LoLog R data logger

Basic User Manual for installation and use

Warning: This manual contains important safety and operating information. Please read, understand, and follow the instructions in the manual.

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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 R data logger
- Radwin Software CD-ROM (also available at www.hwm-water.com)
- RT COM USB Wireless Interface Receiver (optional)
- Connection hose for a pressure logger (optional)
- Flow connection cable (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.

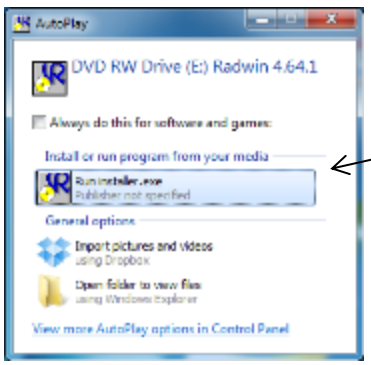
You will need to have:-

A PC with Windows 7/8 installed (Radwin also supports Windows XP & Vista)
A 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)

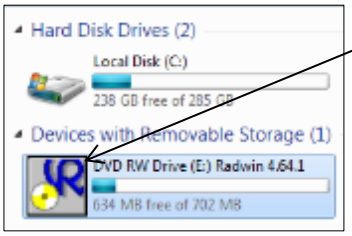
2. When prompted:-



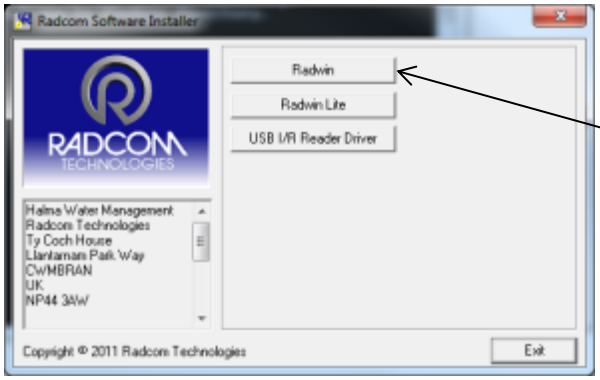
Click <<Run Installer>>

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

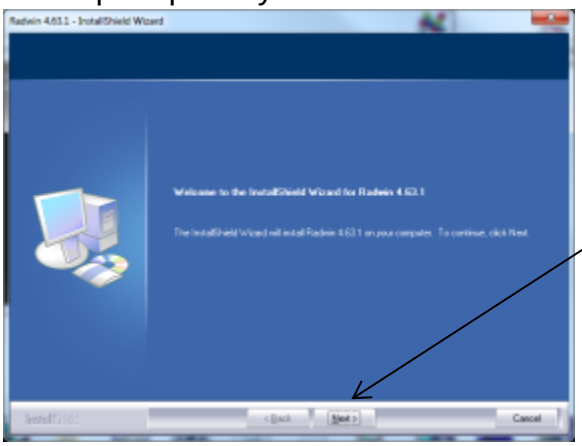


Click to install Radwin software.

Note Radwin Lite is only for specialist use.

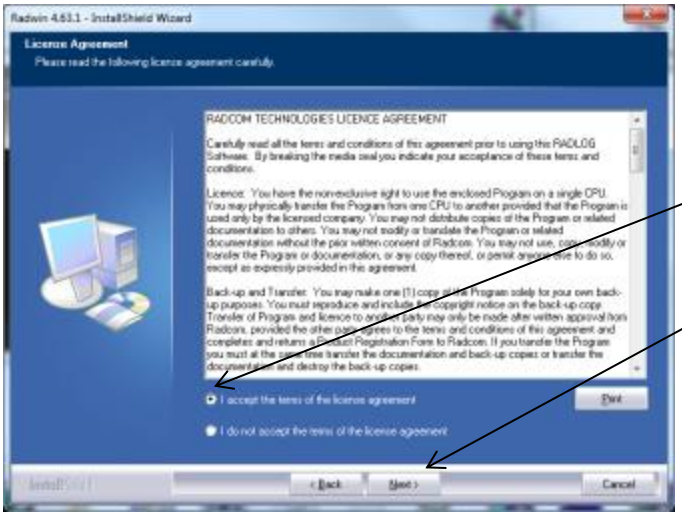
The I/R Driver is normally installed automatically, however, in case it does not in step 0 below, please click the <<USB I/R Reader Driver>> after the main installation is complete.

4. When prompted by the InstallShield Wizard to install:



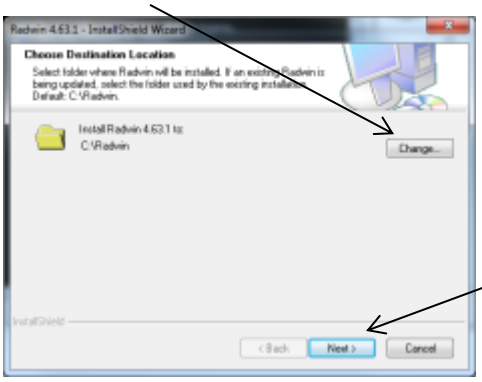
Click <<Next>>

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



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

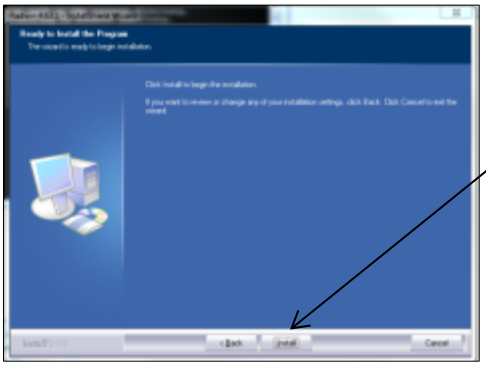
6. Choose the Destination folder you wish to install to by clicking <<Change>>



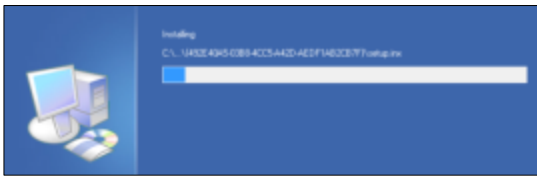
or to accept the default installation (recommended) click <<Next>>

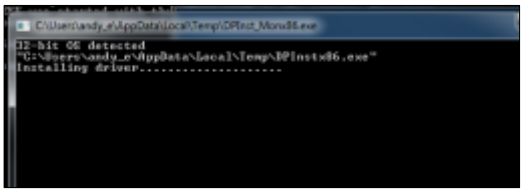
Note: Ensure that you choose a folder that you have read/write access to. Check with your IT team if you are not sure.

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



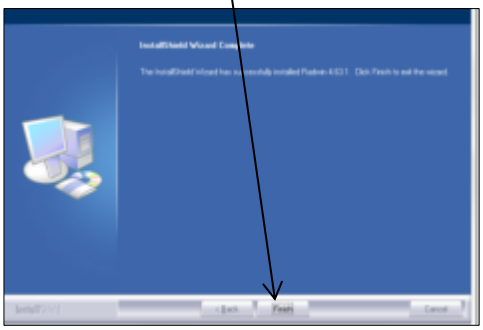
Wait while the installation completes…

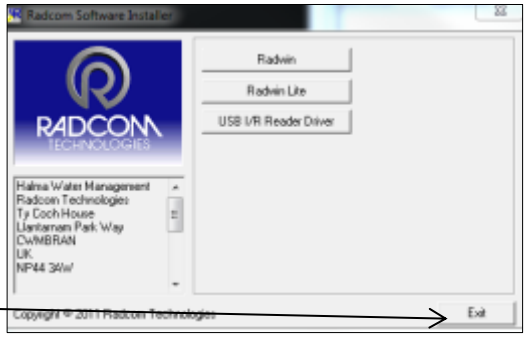




and the I/R Driver installs…

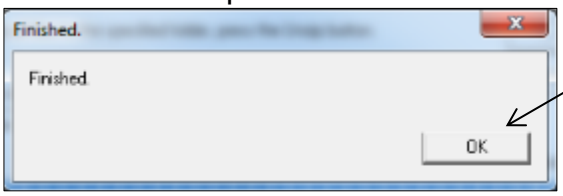
8. Finally click <<Finish>> to close the InstallShield Wizard.





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.



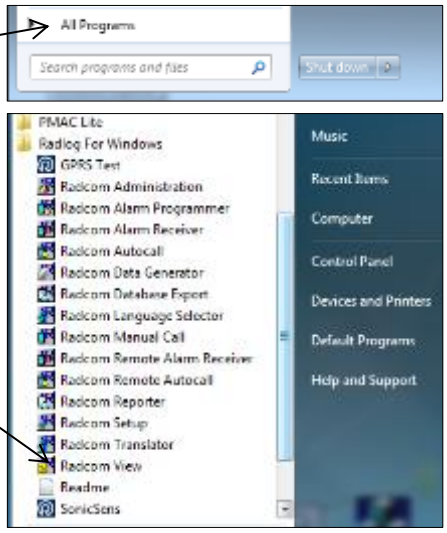
First time run of Radwin

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

Creating your first Database

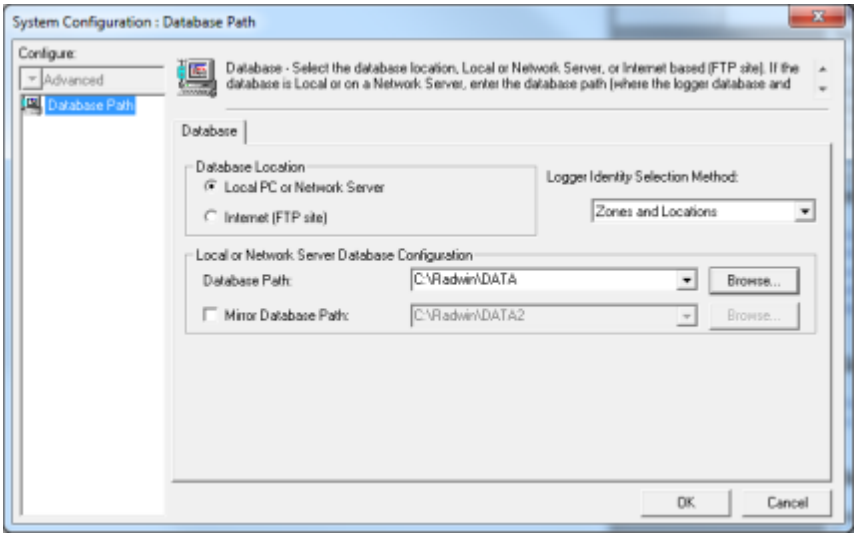
1. From the start menu, click <<All programs>> and find the program group “Radlog for Windows”

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

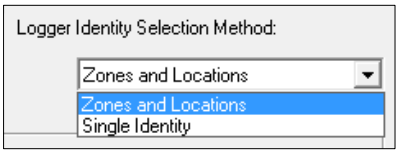


ⓘ You may wish to “Pin” the program to your taskbar for convenience. To do this, **right** click on the Radcom View icon and select “Pin to Taskbar” from the pop up menu.
The program can now be conveniently started from the taskbar.

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:-



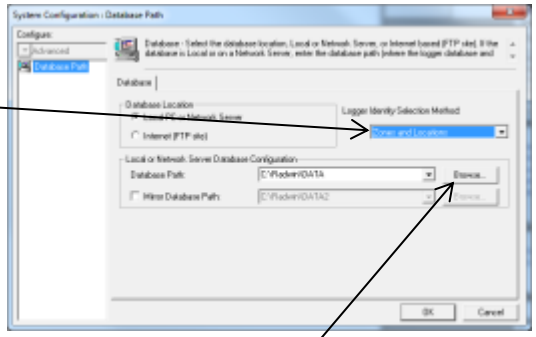
A logger is identified with a single 7 digit reference ID.
If you select *Single Identity* from the menu then you can use the full 7 digits how you like.
E.g. account no, customer number, etc.

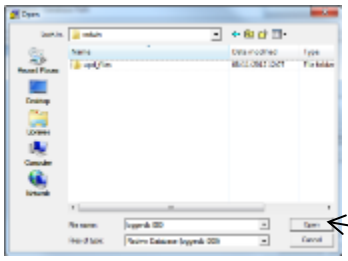
However, when installing a larger fleet of loggers, Radwin allows you to group individual logger *Locations* into larger *Zones*. This allows for geographic regions (*Zones)* to be easily indexed where large fleets are involved.
So, Locations refer to loggers
Zones **contain** Locations (loggers)
Many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

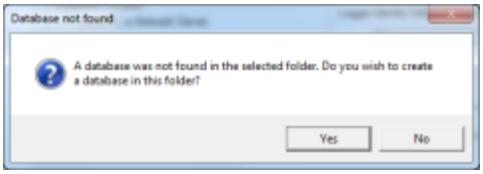
4. From the Logger Identity Selection Method, choose the option as described above.





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.

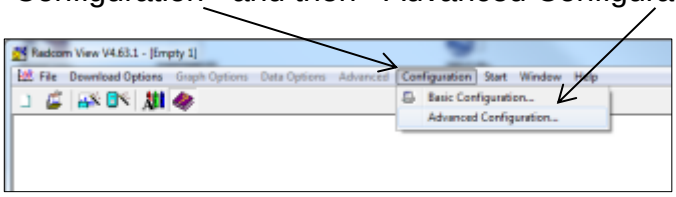
If you have upgraded to this edition of Radwin from an earlier version, then the database format that was chosen in the previous edition will be maintained.

Setting up communications.

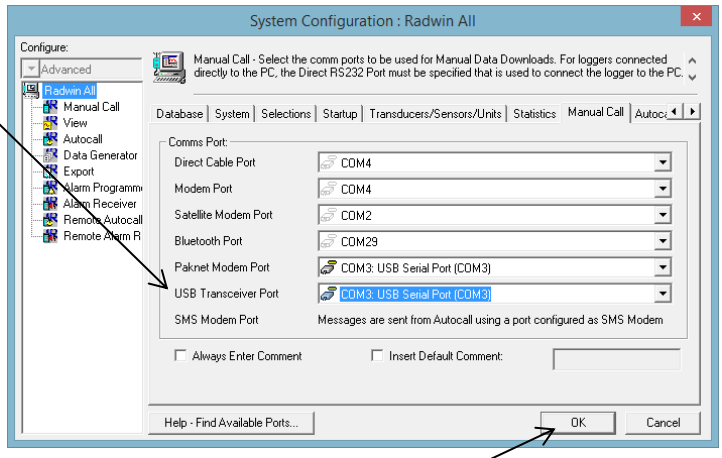
1. Connect the USB plug on the RT COM USB Wireless Interface Receiver to a spare USB port on your computer. Ensure the antenna is connected to the receiver.

2. Position the logger in close proximity to the receiver

3. Start Radcom View again (unless already running) and from the menu select <Configuration> and then <Advanced Configuration…>



4. Select Radwin All > Manual Call tab (when you plug in the Receiver to your PC USB port you should be able to identify it in the Drop down for USB Transceiver Port -



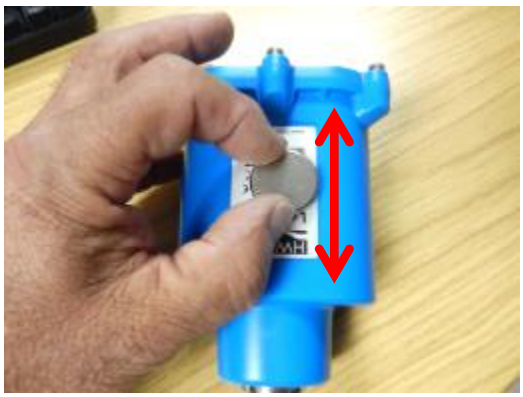
Click <<OK>> to save the configuration.

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

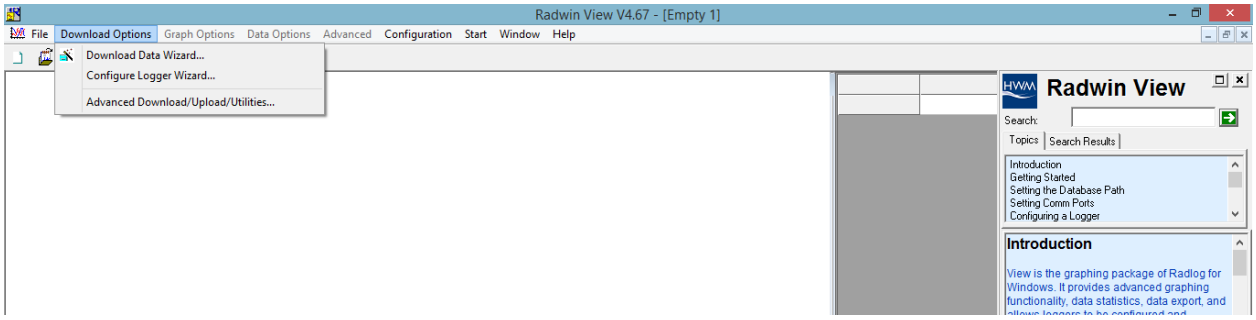
Communicating with the LoLog R and configuration

1. Slide a magnet in a swiping motion over the label of a new LoLog R to ‘wake it up’ out of transport ‘sleep’ mode. (once it is ‘awake’ it will now remain ‘awake’)

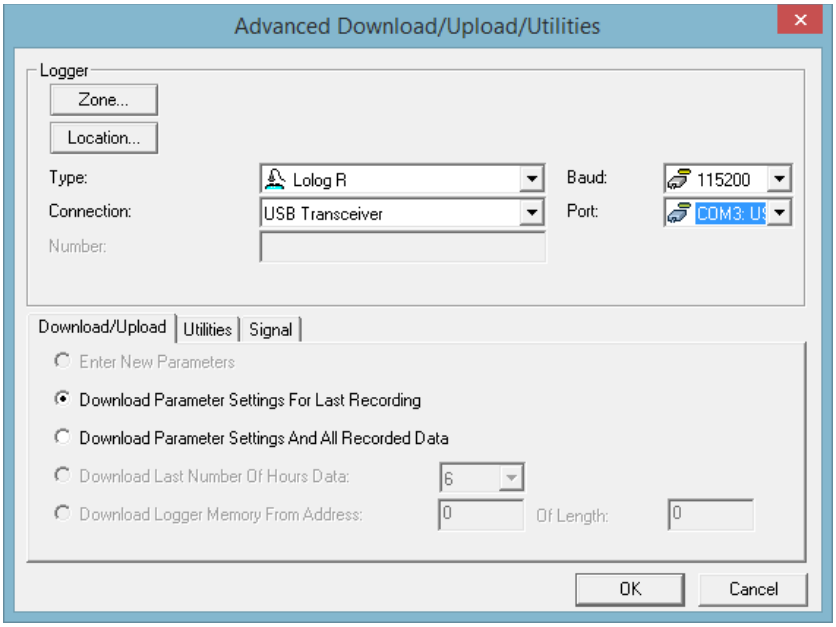
Note: Never use the magnet of another LoLog R to perform this ‘wake up’ routine - the strength of the LoLog R attachment magnet will cause permanent damage to the LoLog R’s reed switch. Use only a low Power magnet for this operation



2. In Radwin View select ‘Download Options’/ ‘Advanced Download /‘Upload’/ ‘Utilites’

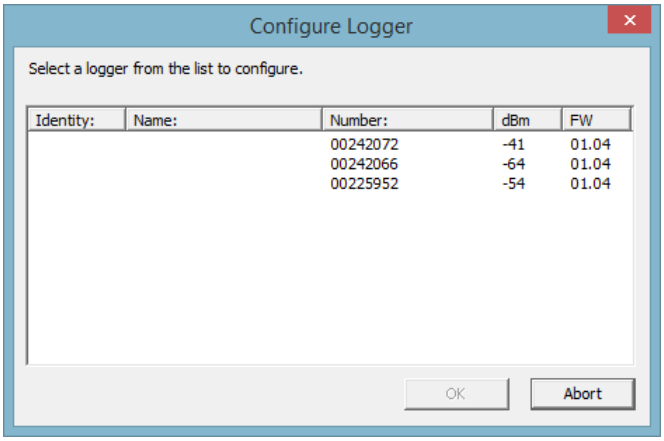


3. At the ‘Advanced Download / Upload / Utilities’ screen select Type : LoLog R from the drop down, Connection type - USB Transceiver , the correct Com port and a baud rate of 115200. Select ‘download parameter settings for last recording’ -



4. Select ‘OK’

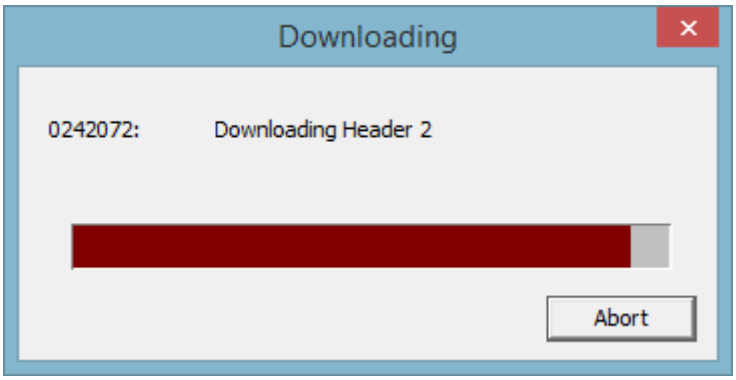
5. The Software will locate all LoLog R's in the vicinity identifying them by their Serial numbers (which can be found on the loggers Label) -



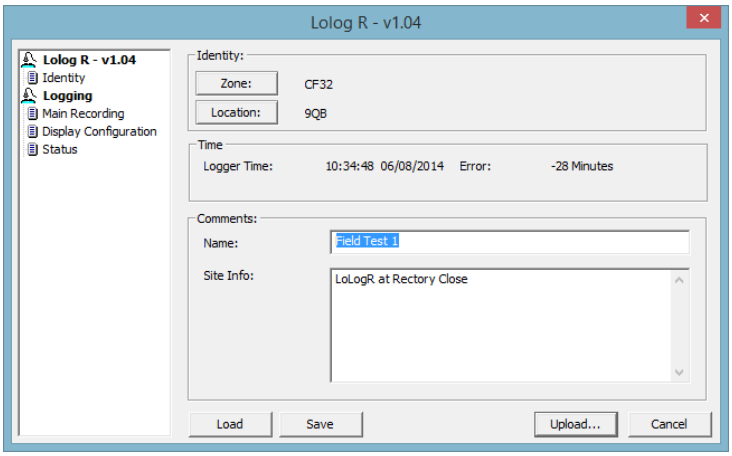
6. Highlight the serial number of the logger you want to configure then select 'OK'

7. If prompted to upgrade the firmware at this step select 'Yes'.

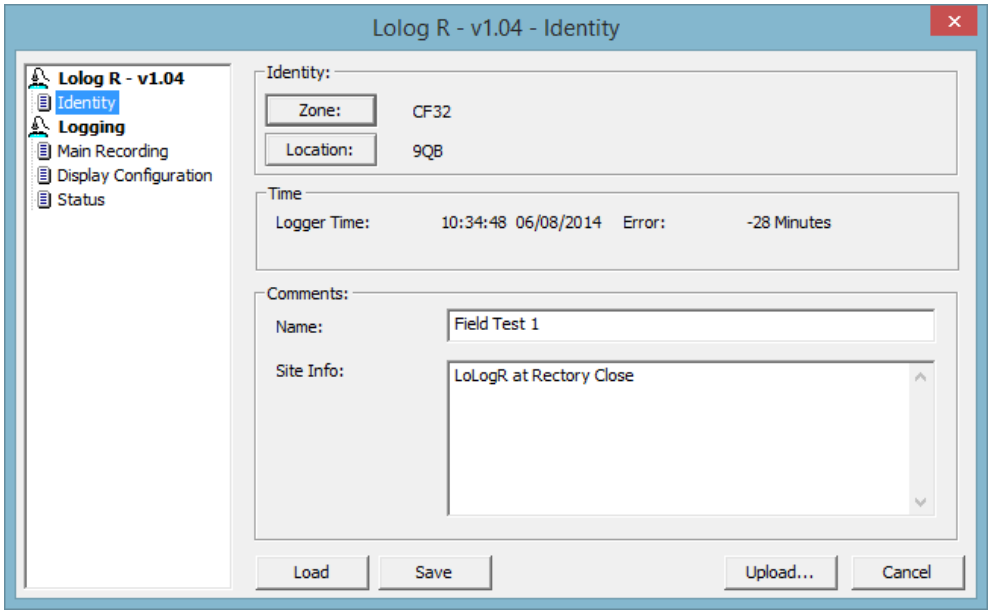
8. The software will then download the logger configuration



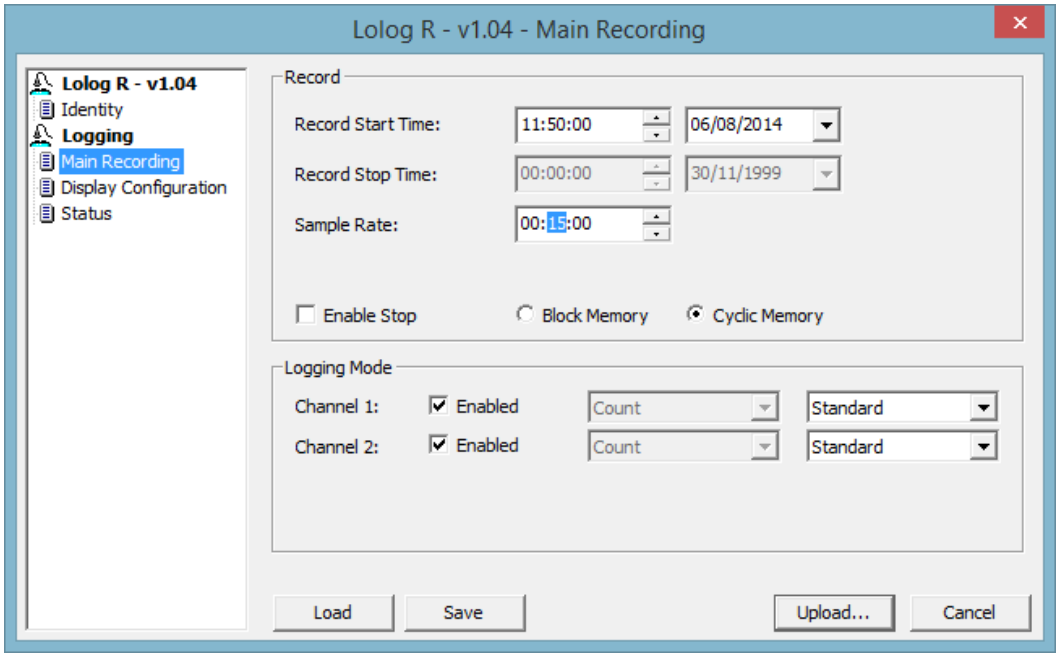
9. Once downloaded you will see the screen below -



10. Select Identity and Edit the zone and location details to suit your database -

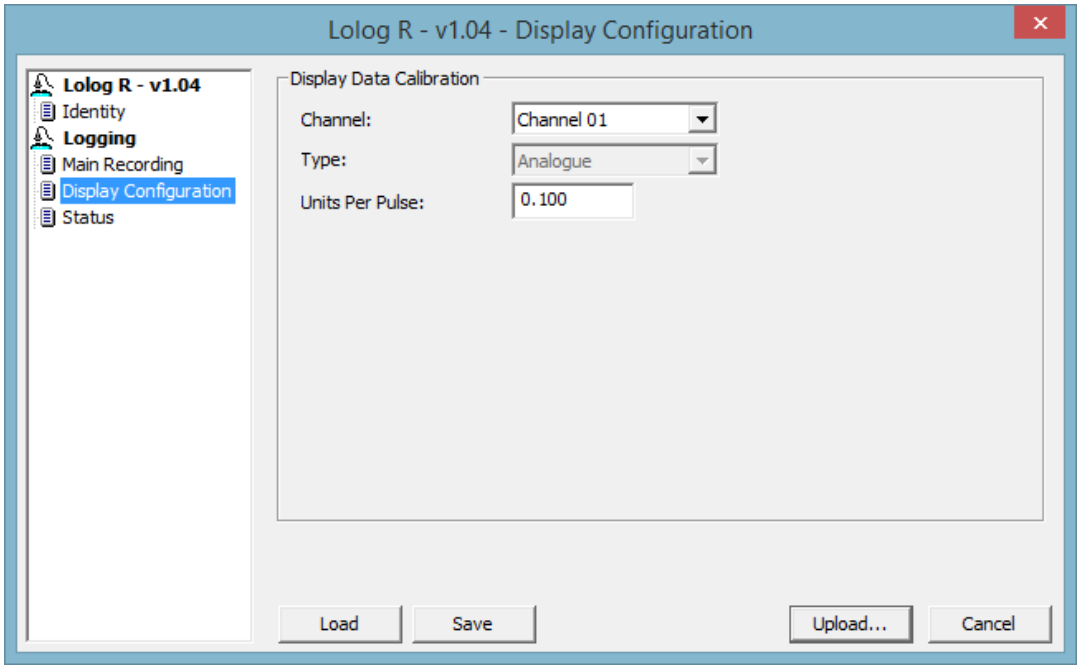


11. Select Main recording -
    Ensure the start time and date is before current to ensure the logger starts when it is uploaded. Enter sample rate (15 minutes is normal), and ensure channels are enabled by ticking the check boxes, as required -

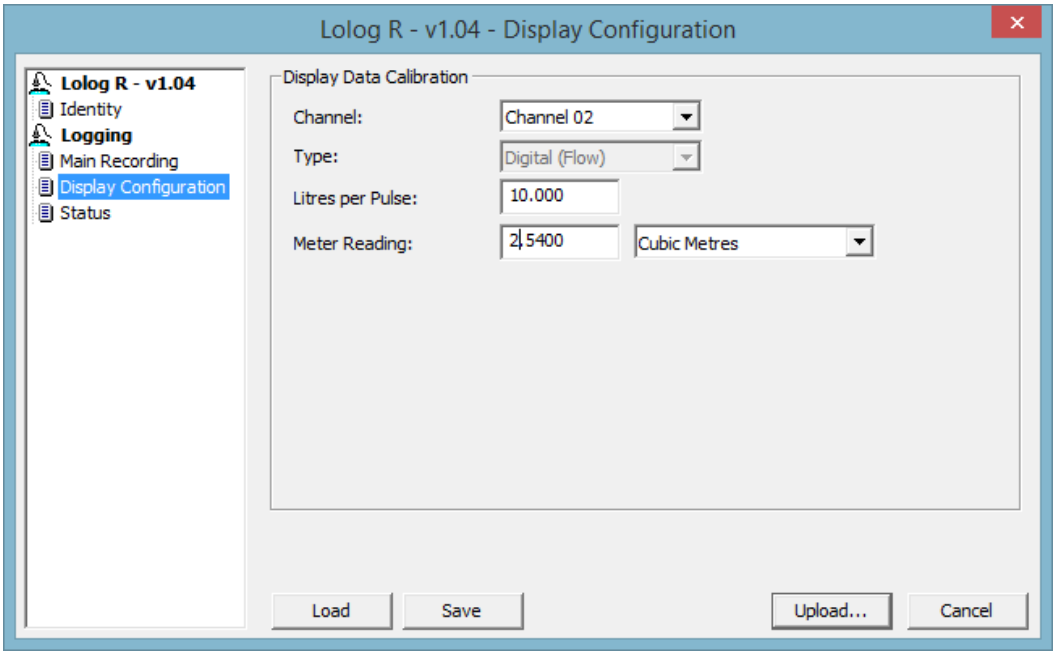


12. Select Display Configuration –

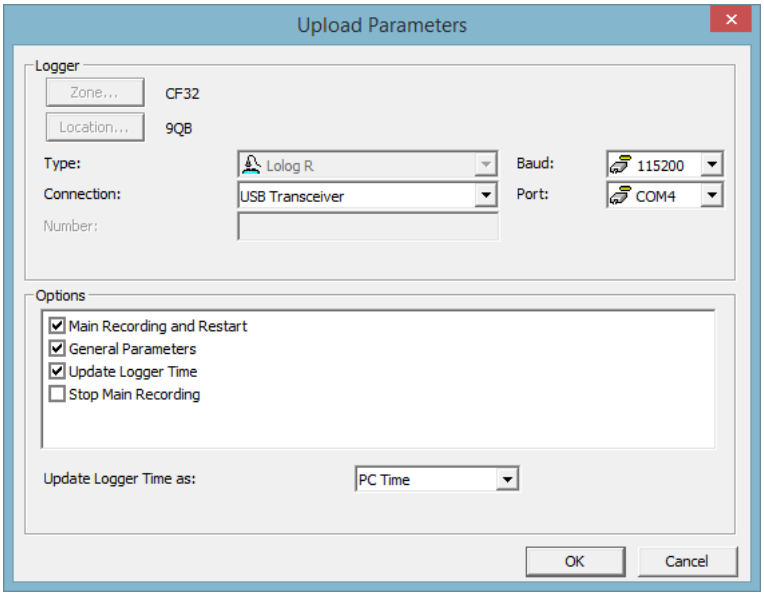
    Select Channel 1 from the drop down (Pressure Channel – if fitted) select units per pulse = 0.1



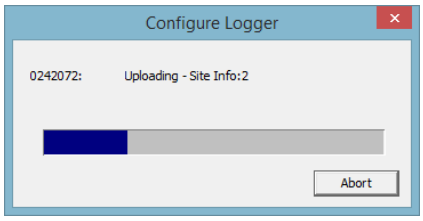
Select Channel 2 from the drop down (Flow Channel-if fitted) and select units per pulse to suit the sensor/meter to which the flow channel is connected (usually 1 or 10 or 100 litres per pulse). Apply the current meter reading if required.



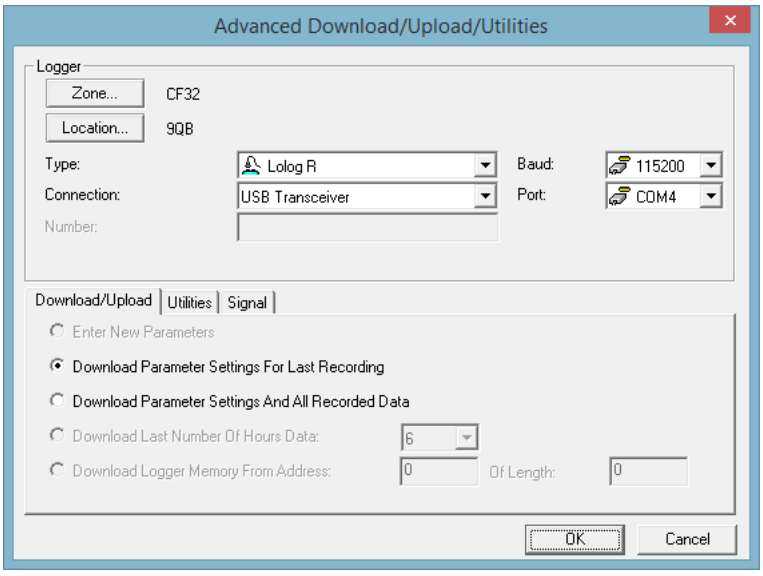
13. Select Upload –
    At the Upload screen tick the check boxes for ‘Main Recording and Restart’, ‘General Parameters’, and ‘Update logger time’ and select ‘OK’ –



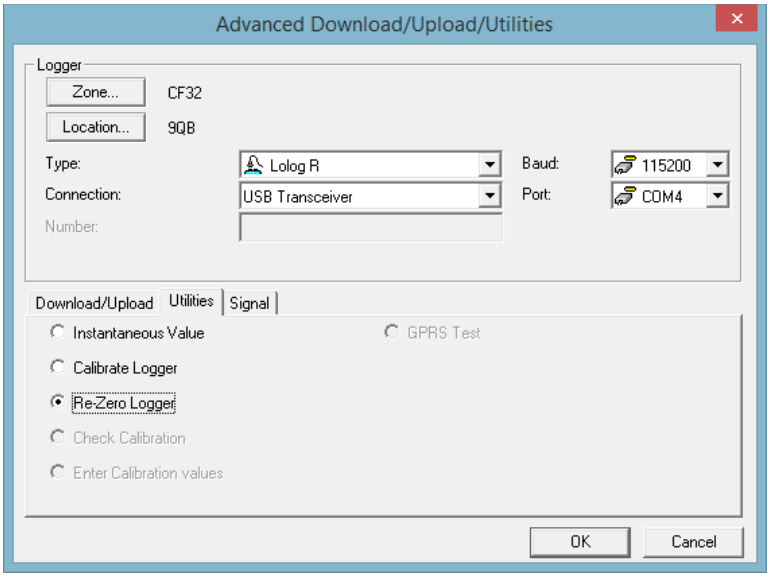
14. The configuration will be uploaded to the logger -



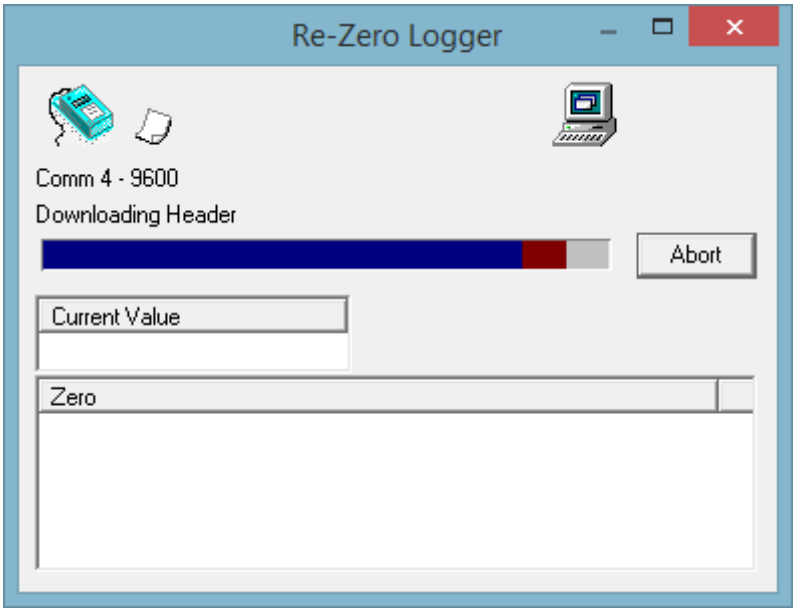
15. At the following screen the logger configuration is now complete and the logger is recording –



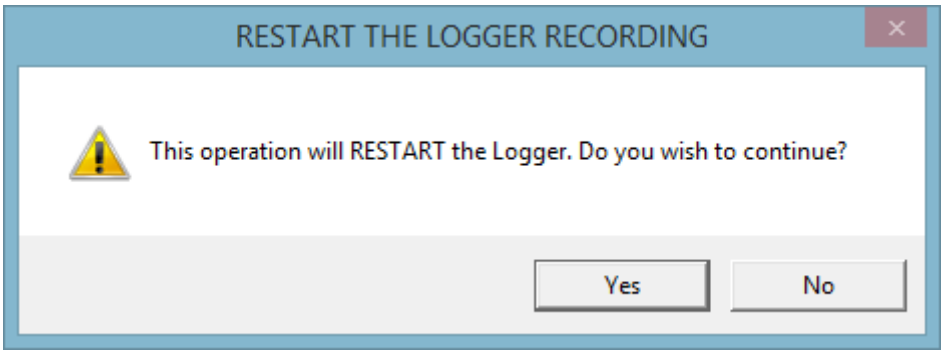
16. If you have a pressure logger use the Utilities tab and Re-Zero the loggers transducer –
17.



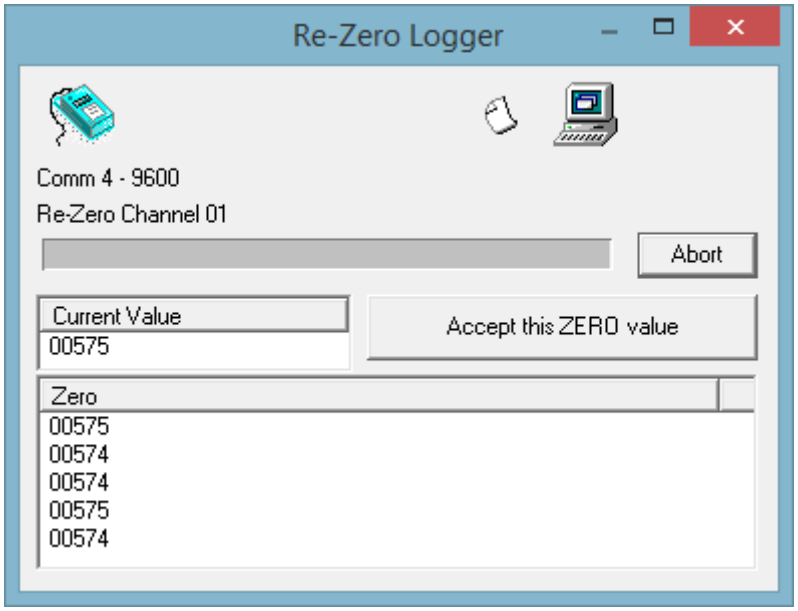
Select ‘Re-Zero the logger’ and ‘OK’



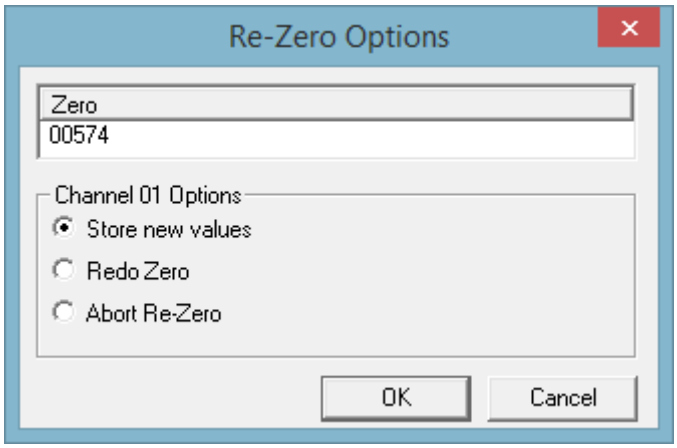
At the error message below select ‘Yes’



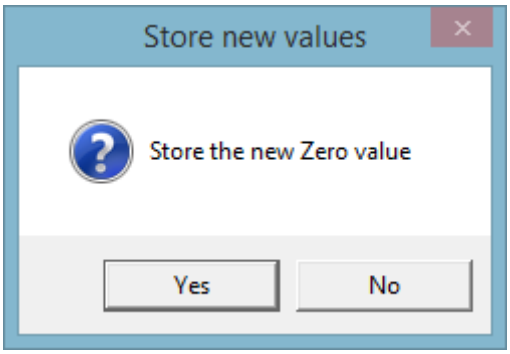
At the below screen allow the values to settle and as the most prevalent value appears in the top window select ‘Accept this zero value’



Select ‘Store new values ‘ and ‘OK’



‘Yes’

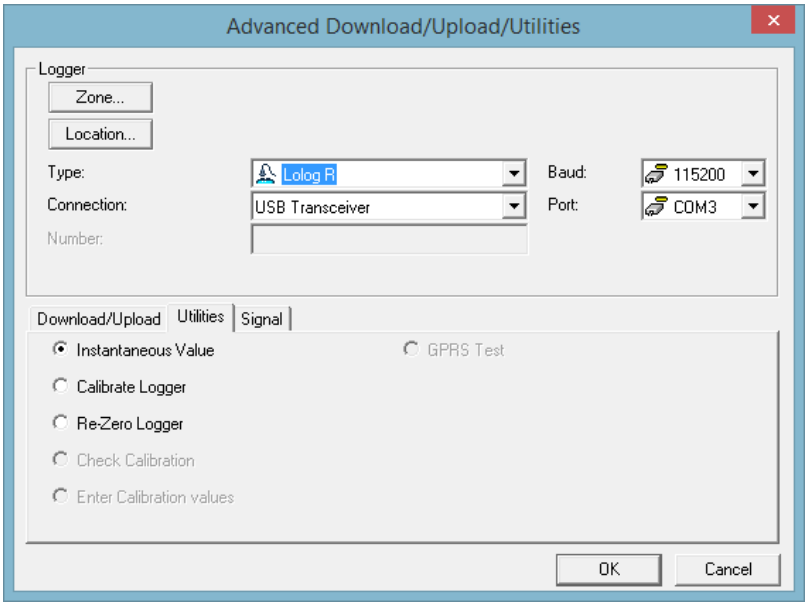


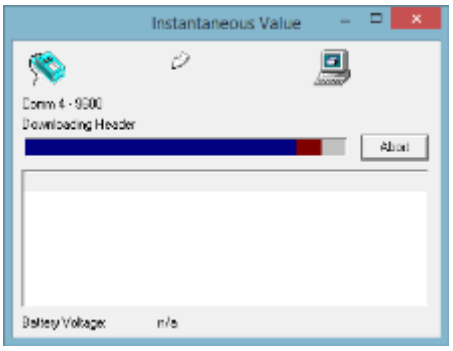
As the Advanced Download/Upload / Utilities screen re-appears select ‘Cancel’ to exit.

18. The logger can now be installed and it will record data for the channels that have been enabled and connected.

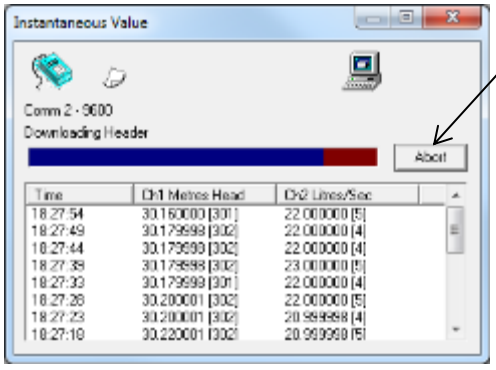
    If required you can confirm that the logger is measuring real data from the sensors by taking an Instantaneous Value –

    In the Advanced Download/Upload /Utilities screen from the Utilities tab select 'Instantaneous Value' –





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.

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

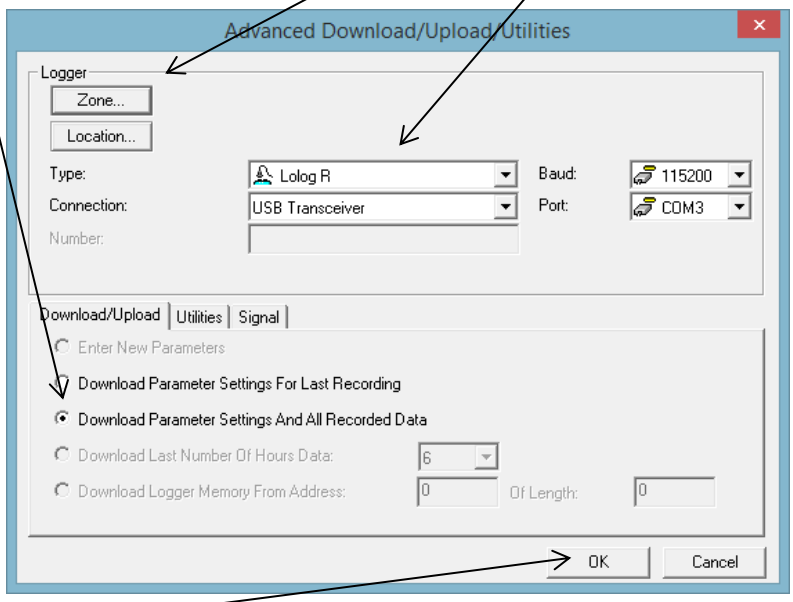
connected your logger, you may have to wait a few minutes for the reading to stabilise. The value in the square brackets [301] & [5] is the raw uncorrected value being measured or counted over 2 seconds.
Note: If the flow readings do not meet your expectations, then check your connections and your calibration 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 Radwin **Advanced Download / Upload / Utilities**

Select the type of logger (i.e. *Lo Log R*) being used and its location (*Select from Zone or location*) –

Select Dow/nload parameter settings and all recorded data

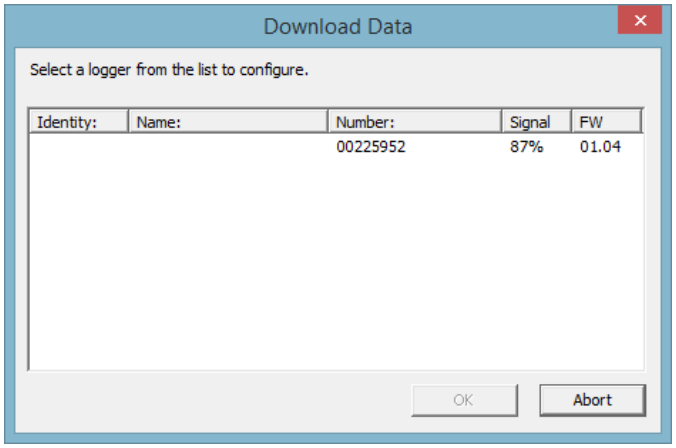


Then select 'OK' >>

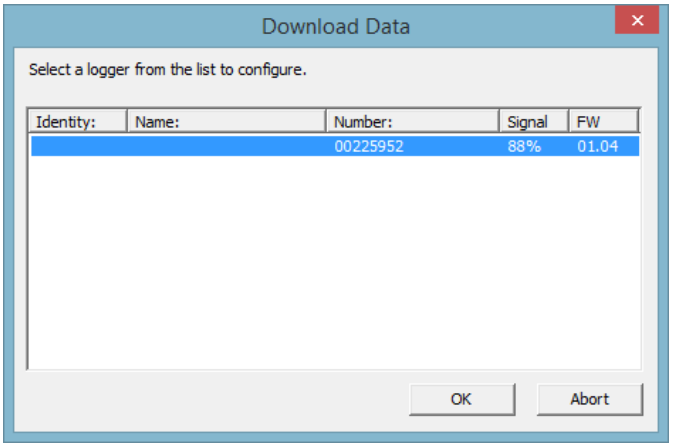
This is similar to the procedure used to configure the logger.

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

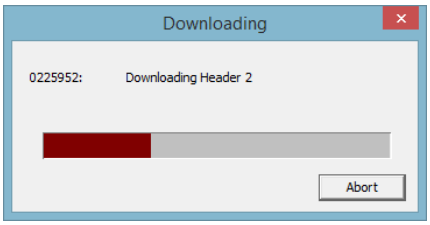
After a moment the available LoLog R's in the vicinity will be listed by their Serial numbers



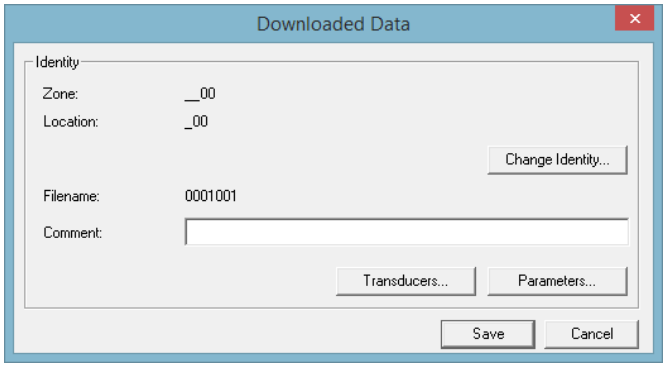
Highlight the logger Serial number you wish to download and double click on it -



The logger will start downloading -



At the next screen add a comment to the data if required and select 'Save'

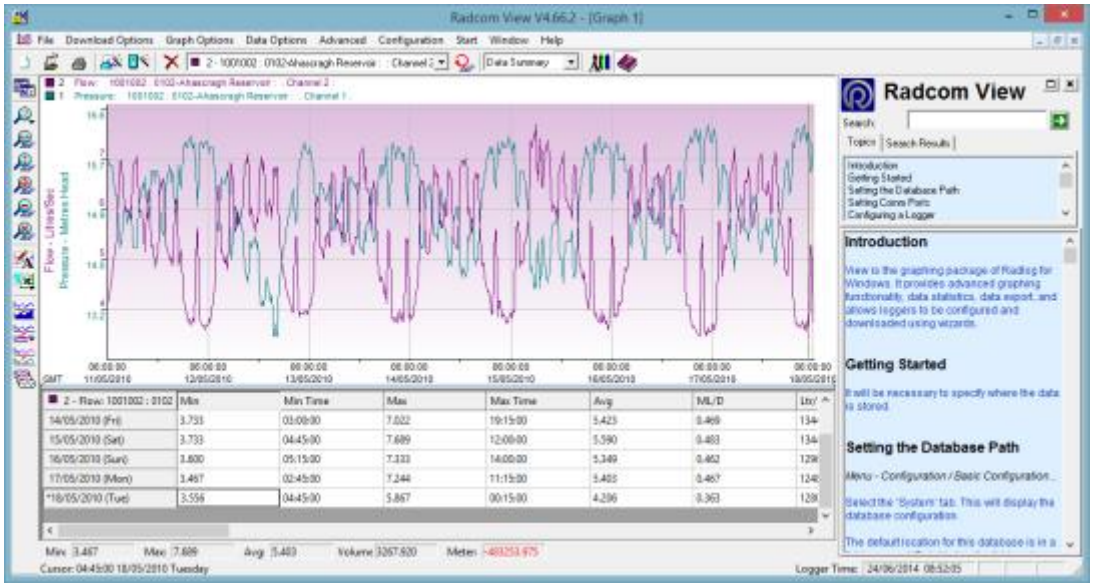


The data will be saved to the Radwin Database location for that logger and a graph of the data will appear as follows.

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.

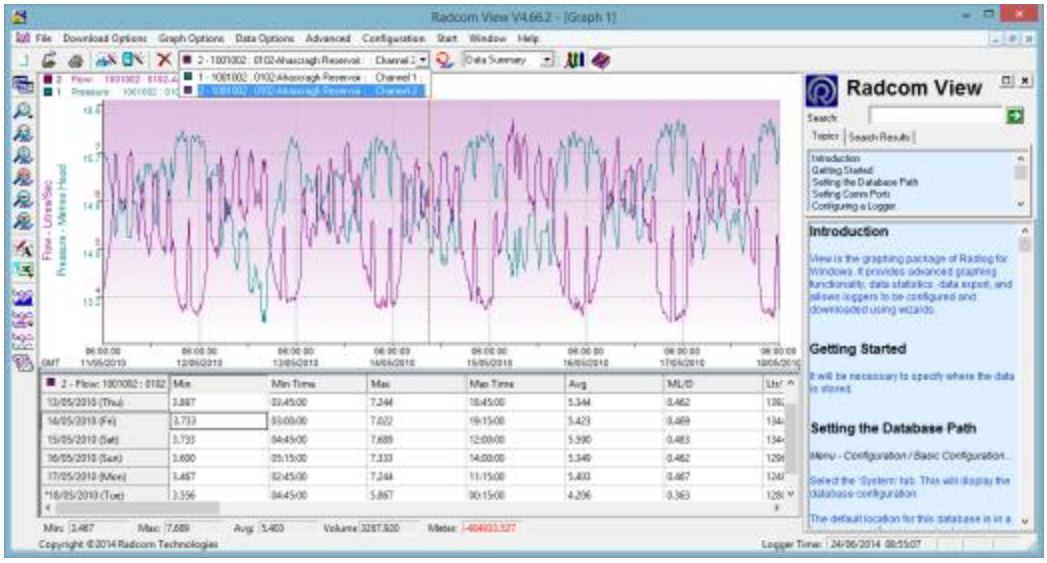
Note - An easy-to-use Help Menu is opened by default and contains all the necessary information to operate the software.



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:

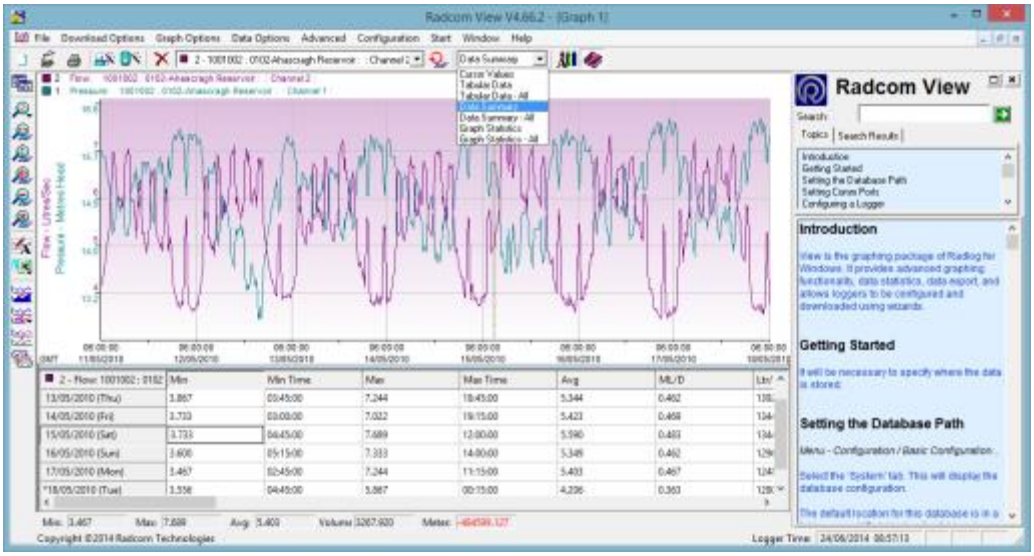
Using the drop-down menu on the toolbar, clicking on the ‘Cycle Through Graphs’ icon  or right clicking on the mouse and selecting the required channel from the **Graph Select** option -



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



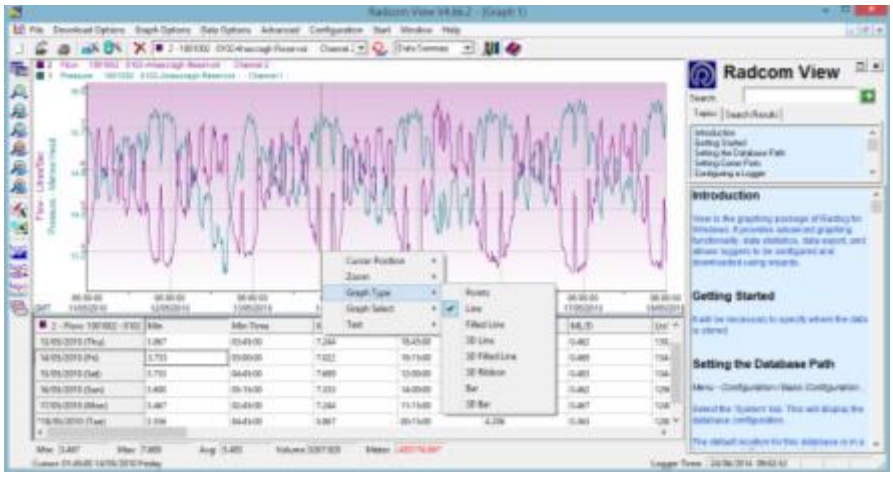
The data format options are summarised in the table below -

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.

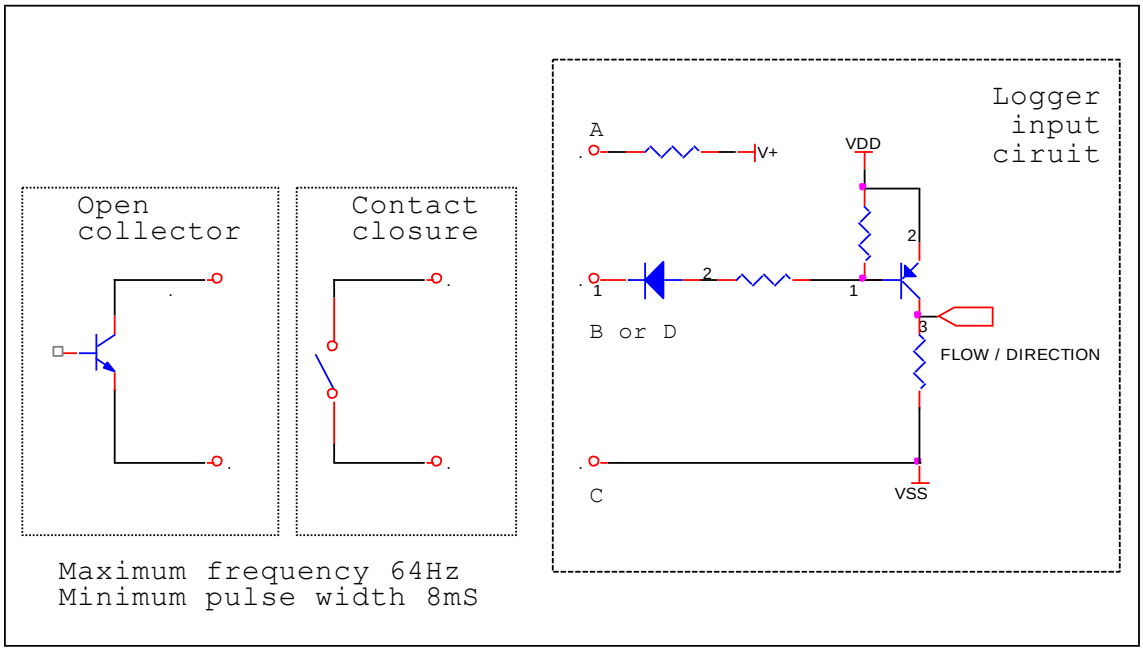
Graph options – (cont)	
Bar	Each data point is displayed as a bar.
3D Bar	Same as Bar but with a 3D effect.
Remove Graph	Removes the current graph - indicated as the top most graph title above the graph
Remove All Graphs	Removes all displayed graphs.
Export Data	Allows an export format to be selected 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.

Flow Input

Lolog R 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

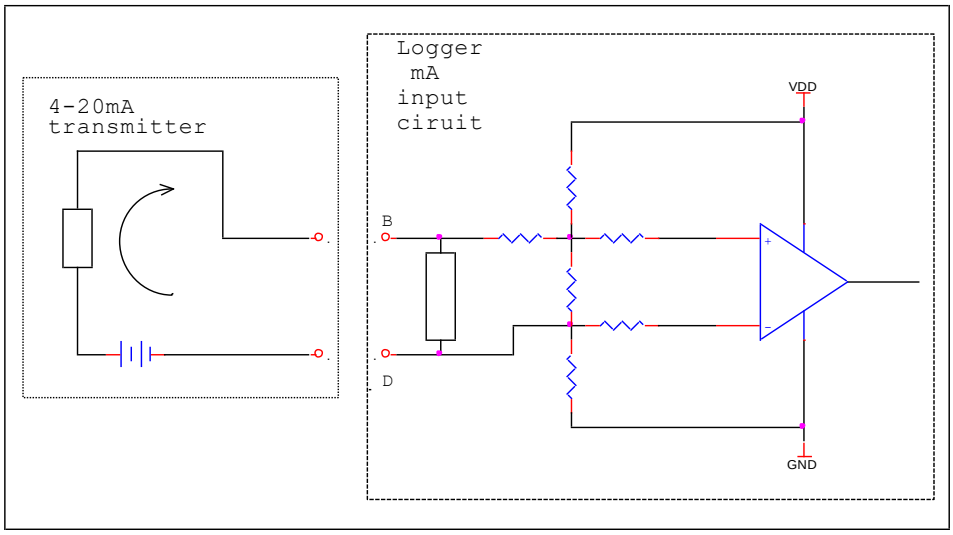


MilliAmp Input

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 R

Sensor Input Options	Digital	Uni- or Bi- directional pulse/status
		Reed Switch contact closure type or equivalent sensors including 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
Capacity	Memory	Standard recording up to 262000 readings . Optional at point of order up to 1 Million readings. Can be configured to stop recording when the memory is full (block Mode) or overwrite oldest data when the memory is full (cyclic mode)
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	Radio	High speed remote radio download using optional USB Receiver. Typical range up to 100m Line of sight
Physical	Dimensions	72D x 91W x 141H mm (3.0"D x 3.5"W x 5.5"H)
	Construction	Rugged plastic enclosure
	Weight	474g (1.0lb)
	Operating Temp	'-20 to +70 deg C (-5 to +160deg F)
	Ingress protection	IP68 submersible
	Power	Lithium Ion battery - operational for 5 years under typical operating conditions

Order codes -

R	D	L	4	R	?	L	F	/	?	?

1= Single channel
2= dual channel

4= 1 x Digital Flow (Reed Switch type) via 4 pin milspec connector
4G = 1 x Digital Flow (Reed Switch type) Glanded with 1.5 metre flying lead
46 = 1 x Digital Flow (Reed Switch type) via 4 pin milspec connector and
1 x Internal Pressure Sensor
5 = 1 x 4-20mA input via 4 pin milspec connector
5G = 1 x 4-20mA input glanded with 1.5 metre flying lead
6 = 1 x Internal pressure Sensor

Order code for USB Radio receiver is part number 553-002

Appendix – Additional Information

Troubleshooting

Error	Possible Cause
'Time-out error' or 'No response from logger' whilst attempting communications between Lo Log R and PC	Is the USB Receiver plugged securely into a comms port on the PC? Is the USB Receiver correctly located in radio range of the the LoLog R? Is the software port setting correct? Have you selected the correct logger type (LoLog R)
Download or Upload seems unreliable	Is the USB Receiver plugged securely into the PC? 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 zero data	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 and serial number 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.

		Cyble k factor					
		1	**2.5**	**10**	**25**	**100**	**1000**
Meter type	**Size(s) (mm)**						
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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