-use Help Menu is opened by default and contains all the necessary information to operate the software.
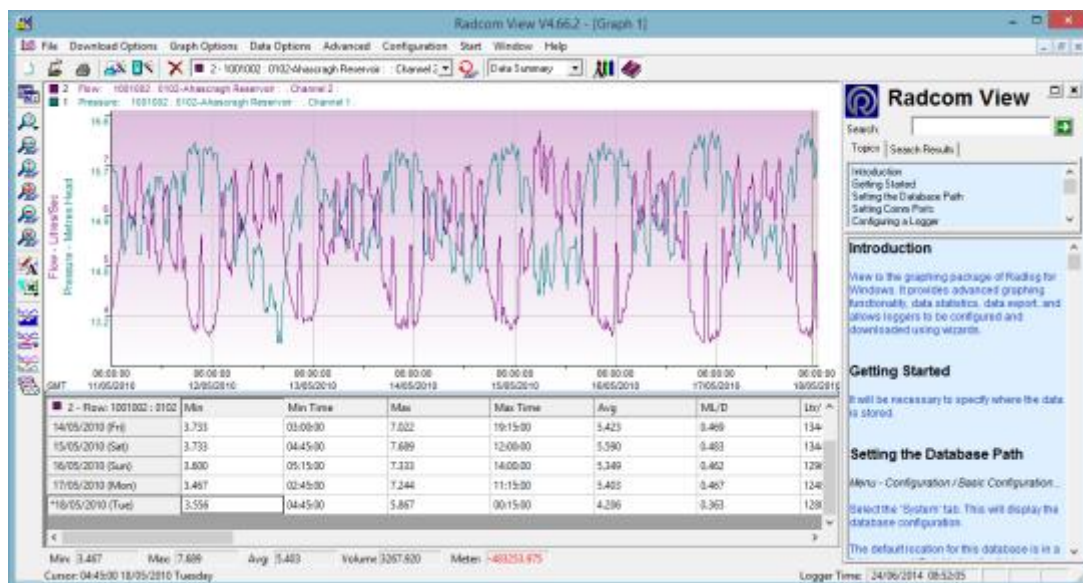
Selecting the Input Channel Data to be viewed

The graph and table will display the data stored for each channel. If the logger has a single input, the data for that channel will be displayed. If the logger has two inputs the information for the either channel can be selected by either:

Using the drop-down menu on the toolbar, clicking on the 'Cycle Through Graphs' icon

or right clicking on the mouse and selecting the required channel from the **Graph Select** option -
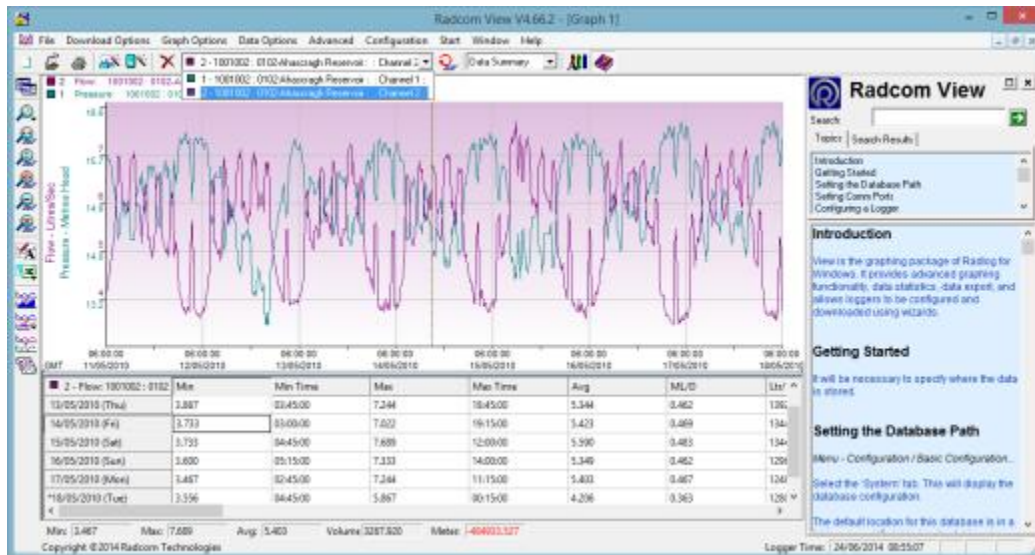
Changing the Information in the Data Table

The information that is displayed in the data table below the graph can be changed to show Cursor Values, Tabular Data, Data Summary or Graph Statistics. The cursor values option displays the value for each graph, while the other options display the values for the selected channel. The information in the table can be opened in .CSV or .TXT file format. The required information can be selected by either:

Selecting the option from the **Data Options** tab on the main menu, or by clicking on the Toolbar to display the options for the Table Data
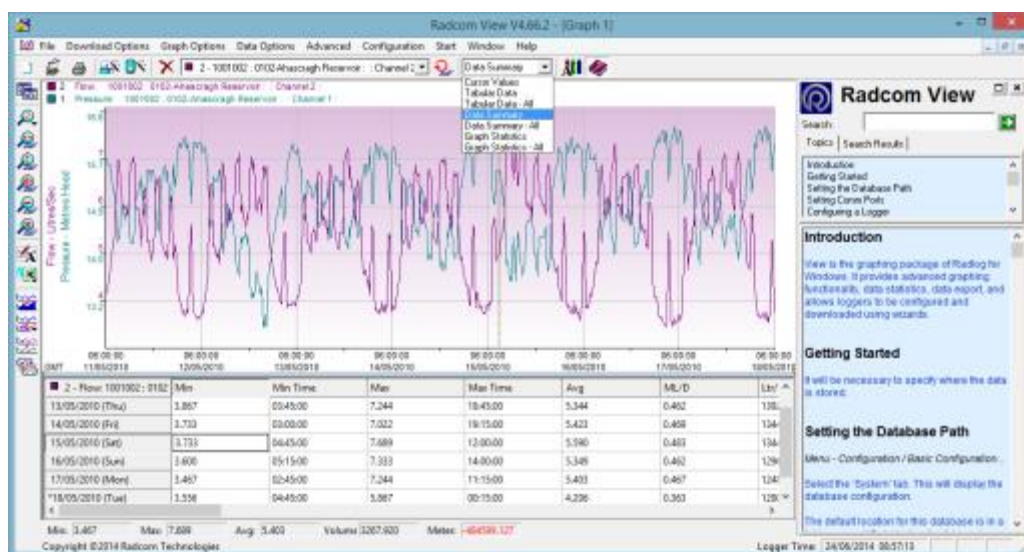
The data format options are summarised in the table below -

Cursor Values	Displays graph data values for each graph in the tabular data table below the graph as the cursor is moved across the graph.
Tabular Data	Displays tabular data for the current graph in the tabular data table. The value at the cursors position is highlighted in the table as the cursor is moved across the graph.
Data Summary	Displays a daily summary for the current graph in the tabular data table. The day of the cursors position is highlighted in the table as the cursor is moved across the graph.
Graph Statistics	Displays Statistics for the current graph in the tabular data table. The statistics are for the currently visible time span of the graph.
Open CSV File (MS Excel)	Writes the contents of the tabular data table to a temporary CSV file that is automatically opened using the default CSV file viewer - normally MS Excel.
Open TXT File	Writes the contents of the tabular data table to a temporary TXT, file that is automatically opened using the default TXT file viewer.

Changing the Graph Style

The operator can change the style of the graph, view the graph from different axes, remove a graph from the display, or copy and export the graphs to be viewed by other programs. These options can be selected by either:

Clicking on the **Graph Options** tab on the main menu, clicking on the **Zoom** toolbar icons 🔍🔍🔍🔍🔍, or right clicking on the mouse and selecting the required **Graph Type** or **Zoom** option -
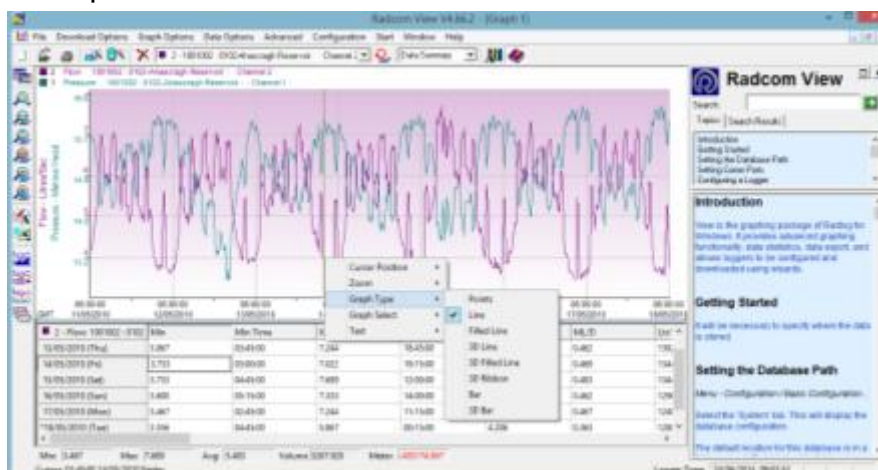
By right clicking on the mouse and selecting **Cursor Position** from the menu, the data value (*Day, Date, Time and recorded value*) will be displayed for the position of the cursor in the current graph.

A summary of the options is shown in the table below-

ZOOM OPTIONS	
Zoom Time Region	Puts the graph in Zoom X axis mode. Left click the graph once to specify the start point, and again to specify the end point.
Zoom Y Axis Region	Puts the graph in Zoom Y axis mode. Left click the graph once to specify the start point, and again to specify the end point.
Zoom Y Axis Region and Time Region	Puts the graph in Zoom XY axis mode. Left click the graph once to specify the start point, and again to specify the end point.
Zoom Out	Zooms out to the previous zoom level
Zoom Full	Displays the graph full size removing all zoom levels.
GRAPH OPTIONS	
Points	Displays graphs as single data points.
Line	Displays graphs with data points as joined lines.
Filled Line	Same as Line but fills the area under the graph.
3D Line	Same as Line but with a 3D effect.
Bar	Each data point is displayed as a bar.
3D Bar	Same as Bar but with a 3D effect.
Remove Graph	Removes the current graph - indicated as the top most graph title above the graph
Remove All Graphs	Removes all displayed graphs.
Export Data	Allows an export format to be selected and exports the data to a file.
Copy Graph To Clipboard	Puts a copy of the graph on the clipboard so it may be pasted into other application as an image.

LoLog Vista Display Options

The values shown on the LCD display panel on the Lo Log Vista Data Logger can be changed to suit the User's requirements. The User can do this using the Radwin View module when connected to the logger.

To change the display format, proceed as follows:

Select **Radwin View** from the start menu.

Select **Download Options** and **Advanced Download/Upload/Utilities** from the drop-down menu

Select the **Logger Type** (*Lo Log Flash*), **Baud Rate** (*9600*) and **Connection Type** (*Direct RS232*) from the drop-down menus shown in **Error! Reference source not ound.**.

Select the **Download Parameter Settings for Last Recording** option by clicking in to the check box.

Click on the **OK** button.
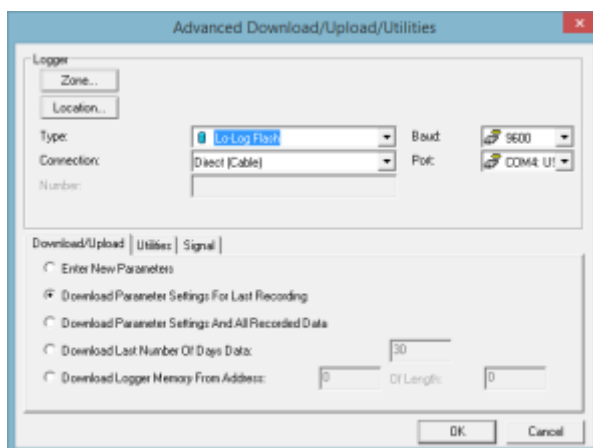
The below screen will appear to show that the logger parameter settings for the last recording are being *downloaded* to the PC/PDA.
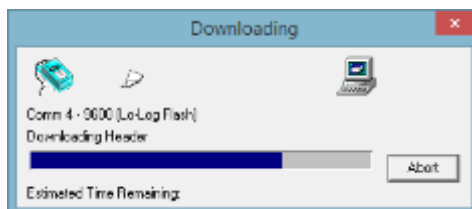
When the parameter settings have been downloaded the **Lo-Log Flash Parameters** screen will appear. Select the **Display Configuration** tab on the Lo-Log Flash Parameter screen as shown below –
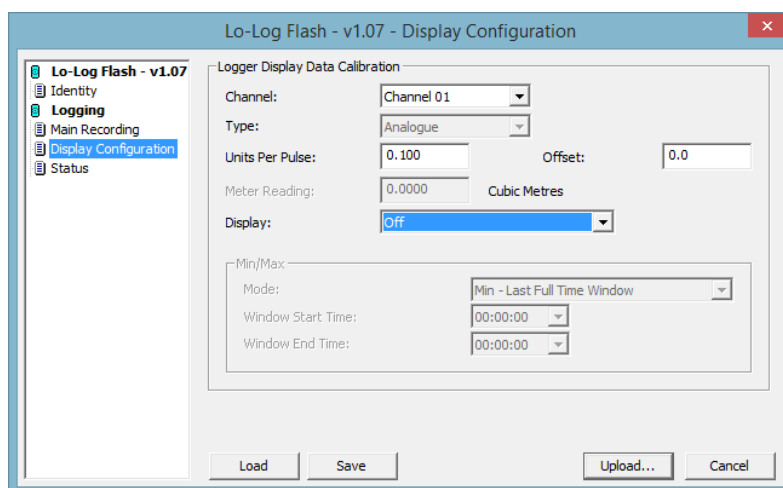
Select the required channel from the **Channel** drop-down list.
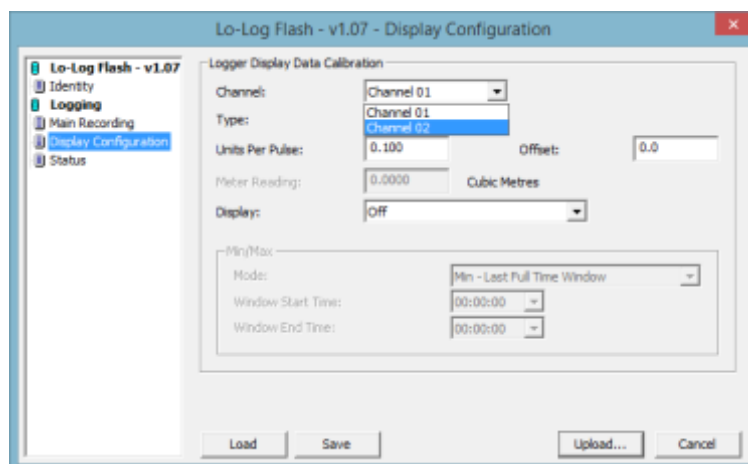
The display on the Lo Log Vista can be configured for Analogue and Digital Channels to display the following:

Analogue Channels

Display Values

To configure the logger to display a meaningful value the **Units per Pulse** field and the **Offset** field must contain a meaning number as per the formula below;

Display value(D) = recorded data in memory(raw number (R)) x unit per pulse(N) – offset (O)

$$D = R \times N - O$$

A standard logger fitted with internal pressure sensor is calibrated over a 10 bar range and stores data in memory in units of decimetres.

To display values in different measurement units on the LCD for a standard pressure channel select the Units per Pulse value from the table below, the Offset value will always be 0.

LCD DISPLAY VALUE	UNIT PER PULSE	OFFSET
Decimetres	1	0
Meters	0.1	0
Bar	0.01	0
PSI	0.06	0

Note

The display will continuously loop round the selected information from the chosen options shown in the table below

The user can select different values to be displayed on the Logger LCD screen by selecting the required option from the **Display** drop-down list. A summary of the display options is shown in the table below.

Lo Log Vista Display Options

	OPTION	DISPLAY
1	OFF	Displays time of day only
2	VALUE	Displays time of day, channel number and the latest value of the selected channel
3	TOTAL	Displays time of day, channel number and the total flow volume for the selected channel
4	VALUE & TOTAL	Displays 1, 2 & 3
5	MIN/MAX	Displays the minimum or maximum value during the last 24 hours
6	VALUE, MIN/MAX	Displays 1, 2 & 5
7	TOTAL, MIN/MAX	Display 1,3 & 5
8	TOTAL, VALUE, MIN/MAX	Displays 1, 2, 3 & 5

Note For analogue pressure channels the **TOTAL** option is not used.

MIN/MAX Value - The min/max value is calculated during either the **Last Full Time Window** (start of logging and end hours set by user) or **Within the last 24 hours from last 1 hour boundary**
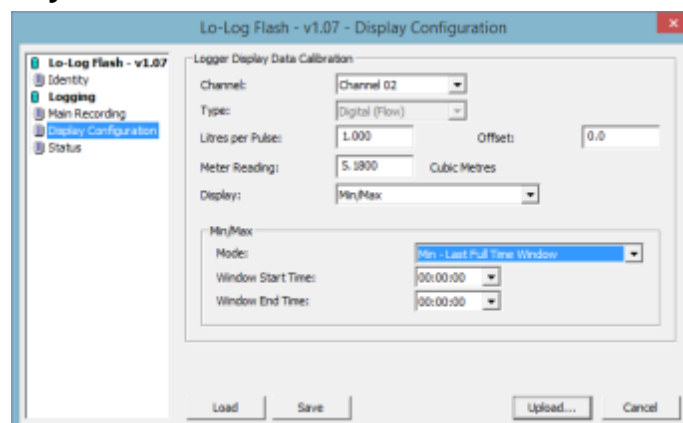
The **Last Full Time Window** min/max value is calculated during the Window Start Time and the Window End Time. To set the Last Full Time Window select the start and end hour value from the **Window Start Time** and **Window End Time** drop-down lists (see **Error! Reference source not found.** below).

The **Within last 24 hour from last 1 hour boundary** value is calculated during the latest 24 hours.
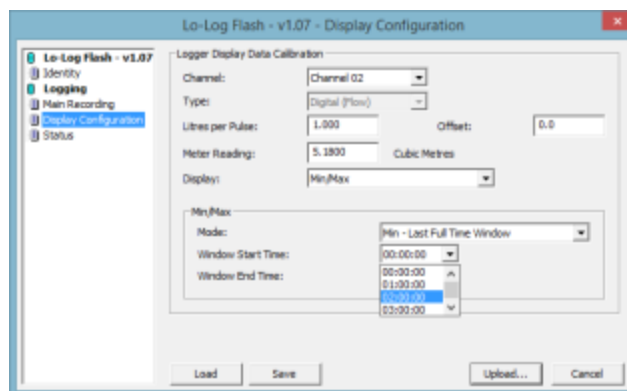
Digital Channels

Display Values

To configure the logger to display a meaningful value the **Litres per Pulse** field must contain a meaning number as per the formula below. The **Offset** value is always 0;

The user must find out the Litre per Pulse value for the meter and sensor being used.

Display value (D) = <u>total pulses during logging interval (R) x unit per pulse (N) –offset (O)</u>
Logging interval time (seconds) (T)

$$D = \frac{R \times N - O}{T}$$

The logger will display, by default, in Litres per Second. To display in any other measurement unit, the values from **Error! Reference source not found.**, assuming he flow meter/sensor generates 1 pulse for 1 litre of water, will need to be input into the **Litre per Pulse** field.

LCD DISPLAY VALUE	LITRES PER PULSE	OFFSET
Litres/Second	1	0
Litres/Minute	60	0
Litres/Hour	3600	0
Meter^3/Hour	3.6	0

(i) **Note -** The display will continuously loop round the selected information from the chosen options shown in the Table.The user can select different values to be displayed on the Logger LCD screen by selecting the required option from the **Display** drop-down list. A summary of the display options is shown above.

Meter Reading

The logger can be configured with a meter reading to a resolution of 10 units (Litres).

The example shown below shows a value 53897628.02 cubic metres which equates to a LCD display value of 53897628020 litres.
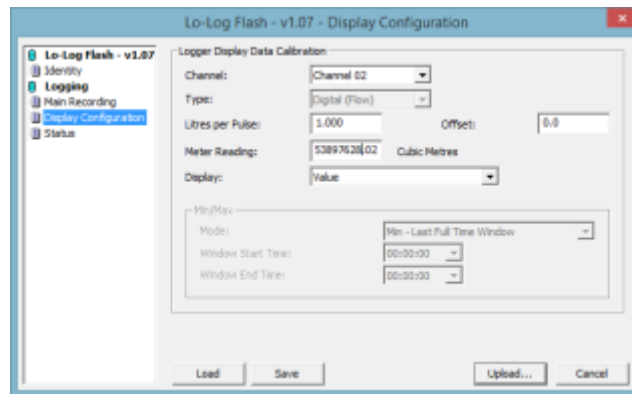
MIN/MAX Value

The min/max values are selected in the same manner as the Analogue channel.

Once the data calibration settings have been completed, click on the **Upload** button to select the upload options from the **Upload Parameter** screen shown below.
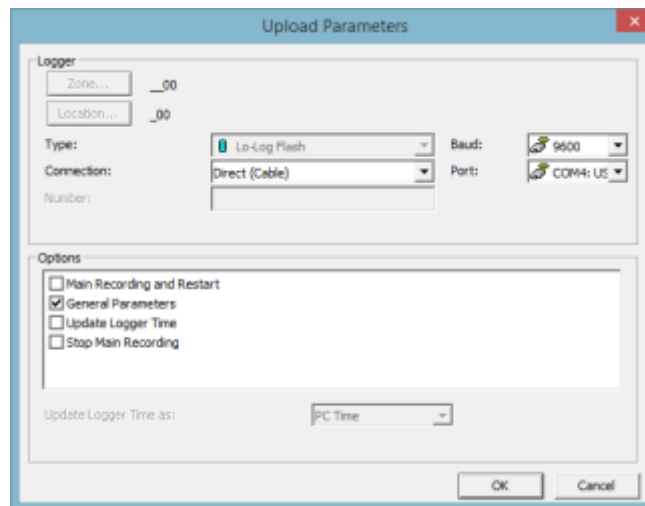
Check the **General Parameters** box under the Options and click **OK**.

The following screen will appear to indicate the parameters are being uploaded.
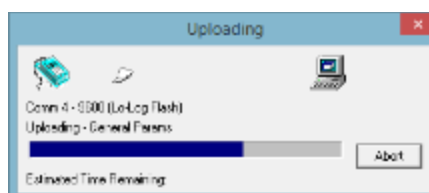
When uploading is complete, the **Display Configuration Tab** on the **Lo Log Flash Parameters** screen reappears. The user can check the options that have been selected or exit from the software by clicking on the **Cancel** button twice and selecting **File/Exit**.

Flow Input

Lolog 4 Pin Milspec Connector

Pin No.	Title	Description	Typical Radcom flow input cable colour
A		Not connected	Red
B	Flow	Flow input signal (pulses)	Blue
C	GND (0V)	Ground (0 volts)	Green
D	Direction	Pulse Direction input signal 0V = -VE direction	Yellow

Digital Flow Input Circuit

Open collector

Contact closure

Logger input ciruit

A

V+

VDD

2

B or D

1

1

2

3

FLOW / DIRECTION

C

VSS

Maximum frequency 64Hz
Minimum pulse width 8mS
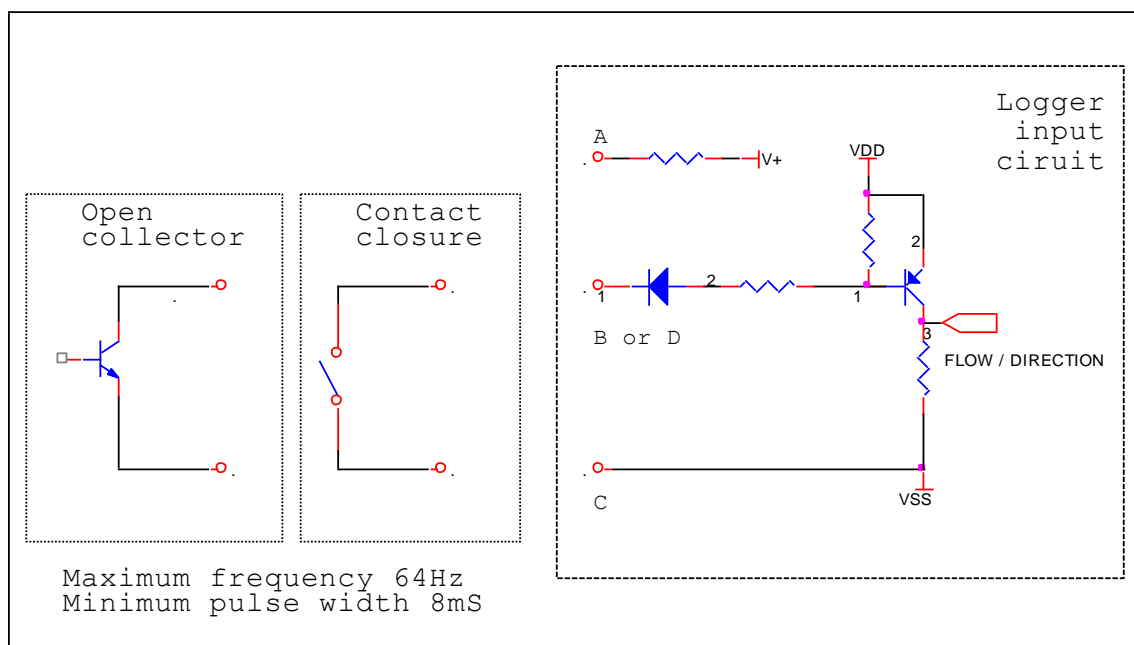
MilliAmp Input

4 Pin MilliAmp Milspec Connector

Pin No.	Title	Description	Typical Radcom Milliamp cable colours
A			
B	+VE signal	Positive mA input signal	Blue
C			
D	-VE signal	Negative mA input signal	Yellow

MilliAmp Input Circuit
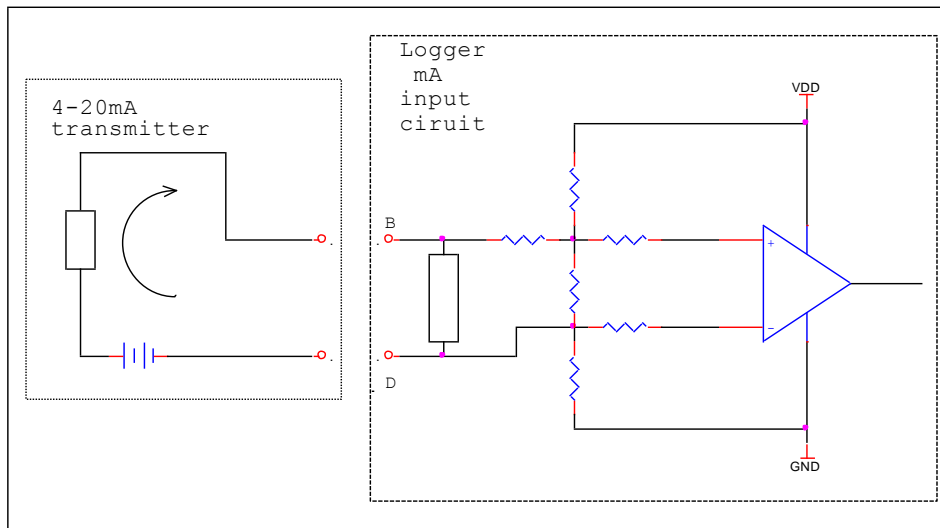
Technical Specs

LoLog LL / 500 / Vista Series

Sensor Input Options	Digital	Uni- or Bi- directional pulse/status
		Reed Switch contact closure tye or equivalent sensors incuding Kent LRP & PU10 pulse heads, Aquamag / Magmaster
		Up to 64 pulses per second
	Analogue	Internal or External pressure Transducer
		0-20bar / 0-200 metres head / 0-300 psig standard (other ranges available). Please note that the logger is calibrated to 10 bar as standard. 20 bar calibration must be specified at time of order if required. <0.2% FSD accuracy supplied as standard. <0.1% FSD accuracy available as optional enhancement if required. Please specify at order.
		4-20mA from isolated sensor Please note only one analogue channel can be 4-20mA
Capacity	Memory	Recording 16,000 readings in continuous (cyclic) operation. Unit can be purchased with optional extended memory to 32,000 readings. An optional compressed firmeware version can enable storage of up to 1,000,000 data values depending on variablility of data. please note that the correct configuration must be ordered at the time of purchase as changes cannot be made after manufacture.
Logging Features	Frequency	Sample periods In 1 second increments from 1 to 60 seconds Then 1 minute increments from 1 to 60 minutes Then 1 hour increments from 1 to 24 hours
	Logger ID	Up to 7 alphanumeric characters
	Site ID	Up to 127 alphanumeric characters
	Clock	On board 24 hour real time clock with date facility
	Logging Modes	Count and Event (PIT) logging modes Bi- directional capability
Communication	Serial	By Infra red reader to RS232 or USB port on a lap top or desktop PC @ 9600 Baud
	Vista display (optional)	4.5 digit LCD display showing one or two (toggling) channels with options of Real time, latest reading, min value last 24 hrs or meter reading with configurable units
Physical	Dimensions	115H x 67W x 35D mm (4.5"H x 2.6"W x 1.2"D)
	Construction	Rugged plastic enclosure
	Weight	210g (0.5lb)
	Operating Temp	'-20 to +70 deg C
	Ingress protection	IP68 submersible
	Power	Lithium Ion battery - operational for 5 years under typical operating conditions

Order codes -

?	D	L	5	1	?	L	F	/	?	?	?

R = Radcom
W=Wessex

1= single channel
2= dual channel

1= Flow (Digital)
2 = 0-1 or 0-10Volt (Analogue)
3 = External pressure
4 = Flow (Digital) power save with Reed switch
5 = 4-20mA
6 = Internal pressure

V=Vista LCD Display
HT = High Temp Transducer
N= 0.1% Accuracy
G=Glanded lead
K= Million Reading

LoLog 450 Series

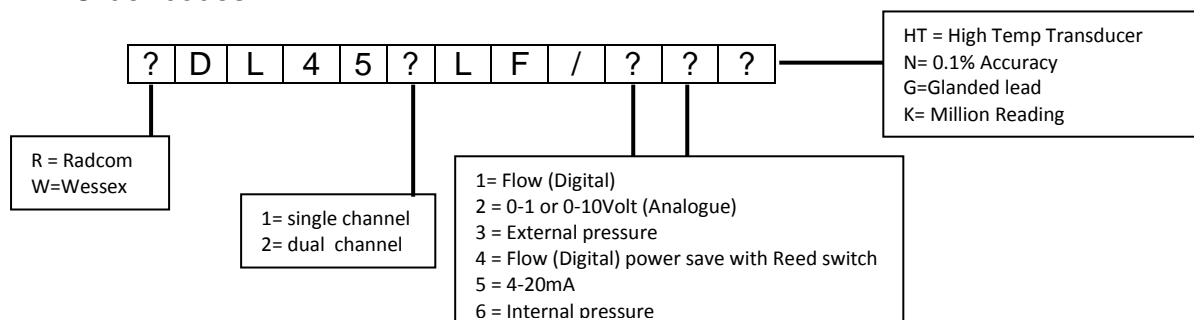|		
Sensor Input Options	Digital	Uni- or Bi- directional pulse/status
		Reed Switch contact closure tye or equivalent sensors incuding Kent LRP & PU10 pulse heads, Aquamag / Magmaster
		Up to 64 pulses per second
	Analogue	Internal or External pressure Transducer
		0-20bar / 0-200 metres head / 0-300 psig standard (other ranges available) Please note that the logger is calibrated to 10 bar as standard. 20 bar calibration must be specified at time of order if required. <0.2% FSD accuracy supplied as standard. <0.1% FSD accuracy available as optional enhancement if required. Please specify at order.
		4-20mA from isolated sensor Please note only one analogue channel can be 4-20mA
Capacity	Memory	Recording 16,000 readings in continuous (cyclic) operation. Unit can be purchased with optional extended memory to 32,000 readings. An optional compressed firmware version can enable storage of up to 1,000,000 data values depending on variablility of data. please note that the correct configuration must be ordered at the time of purchase as changes cannot be made after manufacture.
Logging Features	Frequency	Sample periods In 1 second increments from 1 to 60 seconds Then 1 minute increments from 1 to 60 minutes Then 1 hour increments from 1 to 24 hours
	Logger ID	Up to 7 alphanumeric characters
	Site ID	Up to 127 alphanumeric characters
	Clock	On board 24 hour real time clock with date facility
	Logging Modes	Count and Event (PIT) logging modes Bi- directional capability
Communication	Serial	By Infra red reader to RS232 or USB port on a lap top or desktop PC @ 9600 Baud
Physical	Dimensions	115H x 67W x 35D mm (4.5"H x 2.6"W x 1.2"D)
	Construction	Rugged plastic enclosure
	Weight	210g (0.5lb)
	Operating Temp	'-20 to +70 deg C
	Ingress protection	IP68 submersible
	Power	Lithium Ion battery - operational for 5 years under typical operating conditions

Order codes -

```
? D L 4 5 ? L F / ? ? ?
```

R = Radcom
W=Wessex

1= single channel
2= dual channel

1= Flow (Digital)
2 = 0-1 or 0-10Volt (Analogue)
3 = External pressure
4 = Flow (Digital) power save with Reed switch
5 = 4-20mA
6 = Internal pressure

HT = High Temp Transducer
N= 0.1% Accuracy
G=Glanded lead
K= Million Reading

Appendix – Additional Information

Troubleshooting

Error	Possible Cause
'Time-out error' or 'No response from logger' whilst attempting communications between Lo Log and PC/PDA.	Is the infra-red reader plugged securely into a comms port on the PC/PDA?
	Is the infra-red reader correctly located over the Lo Log's infra-red window?
	Try rotating the IR reader to the logger by 10 degrees
	Is the software port setting correct?
	Is the software baud rate set to 9600?
	Have you selected the correct logger type (LoLog Flash)
Download or Upload seems unreliable	Is the infra-red reader plugged securely into the PC?
	Try another infra-red reader.
	Are there any 'background' programs loaded and running on your PC which could interfere with serial communications?
	If your PC is connected to a network it may help to temporarily disable the connection.
Logger records zeros	Check connections for ingress of water or trapped moisture.
	Check sensor for correct operation.
	Check sensor lead for damage
When downloaded, flow rate readings from the logger are unexpectedly negative.	The meter/sensor combination is producing an output frequency that is too high. If possible, reduce the logger sample period or change the sensor to one with a lower resolution.

Installation checklist

Before you leave site, review the following items to be sure that the installation is going to be a good one.

- ☐ Have you calibrated and zeroed your pressure transducer?
- ☐ Have you run an instantaneous value to confirm data quality?
- ☐ Have you run the Radwin Wizard and set all calibration factors?
- ☐ Have you sealed any joins in the pulser cable?
- ☐ Have you recorded all your site information, serial nos, photos, etc?
- ☐ Have you closed all open chambers and recorded any damage?
- ☐ Have you left all wiring tidy and safe – not tied to ladders?
- ☐ Have you removed all your installation tools?
- ☐ Have you recorded the location of the logger?

Pulsers

There are many different types of pulse cable in use for connecting to meters. Below is a selection of pulse types and wiring configurations that may be useful. The variations are changing all the time so if your particular meter is not shown below, please contact your meter supplier for connection details.

Picture	Pulse Cable	Alternatives		HWM Cable
	Red			Blue
	Blue			Green
	Red	Brown		Blue
	Black	White		Green
	Red	Brown		Blue
	Black	White		Green
	Red	Brown	Red	Blue
	Black	White	Blue	Green
	White			Blue
	Brown			Green
	Yellow			Yellow
	Brown			
	White			
	Brown			Blue
	White			Green
	Blue			Blue
	Green			Green
	Red	Brown		Blue
	Black	White		Green
	Red	Yellow		Blue
	Black	Black		Green
		White		Yellow

Meters & Pulse Value Guide

There are many different varieties of meters in use. Below is a selection of water meters with their appropriate pulse calibration factors that may assist in setup. If your particular meter is not shown below, please contact your meter supplier for pulse factor details.

Meter Type	Pulse Switch	Image	Litre per Pulse for logger
PSM			Meter register with 4 RED digits cal = 0.5
PSM			Meter register with:- 2 RED digits cal = 50 3 RED digits cal = 5
MSM Black			1
MSM Grey			1
Scocam Schlumberg			See label On screen for pulse value
Sappell			1

Sensus HRI A3			1
Actaris			See table 1
Helix 4000 Up to 100mm			Fitted at position:- 0.01 Cal = 10 0.1 Cal = 100 1 Cal = 1000
Helix 4000 Above 150mm			Fitted at position:- 0.01 Cal = 10 0.1 Cal = 100 1 Cal = 1000
Helix 3000 Up to 100mm	PD10 Or LRP		10
Helix 3000 Above 150mm	PD10 Or LRP		100

Helix 2000 Up to 100mm	PD10 Or LRP		10
Helix 2000 Above 150mm	PD10 Or LRP		100
Helix 2000 Master 40mm	PD10 Or LRP		1
Helix 2000 Master 50,80 &100	PD10 Or LRP		10
Actaris Flostar-M			See table 1
Actaris Woltex			See table 1

Meters used in conjunction with Cyble pulse units:-

All pulse values contained in the table below are expressed in litres/pulse.

Where an Emitter-S is necessary, the pulse value indicated on the register label should be used.

Meter type	Size(s) (mm)	Cyble k factor					
		1	2.5	10	25	100	1000
Aquadis	15, 20, 25, 30, 40	1	2.5	10	25	100	1000
	65	10	25	100	250	1000	10000
Flostar-M	All	10	25	100	250	1000	10000
Woltex	50, 65, 80, 100, 125	10	25	100	250	1000	10000
	150, 200, 250, 300	100	250	1000	2500	10000	100000
	400, 500	1000	2500	10000	25000	100000	1000000
Isoflo Combination *(Main)*	50, 65, 80, 100	10	25	100	250	1000	10000
	150	100	250	1000	2500	10000	100000
Isoflo Combination *(Bypass)*	All	1	2.5	10	25	100	1000

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MAN-111-0001-A [LoLog 450-500 - Installation User Guide]