

WinComLog - Advanced

OPERATION GUIDE

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1. INTRODUCTION

WinComLog is a Windows Application used to communicate with a HyQuest Solutions RRDL3 Logger, ML1 Logger, ML420 Logger, ML1-420 Logger or a Data Retrieval unit via the RS232 port. The application has 4 distinct screens that allow terminal type communication (with data capture), as well as plotting of Rain and River data, Scheduling of automatic data collection and upgrading new firmware into the Logger.

The HyQuest Solutions AD375 and WL3100 water level measurement products have an SDI-12 port that can communicate via RS232 with an SE230 RS232 to SDI-12 adapter. When SDI-12 is selected in the baud rate dropdown, you can send SDI-12 commands from the Communicate Tab, and even upgrade the firmware in these products in the Firmware Upgrade Tab.

Additions and Corrections in Rev 1.30

- Added CSV File format option when the Capture button is pressed.
- Correctly increments the filename when plotting to a file.
- Correctly scales and plots small rainfall data files.
- Correctly operates with Imperial RRDL3 Loggers with mm/dd/yy format.
- Describe how to convert an existing dump file to be plotted.

Additions and Corrections in Rev 2.00

- Added baud rate selection.
- Allowed the firmware upgrade of the RDL4.

Additions and Corrections in Rev 2.10

- Allow firmware upgrade for RRDL3, RDL4 and ML1.
- Fixed comms port problem in Win XP.

Additions and Corrections in Rev 2.20

- Added “Clear Screen” button.
- Added Phone No + Dial + Hangup + Auto Hangup for remote connection via modem.
- Fixed bug that blanked the screen when “Esc” was pressed.

Additions and Corrections in Rev 2.52

- Allow ML1 firmware upgrades over modem + allow extra monitoring and control.
- Will not hangup modem line while downloading new firmware.
- Added vertical scaling controls on the plot screen.

Additions and Corrections in Rev 3.00 * Major Features Added *****

- Added 8 x customisable buttons in Communicate Tab.
- Added Tideda format when collecting data.
- Added Schedule Tab to automatically dial sites and collect data into files.

- Goes directly to latest plotted data when Plot Tab is clicked.
- Added Edit/View data in Plot screen.

Additions and Corrections in Rev 3.01

- Added “Level>>1” button to allow 9 x 8 customisable buttons in Communicate Tab.
- After pressing a button, focus is returned to the typing area of the comms screen.

Additions and Corrections in Rev 3.05

- Added SDI-12 to the list of baud rates (sets baud rate to 1200/7/E/1)

Additions and Corrections in Rev 3.06

- Added the AD375A to the list of devices that can be upgraded.

Additions and Corrections in Rev 3.07

- If selecting a capture file that exists, new data is appended rather than overwritten.

Additions and Corrections in Rev 3.08

- Improved modem connection in schedule mode + full path can be entered in schedule filename.

Additions and Corrections in Rev 4.00 * Major Features Added *****

- Compatible with Win7 security features + Where’s My Data? Button added so user can see where the data files are located.
- Added a button to step back as well as forward through the user defined set of buttons.
- Fixed the DMY/MDY lockup bug in the Plot Tab.
- Added the ability to plot from the dump files DUR, DURV, DUBV, DUBVI, DUBVE, DUBVT, DUTMP, DUALL.
- Each plot trace is a different colour with a key in the lower left corner.
- Each plot trace can be held while other plot traces are loaded to allow trace comparisons.
- Left mouse click on multiple plot traces displays the value of each trace on the upper left of the screen.
- Added “Direct Connection Test” on the Edit Schedule dialog, so the schedule can be tested with the Logger directly connected to the PC without connecting through a modem.
- Fixed some bugs in the scheduler when saving the Last Event + the new dump file commands are implemented in the scheduler.

2. WINCOMLOG WINDOWS APP

The WinComLog application requires a Pentium platform and will operate on Windows 95, 98, NT, ME, Win2000, XP, Vista and Win7.

2.1 Installation

The WinComLog software is supplied on a CD or emailed directly.

If installing from a CD, simply put the CD into your PC. The installation software will commence automatically.

If emailed directly, then double click on the “WinComLogInstall.exe” file to commence installation.

In both cases follow the on screen instructions to complete the installation.

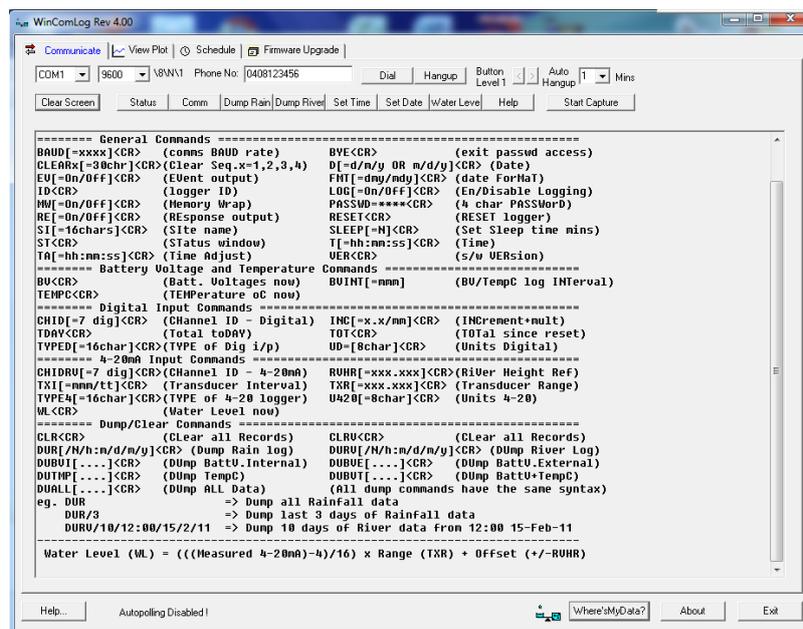
To start the application go to Start – Programs – WinComLog (Alternatively move a copy of the HS icon to your desktop for easier access.)

2.2 Selecting the Comms Port

Click on the comm port drop list to see which comm ports are available on your PC. Note that this list includes both direct connected ports as well as USB comm ports, bluetooth comm Ports and modem ports. Simply select the desired port and make sure a cable is plugged from the PC comm port into the RRDL3, RDL4, ML1 or ML420 data logger.

(The connection to a modem can be verified by pressing the Hangup button. After the ATH is sent, the modem should respond with “OK”.) Some PC’s have COM3 allocated as the internal modem.

If the port you are expecting to use does not appear on this list, then maybe another application is using the comm port. Simply close the application that is using the comm port and click the comm port drop list again and the comm port will appear. (Note that at the instant the drop list is clicked, a check of the available PC comm ports is performed)



2.3 Selecting the Baud Rate

Click on the baud rate drop list to see what baud rates are available. If when you try to communicate with a Logger, strange characters appear on the screen, the incorrect baud rate is probably selected. Try each baud rate until the Logger responds correctly.

2.4 Communications via Modem

Communications to a remote logger may be established via a modem. Simply enter the phone number of the remote modem in the “Phone No” field and press the “Dial” button. (+++ will be sent to the modem to get its attention, and then the ATDTxxxxxxx command will be sent to perform the dialling.) You will hear the usual dialling, ringing and connection tones through the modem. When a connection has been made, send a simple command like ?<CR> to check that communications has been established. When the communications session is complete, press the “Hangup” button. (Again +++ will be sent to the modem to get its attention, and then ATH to perform the hangup)

The “Auto Hangup” dropbox allows a time to be set. If there is no communications with the logger within this time period, then a hangup will be performed. (This is to safeguard you if a modem connection established, and then forgotten.) If a time of 0 mins is selected, then the timeout is disabled.

Scheduling of data collection can now be performed with WinComLog. Up to 300 sites can be configured for automatic data collection via PSTN or GSM modem. Configuration allows for almost any user preferences.

For example to send the status command, enter ST^M where ST is the status command and ^M is a carriage return – which is the same as pressing Enter on the keyboard.

The PC date and PC time may also be inserted into the command string. For example, the Logger time may be set with the following command :

```
Passwd=BOMM^M~~T=^T^M
```

Firstly the command “Passwd=BOMM” is sent followed by an Enter

Then a 1 second delay is introduced with the “~~” characters

Then the time is set with the T=^T command where the PC time is substituted for the ^T

So the command T=13:51:37 would be sent followed by an Enter.

This method allows any command to be structured and sent with a single button press.

The “Plot Question” checkbox on the right should be checked if you want to prompt the operator with the question “Would you like to plot this data?” This should be included when implementing the “dur, durv, dubv, dubvi, dubve, dubvt, dutmp and duall” commands. If the operator answers “Yes” then a file is created – either “Durnxxx.plt” (rain) or Durvxxx.plt (river) or Dubvxxx.plt (BattV) or Dubvixxx.plt (Internal BattV), Dubvexxx.plt (external BattV) or Dubvtxxx.plt (BattV + Temp) Dutmpxxx.plt (Temp only) or Duallxxx.plt (Rain+River+BattV Int+Ext + Temp) which can be viewed in the Plot Tab. The xxx is a number from 001 to 999. These files are automatically created and named sequentially from the largest number found to already exist. The file name is displayed under the respective button. The data is collected until any key is pressed, or an on screen button or tab is clicked. When the View Plot tab is clicked, the Rain or River data collected is presented as a plot.

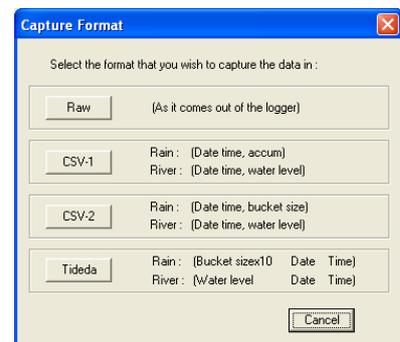
When the screen becomes full, data scrolls off the top of the screen. A scroll bar on the right hand side of the screen allows the operator to review previous data.

The “Clear Screen” button simply clears the screen data.

Data Capture

When the **Start Capture** button is pressed, the operator is prompted to select the format they wish the data to be collected in. Any data sent to, or retrieved from the Logger from this time on, will be saved into the selected file – until the **Stop Capture** Button is pressed.

- If you select “**Raw**” then all data from the logger will be captured into a file.
- If you select “**CSV-1**” then data from the DUR or DURV commands will be manipulated and saved in the format dd/mm/yy hh:mm:ss, xxxxx where xxxxx is the accumulated rainfall, or the water level. All other data will be excluded.

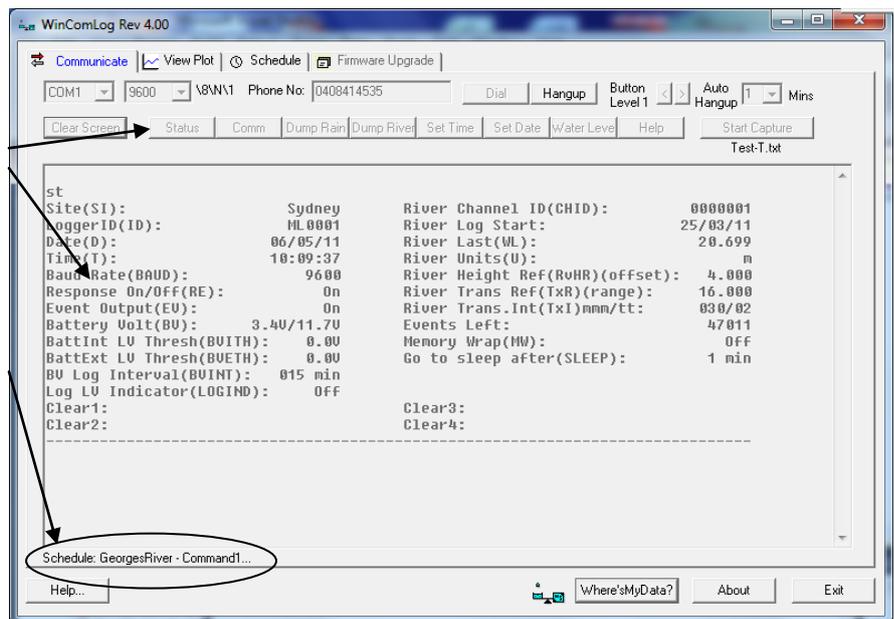


- If you select “**CSV-2**” then the data from the DUR or DURV commands will be manipulated and saved in the format dd/mm/yy hh:mm:ss, xxxxx where xxxxx is the bucket size, or the water level. All other data will be excluded.
- If you select “**Tideda**” then the data from the DUR or DURV commands will be manipulated and saved in the format xxxxx dd/mm/yy hh:mm:ss where xxxxx is the bucket size x 10.

The operator will then be prompted to enter a filename.

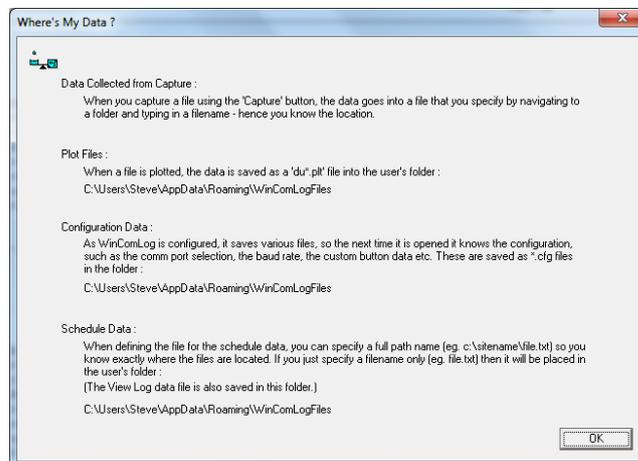
The Capture mode is stopped by pressing the same button which is now labeled ‘Stop XXX Capture’ or by clicking on one of the other tabs. The filename selected is displayed under the button while the capture is in progress.

When scheduling (auto-dialing) occurs, access to the comms dialog and buttons is disabled for the duration of the call. The progress of the scheduled auto-dial and site name is displayed in a “status” line at the bottom of the screen.



The Help... button provides help on the screen being viewed.

The “Where’s My Data?” button gives the location of where all the files are saved on your PC – Win7 security features prevents Applications from saving data in the ProgramFiles folders on a PC, so the files are saved into the User’s AppData area reserved specifically for this reason.

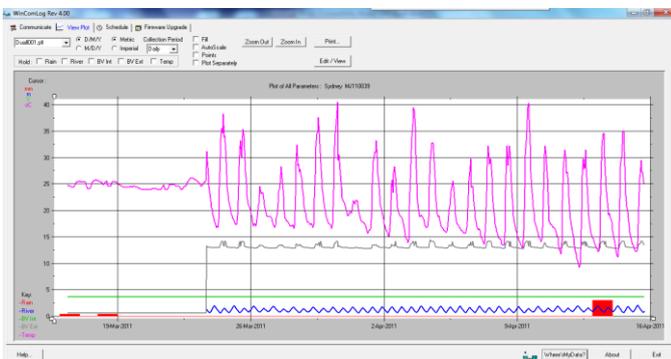


2.6 View Plot Tab

Click on the View Plot tab to view the Rain or River data that was collected while in the Communicate screen. (The Dump Rain and Dump River buttons, in the Communicate screen, prompt the user if they wish to plot the data – if the answer is “Yes”, then a plot file is saved for viewing.) When the plot is initially drawn, the screen is scaled to view all of the data in the data file.

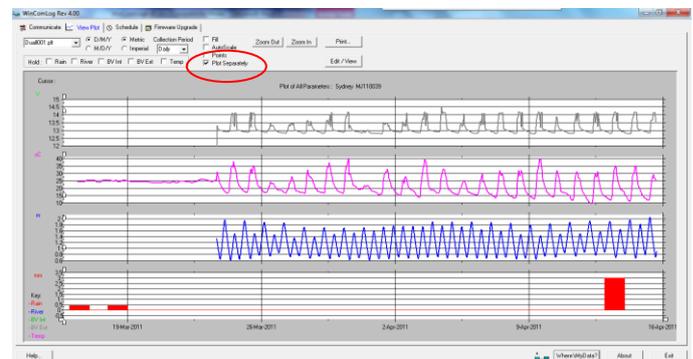
Other plot files can be viewed using the drop list at the top left of the screen.

At the top of each plot is displayed the first line after the DUR, DURV, DUBV, DUBVI, DUBVE, DUBVT, DUTMP, DUALL commands. This contains the Site Name, the River Channel ID and the Logger ID. This information uniquely identifies the plot data. The plot data is automatically identified as either a Rain, River, Battery, Temperature or All data and drawn appropriately.



The data can be plotted on the same graph with a common vertical scale.

OR



The data can be plotted on separate graphs with individual scales. (by selecting “Plot Separately”)

The ‘Zoom In’ and ‘Zoom Out’ buttons provide a quick way to zoom – where the screen width represents ‘All Data’, ‘1 year’, ‘1 month’, ‘1 week’, ‘1day’, ‘2 hours’ and ‘10 minutes’. (The zoom level is displayed under the buttons)

The two white handles on the time axis of the plot can be moved to also pan and zoom. The operator can also ‘right click’ on the screen and drag to pan left and right.

The Print... button allows the present screen data to be printed in default landscape mode.

The Edit / View button allows the present plot file to be viewed and/or edited in Notepad.

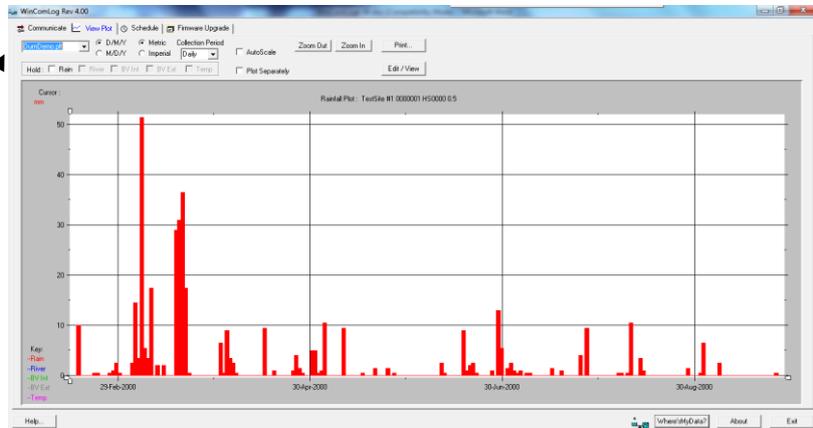
The Help button gives specific help on the Plot screen

Note that data collected from metric RRDL3 or RDL4 Loggers with dd/mm/yy date format and imperial RRDL3 Loggers with mm/dd/yy date format can be viewed and manipulated by selecting the date format option DMY or MDY at the top left of the screen.

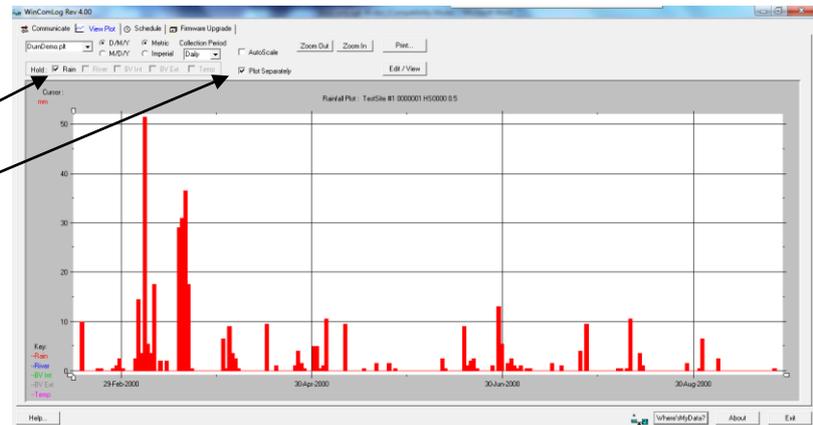
Viewing Data Files Together :

Parameters saved in separate files can be viewed together on the same screen by using the following procedure :

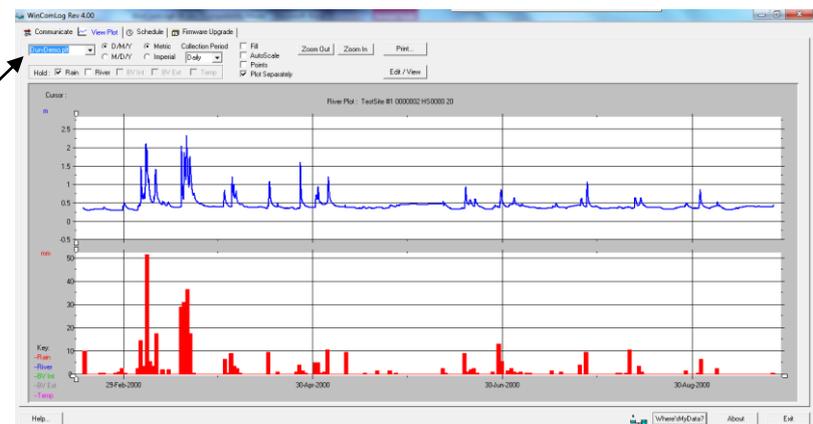
Select the first file you wish to view using the drop list. (In this example it is DurnDemo.plt)



Set the Hold : Rain and Plot Separately checkboxes.



Select the next file to be viewed (In this example it is DurvDemo.plt)



More files can be viewed by selecting “Hold” for the present files and then selecting the new files.

Viewing Previously Collected Data

Data that was collected prior to obtaining WinComLog can be viewed by manipulating it to appear like it was just collected. The “.plt” files are simply text files with a particular format as follows :

- The files **must** be located in the directory shown in “Where’s My Data?”
- The filename **must** be of the form “Durn****.plt” (rain) or “Durv****.plt” (river) or Dubv****.plt (Battery voltages) or Dubvi****.plt (Internal BattV) or Dubve****.plt (External BattV) or Dubvt****.plt (BattV + Temp) or Dutmp****.plt (Temperature) or Duall****.plt (All parameters)
- The first line of the file **must** be either “DUR” or “DURV” or “DUBV” or “DUBVI” or “DUBVE” or “DUBVT” or “DUTMP” or “DUALL” respectively.
- The second line of the file **must** be start of the logger response – that is “Sydney 0000001 HS1234 0.5”

Once the file is in this form, it will automatically appear in the plot file drop list and can be viewed when selected.

Rainfall Plot

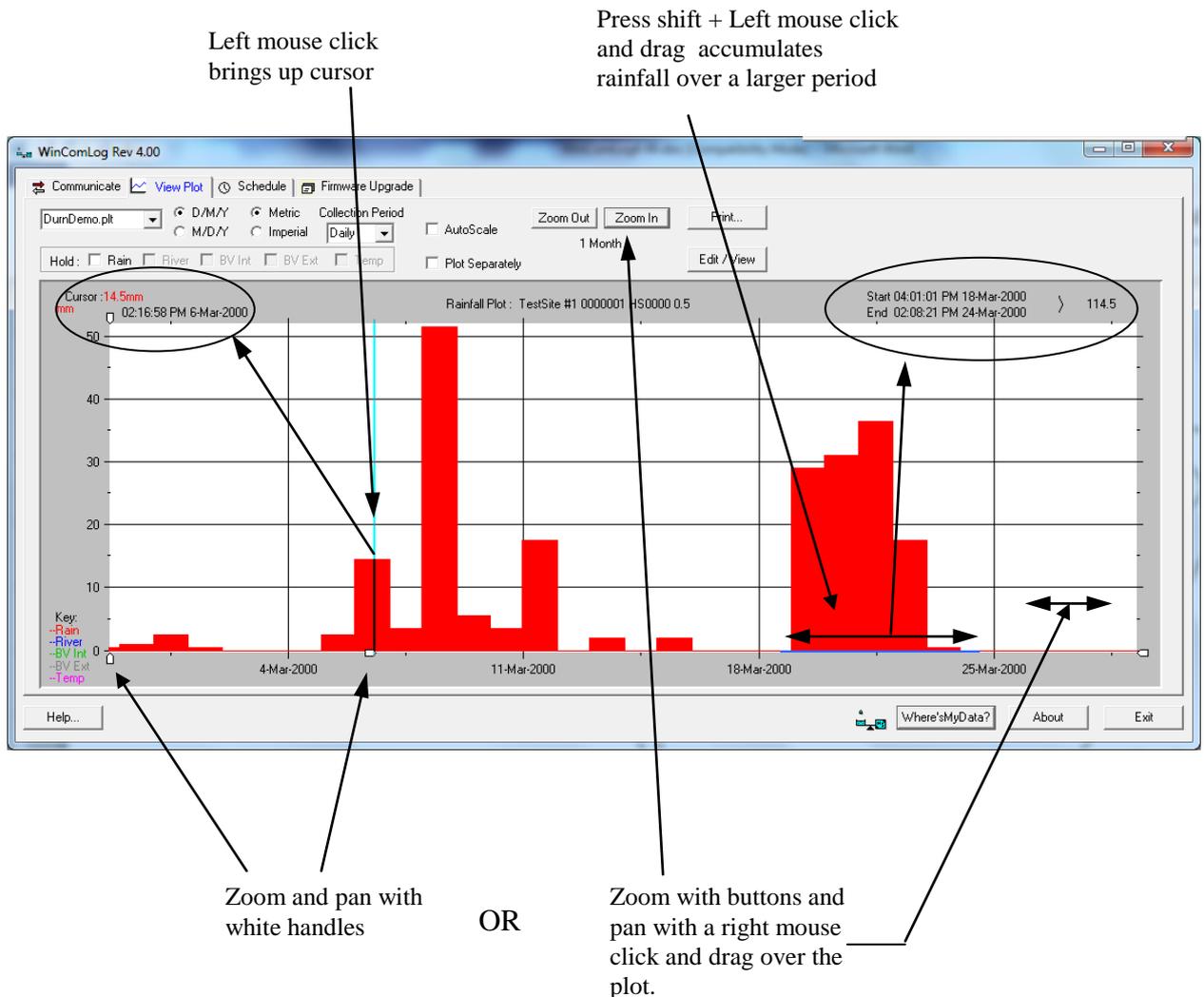
The Rainfall tip data is grouped over a small collection period that can be user selected with a drop box. Periods of ‘5mins’, ‘10mins’, ‘15mins’, ‘hourly’ and ‘daily’ can be selected. The data is then displayed as a bar chart showing the rainfall within the collection period.

The metric/imperial buttons allow the plot units to be displayed as either “mm” or “pts”.

When “AutoScale” is checked and the plot screen is redrawn (due to a collection period change), the vertical scale is adjusted to fit the largest data value (of the total data – not just the display data). If “AutoScale” is unchecked, the vertical scale does not change.

Left click the mouse while over the plot area and a blue vertical cursor will appear. As this cursor is dragged across the screen, the date/time and rainfall in the collection period will be displayed at the top left of the plot area.

The total rainfall over a larger period can be displayed by pressing and holding the “shift” button while the left mouse button is clicked, dragged and then released to highlight a selected area. The Start and End time/date as well as the rainfall over the selected area is displayed at the top right of the plot screen.



River Plot

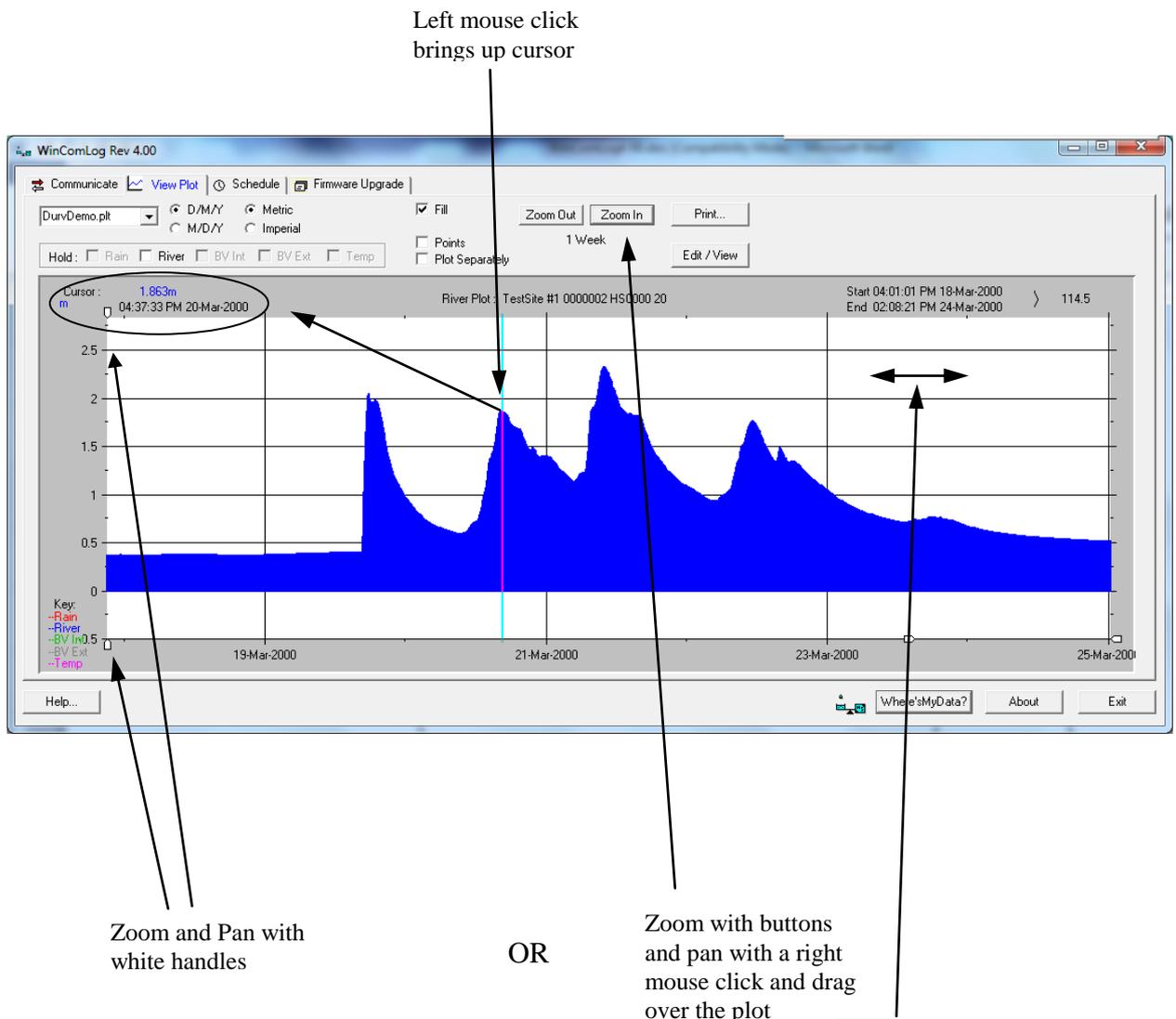
The metric/imperial buttons allow the plot units to be displayed as either “m”/”ft” for river level or “mm” / “in” for rainfall or “C” / “F” for temperature. (Note the data must be measured in the appropriate units – this button simply displays the scale text.)

The Fill checkbox fills in the data above and below the 0 water level.

The Points checkbox turns on a dot at each collected data point.

Left click the mouse while over the plot area and a blue vertical cursor will appear. As this cursor is dragged across the screen, the date/time and water level will be displayed at the top left of the plot area.

Zooming and panning is common to both Rain and River plots as described previously.



When a site on the Schedule tab is double clicked, the following dialog appears. This allows a specific site to be configured.

Polling Schedule

Site Name : Text to describe your site

Phone No : Phone number that will be dialed by the PC modem.

Direct Connection Test : Test the schedule without a modem – connect Logger directly to the PC.

Retries : Number of redial attempts if connection is not successful

Start Time : Date and time when polling will start. The start date may be the present date, or it may be some date in the future – eg. after the site has been commissioned. The start time hours and minutes allow for a precise collection time. For example, if the start time is 9:00 and the Poll Interval is 1 day, then the site will be polled every day at 9:00am. If several sites are to be polled, they may be set to the same start time, and the polling will be queued, or the start time may be staggered by a minute between sites – eg. Site 1 set to 9:00, Site 2 set to 9:01, Site 3 set to 9:02,

Poll Interval: This is the time between polling this site. Polling will start at the Start Time and then increment by the Poll Interval. Can be set from 1 min (for testing) to many days. The “Next Connection” column on the schedule screen will indicate when the next connection to the site will occur.

Collecting Data

The lower part of this screen allows customisation of the commands sent to the logger, and how the data is recorded into a file. This is very flexible and allows for many variations. Although the dumping of data is customised towards HS loggers (as you will see), the way commands can be entered allows for collection of data from almost any logger.

Command / Filename : The basic principle for collecting data is sending command 1, and saving the reply into Filename 1 – then sending Command 2 and saving the reply into Filename 2, and finally sending Command 3 and saving the reply to Filename 3. If the Command 1/2/3 field is

empty, then no data is sent for that stage of the communication session. Each command string may be a single command, or built up into several commands.

Command : The command string entered depends on the data/status you wish to collect – and depends on the logger you are communicating with. (See the assistance on the lower left of the dialog.) If you wish to send the Status command to an ML1, then enter “ST^M” where ^M is a carriage return – same as pressing enter. You may want to send several commands in a single sequence by using a 0.5sec delay (~) in between commands sent. For example, enter the password and then set the time from the PC – use the string “passwd=BOMM^M~~t=^T^M” which will first send the password command “passwd=BOMM” followed by a carriage return (enter) and then wait 1 second (2 x ~) before setting the time “t=15:21:15” (using the PC time) followed by a carriage return (enter). Note you must enter enough 0.5 sec delays (~) for the preceding command to be performed.

Save Last Dump Event : This option can be selected when a dump command DUR or DURV is performed on a HS logger. The last event recorded will be saved into this field for 2 reasons : 1. To give the operator a good idea of the latest data retrieved and 2. So that a dump search can be performed so that only new data is retrieved. The dump command on HS loggers take the form of a simple dump DUR or DURV which dump all the data that is present, or a more complex dump search DUR/xx/hh:mm/dd/mm/yy which searches for a specific time in memory, and dumps from that point on. (Consult the specific logger manual for more details – and look at the examples at the end of this section) The Last Dump Event time and date can be used in subsequent commands by using ^t to enter hh:mm and ^L for dd/mm/yy. If the Last Dump Event is clear then the DUR or DURV commands are sent without the search options.

Filename : The filename to save the data into may be a simple name such as “Site-4.txt” OR it may be a custom name that is different each time a file is saved. (See the assistance on the lower right of the dialog.) For example you may wish to collect the status daily, and have it appear in a separate file each day – simply enter the filename as “SiteA_^Y^m^D.txt” (^Y=PC year : ^m=PC month : ^D=PC day)

On the 12-Jun-11 the file name will be SiteA_110612.txt

On the 22-Oct-11 the filename will be SiteA_111022.txt

You may want a new file each month – so enter the filename “SiteA_^m-^Y.txt”

In June 2011 the filename will be SiteA_06-11.txt

In July 2011 the filename will be SiteA_07-11.txt

You can further extend this to include the time into the filename.

By default, the files are saved into the User’s AppData directory displayed when the “Where’s My Data ?” button is pressed. If the full pathname is used when creating a filename, then the file is put in the specified folder. Eg. C:\SiteData\SiteA.txt

When collecting rain dump data it is best to use the filename format “Durn*****.plt” so that the file appears in the Plot tab droplist. The River data filename should use the format “Durv*****.plt” to appear in the Plot tab droplist. (Similarly, any file in the form Du*****.plt will appear in the Plot tab droplist.)

Append : If Append is selected, then the new data is appended to any data that exists in the present file – thus building up a history. If Append is not selected, the old data is erased and only new data is put into the file – thus only keeping the most recent status. Both types of data collection can be useful.

Raw / CSV-1 / CSV-2 / Tideda : This allows filtering and manipulation of the incoming data. Select Raw for most commands – CSV-1 / CSV-2 and Tideda is used for DUR and DURV dump commands only !!

Raw : Whatever data is sent and received will be recorded into the file.

CSV-1 : The dumped data from DUR and DURV is filtered, modified and saved in the format “dd/mm/yy hh:mm:ss, xxxx” where xxxx is the accumulated rainfall (DUR) or the water level (DURV).

CSV-2 : The dumped data from DUR and DURV is filtered, modified and saved in the format “dd/mm/yy hh:mm:ss, xxxx” where xxxx is the bucket size (DUR) or the water level (DURV).

Tideda : The dumped data from DUR and DURV is filtered, modified and saved in the format “xxxxx yyyymmdd hhhmss” where xxxx is the bucket size x 10 (DUR) or the water level (DURV). The yyyy field is the full year and the data is space delimited into columns. The daily marker is at 8am instead of midnight.

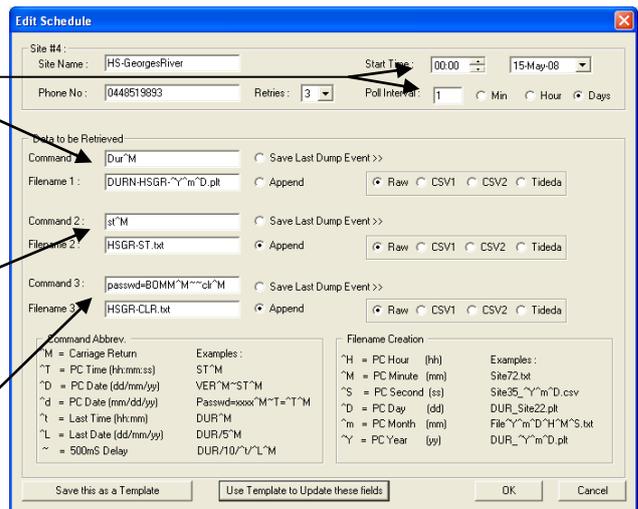
Example 1 :

Collect data each day at midnight.

Perform a DUR (rain dump) and save to a new file each day DUR-HSGR-080515.plt where the filename is constructed from the PC date and will appear on the plot tab droplist.

Perform an ST (status) command and append it to the same file each day “HSGR-ST.txt”

Enter the password, wait and then CLR (clear memory), and append this to a file “HSGR-CLR.txt” each day.

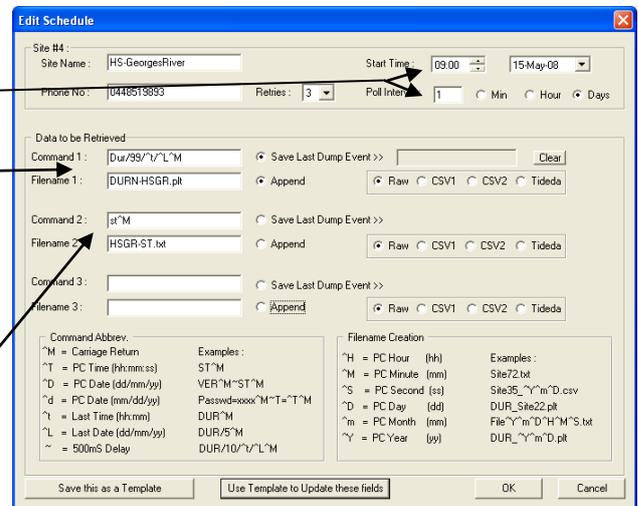


Example 2:

Collect the data each day at 9:00am

Perform a DUR the first day, and save the Last Dump Event. Then on subsequent days do a dump search for the last event yesterday and append the new data to the previous data. This will keep the plot file “DURN-HSGR.plt” up to date every day.

Perform an ST (status) command and save it to the file “HSGR-ST.txt” but only keep the most recent status – append is not selected.



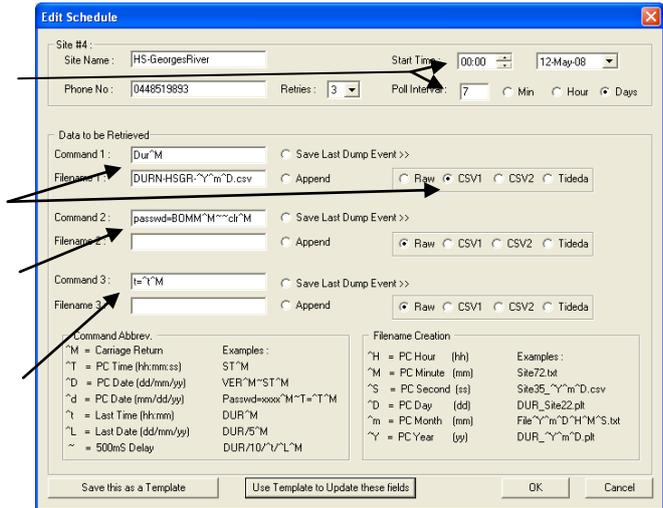
Example 3

Collect the data once a week at 00:00am on Monday morning – ready to view when you get to work.

Perform a DUR, and save the data in CSV-1 format in a new file each week.

Enter the password and then clear memory but don't save it to a file.

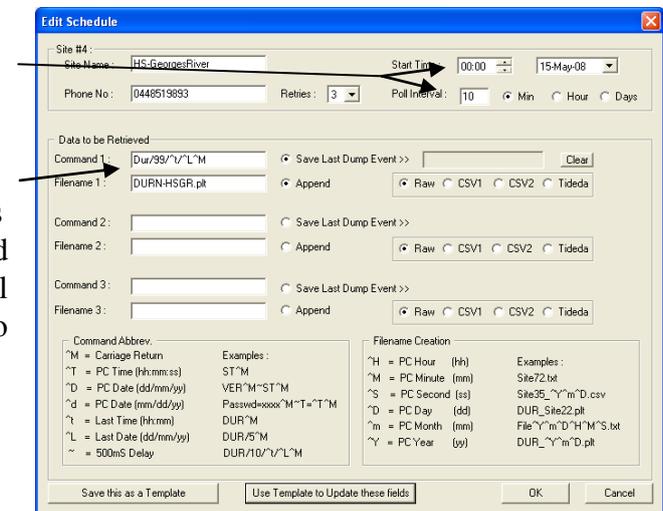
Set the logger time to the PC time ready for the new weeks data – don't save to a file.



Example 4

Collect the data every 10 minutes.

Perform a DUR the first day, and save the Last Dump Event. Then on subsequent polls do a dump search for the last event and append the new data to the previous data. This will keep the plot file “DURN-HSGR.plt” up to date every 10 mins.



Use the following commands and filename examples to collect dump data and have it available to view in a plot immediately (where xxxxx is any name including ^H ^M ^S ^D ^m or ^Y) :

Type of Dump	Product(s)	Command	Filename Example
Rain	RRDL3, ML1, ML1-420	Dur/2/^t/^L^M	Durn-xxxxxx.plt
River	RRDL3, ML420, ML1-420	Durv/2/^t/^L^M	Durv-xxxxxx.plt
Battery Voltages	ML1(Rev1-20), ML420(Rev1-51)	Dubv/2/^t/^L^M	Dubv-xxxxxx.plt
Internal BattV	ML1-420	Dubvi/2/^t/^L^M	Dubvi-xxxxxx.plt
External BattV	ML1-420	Durbve/2/^t/^L^M	Dubve-xxxxxx.plt
BattV and TempC	ML1-420	Dubvt/2/^t/^L^M	Dubvt-xxxxxx.plt
TempC Only	ML1-420	Dutmp/2/^t/^L^M	Dutmp-xxxxxx.plt
All Parameters	ML1-420	Duall/2/^t/^L^M	Duall-xxxxxx.plt

Handy Tip :

When setting up many sites with a similar configuration, setup the configuration for the first site and press “Save this as a Template”, then open subsequent sites and press ”Use Template to Update these fields” and simply change the site name, phone number and filenames.

2.8 Firmware Upgrade Tab

Click on the Firmware Upgrade tab to allow the upgrade of new firmware to the RRDL3, RDL4, ML1, ML420, ML1-420 loggers, AD375A and WL3100 transducers. Select the logger type checkbox and then click on Select File and select the hex file that has been provided by HyQuest Solutions. The upgrade process will not commence unless a valid file is selected.

Before upgrading a device via the SDI-12 port, set the device's SDI-12 address to 0 and set the device's Comms Type to RS232 !!!

Enter the 4 character Logger Password. This is sent to the logger and confirmed as correct before the upgrade process will commence. (The AD375A and WL3100 does not require a password)

Click on Start Upgrade and the process stage will be displayed as it occurs. The progress bar indicates how the upgrade is progressing. When complete, the new firmware version is displayed.

The Help button gives specific help on the Upgrade screen.

Important !!!

Once the upgrade procedure commences, DO NOT turn off the logger or exit the Application. If for some reason communications is lost during the upgrade procedure, DO NOT turn off the logger. This Application will recognise when a logger has been partially upgraded, and will continue without compromising the firmware. Just restart the upgrade procedure, with the same hex file, and it will continue without any problems.

The firmware upgrade of a ML1 MiniLog can be performed over a modem link. The “More+” button allows the display of extra information during the download process.

We DO NOT recommend upgrading the firmware of an RRDL3 over a modem communication link. It is safest to perform the upgrade when directly connected.

The firmware download when directly connected will only take a minute or two, however a firmware download over a modem link may take 20 minutes or more. (This is due to the modem line turn-around during the handshaking process)

