RST INSTRUMENTS LTD.

RST Readout
Host Software
Instruction Manual

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RST Readout Host Software

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TABLE OF CONTENTS

1 OVERVIEW 8

2 QUICK START INSTRUCTIONS 8

3 RST READOUT HOST SOFTWARE 9

3.1 GETTING STARTED 9
3.2 OPENING SCREEN 9
3.3 STATUS BAR 10

4 VW2106 READOUT 11

4.1 CREATING VW2106 LOCATIONS 11
4.2 UPLOADING VW2106 SITE INFO 13
4.3 DOWNLOADING VW2106 DATA 14
4.4 VIEWING VW2106 DATA 15
4.4.1 VIEWING VW2106 LOCATION READINGS 15
4.5 ADVANCED VW2106 SETTINGS 16
4.5.1 VIBRATING WIRE TYPE ADVANCED PARAMETERS 16
4.5.2 ENGINEERING UNITS 17

5 TH2016 AND TH2016B READOUT 19

5.1 CREATING TH2016 LOCATIONS 19
5.2 UPLOADING TH2016 SITE INFO 21
5.3 DOWNLOADING TH2016 DATA 22
5.4 VIEWING TH2016 DATA 23
5.4.1 VIEWING TH2016 LOCATION READINGS 24

6 MA7 READOUT 25

6.1 CREATING MA7 LOCATIONS 25
6.2 UPLOADING MA7 SITE INFO 27
6.3 DOWNLOADING MA7 DATA 28
6.4 VIEWING MA7 DATA 29
6.4.1 VIEWING MA7 LOCATION READINGS 30

7 QB120 READOUT 31

7.1 CREATING QB120 LOCATIONS 31
7.2 UPLOADING QB120 SITE INFO 33
7.3 DOWNLOADING QB120 DATA 34
7.4 VIEWING QB120 DATA 35
7.4.1 VIEWING QB120 LOCATION READINGS 36
7.5 ADVANCED QB120 SETTINGS 36
7.5.1 ENGINEERING UNITS 36

8 SG350 READOUT 38

8.1 CREATING SG350 LOCATIONS 38
8.2 UPLOADING SG350 SITE INFO 40
8.3 DOWNLOADING SG350 DATA 41

8.4 VIEWING SG350 DATA 42
8.4.1 VIEWING SG35 LOCATION READINGS 43
8.5 ADVANCED SG350 SETTINGS 43
8.5.1 ENGINEERING UNITS 43

9 IR420 READOUT 45

9.1 CREATING IR420 LOCATIONS 45
9.2 UPLOADING IR420 SITE INFO 47
9.3 DOWNLOADING IR420 DATA 48
9.4 VIEWING IR420 DATA 49
9.4.1 VIEWING IR420 LOCATION READINGS 50
9.5 ADVANCED IR420 SETTINGS 50
9.5.1 ENGINEERING UNITS 50

10 LP100 READOUT 52

10.1 CREATING LP100 LOCATIONS 52
10.2 UPLOADING LP100 SITE INFO 54
10.3 DOWNLOADING LP100 DATA 55
10.4 VIEWING LP100 DATA 56
10.4.1 VIEWING LP100 LOCATION READINGS 57
10.5 ADVANCED LP100 SETTINGS 57
10.5.1 ENGINEERING UNITS 57

11 C109 READOUT 59

11.1 CREATING C109 LOCATIONS 59
11.2 UPLOADING C109 SITE INFO 61
11.3 DOWNLOADING C109 DATA 62
11.4 VIEWING C109 DATA 63
11.4.1 VIEWING C109 LOCATION READINGS 64

12 IR5000 READOUT 65

12.1 CREATING IR5000 LOCATIONS 65
12.2 UPLOADING IR5000 SITE INFO 67
12.3 DOWNLOADING IR5000 DATA 68
12.4 VIEWING IR5000 DATA 69
12.4.1 VIEWING IR5000 LOCATION READINGS 70
12.5 ADVANCED IR5000 SETTINGS 70
12.5.1 ENGINEERING UNITS 70

13 FILE TYPES 72

13.1.1 CONFIGURATION FILES (*.INI FILES) 72
13.1.2 DATA FILES (*.CSV FILES) 72

14 OPTIONS 75

14.1 OPTIONS DIALOGS 75
14.1.1 READOUT OPTIONS 75
14.1.2 HOST SOFTWARE OPTIONS 76
14.1.3 LOGGING OPTIONS 77

14.1.4 READOUT MONITOR OPTIONS 78
14.2 MENU ITEMS 78
14.2.1 MAIN MENU 78
14.2.2 CLIPBOARD MENU 78
14.2.3 VIEW MENU 79
14.2.4 READOUT MENU 79
14.2.5 INSTRUMENT MENU 79
14.2.6 WINDOW MENU 79
14.2.7 HELP MENU 79

15 USB TO UART CONTROLLER DRIVER SET INSTALLATION – READOUT ID UP TO AND INCLUDING VR0459 OR TR5451 80

15.1 MICROSOFT™ WINDOWSXP INSTALLATION PROCEDURE 80
15.1.1 USB TO UART DEVICE INSTALLATION 80
15.1.2 USB TO UART CONTROLLER INSTALLATION 83
15.2 MICROSOFT™ WINDOWS VISTA AND WINDOWS7, 8.1, 10 INSTALLATION PROCEDURE 88

16 USB TO UART CONTROLLER DRIVER SET INSTALLATION – READOUT ID VR0460 OR GREATER, TR5452 OR GREATER, ALL OTHER RST READOUTS 90

16.1 MICROSOFT™ WINDOWSXP INSTALLATION PROCEDURE 90
16.2 MICROSOFT™ WINDOWS VISTA AND WINDOWS7, 8.1, 10 INSTALLATION PROCEDURE 94

17 TROUBLESHOOTING 98

18 CONTACT US 99

LIST OF FIGURES

Figure 1 – RST Readout Host Software Opening Screen 9
Figure 2 – Creating a New VW2106 Site 11
Figure 3 – Naming VW2106 Location 11
Figure 4 – Creating VW2106 Locations 12
Figure 5 – Uploading VW2106 Sites 13
Figure 6 – Downloading VW2106 Data 14
Figure 7 – Downloaded VW2106 Data 15
Figure 8 – VW2106 Location Data Display 16
Figure 9 – Vibrating Wire Advanced Settings 16
Figure 10 – Decrement and Sweep Time options 17
Figure 11 – Engineering Units settings 18
Figure 12 – Creating a New TH2016 Site 19
Figure 13 – Naming TH2016 Location 19
Figure 14 – Creating TH2016 Locations 20
Figure 15 – Uploading TH2016 Sites 21
Figure 16 – Downloading TH2016 Data 22
Figure 17 – Downloaded TH2016 Data 23
Figure 18 – TH2016 Location data display 24
Figure 19 – Creating a New MA7 Site 25
Figure 20 – Naming MA7 Location 25
Figure 21 – Creating MA7 Locations 26
Figure 22 – Uploading MA7 Sites 27
Figure 23 – Downloading MA7 Data 28
Figure 24 – Downloaded MA7 Data 29
Figure 25 – MA7 Location Data Display 30
Figure 26 – Creating a New QB120 Site 31
Figure 27 – Naming QB120 Location 31
Figure 28 – Creating QB120 Locations 32
Figure 29 – Uploading QB120 Sites 33
Figure 30 – Downloading QB120 Data 34
Figure 31 – Downloaded QB120 Data 35
Figure 32 – QB120 Location Data Display 36
Figure 33 – Engineering Units settings 37
Figure 34 – Creating a New SG350 Site 38
Figure 35 – Naming SG350 Location 38
Figure 36 – Creating SG350 Locations 39
Figure 37 – Uploading SG350 Sites 40
Figure 38 – Downloading SG350 Data 41
Figure 39 – Downloaded SG350 Data 42
Figure 40 – SG350 Location Data Display 43
Figure 41 – Engineering Units settings 44
Figure 42 – Creating a New IR420 Site 45
Figure 43 – Naming IR420 Location 45
Figure 44 – Creating IR420 Locations 46
Figure 45 – Uploading IR420 Sites 47
Figure 46 – Downloading IR420 Data 48
Figure 47 – Downloaded IR420 Data 49
Figure 48 – IR420 Location Data Display 50
Figure 49 – Engineering Units settings 51
Figure 50 – Creating a New LP100 Site 52

Figure 51 – Naming LP100 Location....52
Figure 52 – Creating LP100 Locations....53
Figure 53 – Uploading LP100 Sites....54
Figure 54 – Downloading LP100 Data....55
Figure 55 – Downloaded LP100 Data....56
Figure 56 – LP100 Location Data Display....57
Figure 57 – Engineering Units settings....58
Figure 58 – Creating a New C109 Site....59
Figure 59 – Naming C109 Location....59
Figure 60 – Creating C109 Locations....60
Figure 61 – Uploading C109 Sites....61
Figure 62 – Downloading C109 Data....62
Figure 63 – Downloaded C109 Data....63
Figure 64 – C109 Location Data Display....64
Figure 65 – Creating a New IR5000 Site....65
Figure 66 – Naming IR5000 Location....65
Figure 67 – Creating IR5000 Locations....66
Figure 68 – Uploading IR5000 Sites....67
Figure 69 – Downloading IR5000 Data....68
Figure 70 – Downloaded IR5000 Data....69
Figure 71 – IR5000 Location Data Display....70
Figure 72 – Engineering Units settings....71
Figure 73 – Sample Data File....73
Figure 74 – MS Excel Sorting....74
Figure 75 – Options Screen....75
Figure 76 – Host Software Options Screen....76
Figure 77 – Logging Options Screen....77
Figure 78 – Monitor Options settings....78
Figure 79 – First Gen Driver Set Installation on Windows XP....80
Figure 80 – New Hardware Wizard for Device....81
Figure 81 – New Hardware Wizard for Device – choose install....81
Figure 82 – New Hardware Wizard for Device – Choose Driver....82
Figure 83 – New Hardware Wizard for Device – Continue....82
Figure 84 – New Hardware Wizard for Device – File Transfer....83
Figure 85 – New Hardware Wizard for Device – Install Complete....83
Figure 86 – New Hardware Wizard for Controller....84
Figure 87 – New Hardware Wizard for Controller - Choose Install....84
Figure 88 – New Hardware Wizard for Controller – Choose Driver....85
Figure 89 – New Hardware Wizard for Controller – File Transfer....85
Figure 90 – New Hardware Wizard for Controller – Install Complete....86
Figure 91 – New Hardware Installed Confirmation....87
Figure 92 – WindowsXP Device Manager....87
Figure 93 – First Gen Driver Set Installation on Windows Vista and 7, 8.1, 10....88
Figure 94 – Install Complete....88
Figure 95 – New Hardware Status for Controller....88
Figure 96 – New Hardware Installed Confirmation....89
Figure 97 – Windows Vista and Windows 7, 8.1, 10 Device Manager....89
Figure 98 – Second Gen Driver Set Installation on Windows XP....90
Figure 99 – New Hardware Wizard for USB to UART....91
Figure 100 – New Hardware Wizard for USB to UART – File Transfer....91
Figure 101 – New Hardware Wizard for USB to UART – Install Complete....92
Figure 102 – New Hardware Installed Confirmation....93

Figure 103 – WindowsXP Device Manager....93
Figure 104 – Second Gen Driver Set Installation on Windows Vista and 7, 8.1, 10 94
Figure 105 – USB to UART Driver Set Installation 94
Figure 106 – USB to UART Driver Set Installation – File Transfer 95
Figure 107 – USB to UART Driver Set Installation – Install Complete....95
Figure 108 – USB Serial Port Driver Installation....96
Figure 109 – USB Serial Port Driver Installation Complete 96
Figure 110 – New Hardware Installed Confirmation 96
Figure 111 – Windows Vista and Windows 7, 8.1, 10 Device Manager....97

1 OVERVIEW

The RST Readout Host Software was designed to allow easy download and display of data from the compatible readouts to PC's running Microsoft Windows. The user friendly graphical interface lets the user to view all data contained in readout memory and enables modification of any options and presets offered by the instrument.

2 QUICK START INSTRUCTIONS

The following instructions outline the basic steps needed to take and store readings with the Readout Host Software with the appropriate references to sections in the manual:

- Install the RST Readout Host Software on a Desktop or Laptop PC (section 3.1).
- Connect to the compatible Readout via a USB port (section 3.3).
- Using the software, enter the list of locations as they appear on site (section 4.1, 5.1, 6.1, 7.1, 8.1, 9.1,10.1).
- Upload the information to the readout (section 4.2, 5.2, 6.2, 7.2, 8.2, 9.2,10.2)
- Take the readout to the field and record readings in the locations that were setup with the software.
- When finished, return to the office, connect to the readout with the host software and download the data (section 4.3, 5.3, 6.3, 7.3, 8.3, 9.3,10.3).
- **Save downloaded data to the csv formatted file as prompted by the software. This will ensure that data is not accidentally erased from readout resulting in data being lost.**
- Make any changes (if needed) and upload locations configuration to the readout (section 4.2, 5.2, 6.2, 7.2, 8.2, 9.2,10.2). During the upload, the software will prompt if you would like to erase all data on the readout except previous readings. Erasing the historical data ensures that data will not be duplicated in the *.csv file the next time the readout data is downloaded.
- Close the RST Readout Host program.
- Open the *.csv file created by the software with Microsoft Excel, sort and plot the data (section 12.1.2).

3 RST READOUT HOST SOFTWARE

3.1 GETTING STARTED

Insert the RST Readout Host Software CD-ROM and follow the on-screen instructions for installing the software. The default directory for the software is:

C:\Programs Files\RST Instruments\RST Readout Host

This directory can be changed if desired.

Very Important

Ensure that USB to UART Device Driver Set is installed correctly, as described in Section 14 or Section 15. These drivers are necessary for correct communication between host computer and the readout.

3.2 OPENING SCREEN

Upon first launch of the program, the following screen will appear:

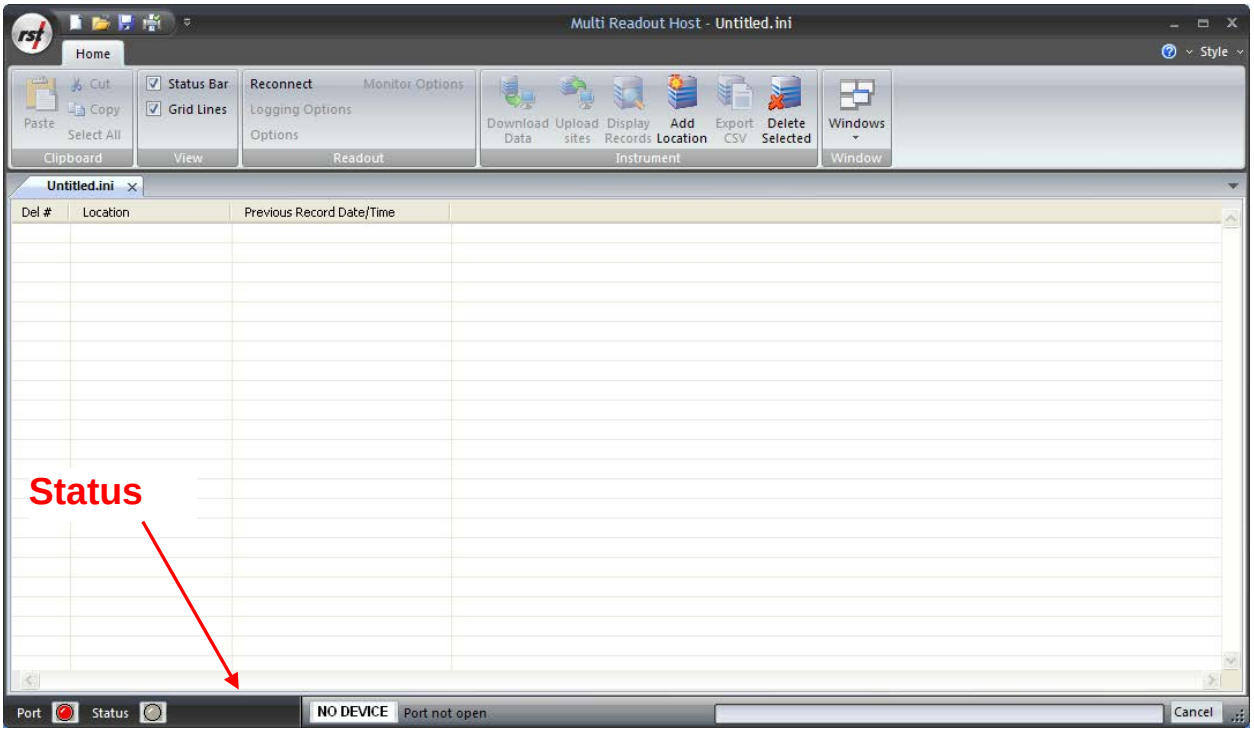


Figure 1 – RST Readout Host Software Opening Screen

The workspace screen consists of a menu and toolbar at the top, and a blank workspace beneath.

If the readout is connected via the USB port, the software automatically senses a connection and will prompt to download the data from readout memory.

3.3 STATUS BAR

Please note the location of the status bar at the bottom of the screen (Figure 1). The program will continuously try to connect to the readout even if the unit is not powered on. To connect to the readout, remove the dust cover from the USB port connector and plug in the supplied USB cable. Plug the other end of the USB Cable into the USB port of the host computer.

The software automatically detects USB port settings. If problems are encountered, please refer to section 16 (Troubleshooting).

Power on the readout by pressing any key. The status bar connection indicator should change from *Connecting* to *Connected* (Figure 1). The software should prompt you if you would like to download the data. After data download, it will prompt you to save data into csv comma separated file. For more information on the file types the host software creates, please refer to section 12.

The download progress will be indicated on the left side of the status bar.

Note

It is highly recommended to save downloaded data to csv formatted data file. This will ensure that data is not accidentally erased from readout resulting in data being lost.

4 VW2106 READOUT

4.1 CREATING VW2106 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

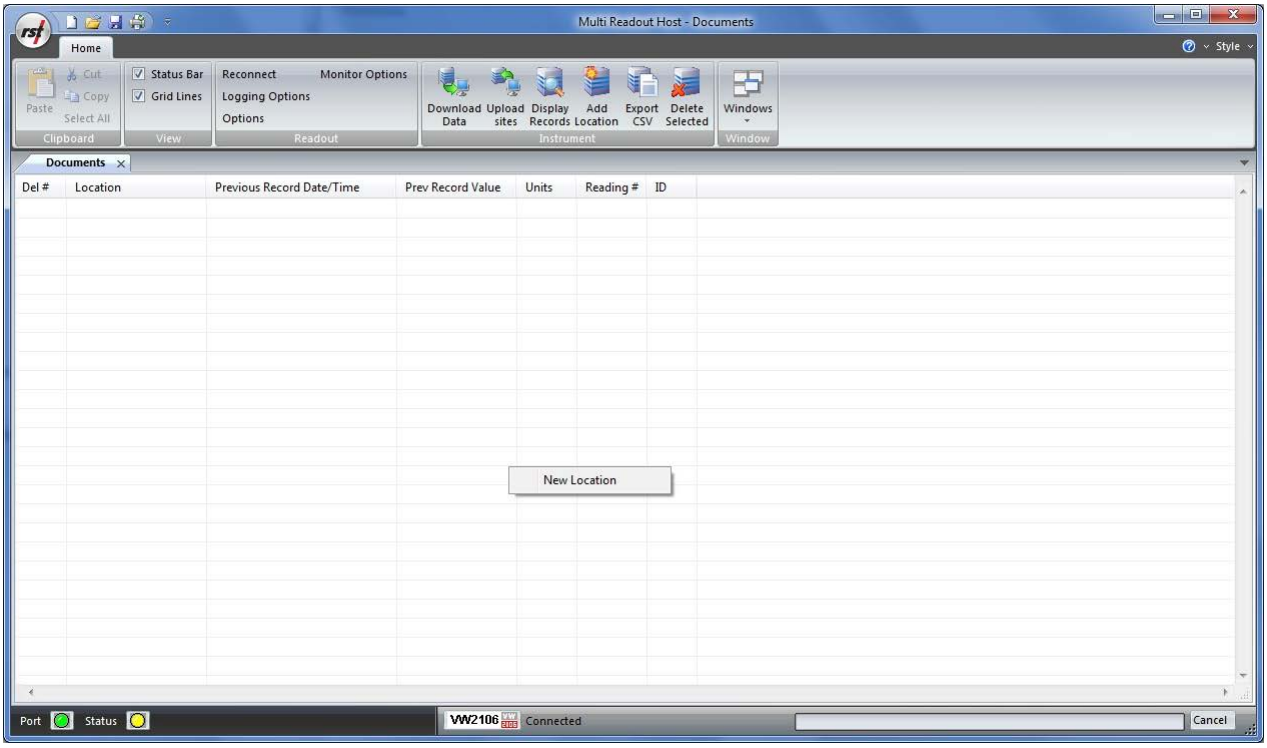


Figure 2 – Creating a New VW2106 Site

Click on *New Location* and the following dialog box will appear:

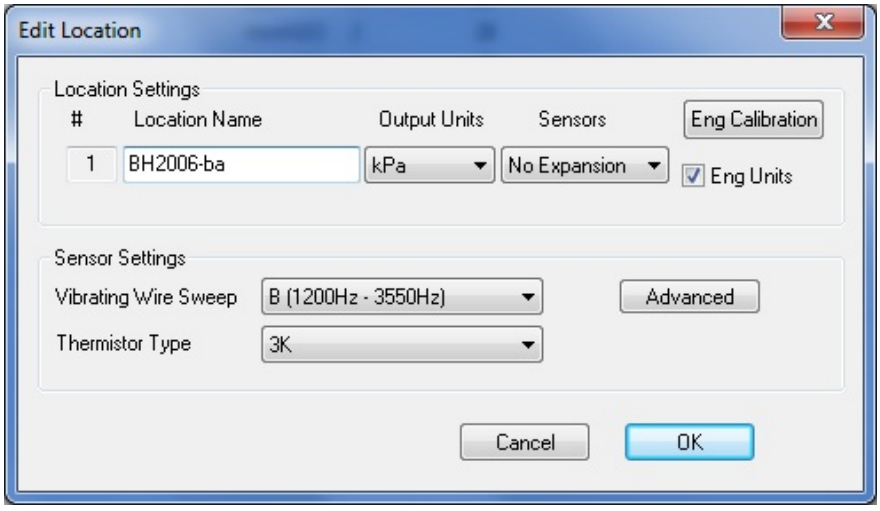


Figure 3 – Naming VW2106 Location

Enter in an appropriate location name. In this example the location is: *BH2005-ba*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

Select the number of VW sensors (between 1 and 6) for this Readout location. When sensor number is set to *No Expansion*, one sensor can be connected to Readout terminals. Between 1 to 6 sensors can be connected to expansion connector (i.e. loadcell).
Select appropriate *Vibrating Wire Sweep* and *Thermistor Type*. The *Eng Calibration* and *Advanced* functions are explained in section 4.5 Advanced settings. Subsequent Locations can be created by repeating the above procedure.

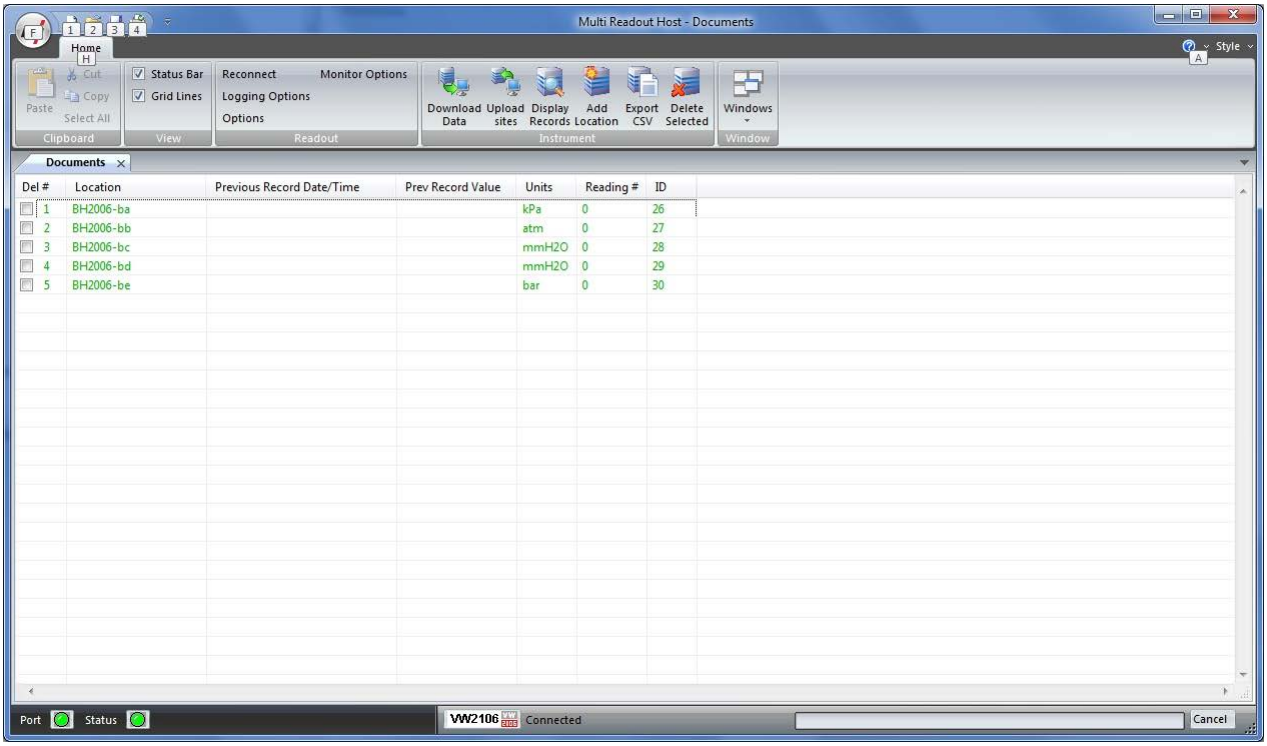


Figure 4 – Creating VW2106 Locations

Figure 4 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

4.2 UPLOADING VW2106 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

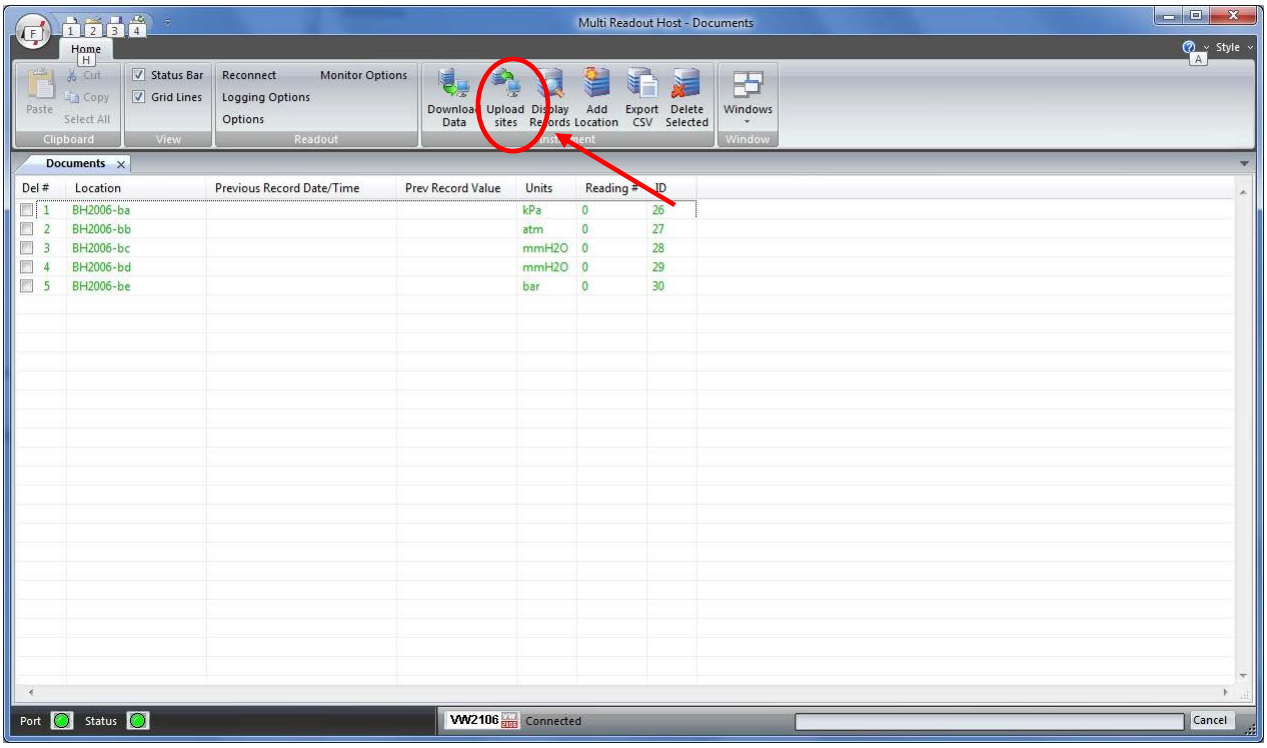


Figure 5 – Uploading VW2106 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

4.3 DOWNLOADING VW2106 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

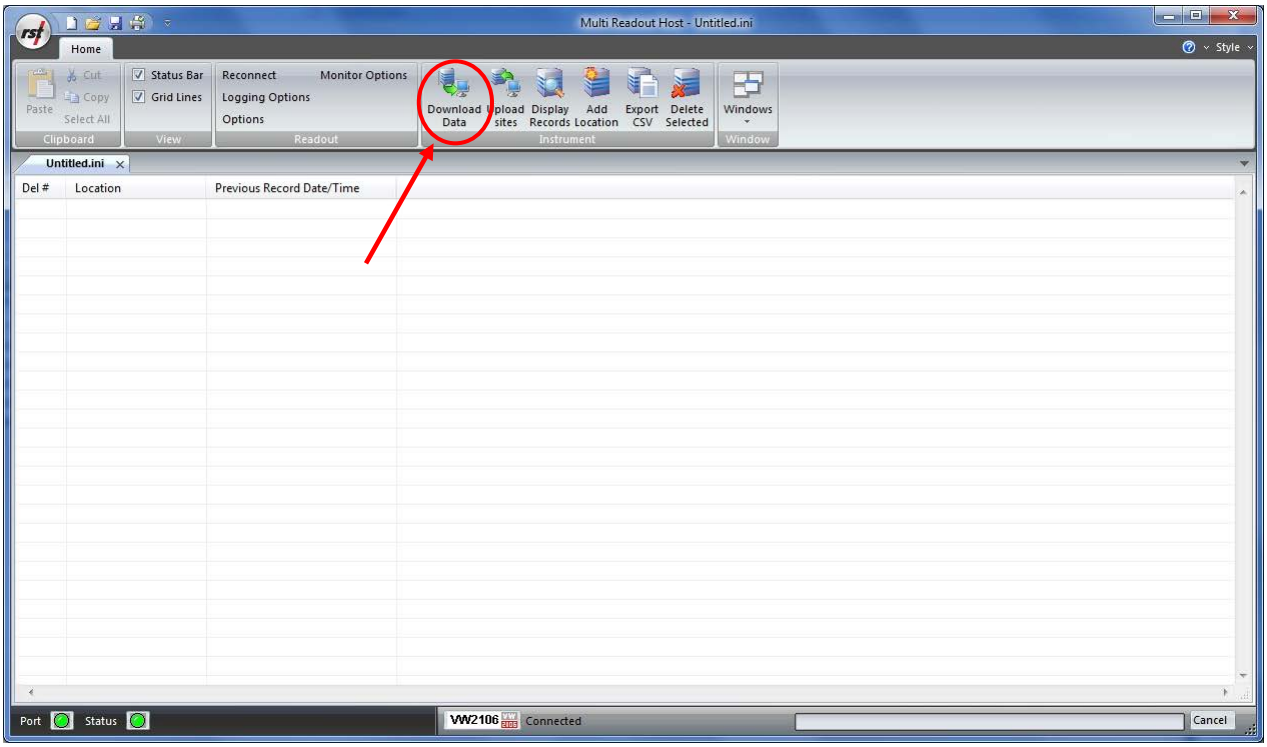


Figure 6 – Downloading VW2106 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

4.4 VIEWING VW2106 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

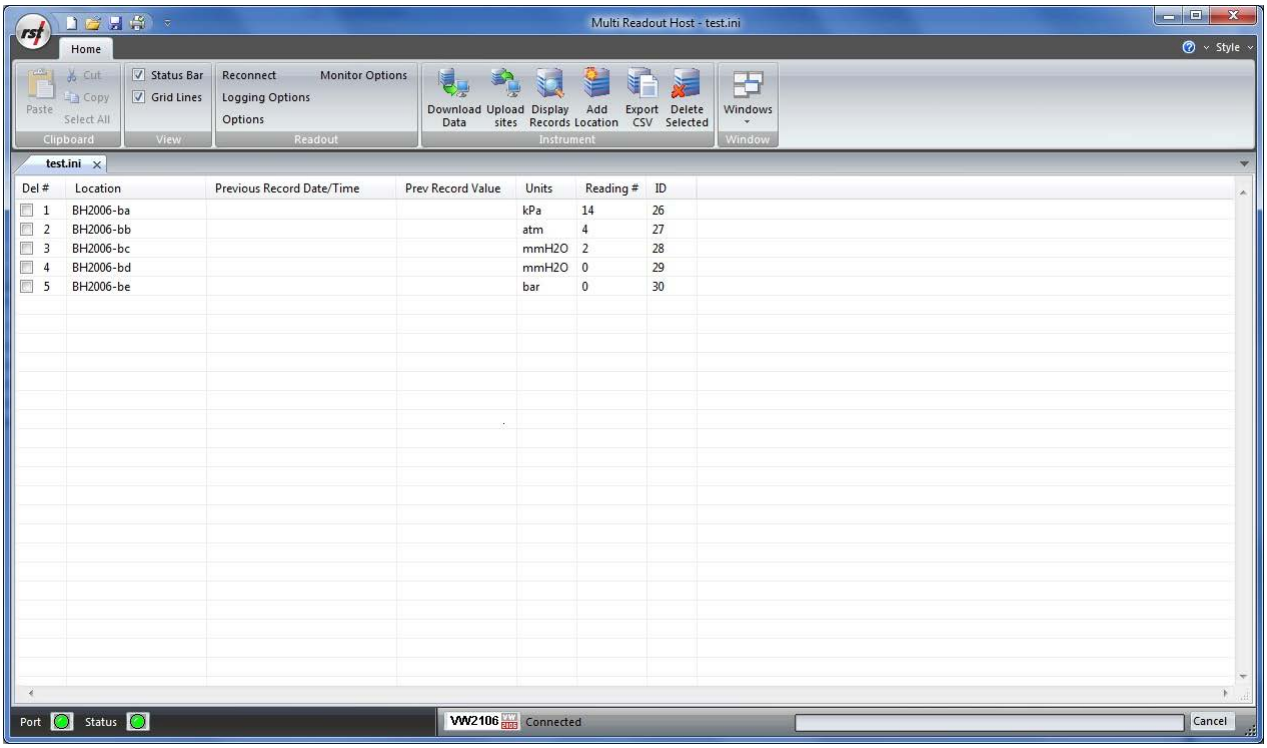


Figure 7 – Downloaded VW2106 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

4.4.1 VIEWING VW2106 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

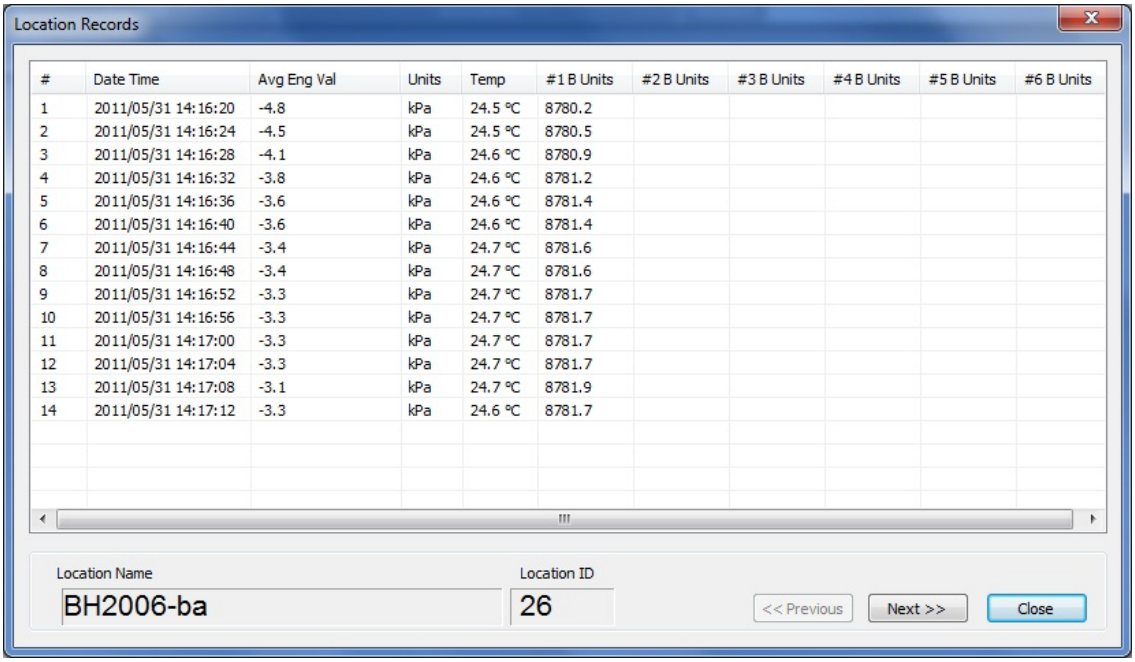


Figure 8 – VW2106 Location Data Display

4.5 ADVANCED VW2106 SETTINGS

4.5.1 VIBRATING WIRE TYPE ADVANCED PARAMETERS

Each location's Vibrating Wire Type can be set to any of the predefined types: A, B, C, D, E, F. For fine tuning of vibrating wire parameters, choose U Custom (Advanced) option from pull-down menu (Figure 9).

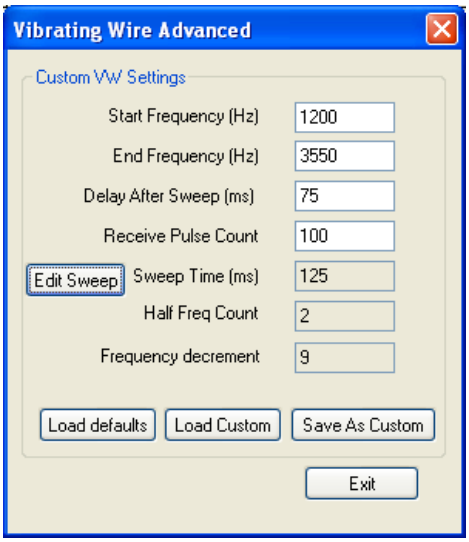


Figure 9 – Vibrating Wire Advanced Settings

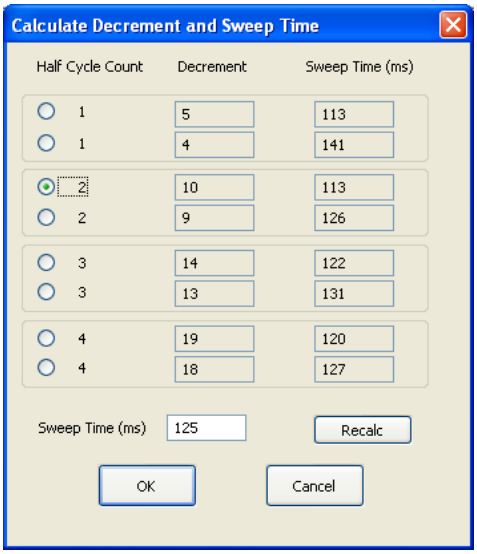


Figure 10 – Decrement and Sweep Time options

Edit the required fields if necessary, and click *Edit Sweep* to determine the remaining parameters. Enter the desired Sweep Time and click *Recalc.* The program will calculate Decrement and Sweep Time and give option to choose optimal parameters.Press *Load Defaults* to load default parameters. After modifying parameters, click *Save Custom* to save one custom vibrating wire type for future retrieval. This custom type can be loaded to any location settings by pressing *Load Custom* button. Each location can have its own vibrating wire settings. Modify parameters in the above dialog and click OK to save changes.

4.5.2 ENGINEERING UNITS

Often the user may wish to report the readings directly in engineering units, rather than B-units (f^2x10^3). Data required for the conversion to engineering units is always found on the calibration sheets for the transducer.

Each transducer is shipped from the factory with a calibration sheet. If you have not received a calibration sheet, or the sheet has been lost, please contact RST Instruments and a copy will be faxed or e-mailed to you.

Engineering units conversion settings can be modified using the *Eng Calibration* dialog box shown in Figure 11. Access to this dialog box is provided from *Edit Location* dialog box.

Conversion Method

The user is given an option to apply either a *Linear* or *Polynomial* Conversion. If *linear conversion* in selected, input the provided Calibration Factor and Zero Reading into the appropriate boxes.

If *polynomial conversion* is selected, input the provided coefficients (A, B & C) into the appropriate boxes.

In each case, equations used for calculations are shown for a reference.

Note
In each location settings, either linear or polynomial conversion coefficients can be saved.

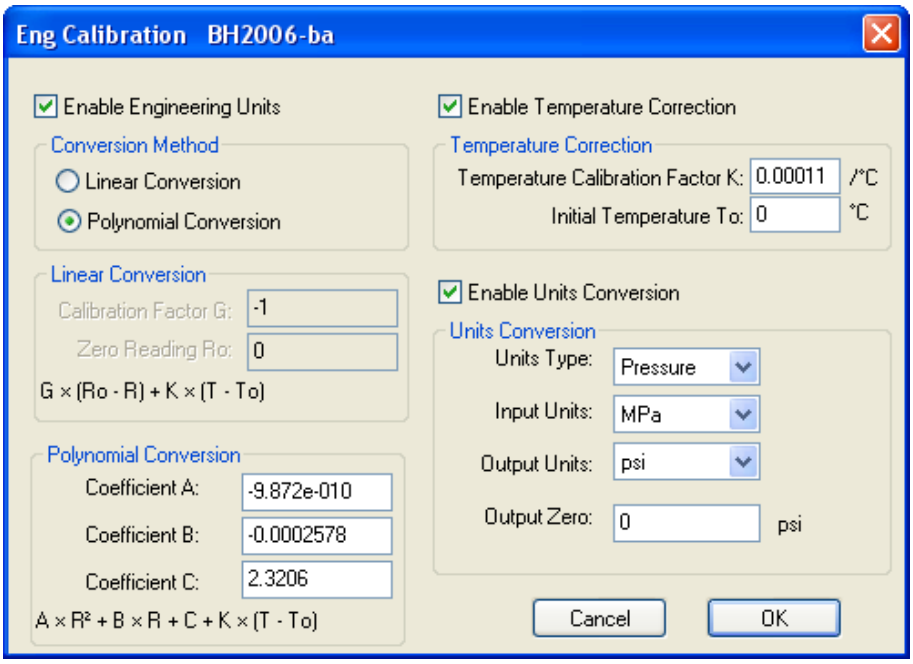


Figure 11 – Engineering Units settings

Temperature Correction

When the Enable Temperature Correction box is checked, the software will apply a temperature correction to the data. This requires the user to enter in the temperature correction factor and an initial temperature which is found on the calibration sheet for that particular instrument.

If the calibration sheet is missing, please contact RST Instruments and a copy of the calibration sheet can be faxed or e-mailed to you.

Units Conversion

Units Type: Choose pressure or distance using the drop-down menu.

Input Units: These are the units of the calibration constants you inputted into either the linear conversion or polynomial conversion methods. In general, the calibration constants reported on the calibration sheets are either in kPa/B unit or psi/B unit. In the case of strain gauges, this could be mm/B unit.

Output Units: Select the appropriate output units from the drop-down list.

Output Zero: This is a user defined offset value. Under certain circumstances, the user may wish to enter in the elevation of the pressure transducer. In this way the reported pressure will be correlated to a reference elevation (i.e. above sea level).

Important

Whenever **ANY** changes are made on the Engineering Units screen or Edit Location dialog box, the *Upload Site Info* button must be pressed in order to update the readout with new information.

5 TH2016 AND TH2016B READOUT

5.1 CREATING TH2016 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

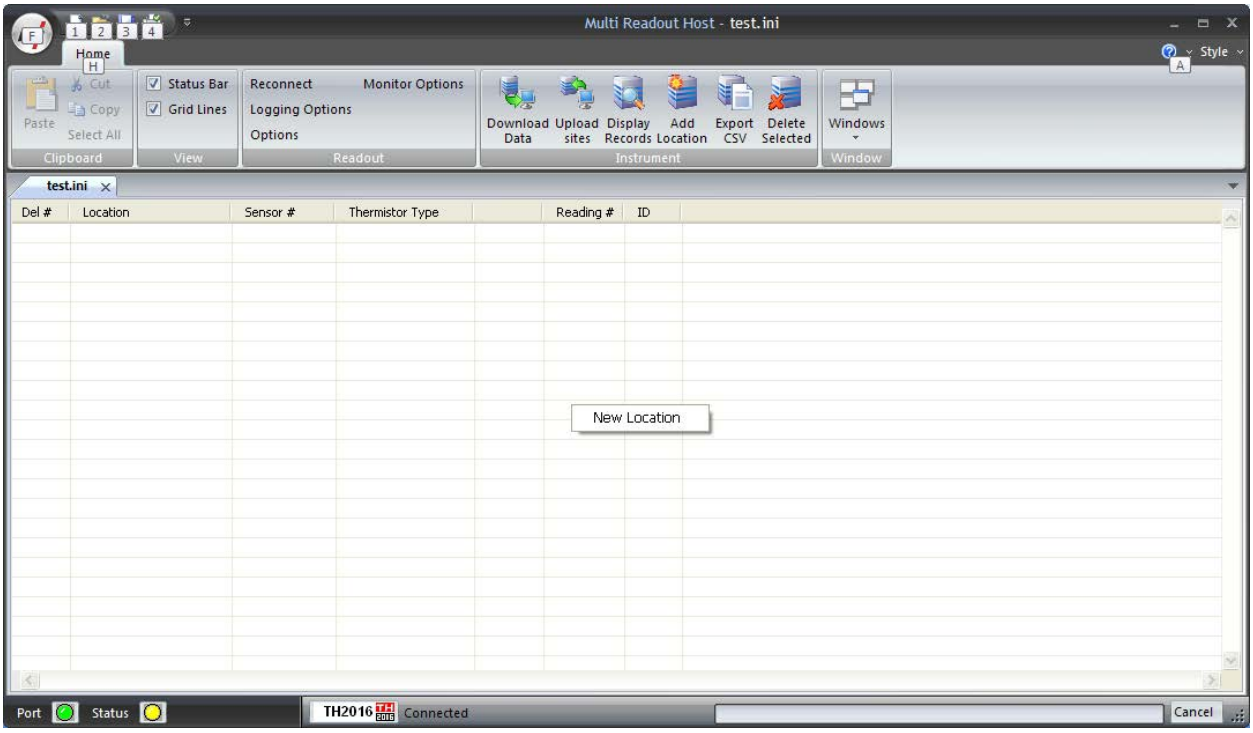


Figure 12 – Creating a New TH2016 Site

Click on *New Location* and the following dialog box will appear:

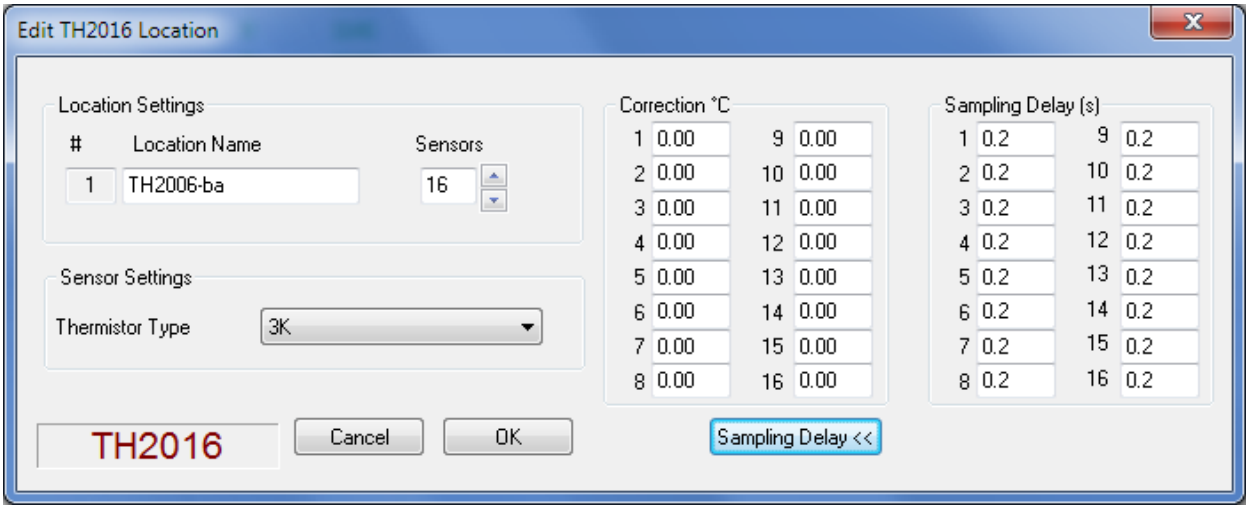


Figure 13 – Naming TH2016 Location

Enter in an appropriate location name. In this example the location is: *TH2006-ba*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

Select the number of temperature sensors (between 1 and 16) for this Readout location. One sensor can be connected to Readout terminals, 1 to 16 sensors can be connected to expansion connector. Select the appropriate *Thermistor Type*. If required, enter correction and sampling delay values for selected sensors. See section 13.1.2 for setting default sampling delay. Subsequent Locations can be created by repeating the above procedure.

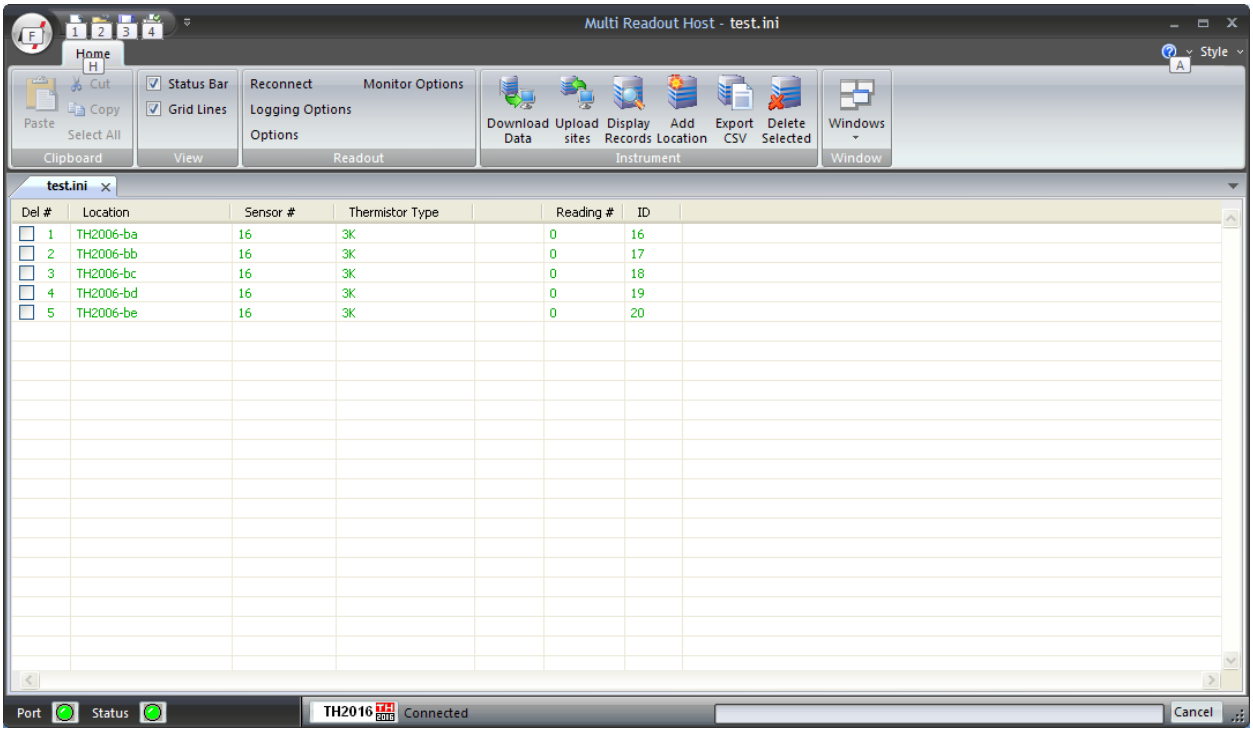


Figure 14 – Creating TH2016 Locations

Figure 14 shows five locations which have been created. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to TH2016 Reader. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

5.2 UPLOADING TH2016 SITE INFO

For the following procedures, it is assumed that the TH2016 Readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the TH2016 Host software to the Readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step.

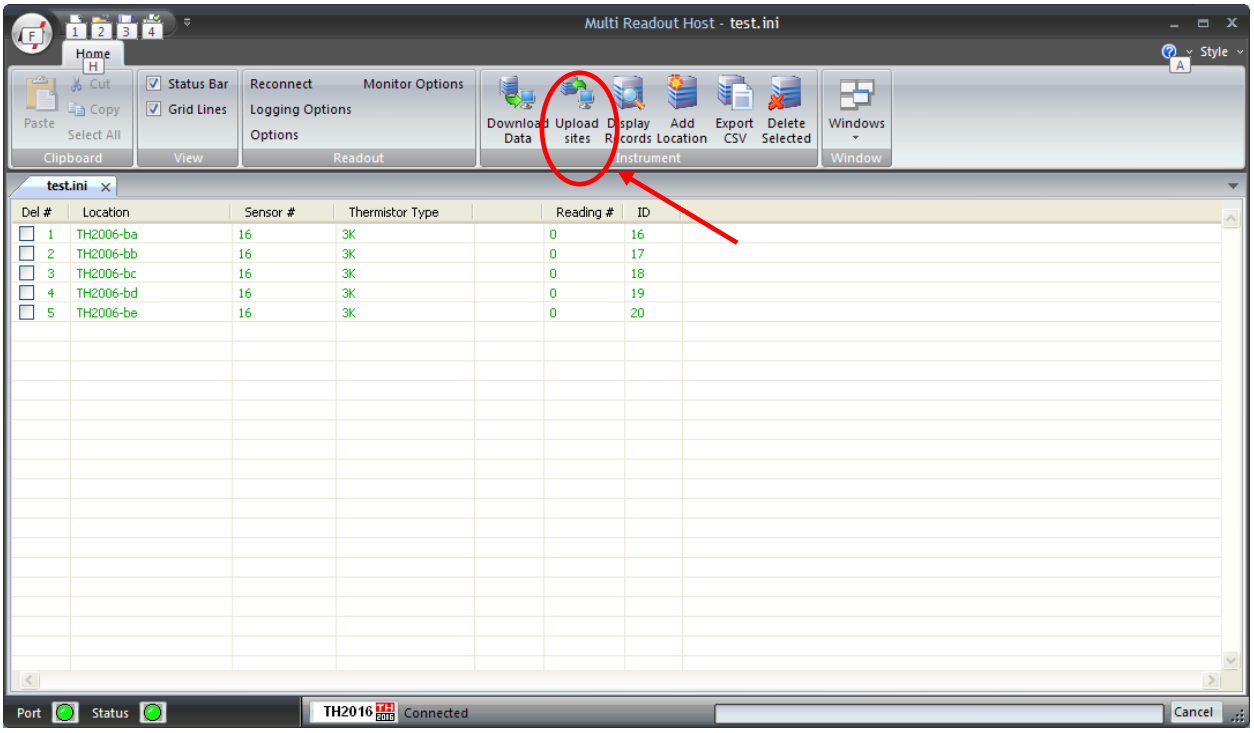


Figure 15 – Uploading TH2016 Sites

Note

Always press the **Upload Site Info** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

5.3 DOWNLOADING TH2016 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the TH2016 Readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

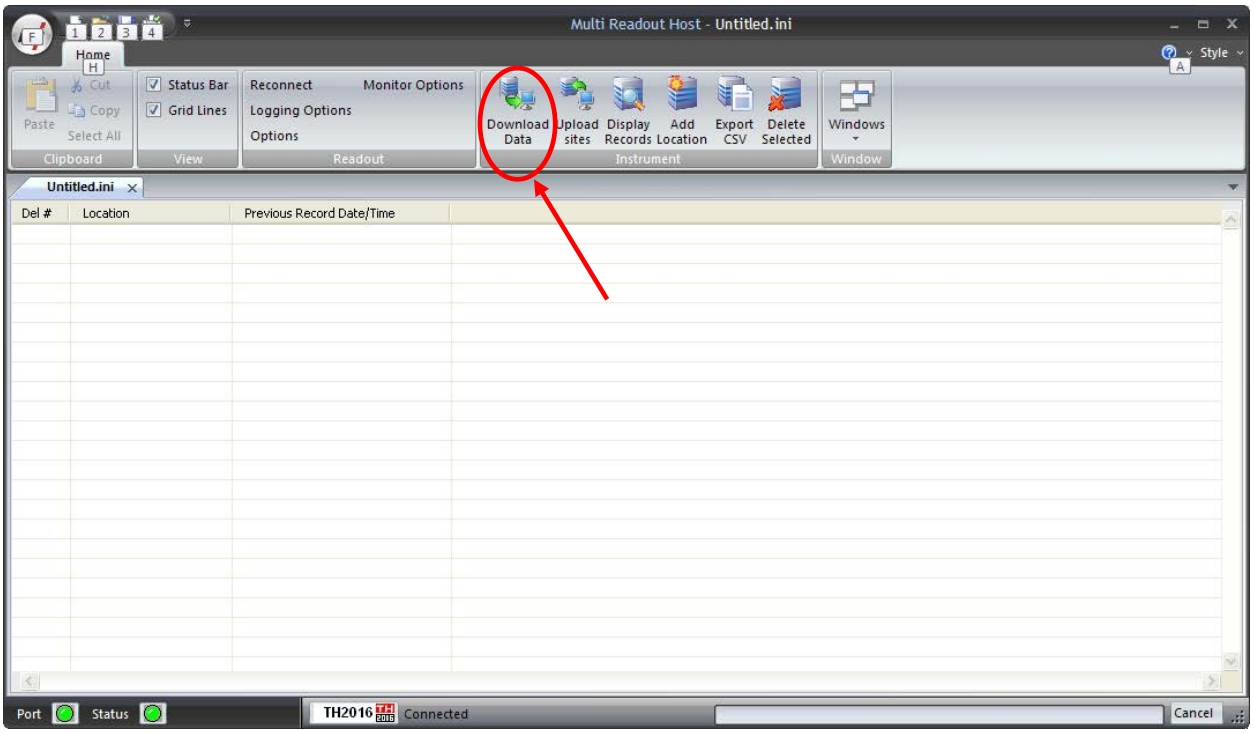


Figure 16 – Downloading TH2016 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

5.4 VIEWING TH2016 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the TH2016 Readout.

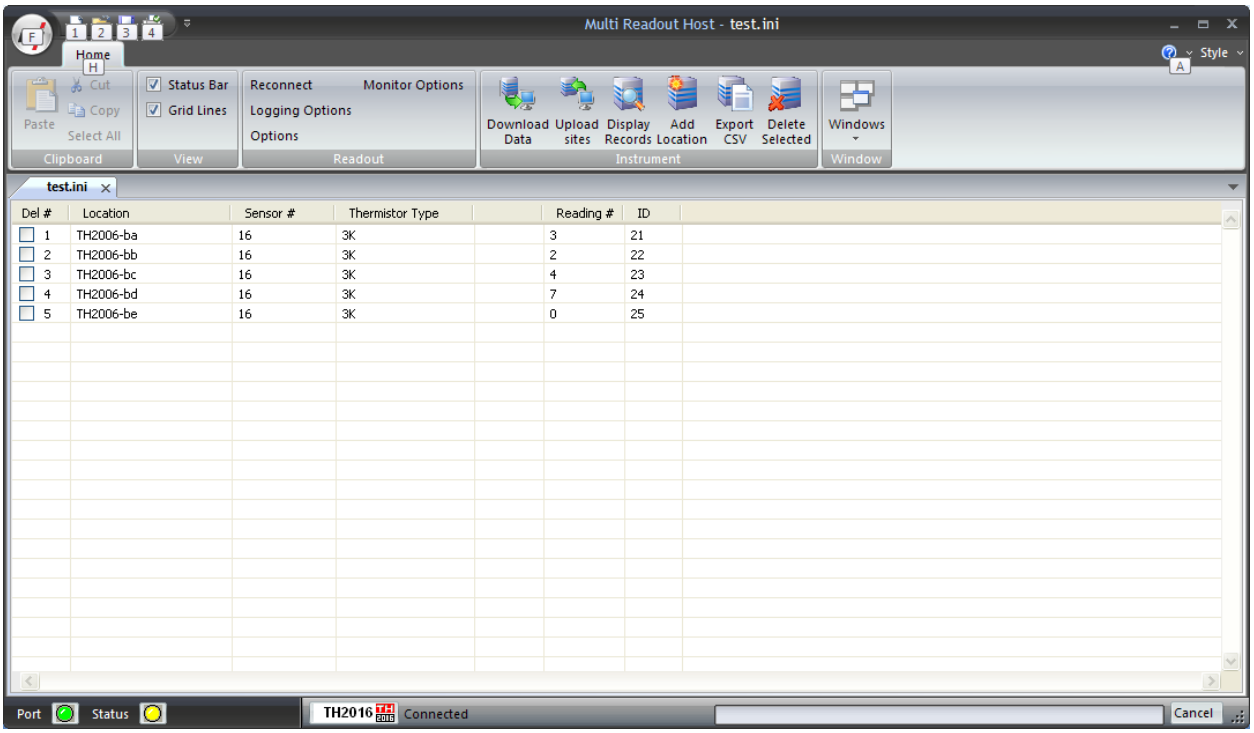


Figure 17 – Downloaded TH2016 Data

As shown above, the data is populated and includes Location label, Sensor number, Thermistor Type, and Number of saved readings for each location.

5.4.1 VIEWING TH2016 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

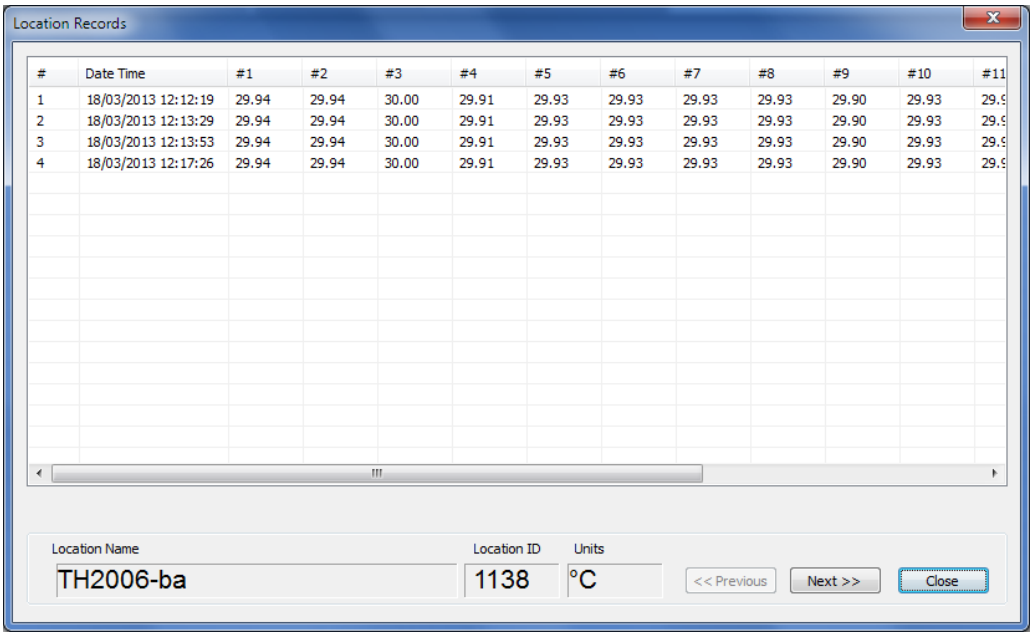


Figure 18 – TH2016 Location data display

6 MA7 READOUT

6.1 CREATING MA7 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

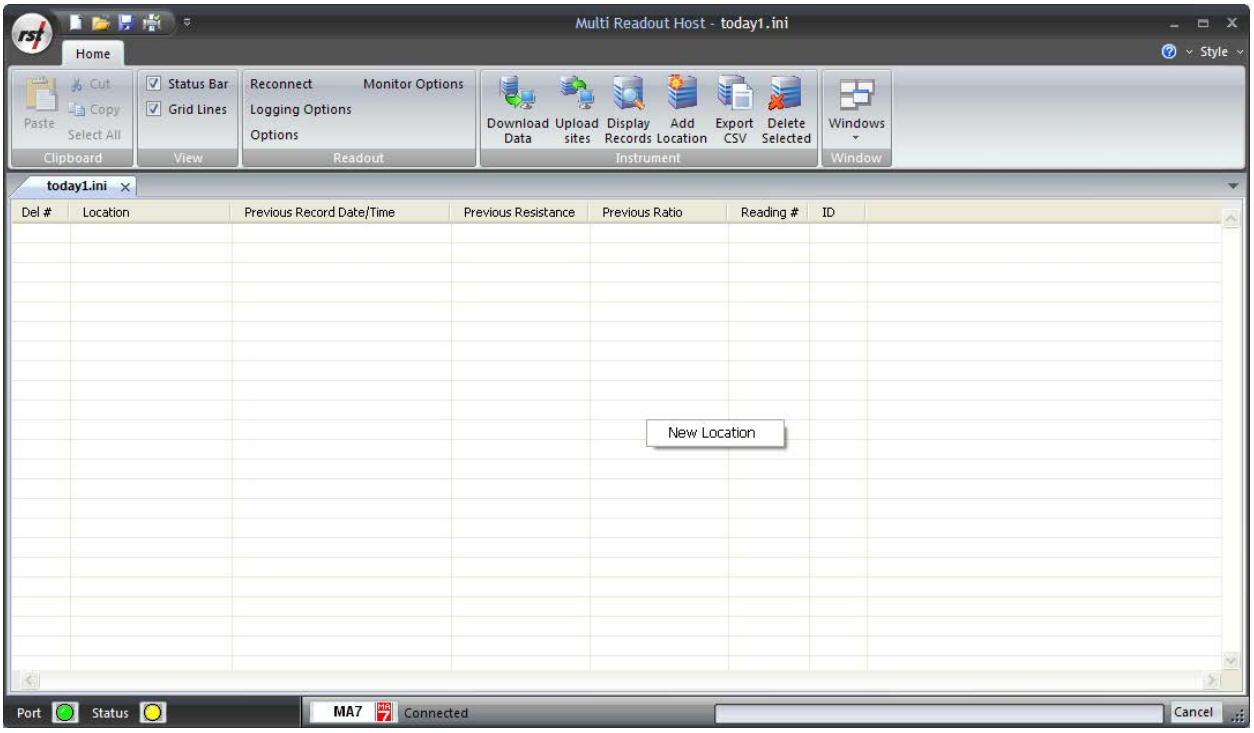


Figure 19 – Creating a New MA7 Site

Click on *New Location* and the following dialog box will appear:

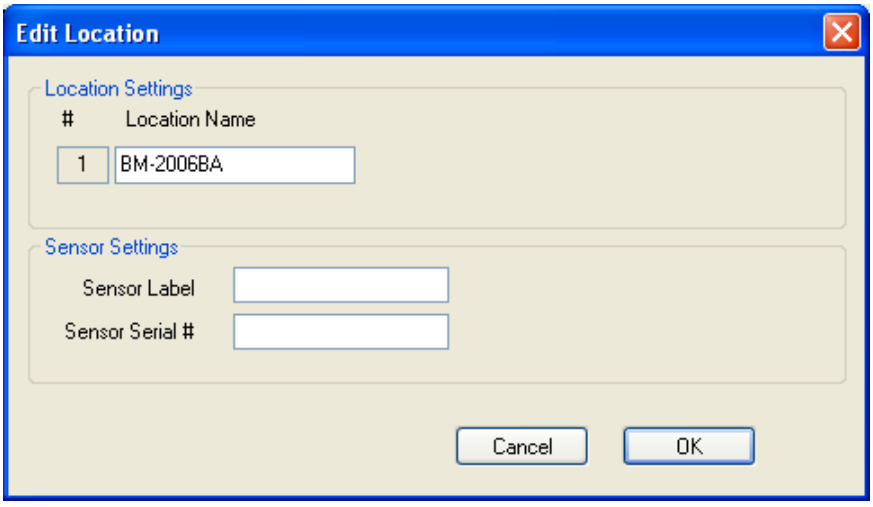


Figure 20 – Naming MA7 Location

Enter in an appropriate location name. In this example the location is: *BM2006-ba*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name. Optionally, each sensor can have individual name and serial number.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

Subsequent Locations can be created by repeating the above procedure.

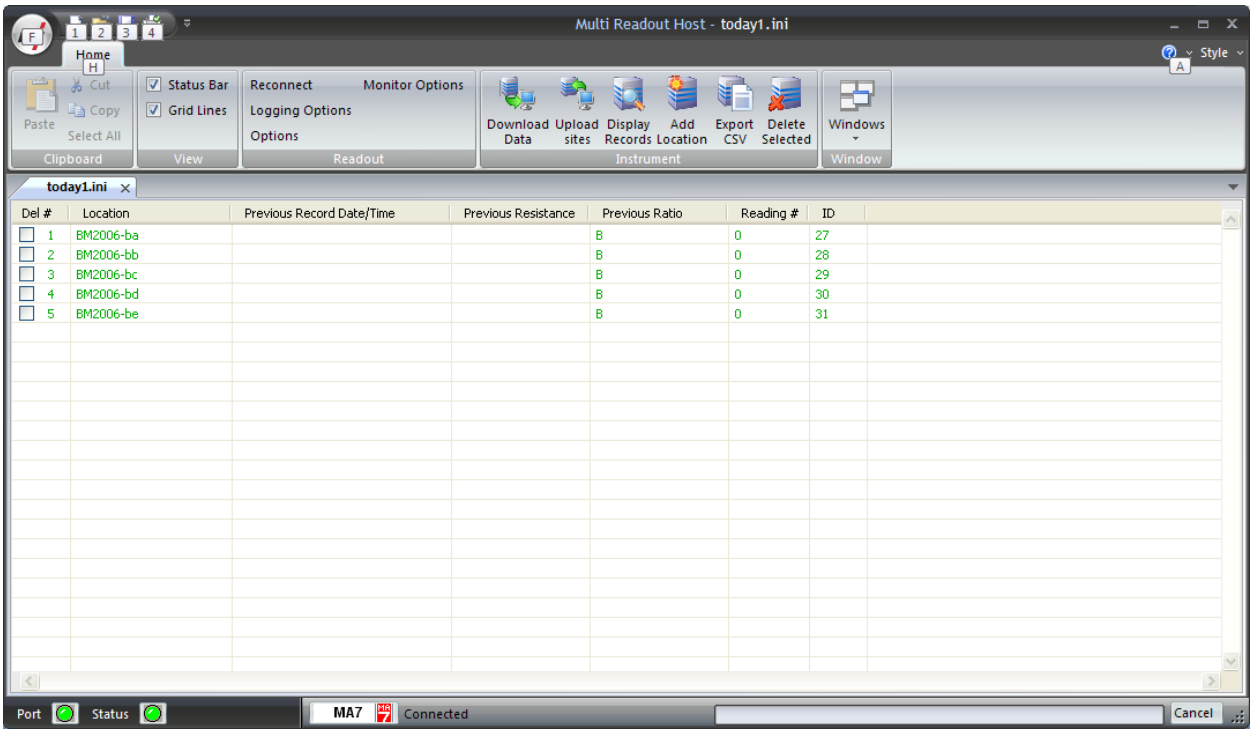


Figure 21 – Creating MA7 Locations

Figure 21 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

6.2 UPLOADING MA7 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

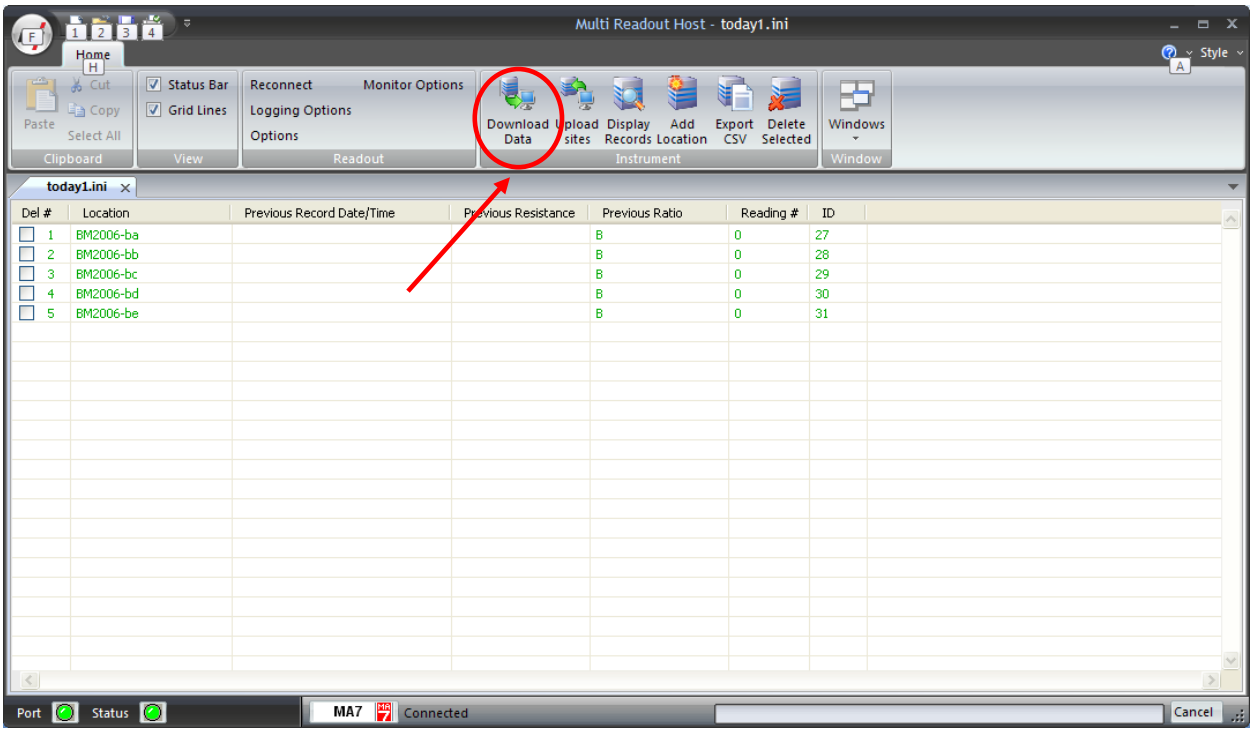


Figure 22 – Uploading MA7 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

6.3 DOWNLOADING MA7 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

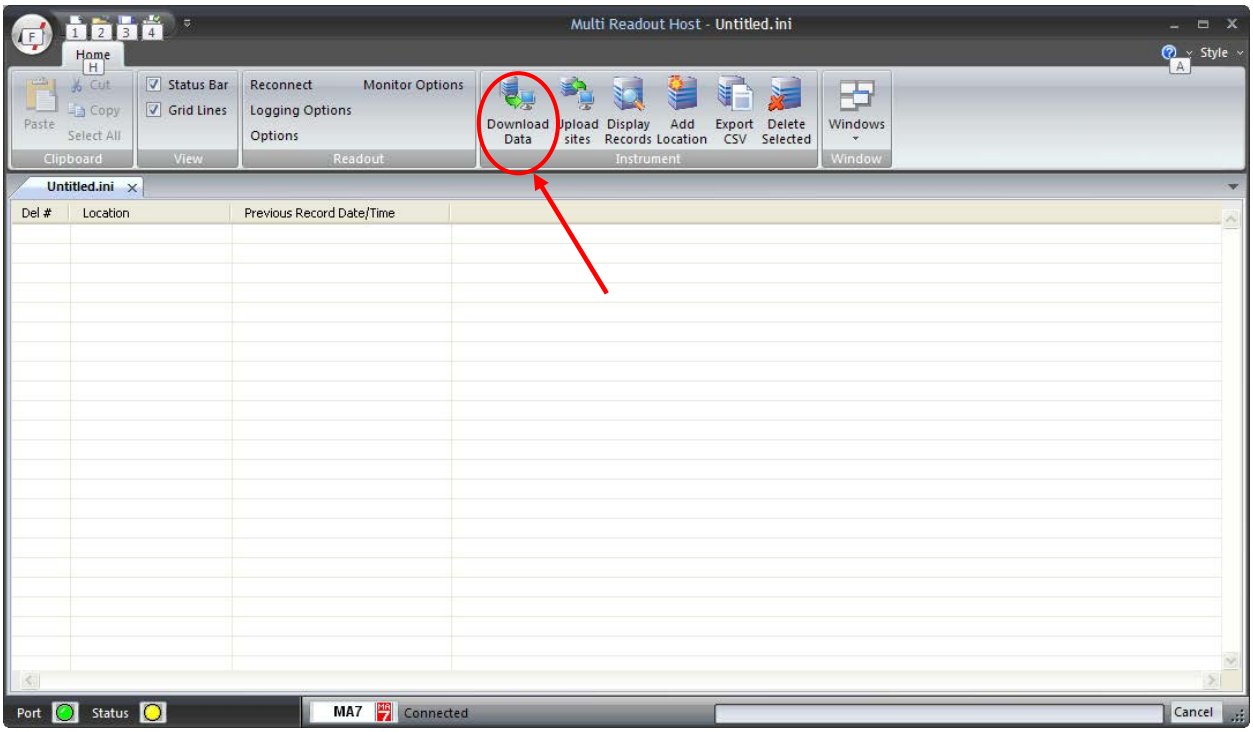


Figure 23 – Downloading MA7 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

6.4 VIEWING MA7 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

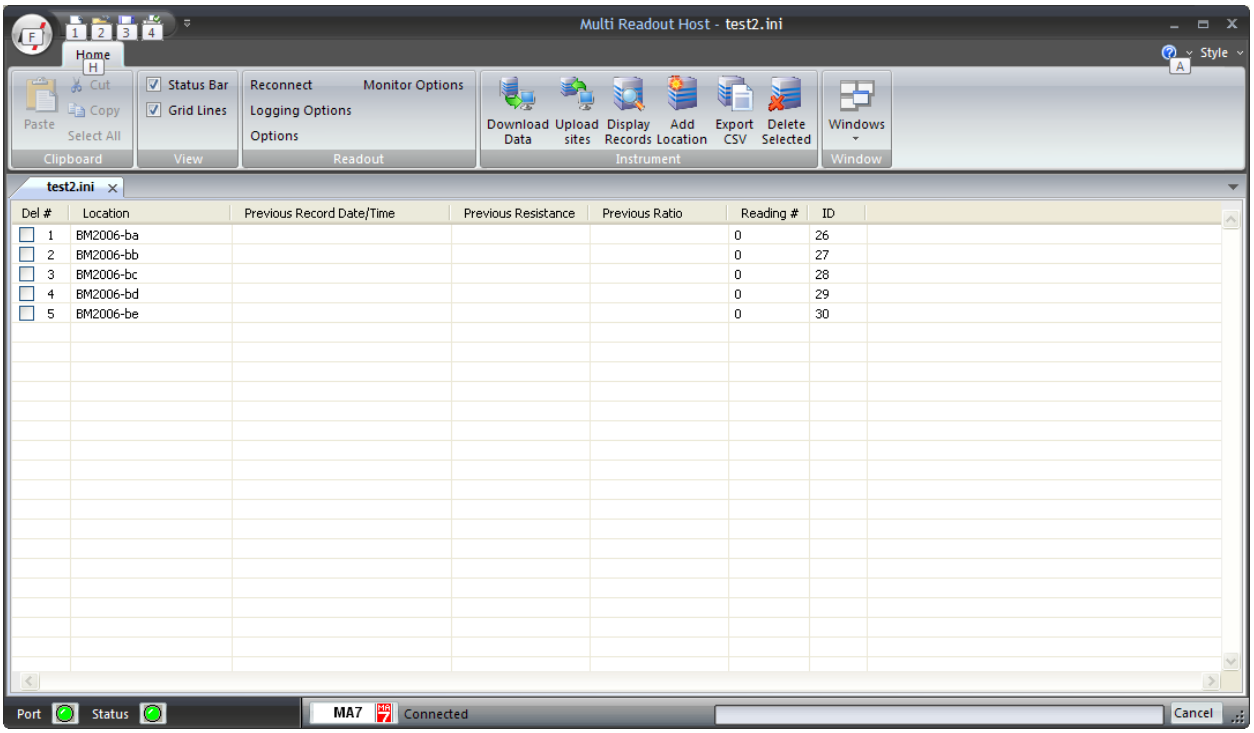
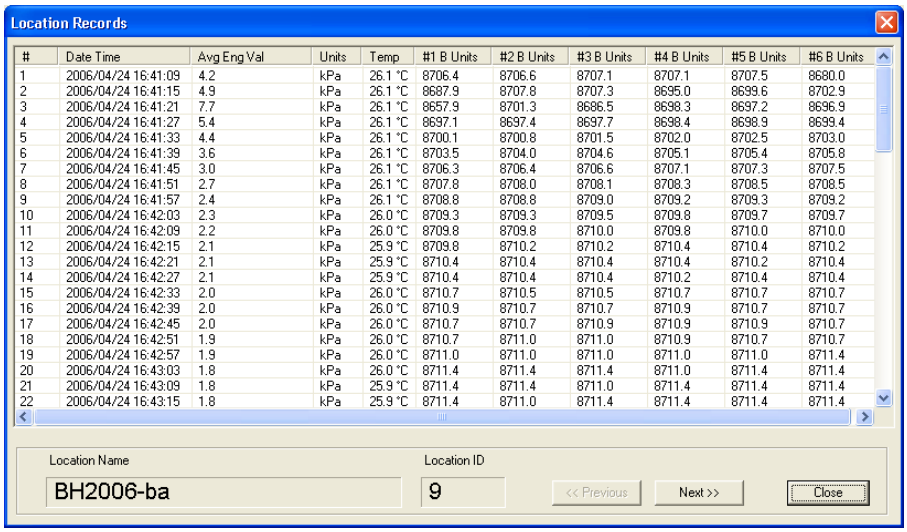


Figure 24 – Downloaded MA7 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

6.4.1 VIEWING MA7 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.



#	Date Time	Avg Eng Val	Units	Temp	#1 B Units	#2 B Units	#3 B Units	#4 B Units	#5 B Units	#6 B Units
1	2006/04/24 16:41:09	4.2	kPa	26.1 °C	8706.4	8706.6	8707.1	8707.1	8707.5	8680.0
2	2006/04/24 16:41:15	4.9	kPa	26.1 °C	8687.9	8707.8	8707.3	8695.0	8699.6	8702.9
3	2006/04/24 16:41:21	7.7	kPa	26.1 °C	8657.9	8701.3	8686.5	8698.3	8697.2	8696.9
4	2006/04/24 16:41:27	5.4	kPa	26.1 °C	8697.1	8697.4	8697.7	8698.4	8698.9	8699.4
5	2006/04/24 16:41:33	4.4	kPa	26.1 °C	8700.1	8700.8	8701.5	8702.0	8702.5	8703.0
6	2006/04/24 16:41:39	3.6	kPa	26.1 °C	8703.5	8704.0	8704.6	8705.1	8705.4	8705.8
7	2006/04/24 16:41:45	3.0	kPa	26.1 °C	8706.3	8706.4	8706.6	8707.1	8707.3	8707.5
8	2006/04/24 16:41:51	2.7	kPa	26.1 °C	8707.8	8708.0	8708.1	8708.3	8708.5	8708.5
9	2006/04/24 16:41:57	2.4	kPa	26.1 °C	8708.8	8708.8	8709.0	8709.2	8709.3	8709.2
10	2006/04/24 16:42:03	2.3	kPa	26.0 °C	8709.3	8709.3	8709.5	8709.8	8709.7	8709.7
11	2006/04/24 16:42:09	2.2	kPa	26.0 °C	8709.8	8709.8	8710.0	8709.8	8710.0	8710.0
12	2006/04/24 16:42:15	2.1	kPa	25.9 °C	8709.8	8710.2	8710.2	8710.4	8710.4	8710.2
13	2006/04/24 16:42:21	2.1	kPa	25.9 °C	8710.4	8710.4	8710.4	8710.4	8710.2	8710.4
14	2006/04/24 16:42:27	2.1	kPa	25.9 °C	8710.4	8710.4	8710.4	8710.2	8710.4	8710.4
15	2006/04/24 16:42:33	2.0	kPa	26.0 °C	8710.7	8710.5	8710.5	8710.7	8710.7	8710.7
16	2006/04/24 16:42:39	2.0	kPa	26.0 °C	8710.9	8710.7	8710.7	8710.9	8710.7	8710.7
17	2006/04/24 16:42:45	2.0	kPa	26.0 °C	8710.7	8710.7	8710.9	8710.9	8710.9	8710.7
18	2006/04/24 16:42:51	1.9	kPa	26.0 °C	8710.7	8711.0	8711.0	8710.9	8710.7	8710.7
19	2006/04/24 16:42:57	1.9	kPa	26.0 °C	8711.0	8711.0	8711.0	8711.0	8711.0	8711.4
20	2006/04/24 16:43:03	1.8	kPa	26.0 °C	8711.4	8711.4	8711.4	8711.0	8711.4	8711.4
21	2006/04/24 16:43:09	1.8	kPa	25.9 °C	8711.4	8711.4	8711.0	8711.4	8711.4	8711.4
22	2006/04/24 16:43:15	1.8	kPa	25.9 °C	8711.4	8711.0	8711.4	8711.4	8711.4	8711.4

Figure 25 – MA7 Location Data Display

7 QB120 READOUT

7.1 CREATING QB120 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

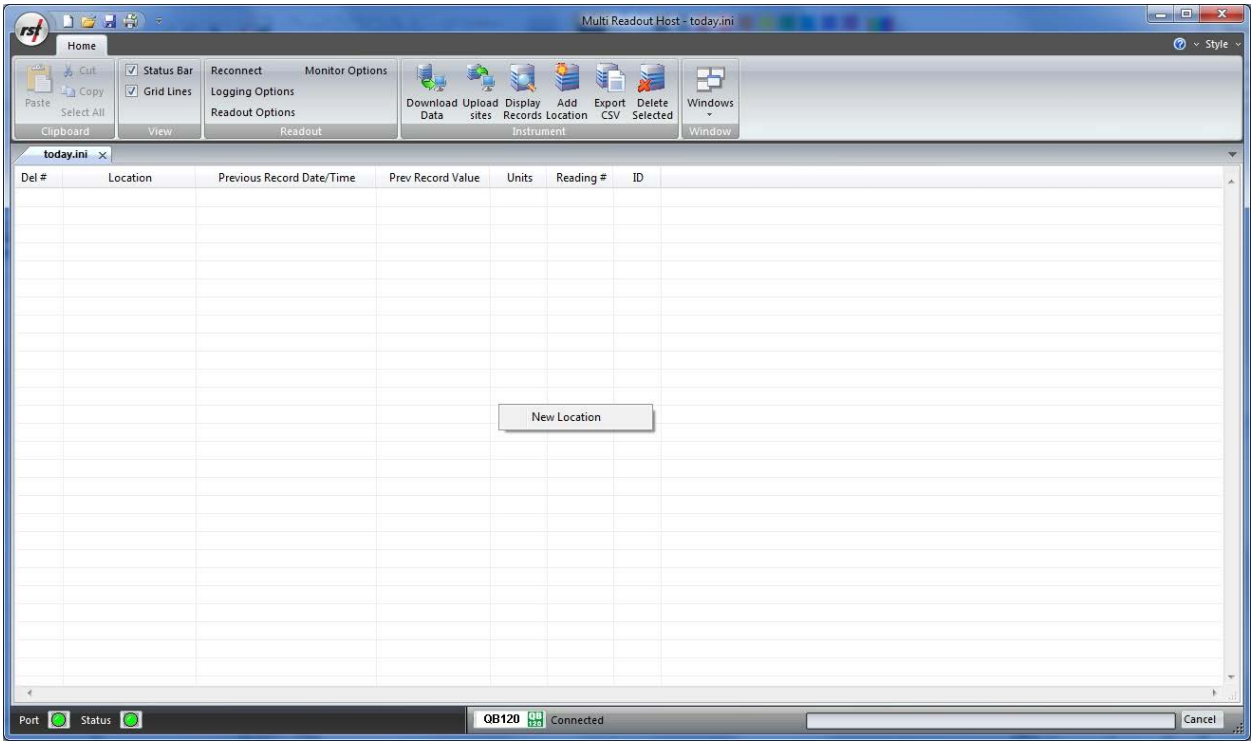


Figure 26 – Creating a New QB120 Site

Click on *New Location* and the following dialog box will appear:

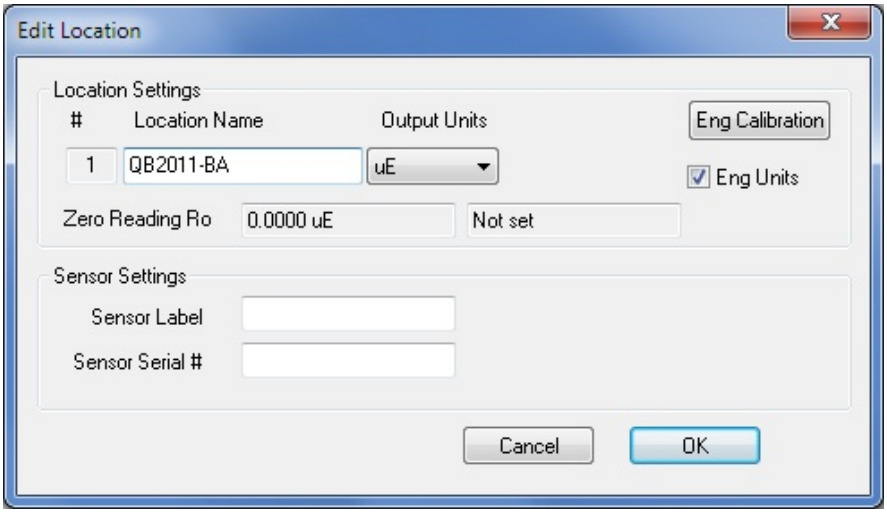


Figure 27 – Naming QB120 Location

Enter in an appropriate location name. In this example the location is: *BH2005-ba*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name. Optionally, each sensor can have individual name and serial number.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

The *Eng Calibration* and *Advanced* functions are explained in section 7.5 Advanced settings. Subsequent Locations can be created by repeating the above procedure.

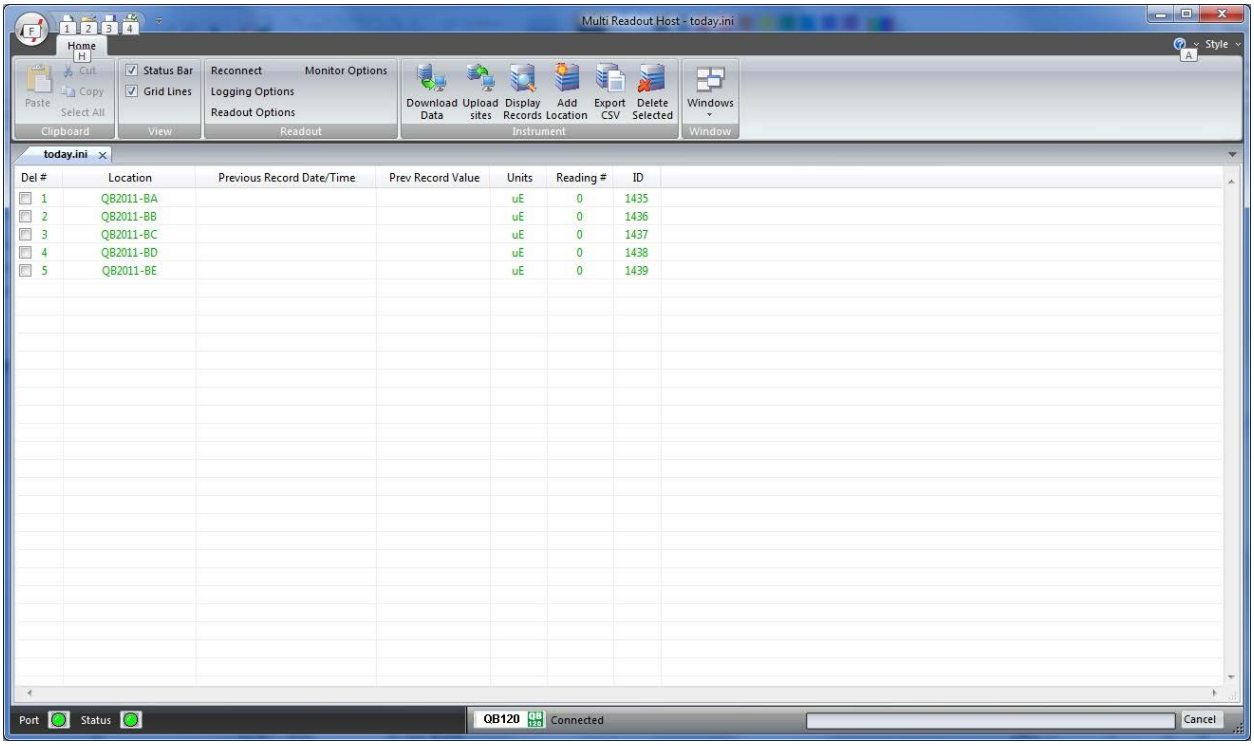


Figure 28 – Creating QB120 Locations

Figure 28 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

7.2 UPLOADING QB120 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

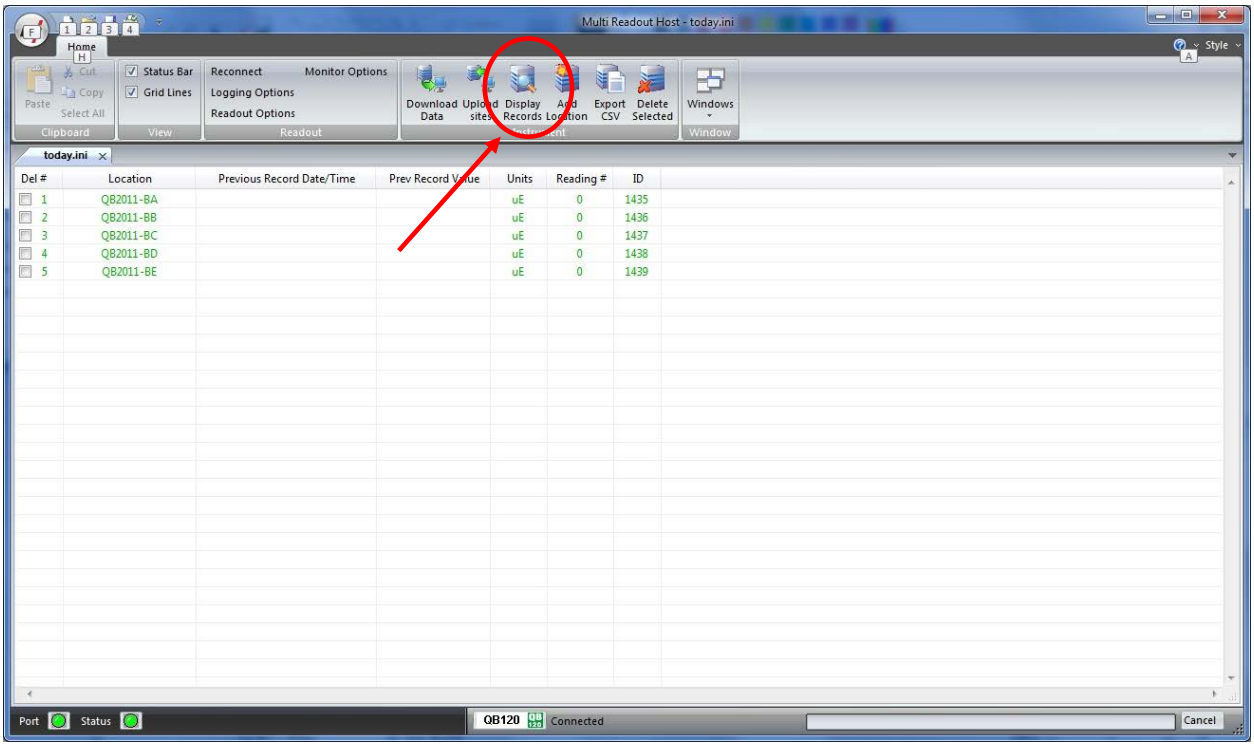


Figure 29 – Uploading QB120 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

7.3 DOWNLOADING QB120 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

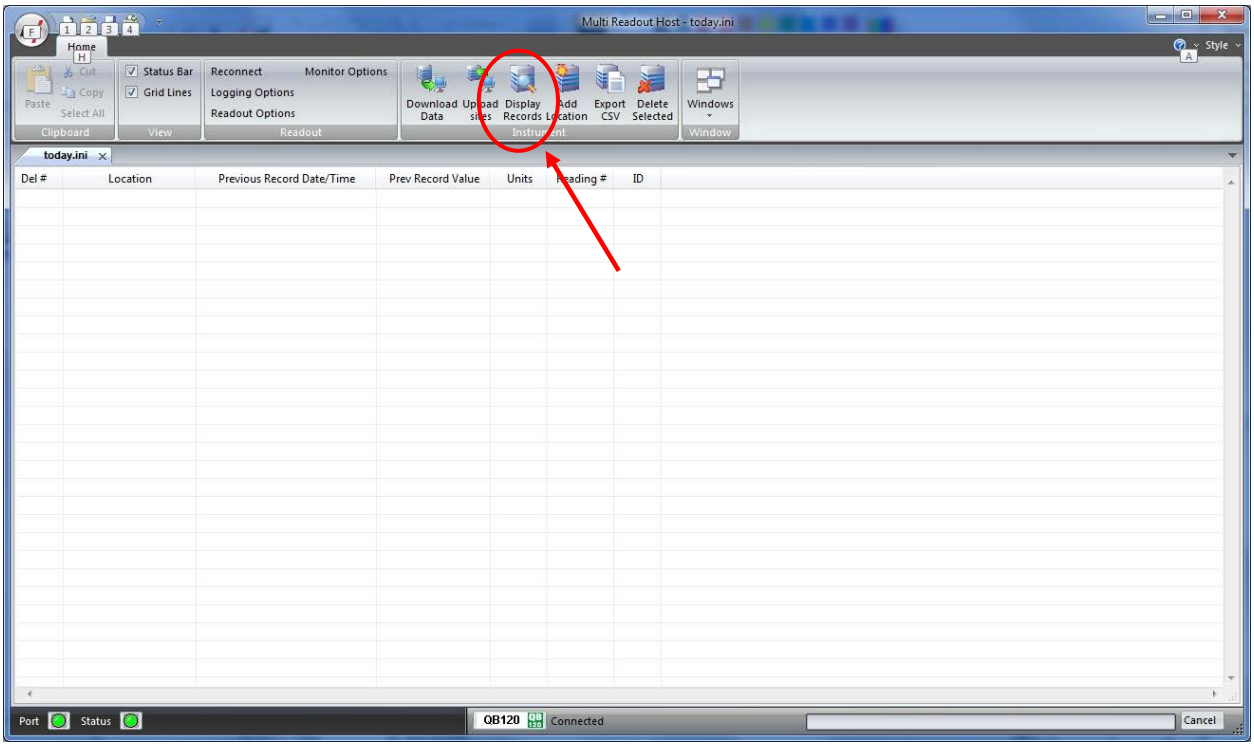


Figure 30 – Downloading QB120 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

7.4 VIEWING QB120 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

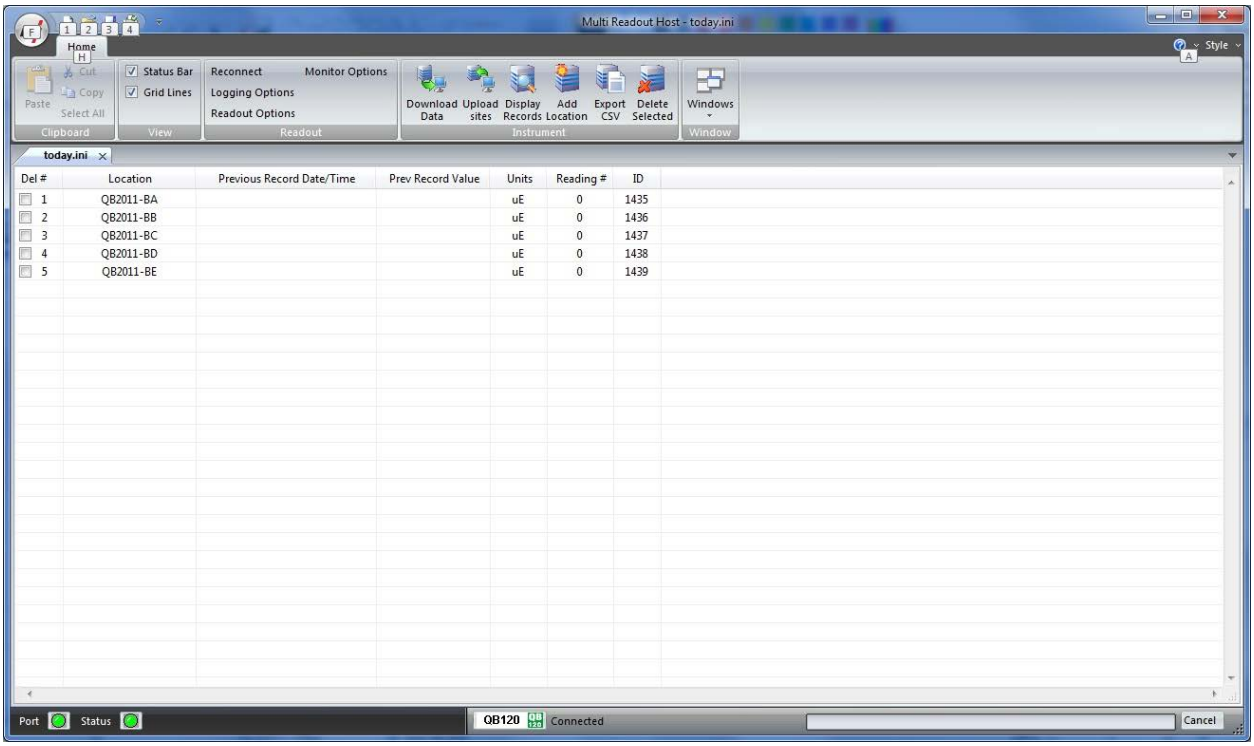


Figure 31 – Downloaded QB120 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

7.4.1 VIEWING QB120 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

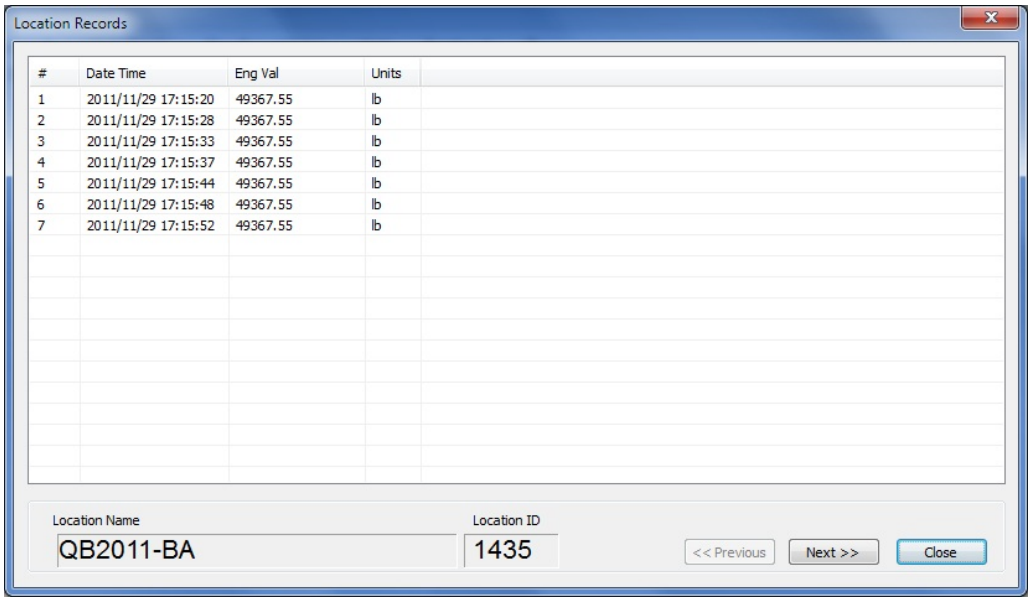


Figure 32 – QB120 Location Data Display

7.5 ADVANCED QB120 SETTINGS

7.5.1 ENGINEERING UNITS

Often the user may wish to report the readings directly in engineering units, rather than uE-units. Data required for the conversion to engineering units is always found on the calibration sheets for the transducer.

Each transducer is shipped from the factory with a calibration sheet. If you have not received a calibration sheet, or the sheet has been lost, please contact RST Instruments and a copy will be faxed or e-mailed to you.

Engineering units conversion settings can be modified using the *Eng Calibration* dialog box shown in Figure 33. Access to this dialog box is provided from *Edit Location* dialog box.

Conversion Method

The user is given an option to apply a *Linear* Conversion. Input the provided Calibration Factor into the appropriate box.

The option is also given to modify the zero reading.

Equation used for calculations is shown for a reference.

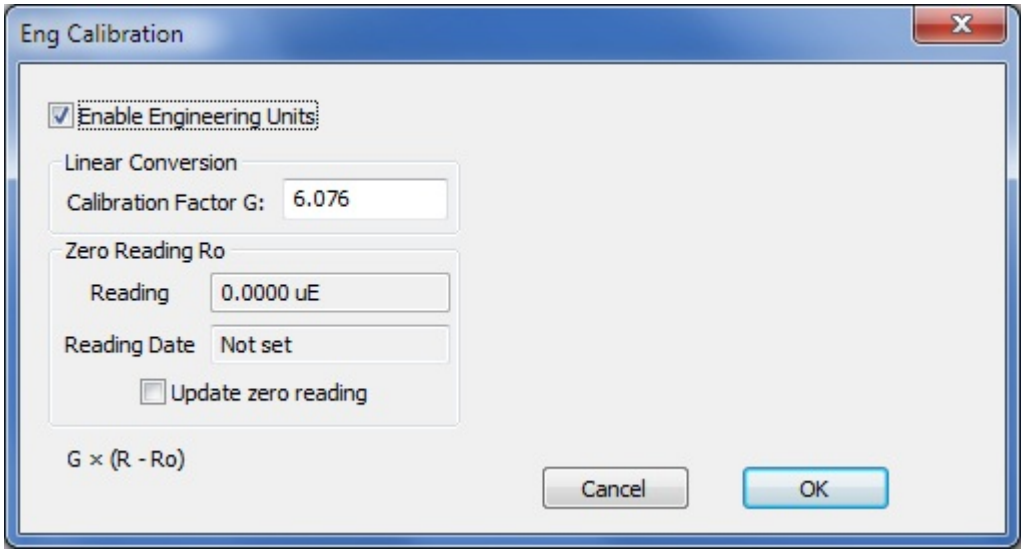


Figure 33 – Engineering Units settings

Important
Whenever **ANY** changes are made on the Engineering Units screen or Edit Location dialog box, the *Upload Site Info* button must be pressed in order to update the readout with new information.

8 SG350 READOUT

8.1 CREATING SG350 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

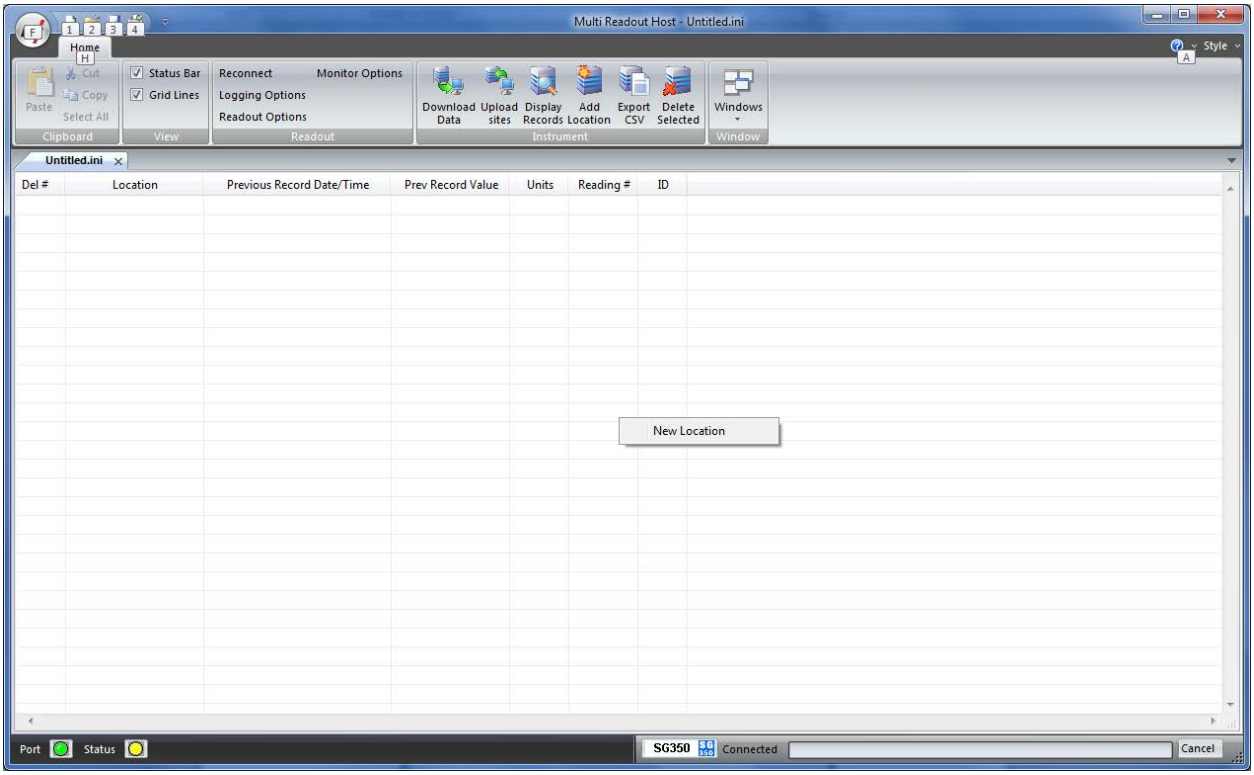


Figure 34 – Creating a New SG350 Site

Click on *New Location* and the following dialog box will appear:

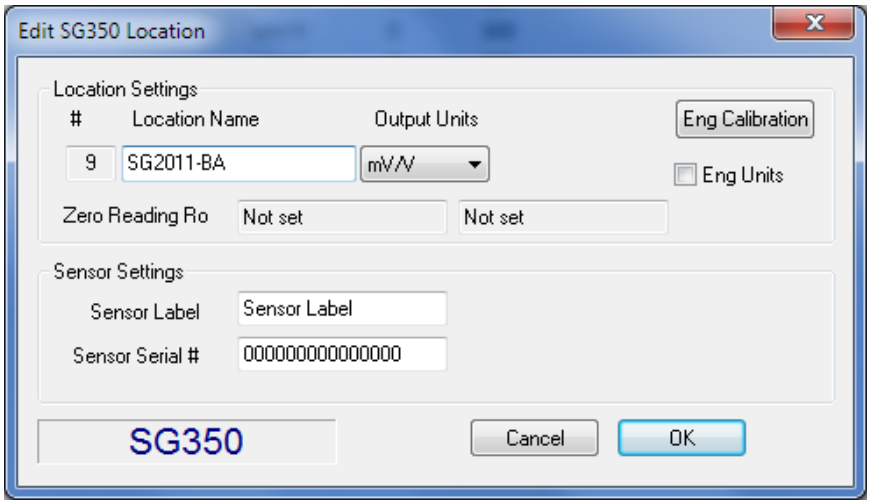


Figure 35 – Naming SG350 Location

Enter in an appropriate location name. In this example the location is: SG*2011-BA*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name. Optionally, each sensor can have individual name and serial number.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

The *Eng Calibration* and *Advanced* functions are explained in section 8.5 Advanced settings. Subsequent Locations can be created by repeating the above procedure.

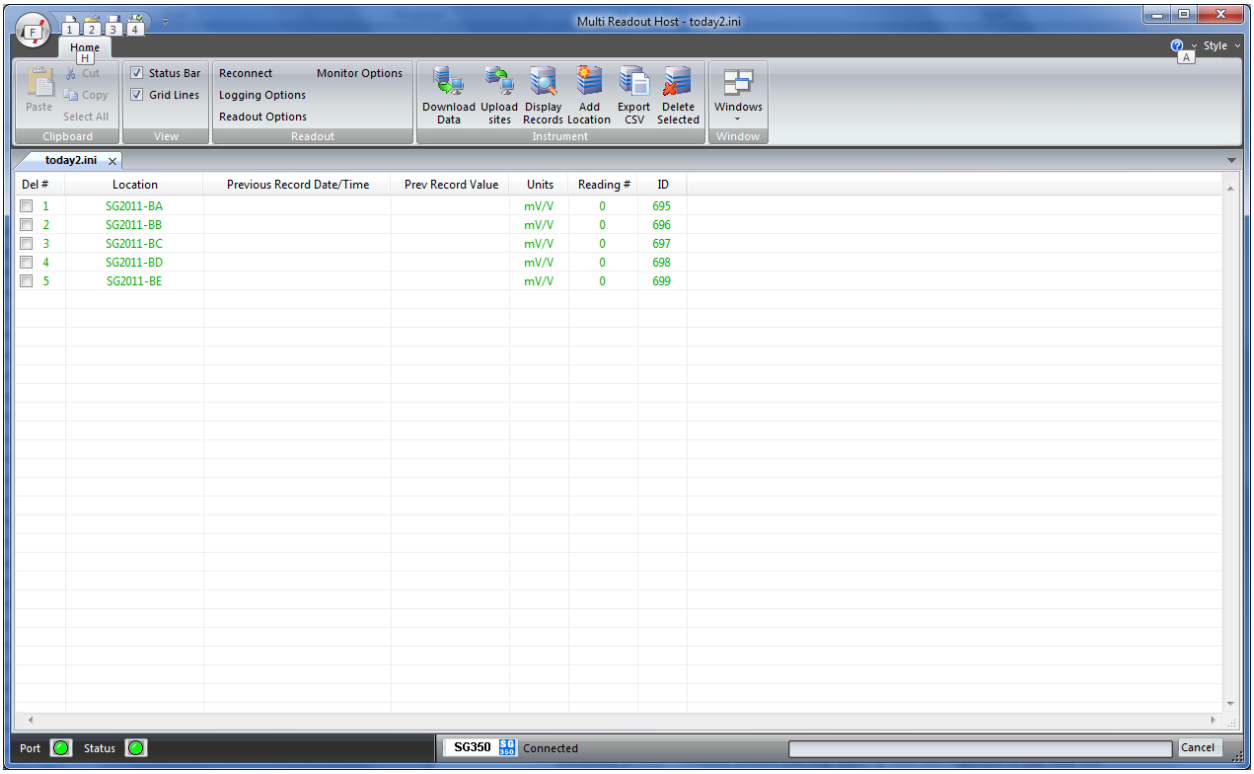


Figure 36 – Creating SG350 Locations

Figure 36 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

8.2 UPLOADING SG350 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

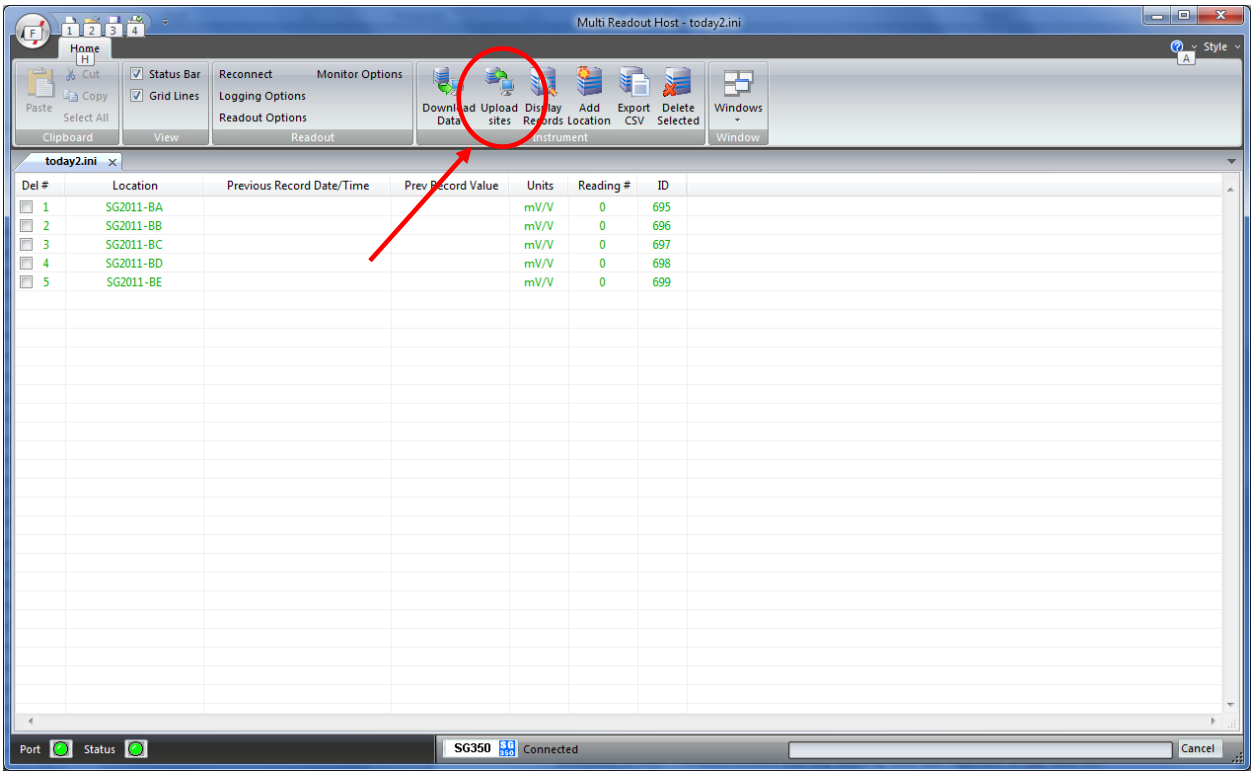


Figure 37 – Uploading SG350 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

8.3 DOWNLOADING SG350 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

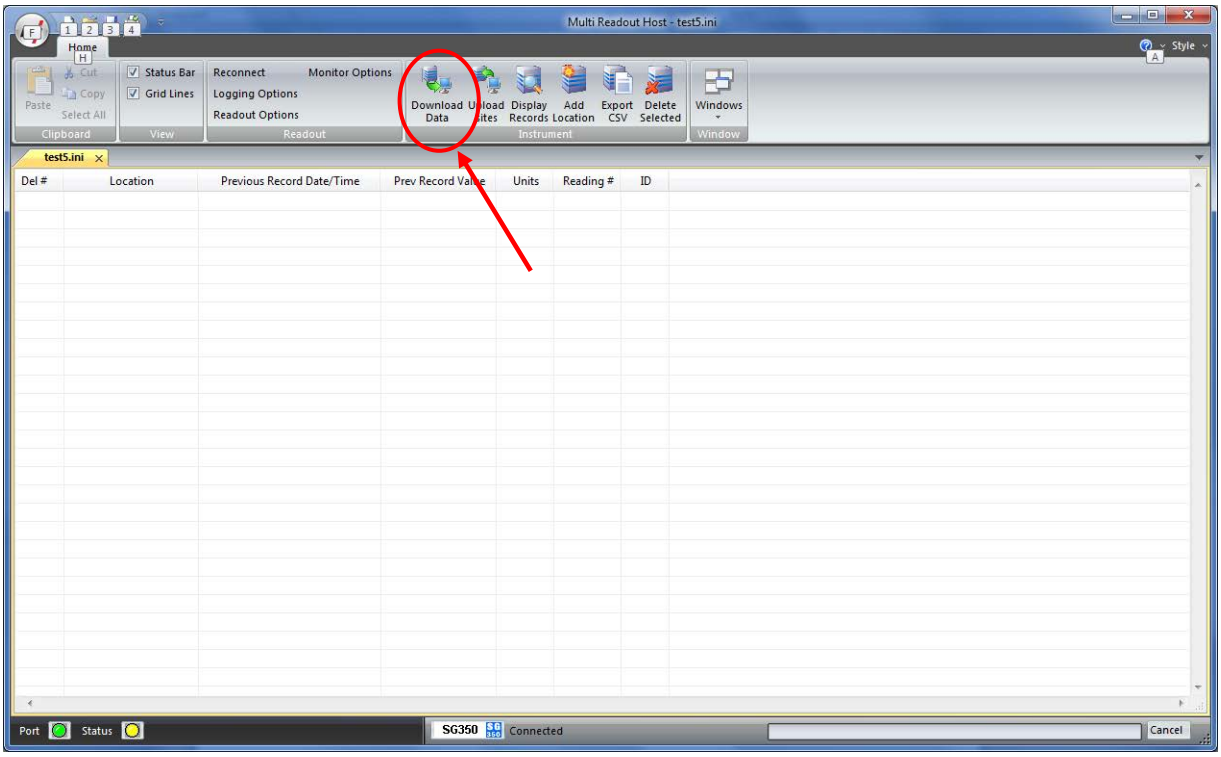


Figure 38 – Downloading SG350 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

8.4 VIEWING SG350 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

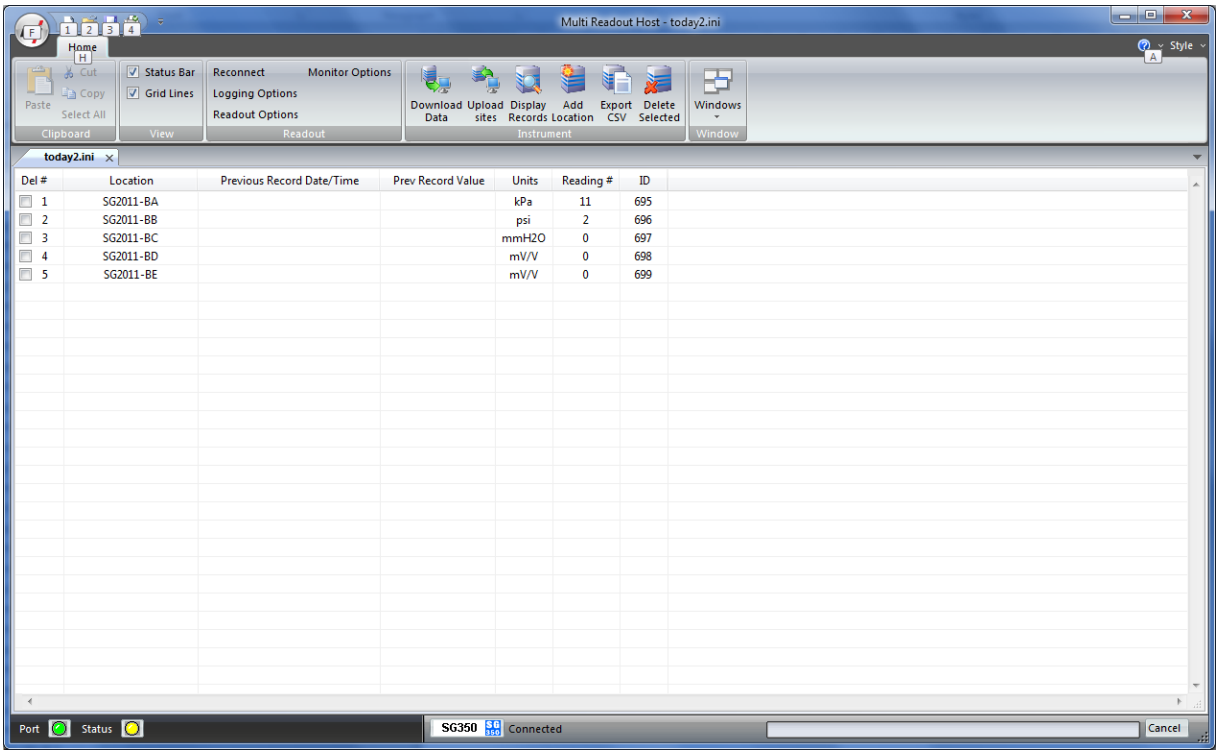


Figure 39 – Downloaded SG350 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

8.4.1 VIEWING SG35 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

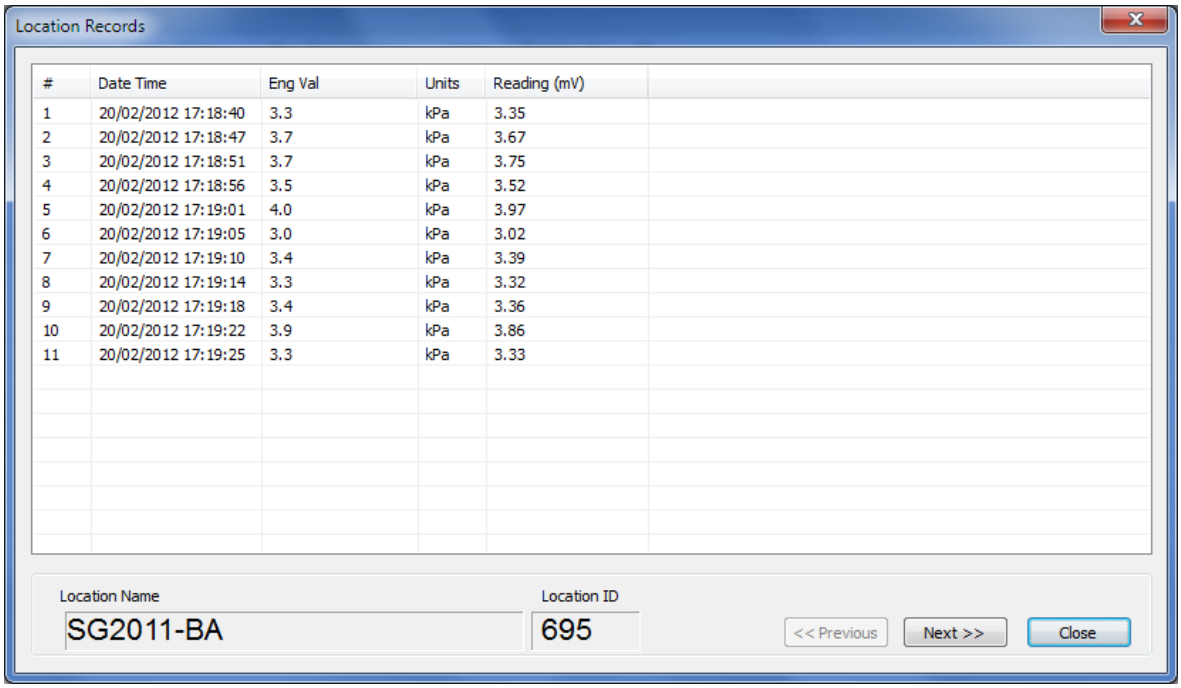


Figure 40 – SG350 Location Data Display

8.5 ADVANCED SG350 SETTINGS

8.5.1 ENGINEERING UNITS

Often the user may wish to report the readings directly in engineering units, rather than mV/V-units. Data required for the conversion to engineering units is always found on the calibration sheets for the transducer.

Each transducer is shipped from the factory with a calibration sheet. If you have not received a calibration sheet, or the sheet has been lost, please contact RST Instruments and a copy will be faxed or e-mailed to you.

Engineering units conversion settings can be modified using the *Eng Calibration* dialog box shown in Figure 41. Access to this dialog box is provided from *Edit Location* dialog box.

Conversion Method

The user is given two options to apply a Linear Conversion:

- Coefficient Input, enter Calibration Factor BM and Zero Reading CZ.
- Range Input. Input voltage vrnge and engineering calibration limits into appropriate boxes.

The option is also given to modify the sensor offset.

Equation used for calculations is shown for a reference.

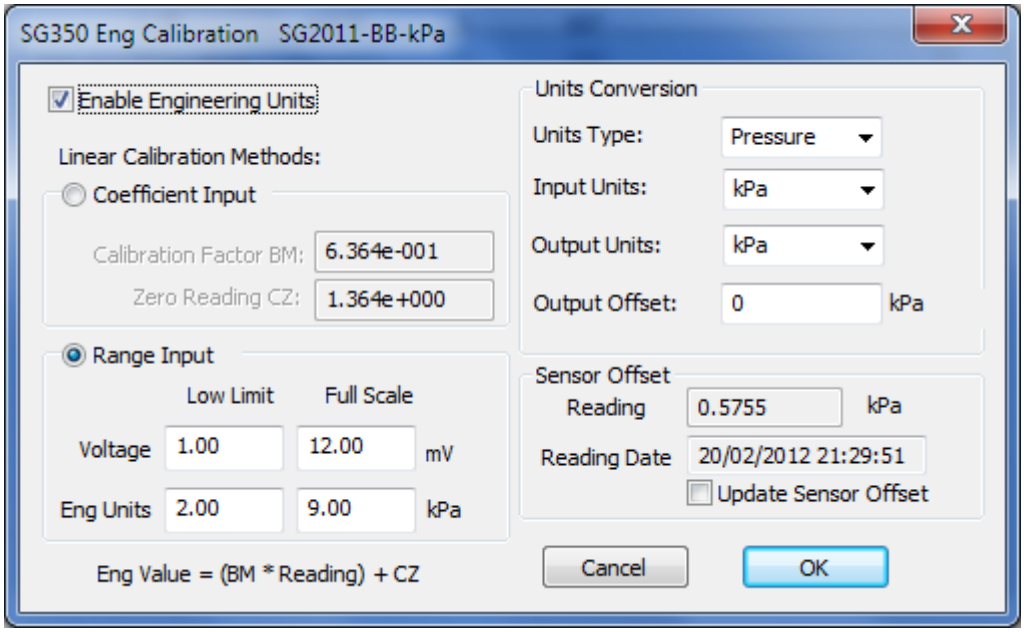


Figure 41 – Engineering Units settings

Important

Whenever **ANY** changes are made on the Engineering Units screen or Edit Location dialog box, the *Upload Site Info* button must be pressed in order to update the readout with new information.

9 IR420 READOUT

9.1 CREATING IR420 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

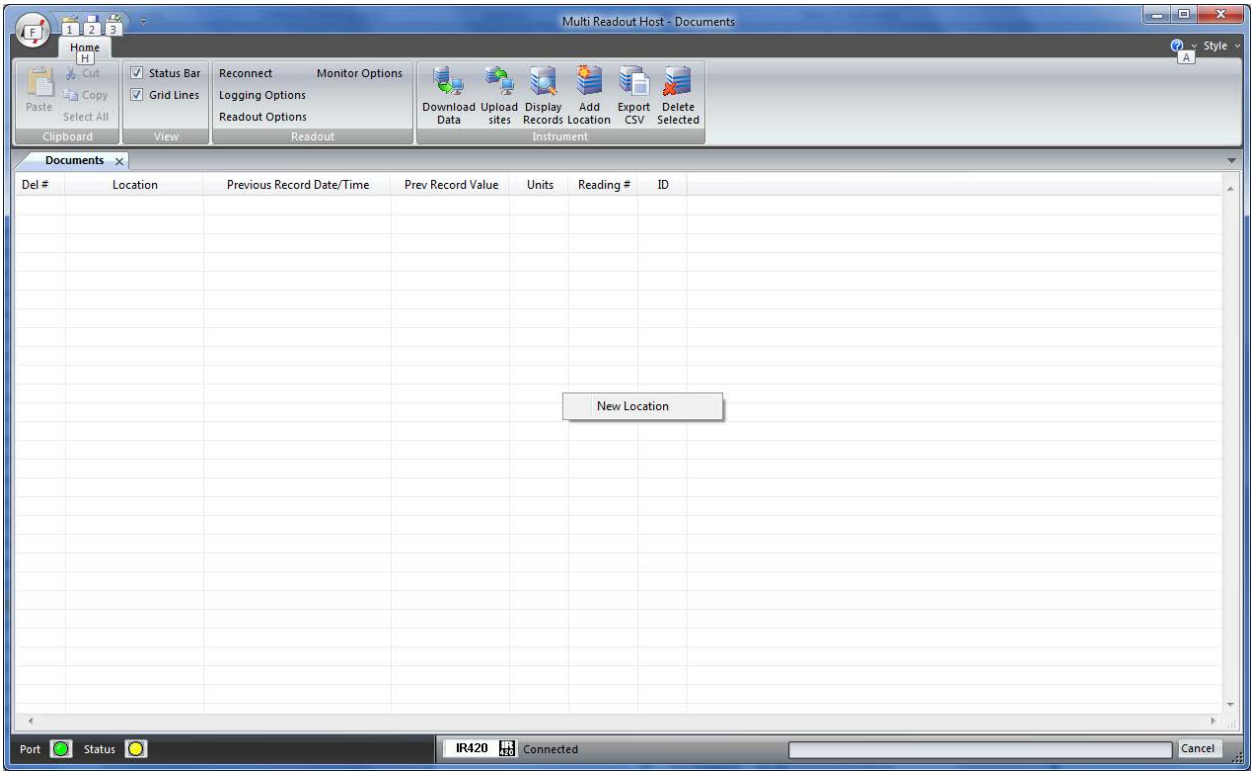


Figure 42 – Creating a New IR420 Site

Click on *New Location* and the following dialog box will appear:

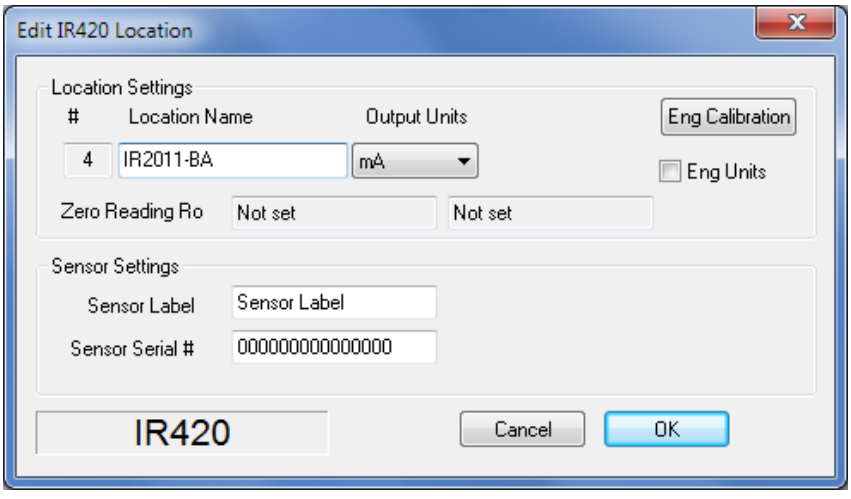


Figure 43 – Naming IR420 Location

Enter in an appropriate location name. In this example the location is: IR*2011-BA*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name. Optionally, each sensor can have individual name and serial number.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

The *Eng Calibration* and *Advanced* functions are explained in section 9.5 Advanced settings. Subsequent Locations can be created by repeating the above procedure.

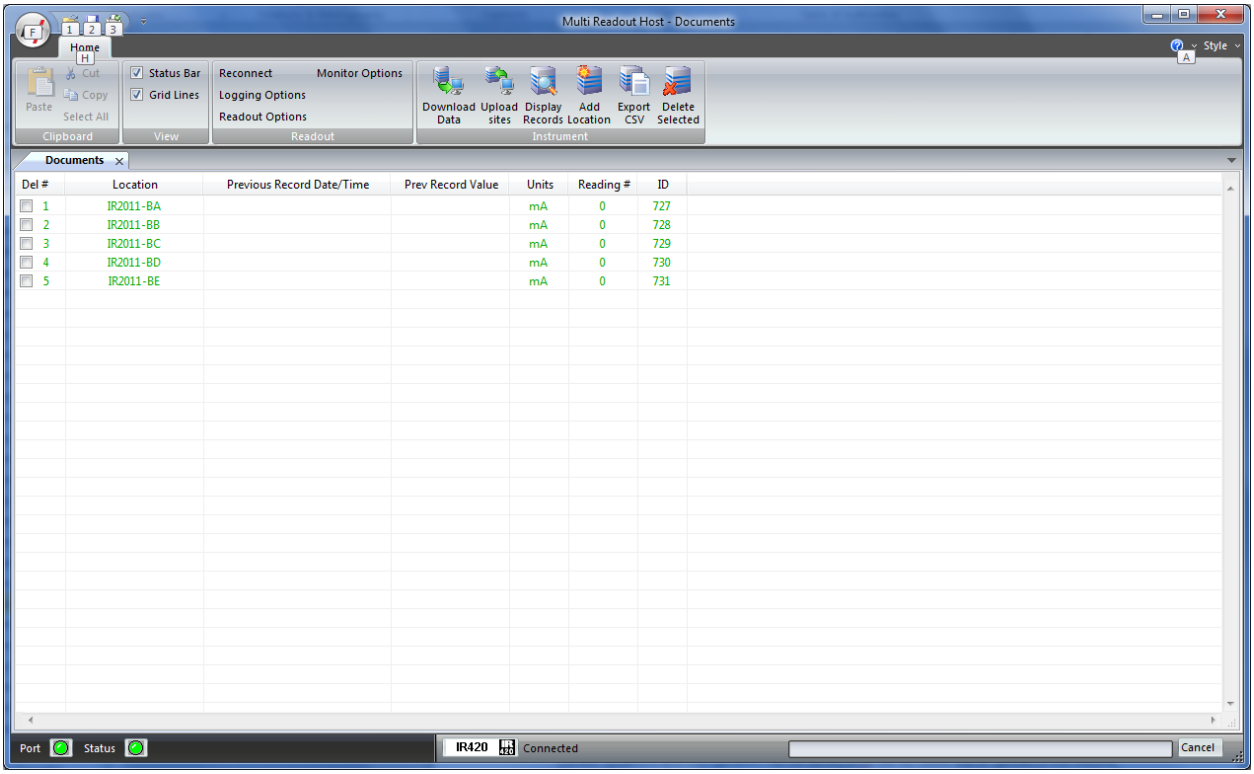


Figure 44 – Creating IR420 Locations

Figure 44 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

9.2 UPLOADING IR420 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

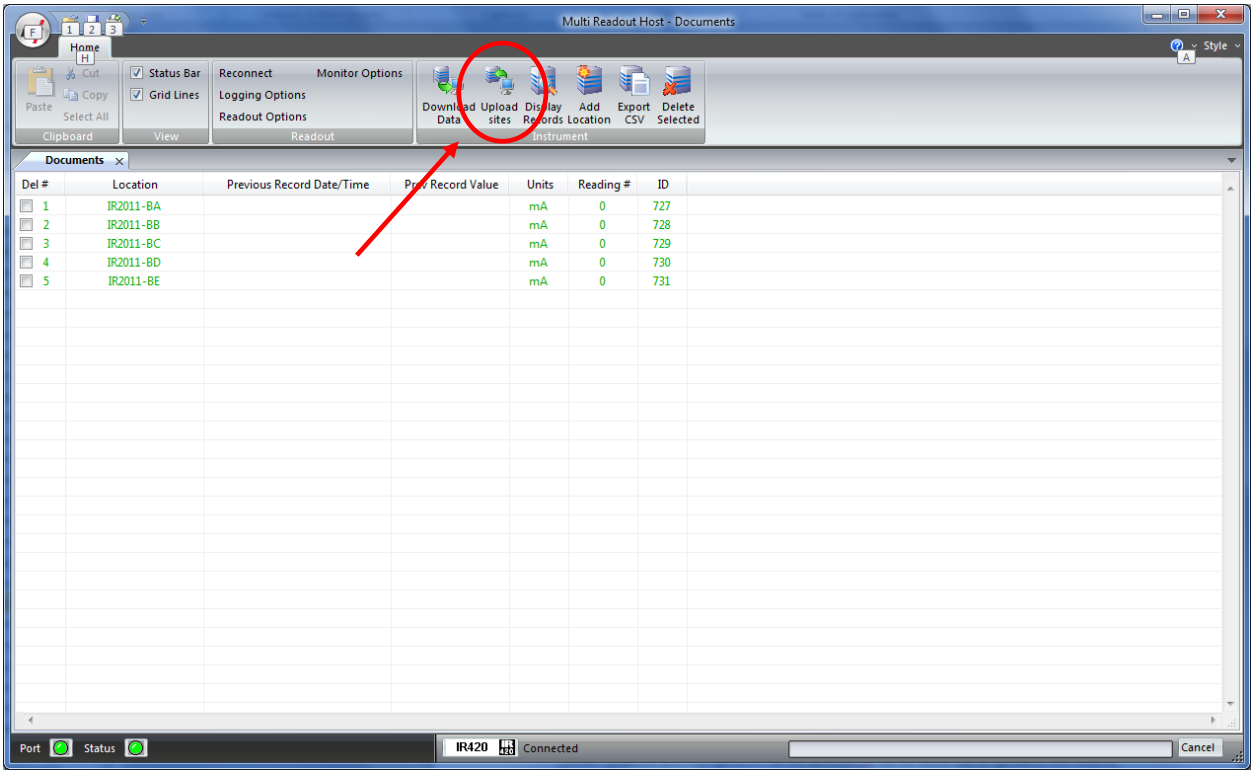


Figure 45 – Uploading IR420 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

9.3 DOWNLOADING IR420 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

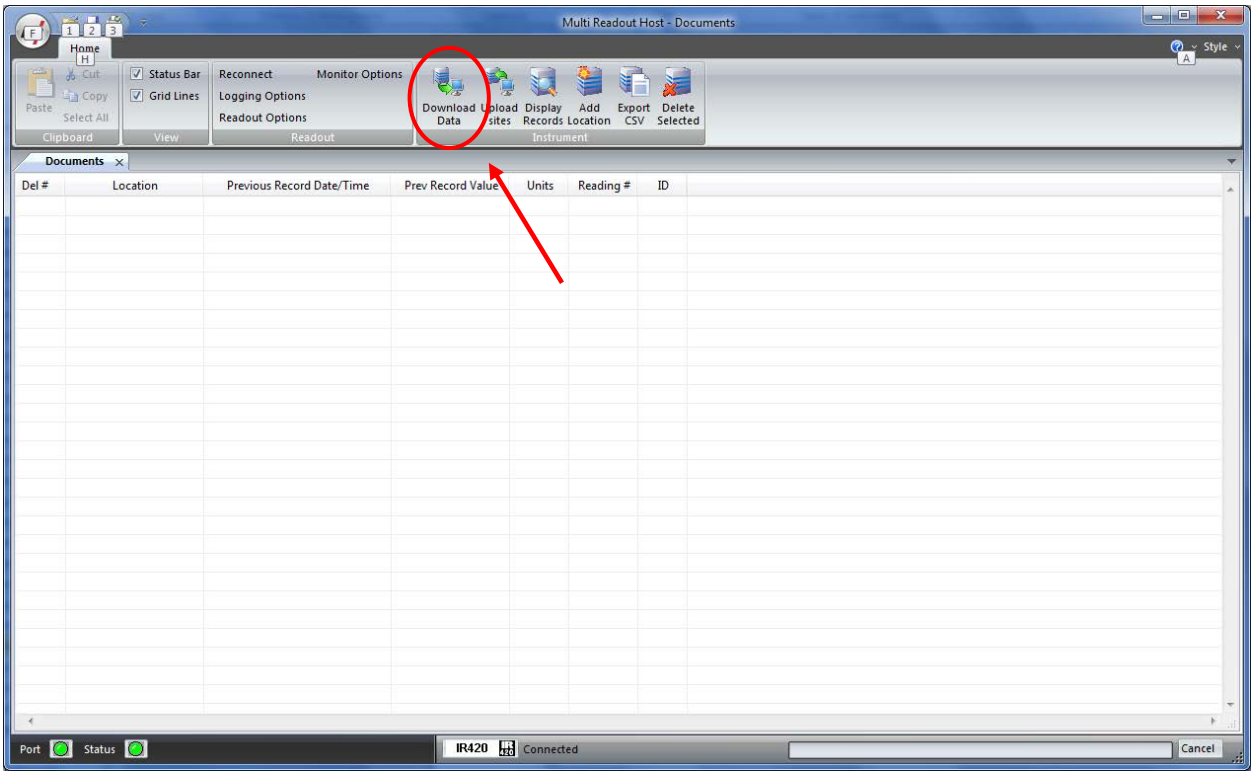


Figure 46 – Downloading IR420 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

9.4 VIEWING IR420 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

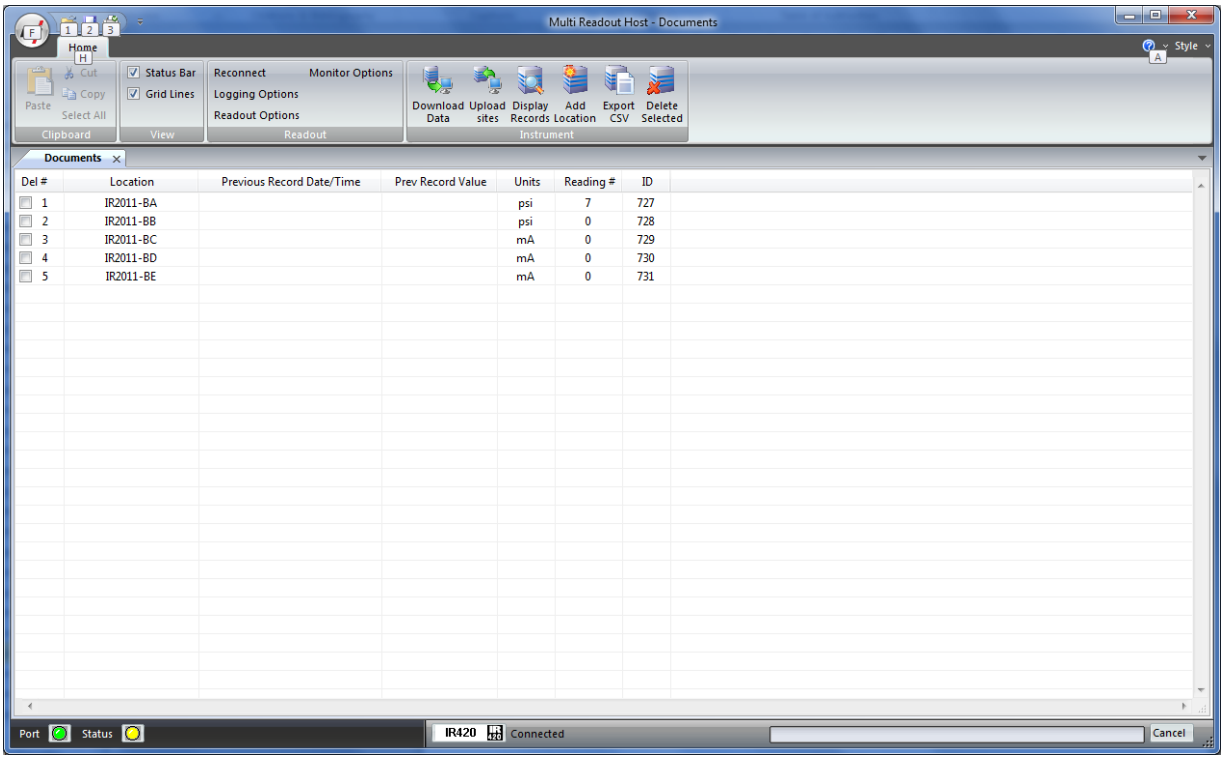


Figure 47 – Downloaded IR420 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

9.4.1 VIEWING IR420 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

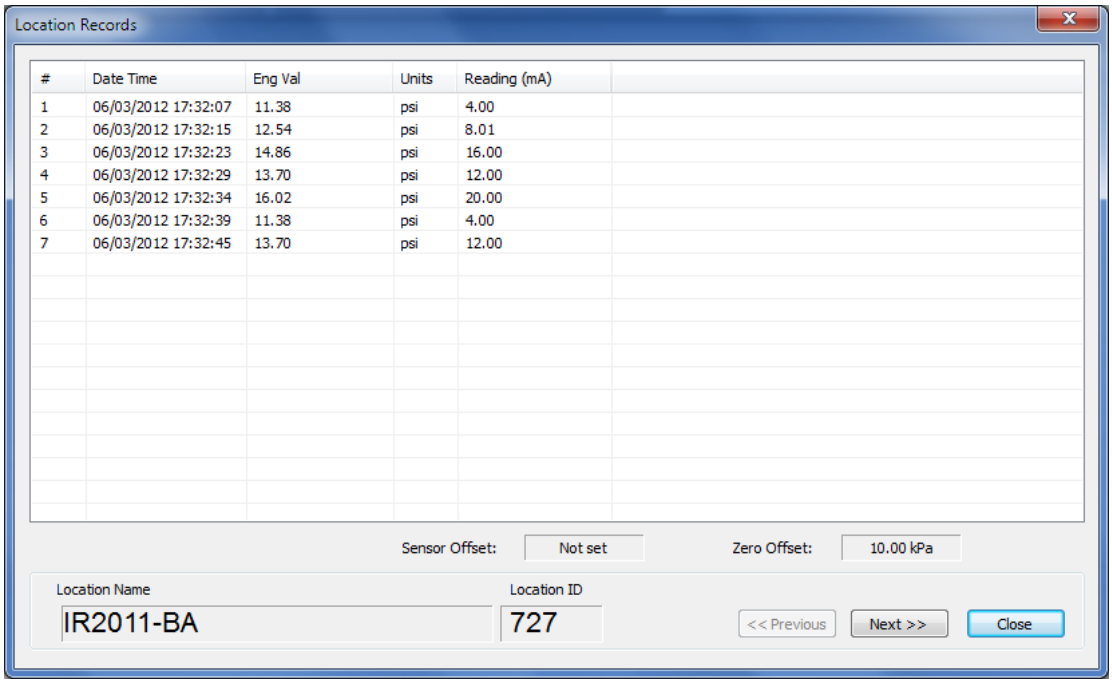


Figure 48 – IR420 Location Data Display

9.5 ADVANCED IR420 SETTINGS

9.5.1 ENGINEERING UNITS

Often the user may wish to report the readings directly in engineering units, rather than mA-units. Data required for the conversion to engineering units is always found on the calibration sheets for the transducer.

Each transducer is shipped from the factory with a calibration sheet. If you have not received a calibration sheet, or the sheet has been lost, please contact RST Instruments and a copy will be faxed or e-mailed to you.

Engineering units conversion settings can be modified using the *Eng Calibration* dialog box shown in Figure 49. Access to this dialog box is provided from *Edit Location* dialog box.

Conversion Method

The user is given two options to apply a Linear Conversion:

- Coefficient Input, enter Calibration Factor BM and Zero Reading CZ.
- Range Input. Input current and engineering calibration limits into appropriate boxes.

The option is also given to modify the sensor offset.

Equation used for calculations is shown for a reference.

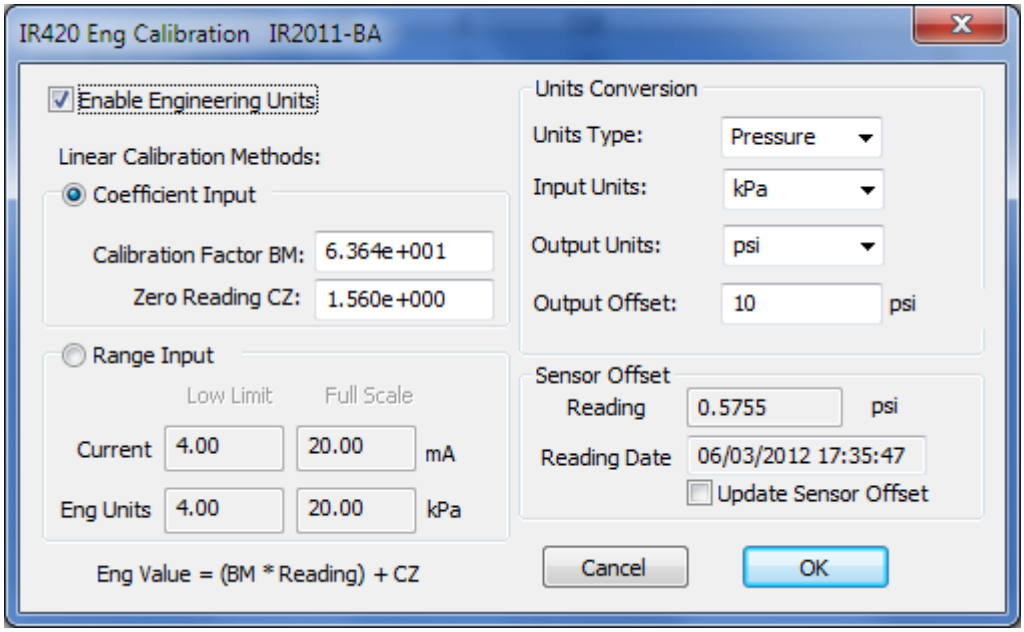


Figure 49 – Engineering Units settings

Important

Whenever **ANY** changes are made on the Engineering Units screen or Edit Location dialog box, the *Upload Site Info* button must be pressed in order to update the readout with new information.

10 LP100 READOUT

10.1 CREATING LP100 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

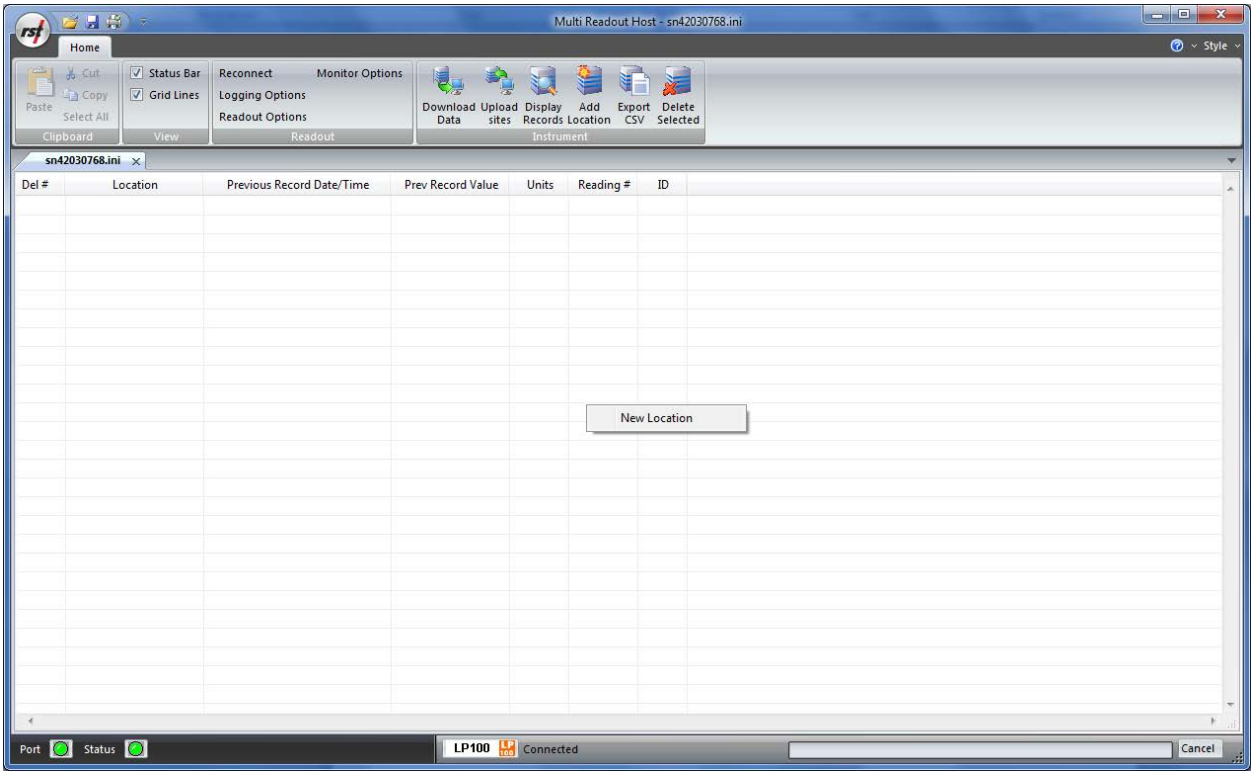


Figure 50 – Creating a New LP100 Site

Click on *New Location* and the following dialog box will appear:

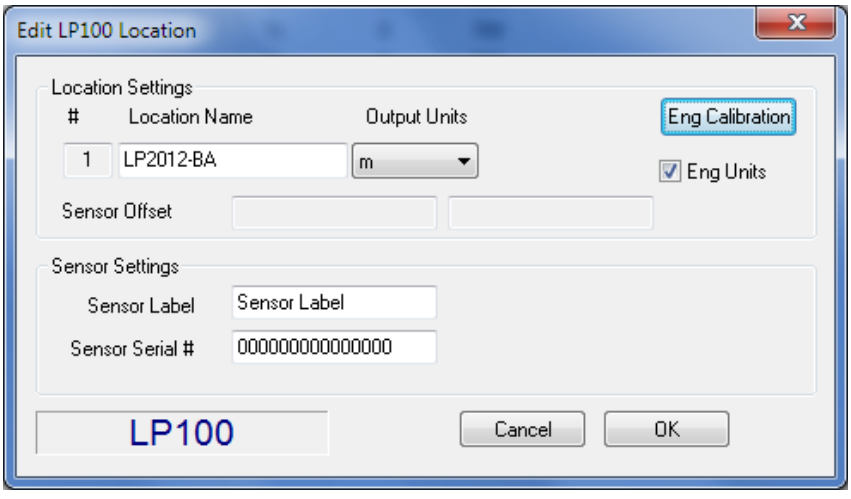


Figure 51 – Naming LP100 Location

Enter in an appropriate location name. In this example the location is: LP2*011-BA*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name. Optionally, each sensor can have individual name and serial number.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

The *Eng Calibration* and *Advanced* functions are explained in section 10.5 Advanced settings. Subsequent Locations can be created by repeating the above procedure.

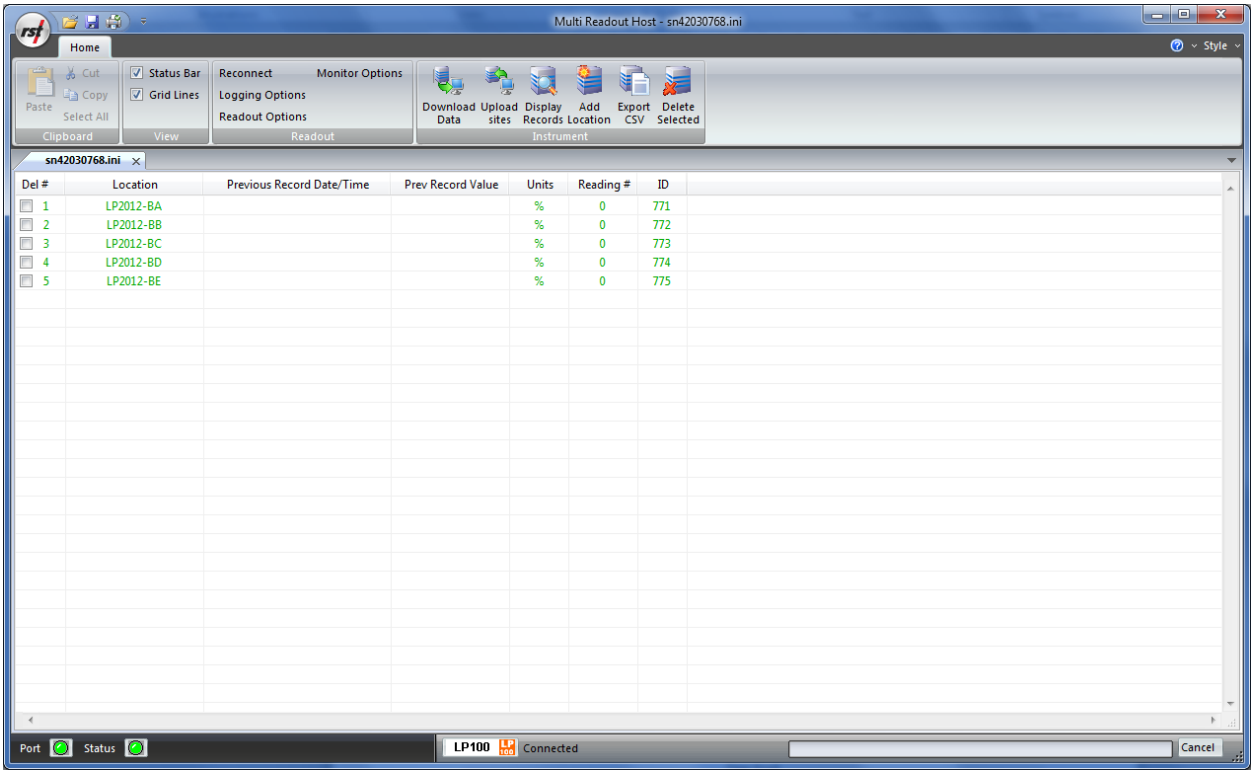


Figure 52 – Creating LP100 Locations

Figure 52 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

10.2 UPLOADING LP100 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

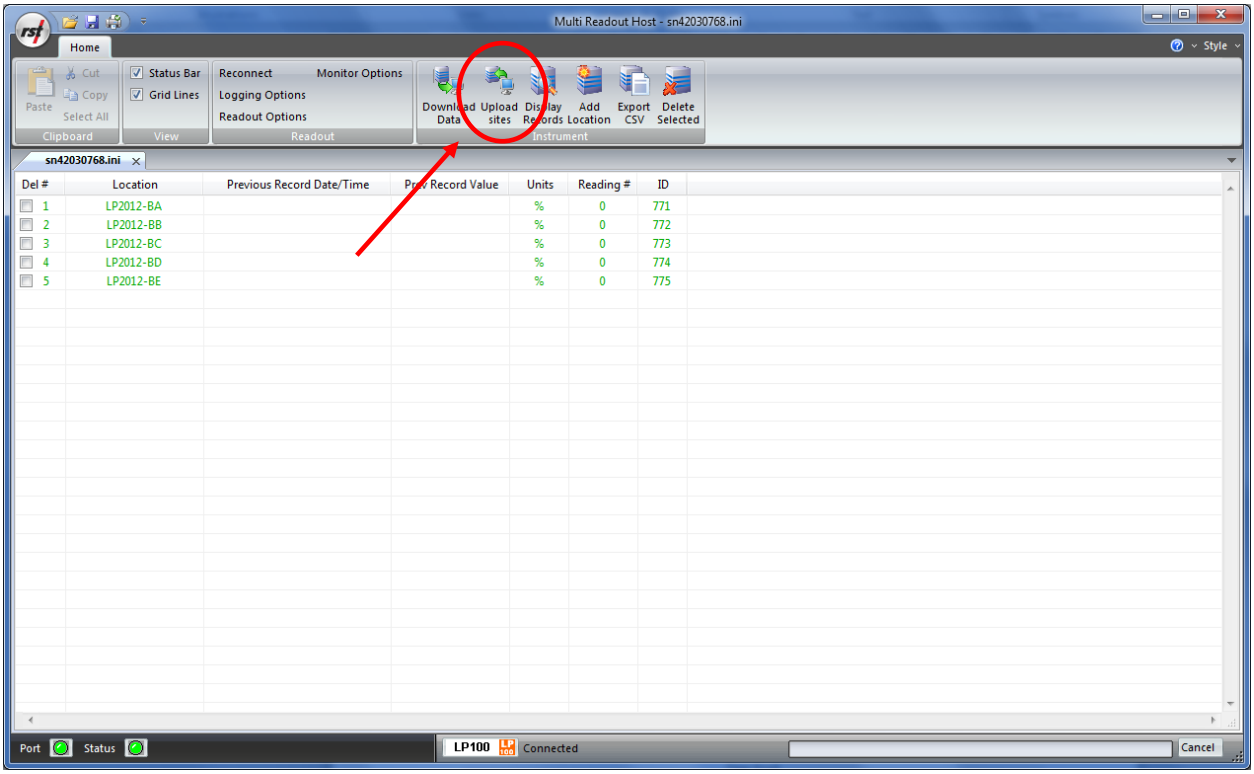


Figure 53 – Uploading LP100 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

10.3 DOWNLOADING LP100 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

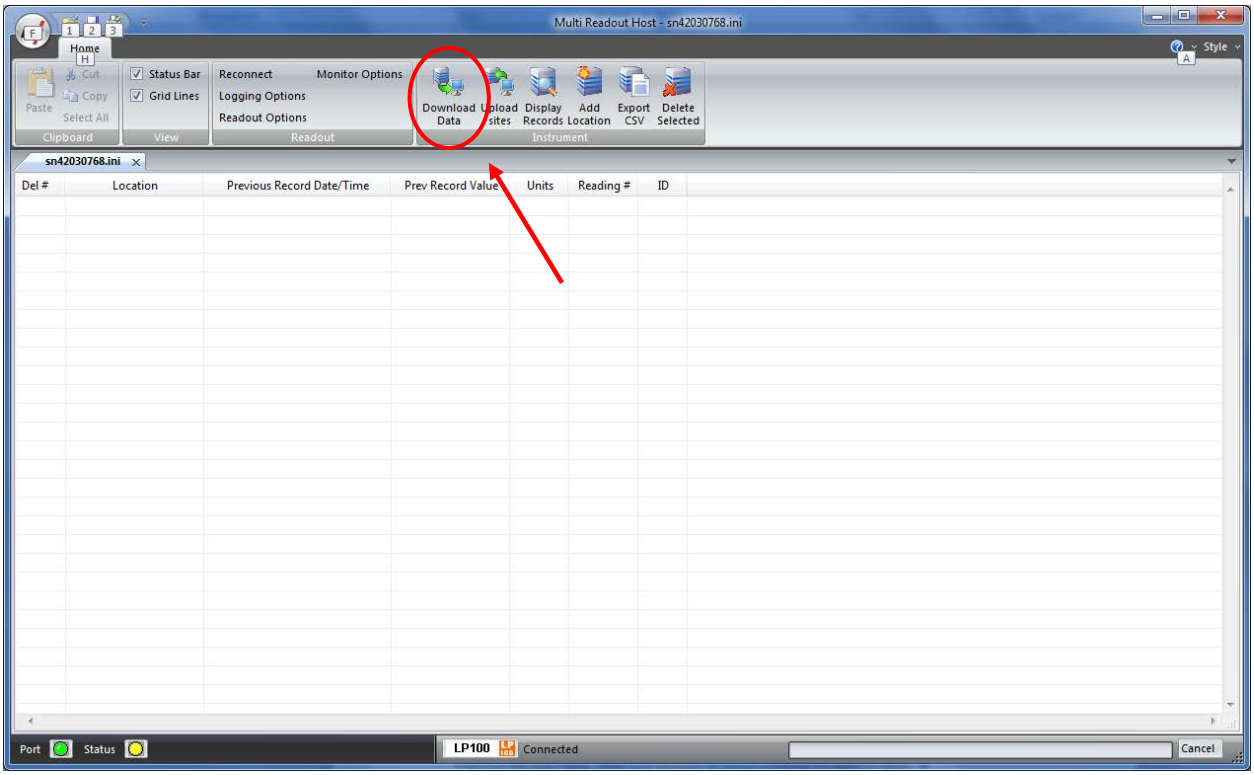


Figure 54 – Downloading LP100 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

10.4 VIEWING LP100 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

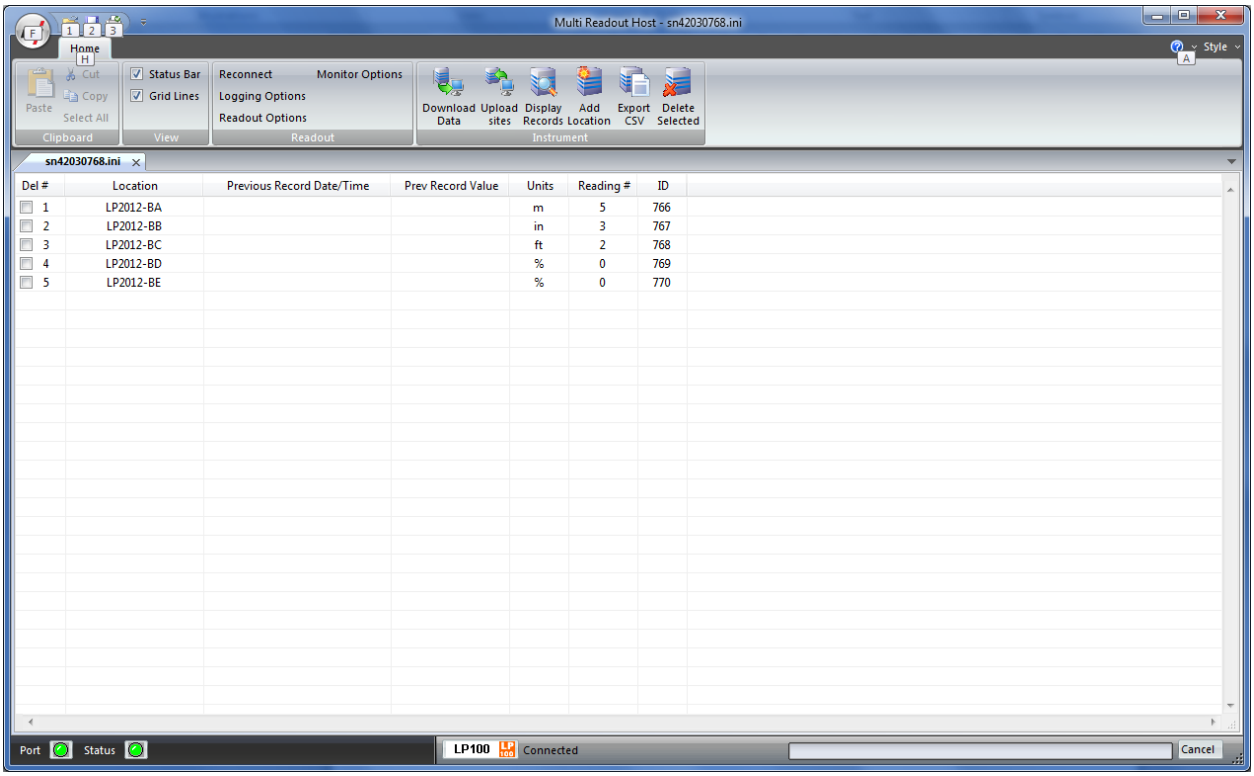


Figure 55 – Downloaded LP100 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

10.4.1 VIEWING LP100 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

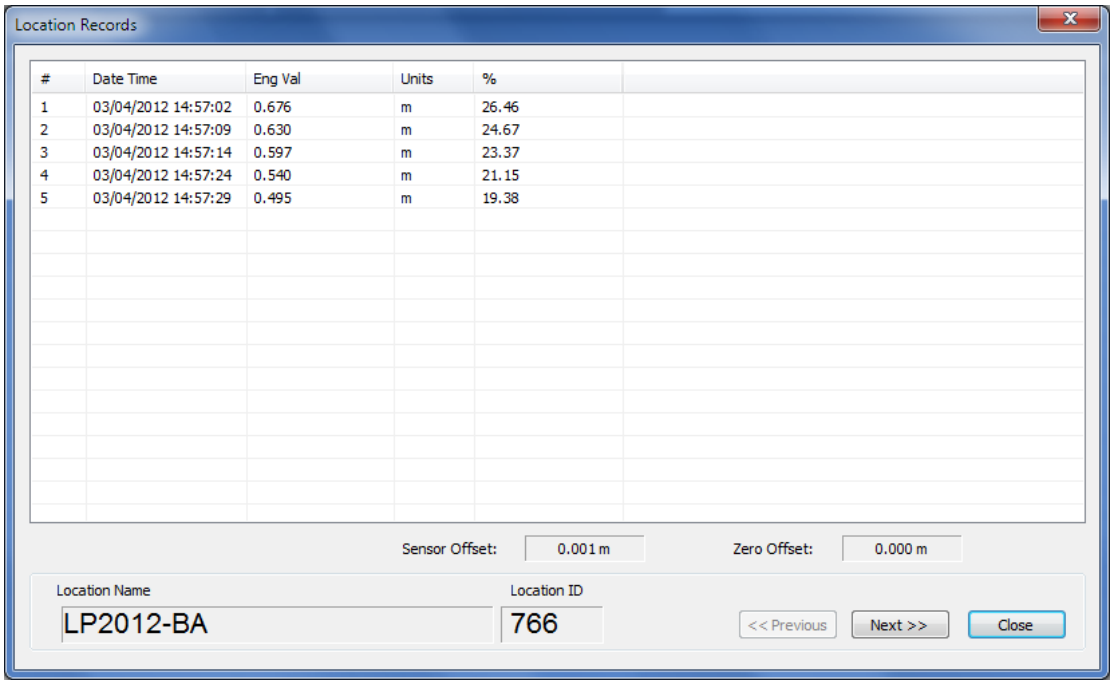


Figure 56 – LP100 Location Data Display

10.5 ADVANCED LP100 SETTINGS

10.5.1 ENGINEERING UNITS

Often the user may wish to report the readings directly in engineering units, rather than %-units. Data required for the conversion to engineering units is always found on the calibration sheets for the linear potentiometer.

Each potentiometer is shipped from the factory with a calibration sheet. If you have not received a calibration sheet, or the sheet has been lost, please contact RST Instruments and a copy will be faxed or e-mailed to you.

Engineering units conversion settings can be modified using the *Eng Calibration* dialog box shown in Figure 57. Access to this dialog box is provided from *Edit Location* dialog box.

Conversion Method

The user is given two options to apply a Linear Conversion:

- Coefficient Input, enter Calibration Factor BM and Zero Reading CZ.
- Range Input. Input % and engineering calibration limits into appropriate boxes.

The option is also given to modify the sensor offset.

Equation used for calculations is shown for a reference.

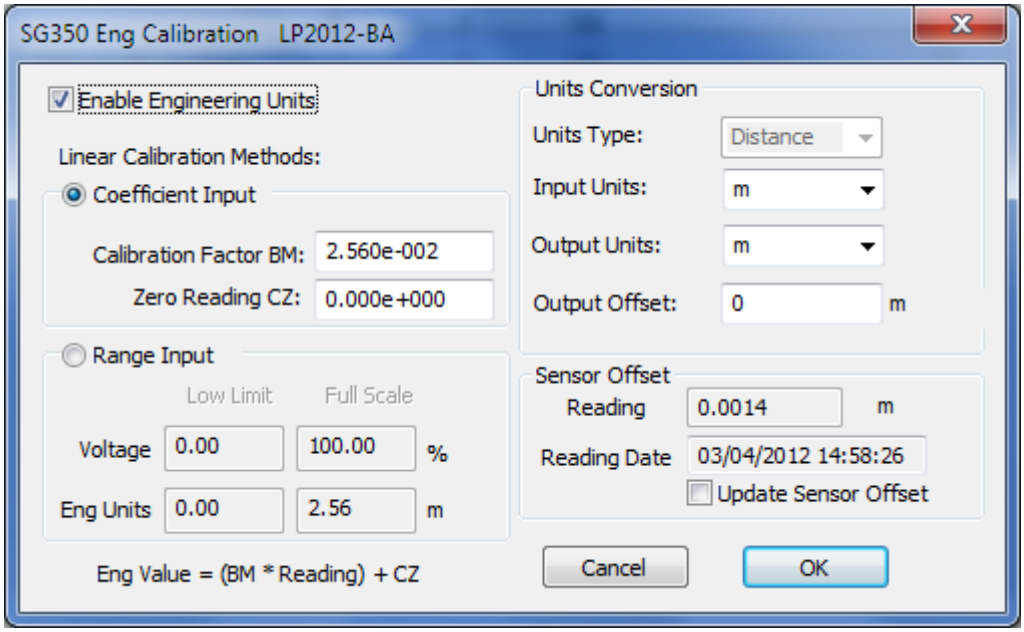


Figure 57 – Engineering Units settings

Important

Whenever **ANY** changes are made on the Engineering Units screen or Edit Location dialog box, the *Upload Site Info* button must be pressed in order to update the readout with new information.

11 C109 READOUT

11.1 CREATING C109 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

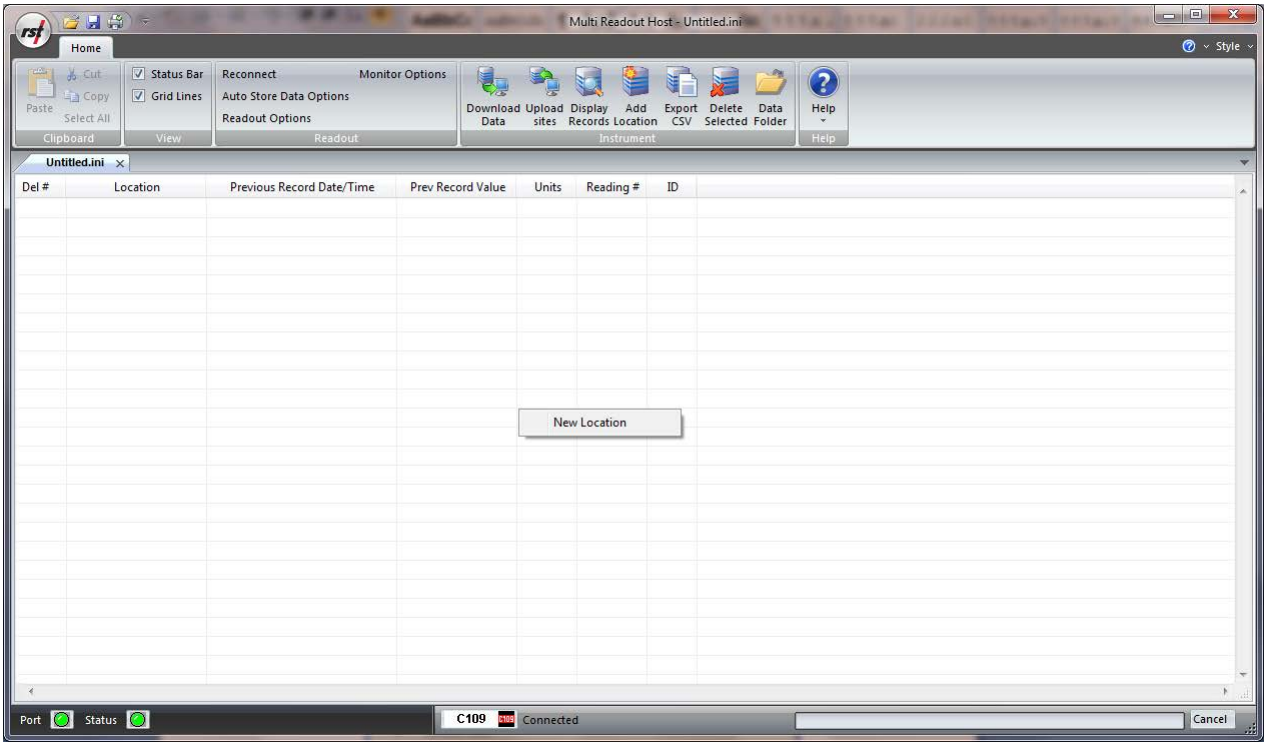


Figure 58 – Creating a New C109 Site

Click on *New Location* and the following dialog box will appear:

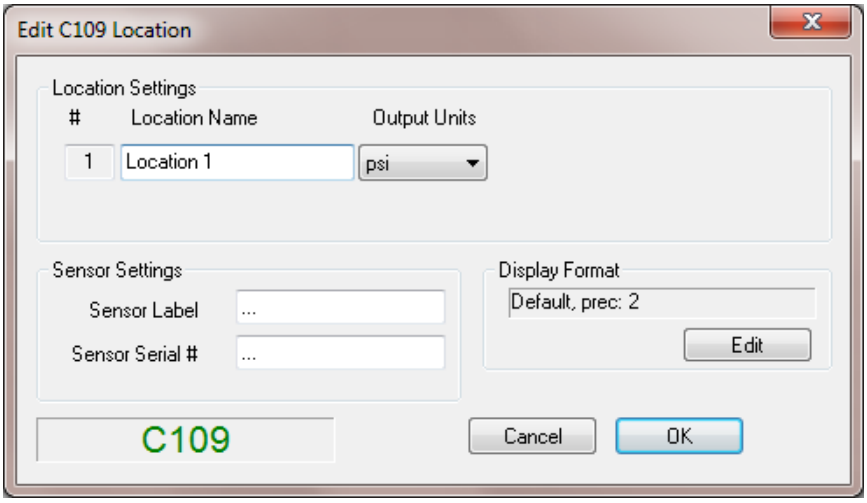


Figure 59 – Naming C109 Location

Enter in an appropriate location name. In this example the location is: *BM2006-ba*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name. Optionally, each sensor can have individual name and serial number.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

Subsequent Locations can be created by repeating the above procedure.

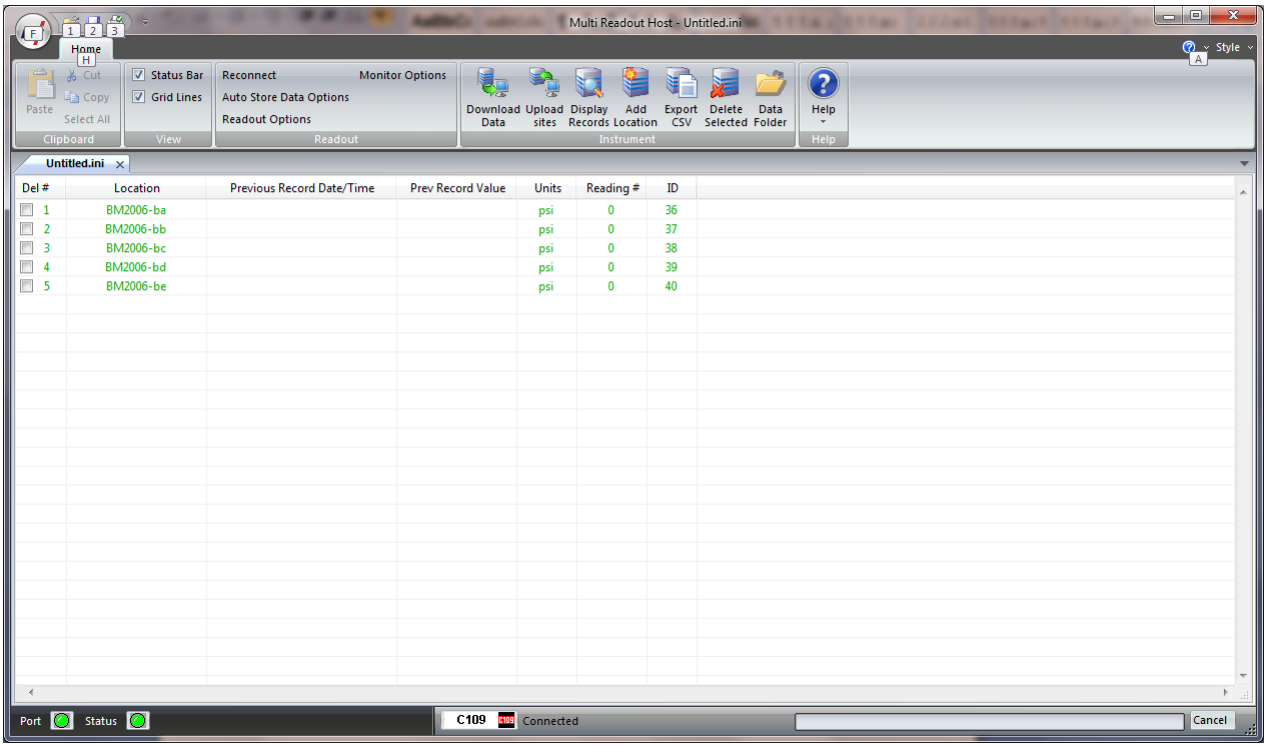


Figure 60 – Creating C109 Locations

Figure 60 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

11.2 UPLOADING C109 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

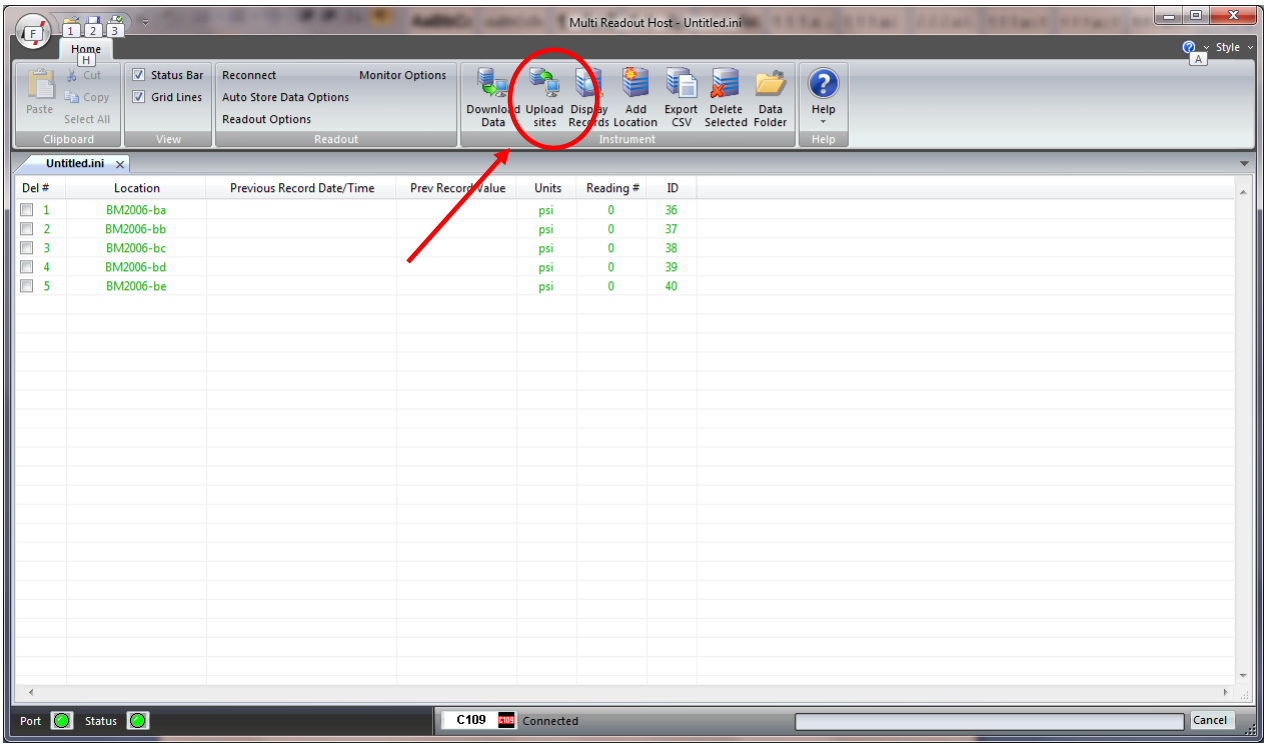


Figure 61 – Uploading C109 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

11.3 DOWNLOADING C109 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

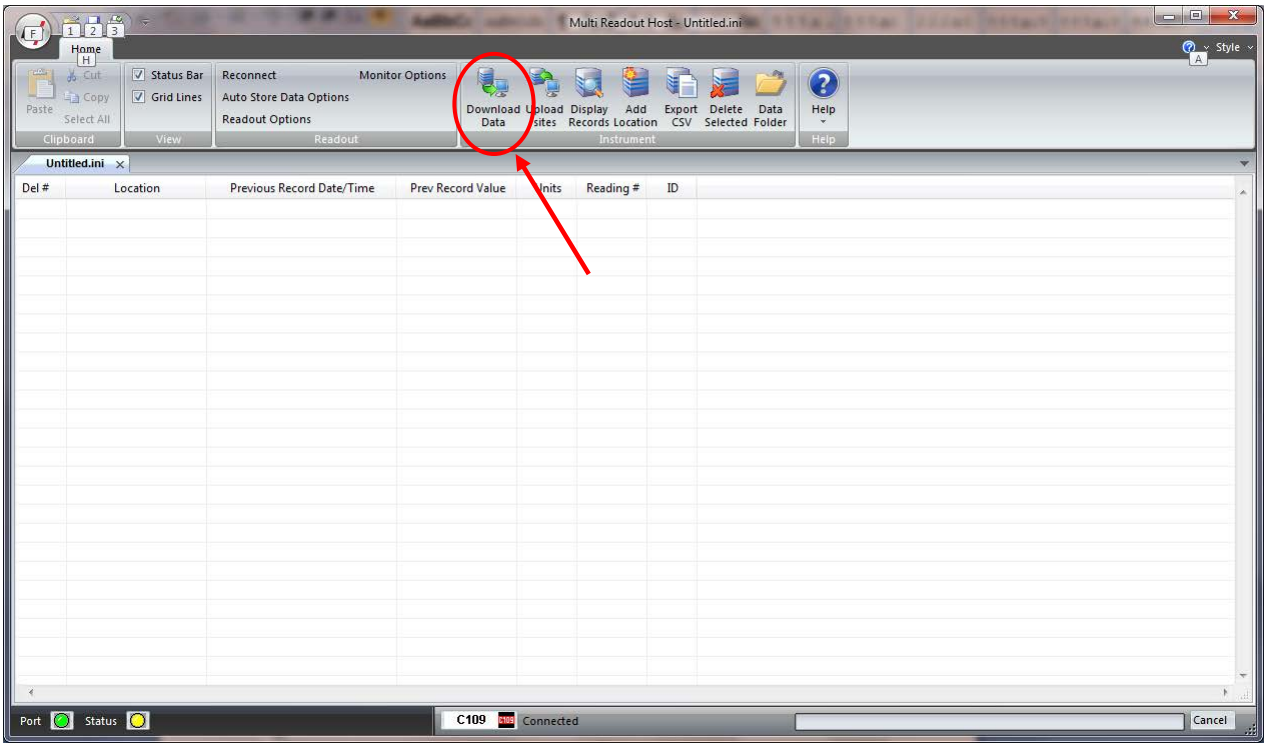


Figure 62 – Downloading C109 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

11.4 VIEWING C109 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

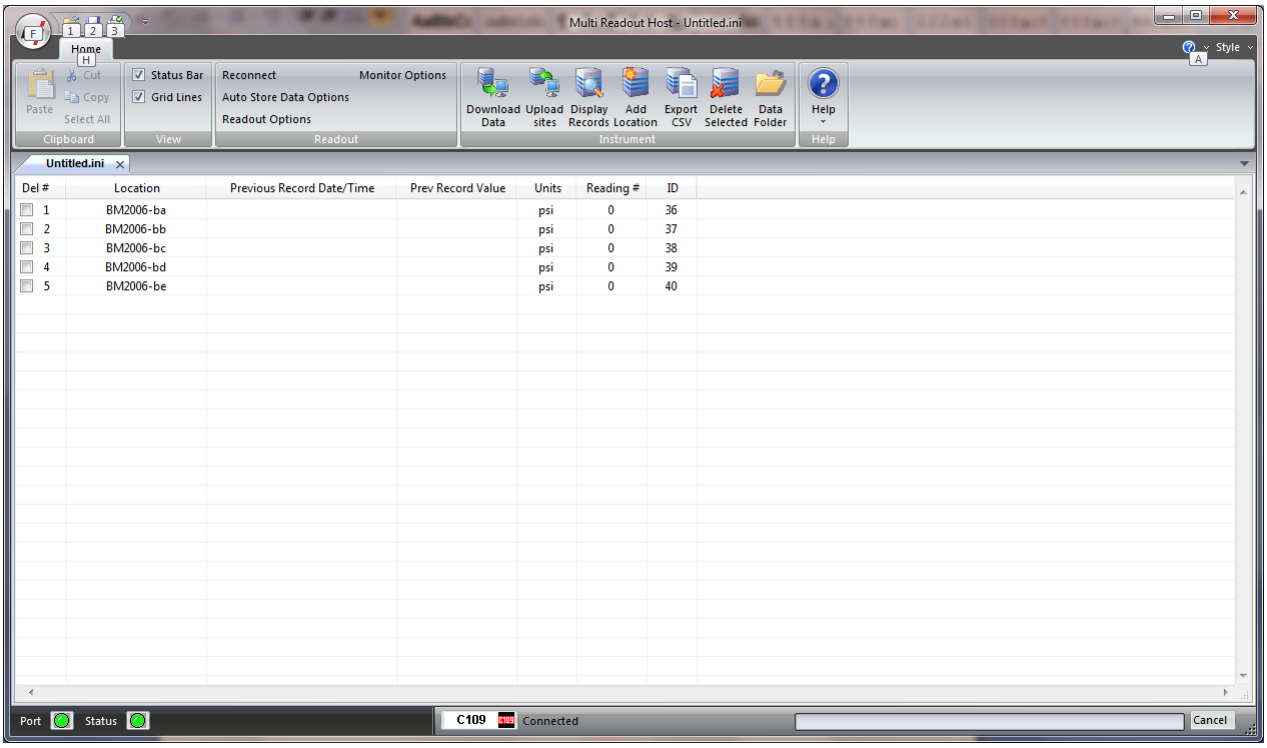


Figure 63 – Downloaded C109 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

11.4.1 VIEWING C109 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

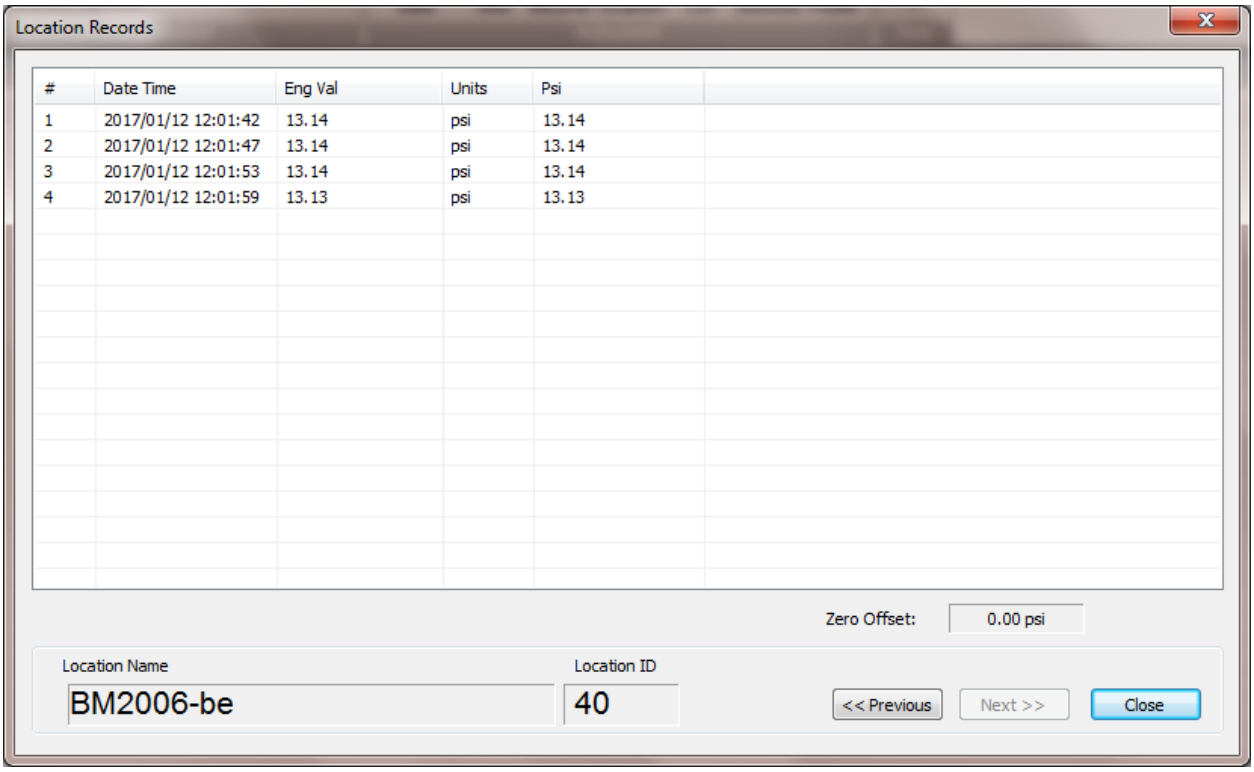


Figure 64 – C109 Location Data Display

12 IR5000 READOUT

12.1 CREATING IR5000 LOCATIONS

Right-click anywhere in the blank workspace to create a new location or click on *Add Location* toolbar button.

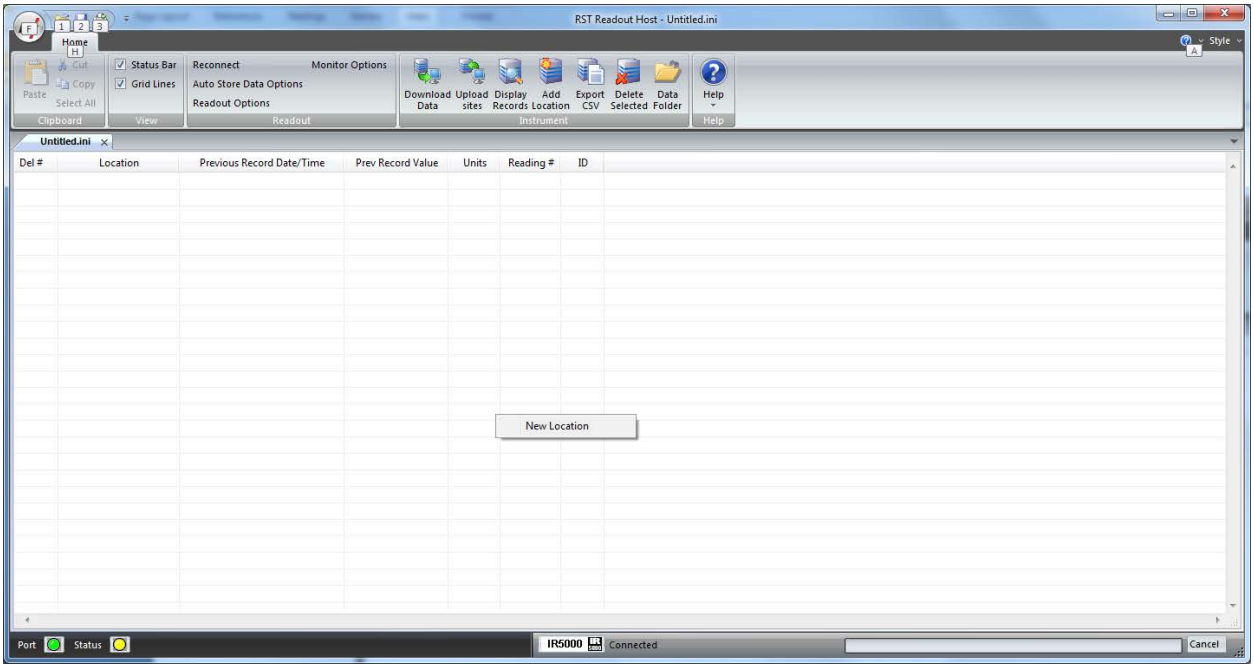


Figure 65 – Creating a New IR5000 Site

Click on *New Location* and the following dialog box will appear:

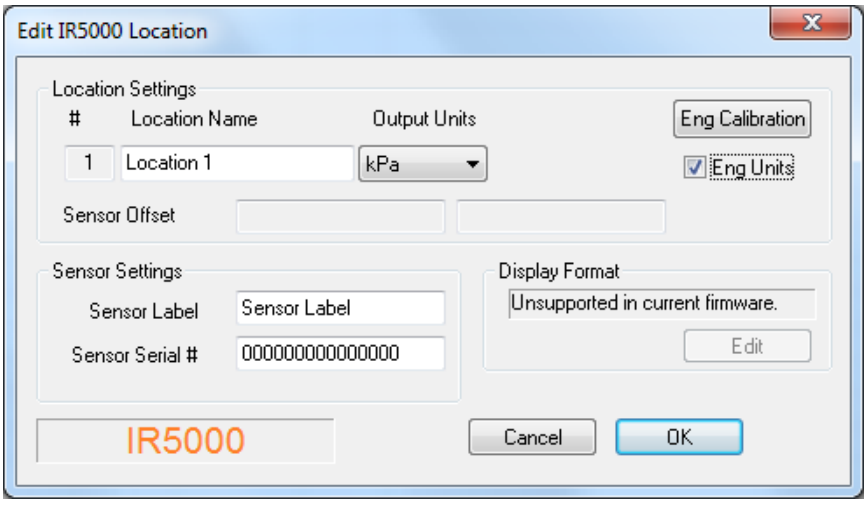


Figure 66 – Naming IR5000 Location

Enter in an appropriate location name. In this example the location is: *BM2006-ba*. The location name can be any alpha-numeric character up to 20 characters long. This allows the option of entering a detailed name. Optionally, each sensor can have individual name and serial number.

Important

Location name, sensor label and sensor serial cannot contain any comma (“,”) characters. Using comma characters in any label string would interfere with CSV data file formatting.

The *Eng Calibration* and *Advanced* functions are explained in section 12.5 Advanced settings. Subsequent Locations can be created by repeating the above procedure.

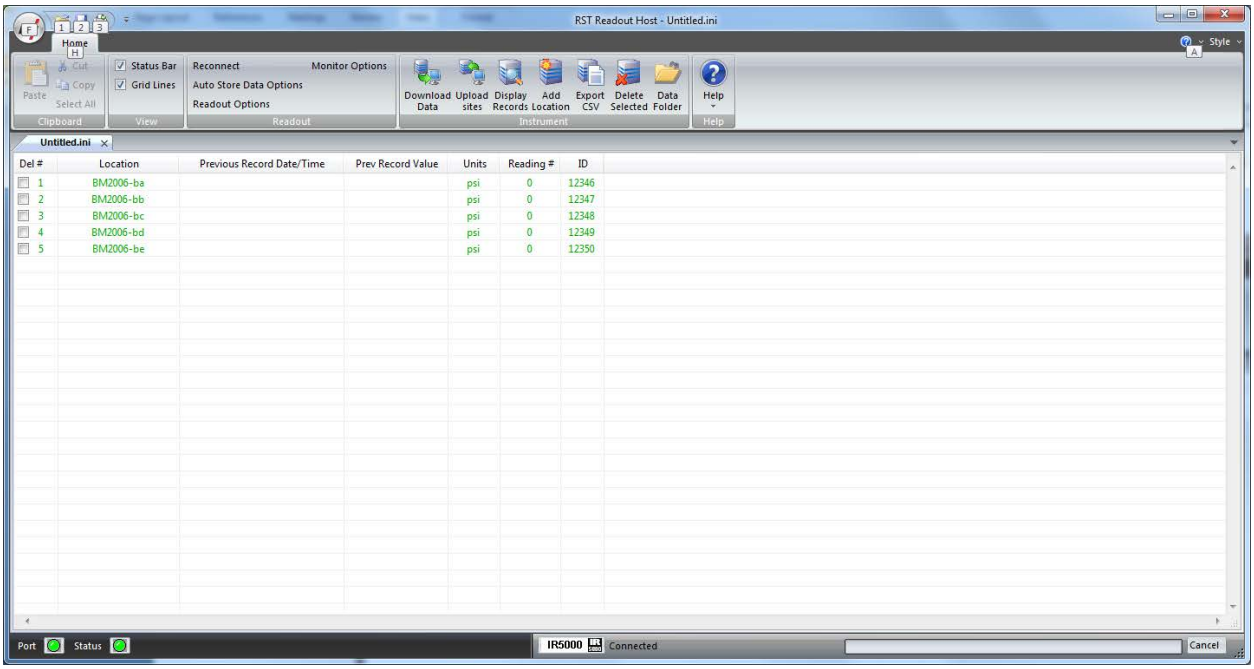


Figure 67 – Creating IR5000 Locations

Figure 60 shows five locations which have been created and contain no current or historical readings. These locations still need to be uploaded to the readout device at this stage.

In order to delete any existing location, put a checkmark in first column checkbox and click *Delete checked* toolbar button.

Current locations and configuration can be saved to ini file for future use or upload to the readout. Choose *Save As..* from *File* menu to save currently displayed locations to site configuration file.

12.2 UPLOADING IR5000 SITE INFO

For the following procedures, it is assumed that the readout has established a successful connection to the host computer and the status *Connected* is displayed on the status bar.

The following steps will clear Readout data memory and prepare Readout for next data collection in field. Therefore ensure that any existing data was exported to csv data file. (section 12.1.2).

Click on Upload Site Info to upload the current information from the RST Readout Host software to the readout. Upon uploading the data, the program will prompt you to if you would like to erase the current data on the readout. In the normal progression of the program, erasing the existing data is the appropriate step. The latest recorded value from each location is saved as *Previous Record Value*.

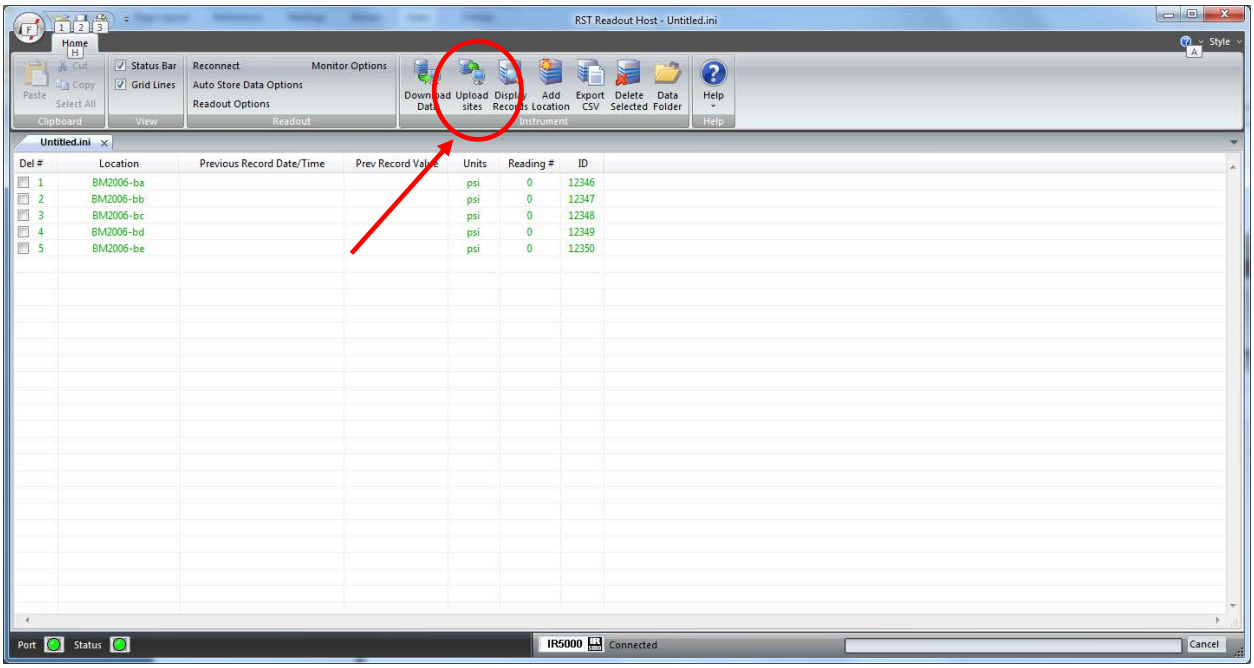


Figure 68 – Uploading IR5000 Sites

Note

Always press the **Upload Sites** button before exiting the program as this ensures that data will not be duplicated in the subsequent *.csv file. If no changes have been made to the setup, select **NO** when the program prompts you to save changes to the *.ini file.

Once the custom user-defined locations are uploaded, the readout is ready to be taken out to the field to record data.

12.3 DOWNLOADING IR5000 DATA

Once the readings have been taken in the field, the data must be downloaded to the host software. Connect the readout to the Computer via the USB cable. Launch the software and connect to the readout (section 3).

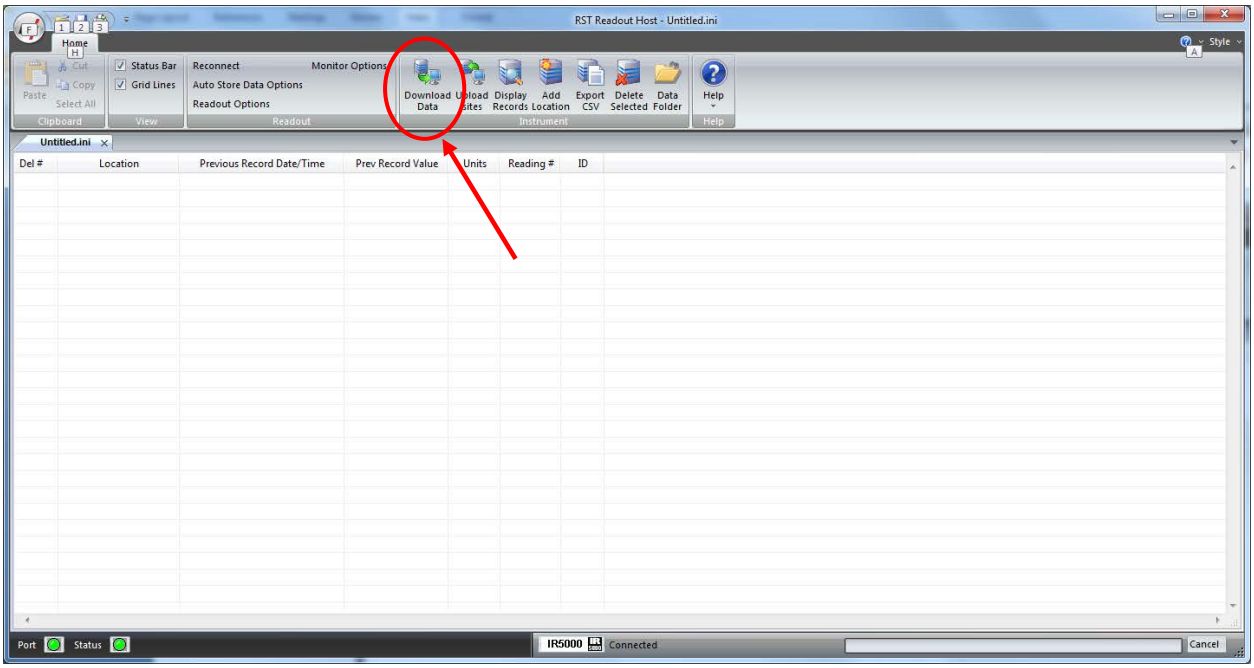


Figure 69 – Downloading IR5000 Data

Upon connection, the software will automatically prompt the user to download and save the data. To perform a manual download press the *Download Data* button in the toolbar.

Note

Downloaded data is not automatically saved into the data file by host computer. It is highly recommended to export data into csv file, as prompted by the host software. This will ensure that data is not accidentally erased from readout resulting in data being lost.

12.4 VIEWING IR5000 DATA

Once the data has been downloaded, the workspace becomes populated with all the information as found on the readout.

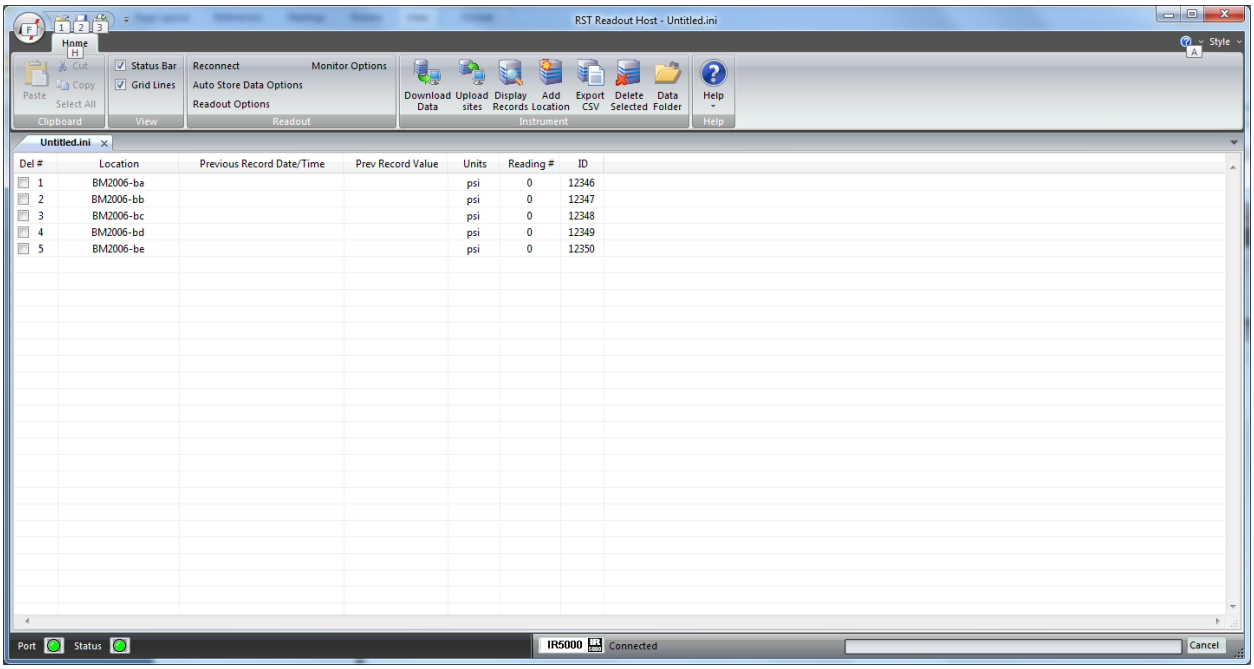


Figure 70 – Downloaded IR5000 Data

As shown above, the data is populated and includes Location label, Previous Record Date/Time, Previous Record Value, Units and Number of saved readings for each location.

12.4.1 VIEWING IR5000 LOCATION READINGS

A complete listing of readings for selected location can be seen by clicking on the *Display Records* button in the toolbar. The sample data is shown below. This is the data currently contained on the readout itself, not necessarily all the historical data you might have for that location. The scroll bar at the right of the screen permits the user to scroll and view all the readings for a particular location. To quickly jump to viewing another location, click on *Previous* or *Next* buttons.

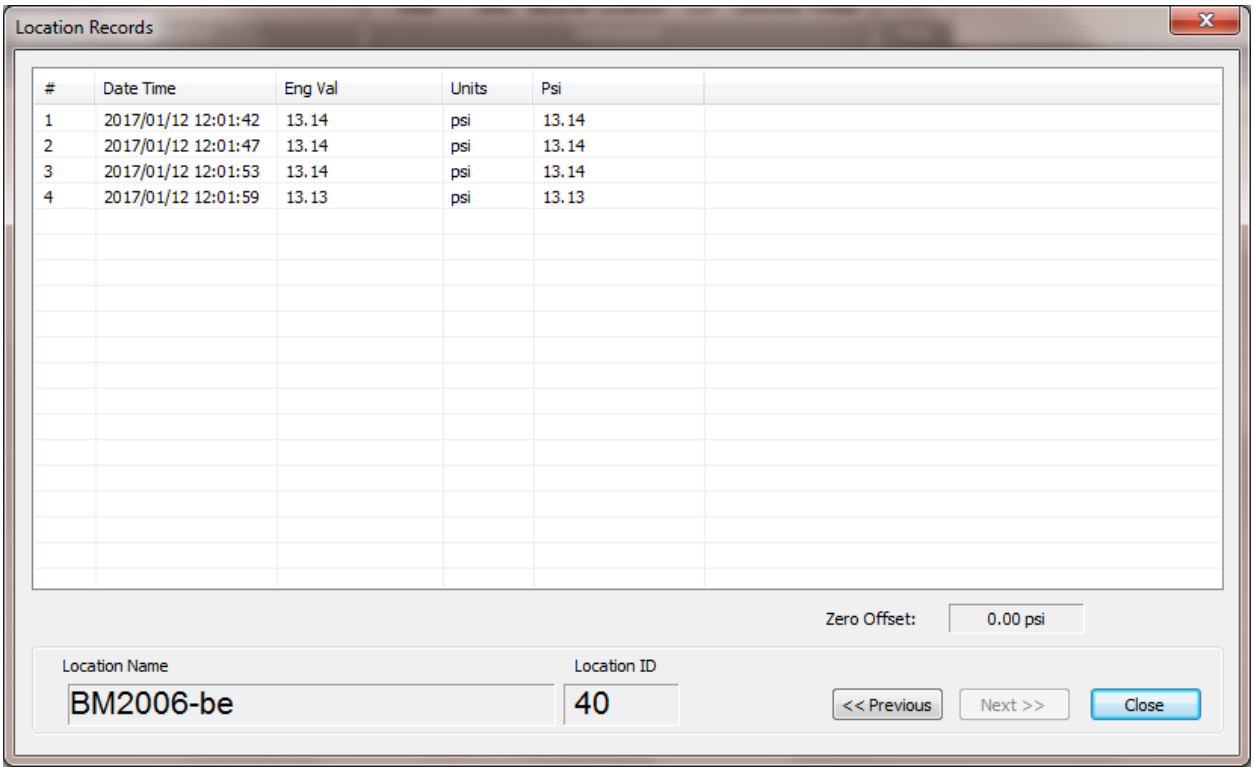


Figure 71 – IR5000 Location Data Display

12.5 ADVANCED IR5000 SETTINGS

12.5.1 ENGINEERING UNITS

Often the user may wish to report the readings directly in engineering units, rather than %-units. Data required for the conversion to engineering units is always found on the calibration sheets for the linear potentiometer.

Each potentiometer is shipped from the factory with a calibration sheet. If you have not received a calibration sheet, or the sheet has been lost, please contact RST Instruments and a copy will be faxed or e-mailed to you.

Engineering units conversion settings can be modified using the *Eng Calibration* dialog box shown in Figure 57. Access to this dialog box is provided from *Edit Location* dialog box.

Conversion Method

The user is given two options to apply a Linear Conversion:

- Coefficient Input, enter Calibration Factor BM and Zero Reading CZ.
- Range Input. Input % and engineering calibration limits into appropriate boxes.

The option is also given to modify the sensor offset.

Equation used for calculations is shown for a reference.

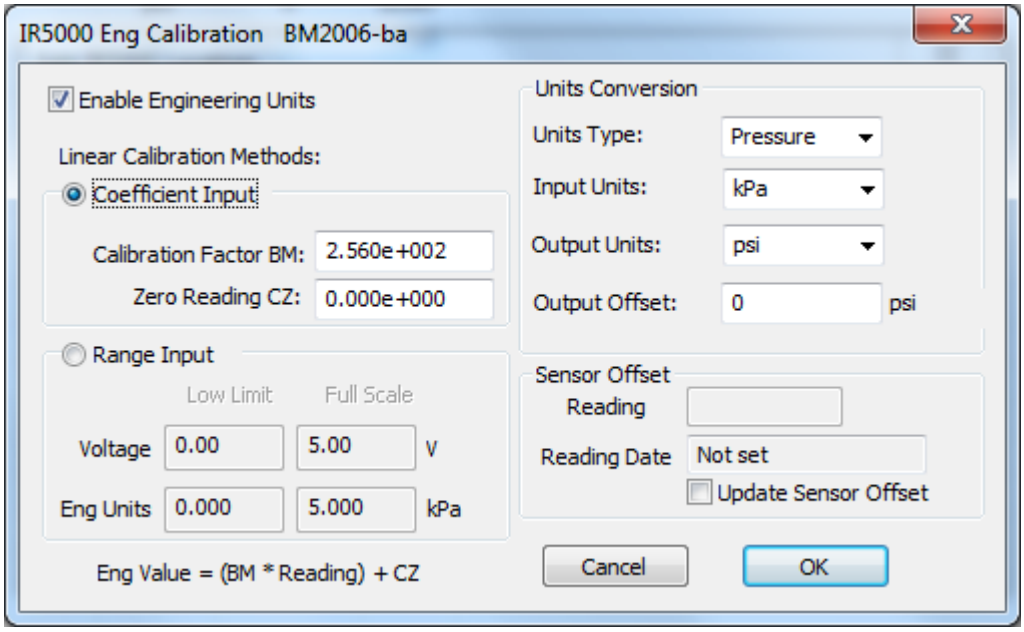


Figure 72 – Engineering Units settings

Important
Whenever **ANY** changes are made on the Engineering Units screen or Edit Location dialog box, the *Upload Site Info* button must be pressed in order to update the readout with new information.

13 FILE TYPES

13.1.1 CONFIGURATION FILES (*.INI FILES)

The RST Readout Host software creates a *.ini file when locations are created and saved into file. This is the equivalent of a configuration file and is used both in the host software and the readout unit itself. If you have multiple readout boxes all being downloaded on the same computer, keeping separate configuration file for each readout greatly aids in keeping the appropriate data organized.

13.1.2 DATA FILES (*.CSV FILES)

Whenever the connection to the readout is established, or *Download Data* button is pressed, the software will collect all the current data stored in the memory of the readout. A progress bar will be displayed showing the status of this collection.

It is highly recommended to save data into csv file as soon as data is downloaded from the readout box. Either follow the prompt, or save csv file manually by clicking on *Export csv file* button, or choose *Export to csv file* from *File* pull down menu. The software will write the data to a *.csv file in the directory selected in Host Software *Options*. The default directory is:
My Documents\XXXXdata.
Depending on file saving options, the user is prompted for data filename or file is saved automatically. With automatic filename option, data is appended to existing file or unique filename is created. The unique data filename format is:
XXXXdata_yymmdd_hhmmss.csv.

The XXXX represents readout type.
This file can then be opened directly with Microsoft Excel™ or other popular spreadsheet programs. The file header is created only at the first download and contains Readout status data.

Note

The *.csv cannot be open in Excel at the same time the RST Readout Host Software is running. To ensure the program does not become unstable, close the RST Readout software and then open the appropriate files in Excel.

When opened with Excel, the file has the following format:

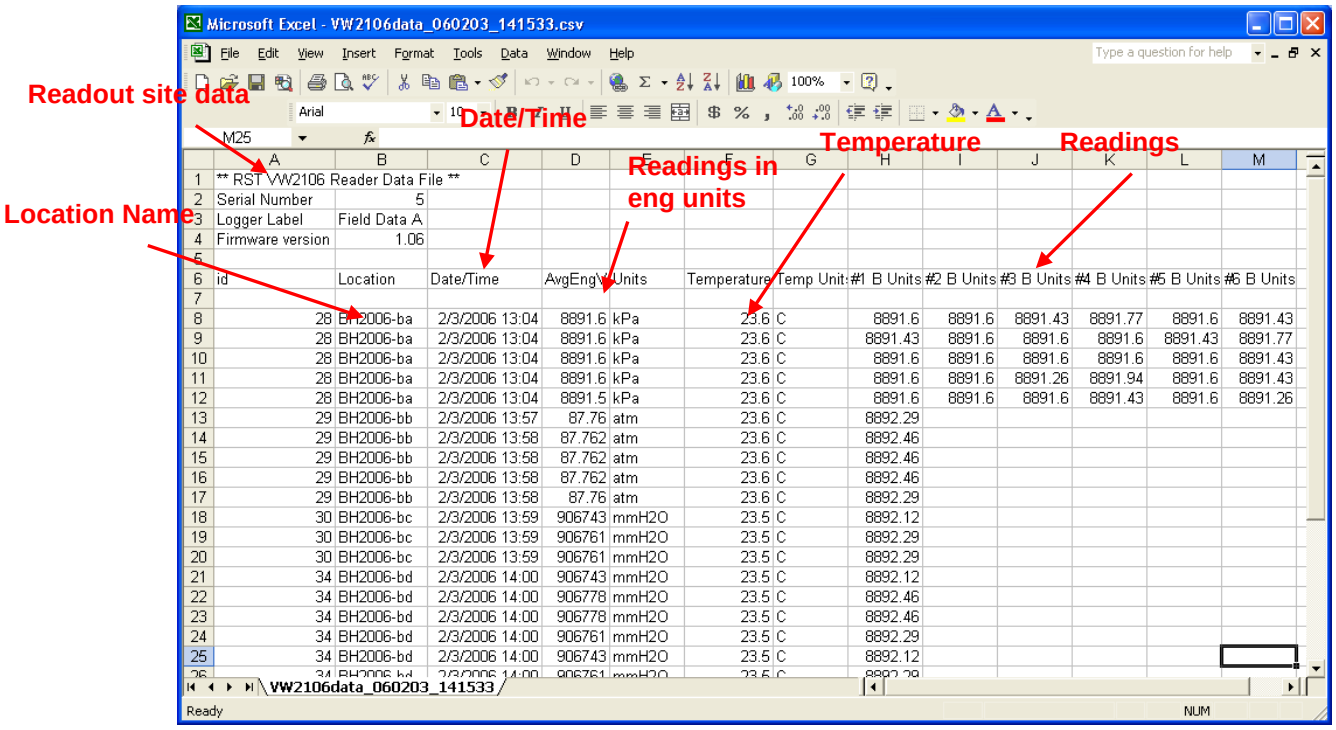


Figure 73 – Sample Data File

Note

When sensor reading is outside of the valid range, the “99999” value will be recorded as the data value.

The data format will depend on Readout type, all readout types will have *ID, Location Name, Date/Time,* followed by recorded values. This data can easily be sorted in Excel and plotted. To sort in Excel:

- Highlight all the data.
- Under the *Data* menu, choose *Sort*. The following screen will appear:
- The data can be sorted as shown in Figure 66. Column A = Ascending and Column C = Ascending. This will sort all locations by their *ID* and will place them in the order from oldest to newest. Conversely, the data could be sorted descending in time if required (i.e. Column C = descending).

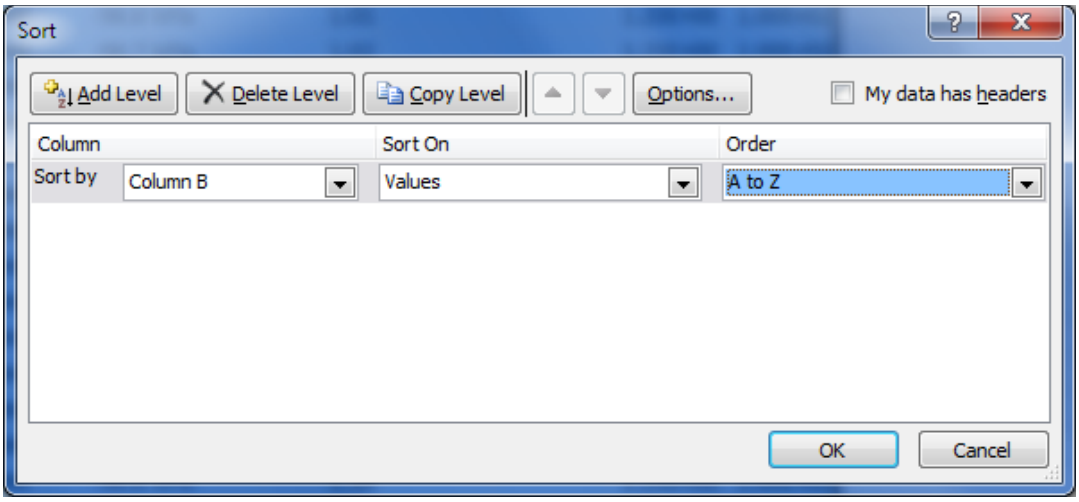


Figure 74 – MS Excel Sorting

- Highlight the desired cells and plot the data using the Chart Wizard.

Note

It is always good practice to create backups of your data. When finished manipulating the data in Excel, save your work in *.xls format. This ensures that the original *.csv format is not changed, and any plots which have been created will be preserved.

14 OPTIONS

14.1 OPTIONS DIALOGS

14.1.1 READOUT OPTIONS

Once a connection has been established between the readout and the Host Software, the status of the device can always be checked. Under the *Readout* menu, choose *Readout Options* and the following screen will appear:

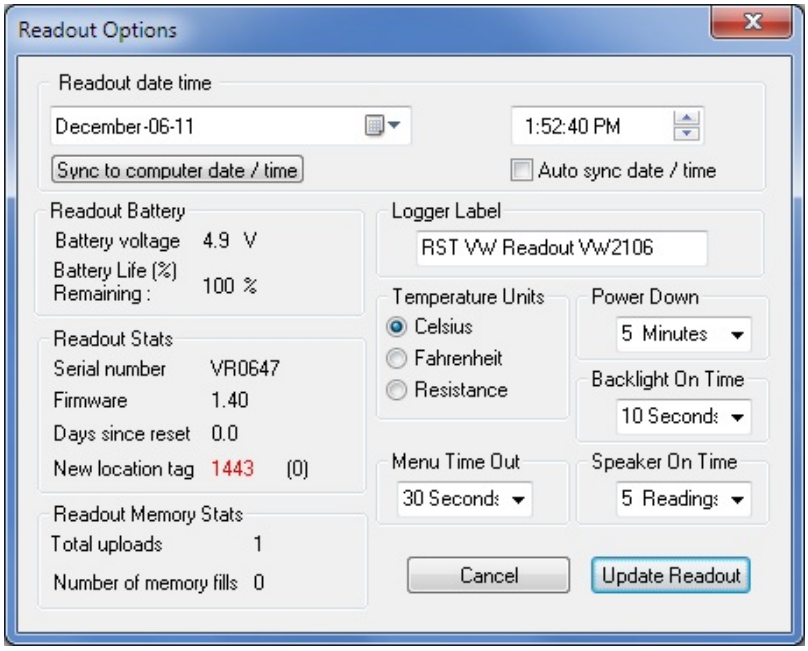


Figure 75 – Options Screen

The Readout Options screen allows viewing and modification of the readout settings. Most of the items are self-explanatory.

The status of the following Readout components is displayed:

Readout Battery
The battery level should be monitored periodically to ensure uninterrupted operation in the field. Batteries should be replaced when voltage level drops below 3.5 Volts.

Readout Stats
This area shows the Readout serial number, firmware version, number of days since the last power-on and the last assigned location ID.

Readout Memory Stats
The number of uploads and memory fills are shown for reference.
Parameters in white windows can be changed and updated by pressing the *Update Readout* button at the bottom of the screen.
The following settings can be modified:

Readout clock
The internal Readout clock can be adjusted manually or synchronized with computer clock. Click *Sync to computer date / time* to synchronize Readout internal clock with computer clock. To make clock adjustment automatic each time readout is connected to host computer, check *Auto sync date / time* checkbox.

Logger Label
When several Readout boxes are used, the Logger label can be used to maintain control over data sets. The logger label is recorded in “csv” file after each data download.

Temperature Units (VW2106, TH2016, MA7 Readouts only)
Temperature can be displayed in Centigrade or Fahrenheit.

Power Down, Backlight On Time
To minimize power consumption, the readout powers down after chosen preset time. *Backlight On Time* can be adjusted to suit preferences.

Speaker On Time (VW2016 Readout only)
The build-in speaker will be activated for preset number of readings.

Default Factor G (QB120 Readout only)
If necessary, modify the default Multiplier Factor G used for Linear Conversion into engineering units.

Note
When configuration changes are complete, press *Update Readout* button to transfer new option settings to the readout memory.

14.1.2 HOST SOFTWARE OPTIONS

The RST Readout Host software options can be customized by accessing *Host Software Options* dialog from *File* menu.

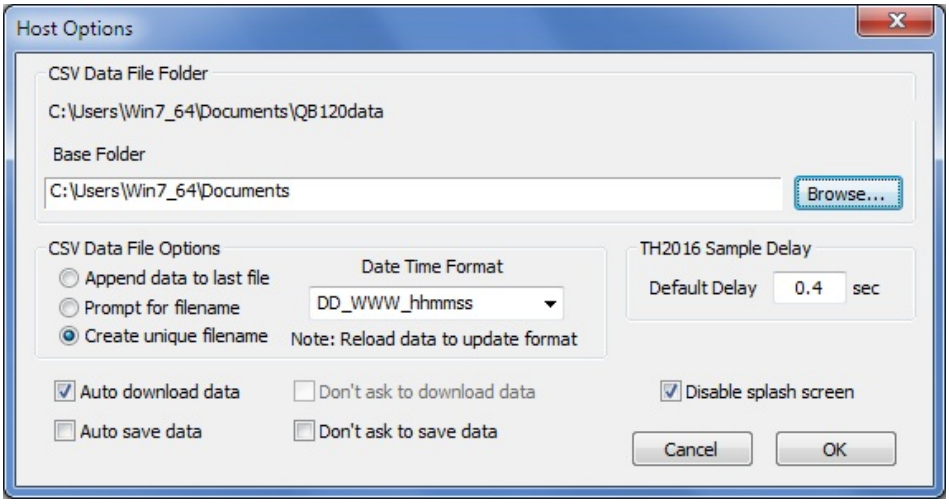


Figure 76 – Host Software Options Screen

As shown on Figure 68, the following are editable settings:

CSV Data File Folder
The location of data file directory. Configuration ini files and data csv files are saved in *CSV Data File Folder*, unless other location is specified in file save dialog box. The *Base Folder* can be modified using *Browse* button. Initially, *Base Folder* setting points to user’s ***My Documents*** folder.

CSV Data File Options
The Host Software can append readout data to a new or existing file. Alternatively, the options are given to prompt for file name or create unique filename each time readout data is saved. The unique data filename format is:

XXXXdata_yymmdd_hhmmss.csv.
The XXXX represent readout type.
This file can then be opened directly with Microsoft Excel™ or other popular spreadsheet programs. Date and time can be recorded in data files using several formats. Choose desired format using the combo box.

Note

After changing the date and time display format, reload data from the readout to activate the new format. This is global setting, date and time in all csv formatted datafiles will be recorded using this format.

CSV Data File Save Options
Upon connection to the readout, data is automatically downloaded to Host Software. To disable this feature, uncheck the *Auto download data* checkbox.

Sample Delay (TH2016 Readout only)
Set the default TH2016 sample delay to be used when creating new locations. This value is initially set at 0.4 seconds. The sample delay range is 0.2 to 51 seconds, with even fractions allowed only.

14.1.3 LOGGING OPTIONS

Selecting the *Logging Options* in *Readout* menu opens the following window:

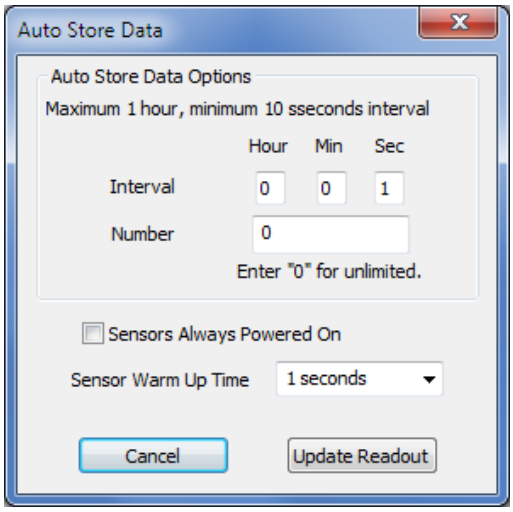


Figure 77 – Logging Options Screen

Using the *Logging Options* screen the logging settings can be adjusted. The maximum continuous logging interval is 1 hour. The readout will continue logging data until Logging Number is reached or the logger memory becomes full. Enter “0” in Logging Number field to keep logging until logger memory becomes full.

If sensors take some time to warm up, uncheck *Sensors Always Powered On* and select desired warm up time.

Click *Update Readout* to transfer any edited settings to connected readout.

14.1.4 READOUT MONITOR OPTIONS

The real time output of a vibrating wire sensor is monitored by the readout. To view the units and sensor settings for the monitor display choose *Readout Monitor Options* from Readout pull down menu. (Figure 70).

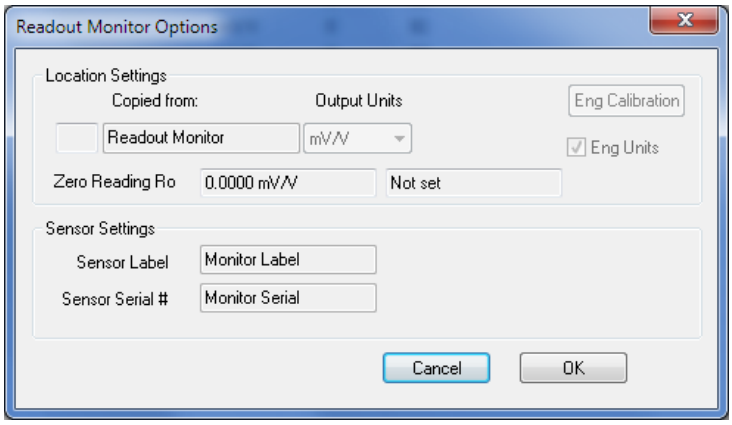


Figure 78 – Monitor Options settings

Note

Readout Monitor Settings can be imported from any predefined location using the readout, please refer to the Readout Instruction Manual for further information.

14.2 MENU ITEMS

14.2.1 MAIN MENU

New: Creates a new blank Readout Host Screen. The user can then add new locations by right-clicking the blank workspace (Figure 1).

Open: Opens an existing configuration file (*.ini) which contain existing locations settings.

Save: Saves the current working file to disk under the current filename and path.

Save As…: Saves the current working file to disk and allows the user to choose a path and filename.

Export csv file: Write all downloaded data to a csv file.

Quick Print: Prints the current workspace as it appears on screen.

Print Preview: display the active workspace as it would appear when printed

Print Setup: specify the printer and its connection.

Host Software Options: Modify Host Software settings.

Exit: Exits the RST Readout Host Software

14.2.2 CLIPBOARD MENU

Cut: Cut the current selection in the location listing and put it on the clipboard.

Copy: Copy the current selection to the clipboard.

Paste: Paste the clipboard to the workspace.

14.2.3 VIEW MENU

Status Bar: Hides/Reveals the Status Bar

Gridlines: Hides/Reveals the Gridlines in the workspace.

14.2.4 READOUT MENU

Reconnect: Reconnects to the readout.

Logging Options: Opens the Logging Options setup screen (section 13.1.2).

Readout Options: Opens the Readout Options s*etup* screens (section 13.1.1)

Monitor Options: Allows editing of Readout Monitor units and conversion parameters (section 13.1.4).

14.2.5 INSTRUMENT MENU

Download Data: Downloads data from the readout (section 4.3, 5.3, 6.3, 7.3, 8.3, 9.3,10.3,11.3,12.3).

Upload Sites: Uploads the current site parameters to the readout (section 4.2, 5.2, 6.2, 7.2, 8.2, 9.2,10.2, 11.2, 12.2).

Display Records: Display records for selected location.

Add Location: Add new location.

Export csv: Write all downloaded data to a csv file.

Delete Selected: Delete locations indicated with check box mark.

14.2.6 WINDOW MENU

Manages open windows.

14.2.7 HELP MENU

Help Topics: Opens the Help Topics software help menu.

Manual: Opens the software manual.

About RST Readout Host: Displays the program version/revision number.

15 USB TO UART CONTROLLER DRIVER SET INSTALLATION – READOUT ID UP TO AND INCLUDING VR0459 OR TR5451

Note

This chapter is for VW2106 and TH2016 Readout. For other instruments, please refer to section 15 for further information.

Note the serial number on sticker underneath readout lid. Skip to section 15 if the serial number is VR0460 or greater, TR5451 or greater. For other instruments USB driver installation, skip to section 15.

The RST Readouts requires a set of drivers installed on the host computer in order to communicate over USB communication port. All steps must be completed for USB communication to work correctly.

It is recommended to install the drivers from Microsoft Windows Update if internet connection is available. This will ensure the most up to date drivers are used. Just connect the RST Readout to desktop or laptop PC using included USB cable. Follow onscreen prompts for easy installation.

In case internet connection is not available, use the included CD. Current USB drivers and software can be also downloaded from RST Instruments website http://www.rstinstruments.com.

The following outlines a procedure for installing the USB to UART Controller Driver Set on Microsoft™ WindowsXP, Microsoft™ Windows Vista and Microsoft™ Windows7 platforms. The actual screenshots may differ but the steps will be very similar.

15.1 MICROSOFT™ WINDOWSXP INSTALLATION PROCEDURE

15.1.1 USB TO UART DEVICE INSTALLATION

The following instructions contain VW2106 dialog screen shots. TH2016 dialogs will be very similar.

After successful installation of RST Readout Host software, click on "First Gen Driver Install" in RST Instruments->RST Readout Host->Tools. The following screen will be shown:

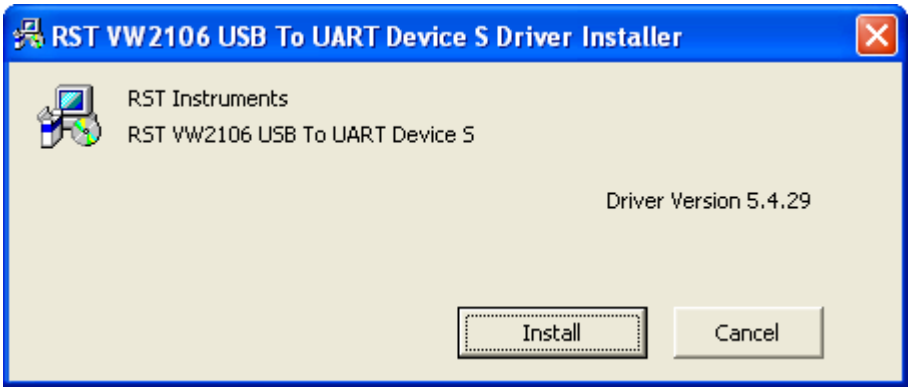


Figure 79 – First Gen Driver Set Installation on Windows XP

Click ***Install…*** and press **OK** when installation finishes.

At this time, Windows system detects installed device and starts **New Hardware Wizard**, as displayed in Figure 72

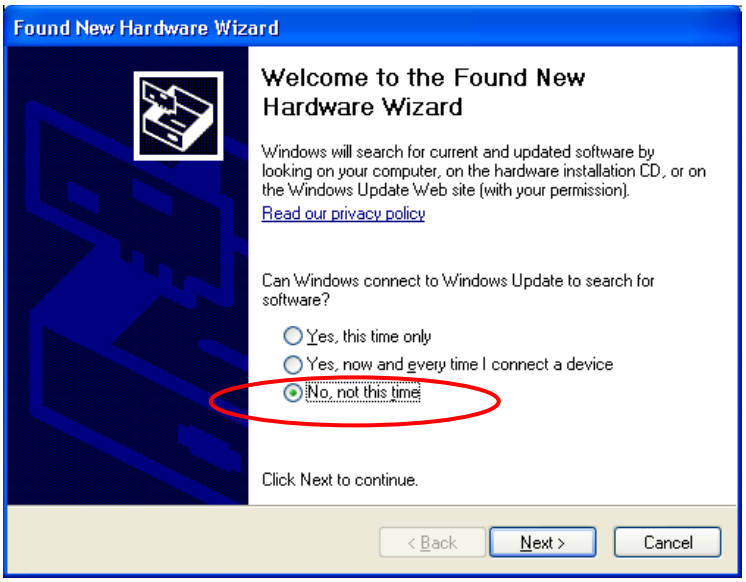


Figure 80 – New Hardware Wizard for Device

Choose ***No, not this time*** if asked whether or not connect to Windows Update. Click ***Next***.

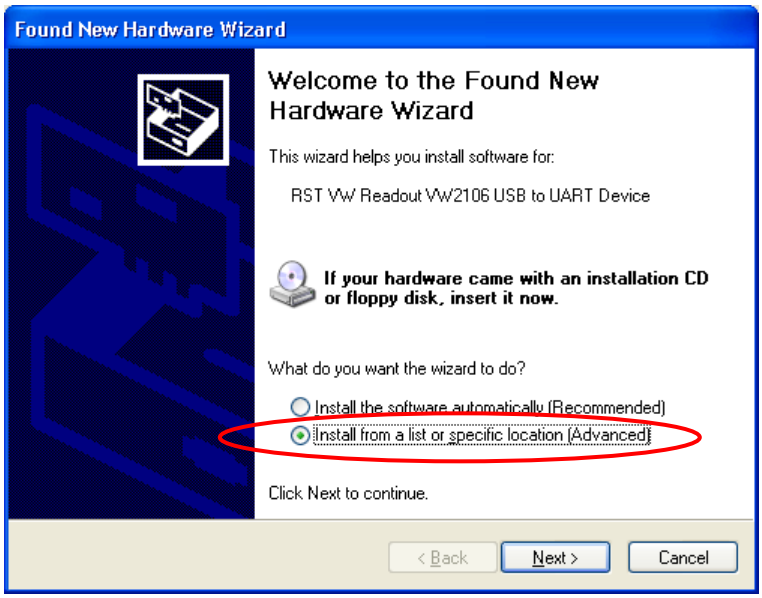


Figure 81 – New Hardware Wizard for Device – choose install

Choose ***Install from a list or specific location*** and click ***Next***.

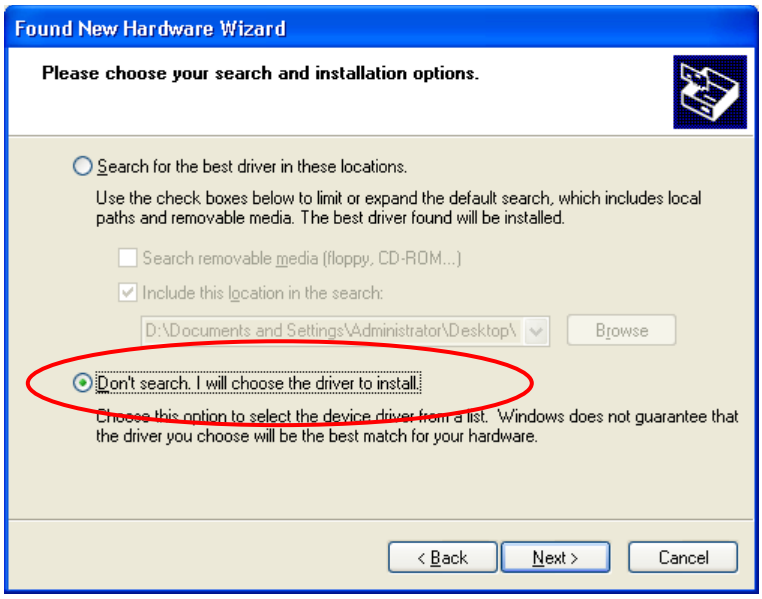


Figure 82 – New Hardware Wizard for Device – Choose Driver

Select ***Don't search*** and click ***Next***. Click ***Next*** on window that follows.

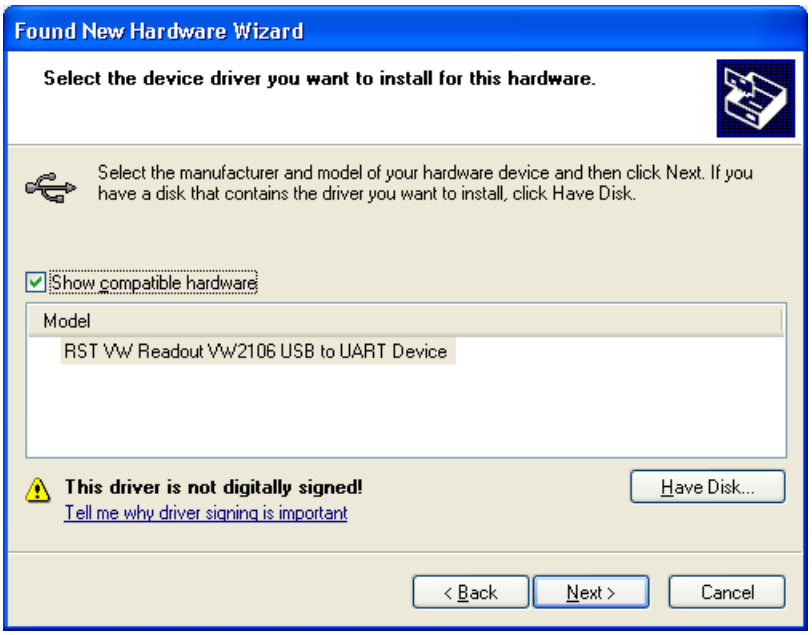


Figure 83 – New Hardware Wizard for Device – Continue

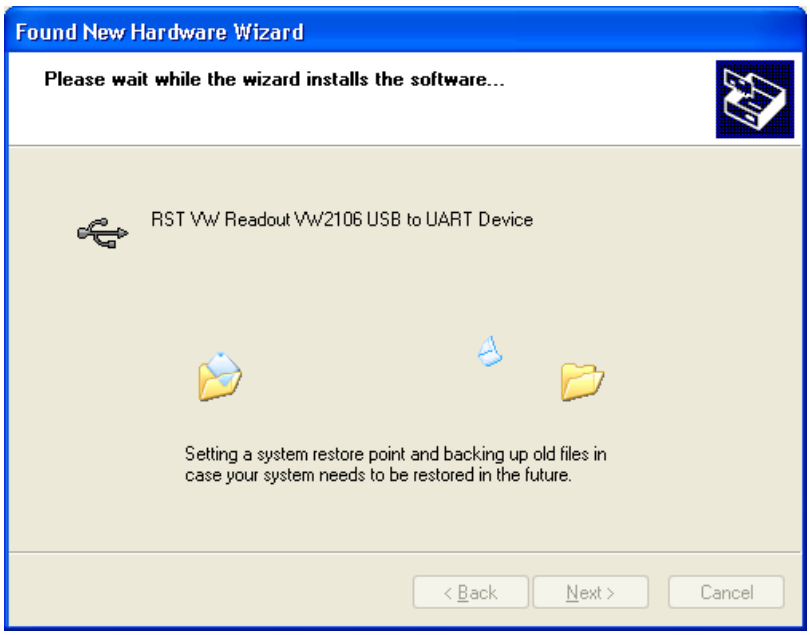


Figure 84 – New Hardware Wizard for Device – File Transfer

The Wizard will install device drivers and display the following screen. Click ***Finish*** to complete device drivers installation.

Figure 85 – New Hardware Wizard for Device – Install Complete

15.1.2 USB TO UART CONTROLLER INSTALLATION

After successful installation of USB to UART device drivers, the readout should be connected to the host computer. Press any key on the readout to power up the unit, if not already done so. The MS Windows system should detect the new device and display New Hardware Wizard, as shown on Figure 78.

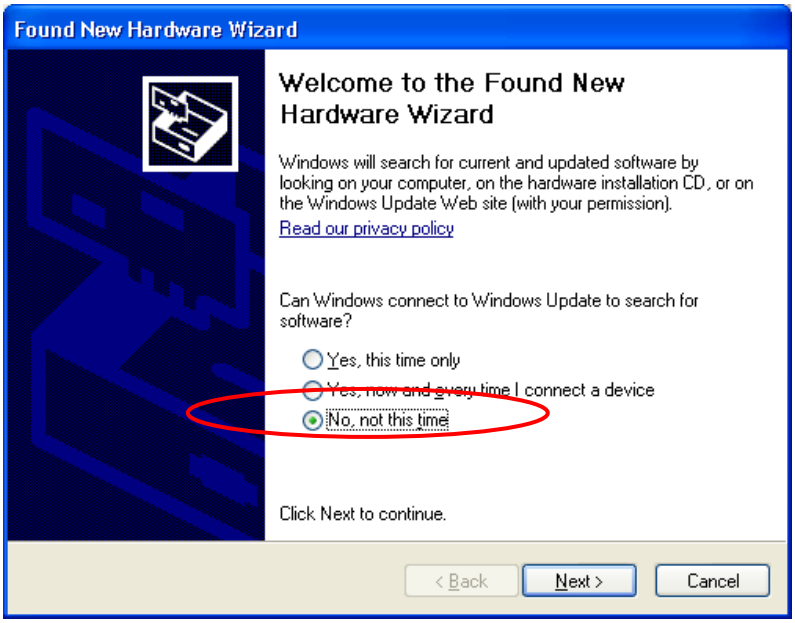


Figure 86 – New Hardware Wizard for Controller

Installing USB to UART Controller device drivers procedure is very similar to the previously described steps for installing USB to UART Device drivers. Figure 79 through Figure 82 show every step for a reference.

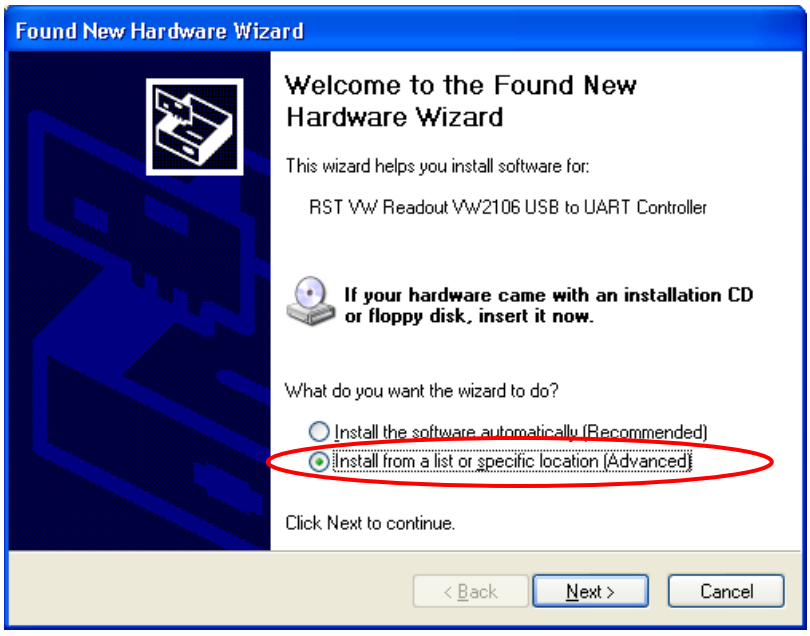


Figure 87 – New Hardware Wizard for Controller - Choose Install

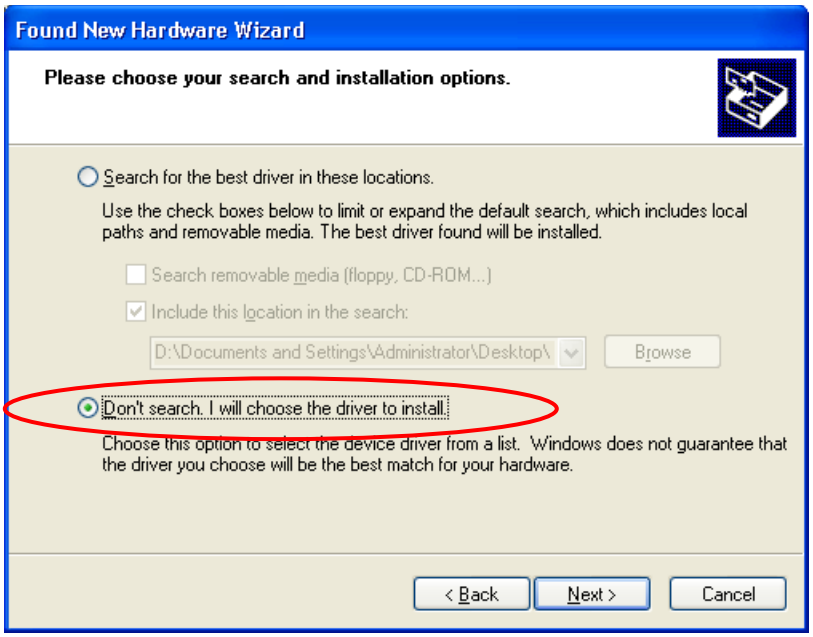


Figure 88 – New Hardware Wizard for Controller – Choose Driver

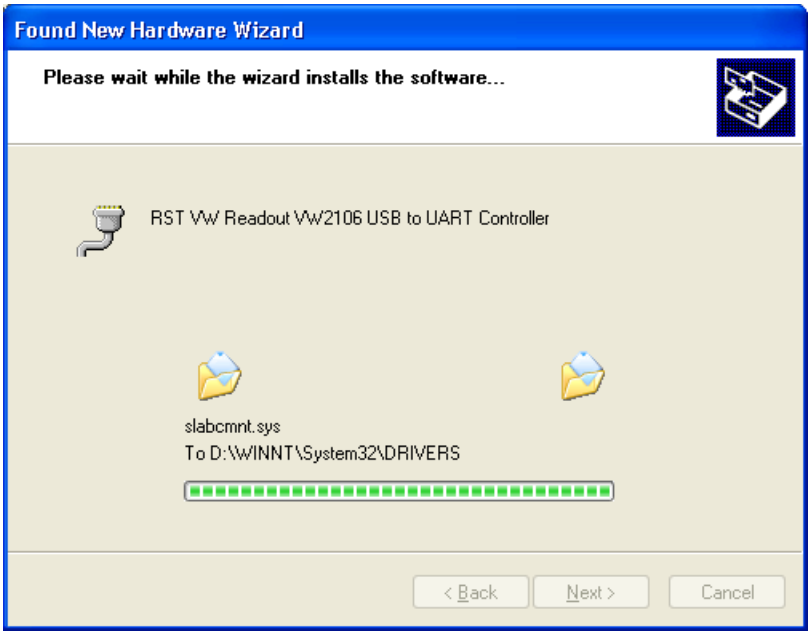


Figure 89 – New Hardware Wizard for Controller – File Transfer

Figure 90 – New Hardware Wizard for Controller – Install Complete

After successful installation, the yellow message balloon (Figure 83) should be shown in the lower right hand corner stating that all device drivers are installed and ready to use.

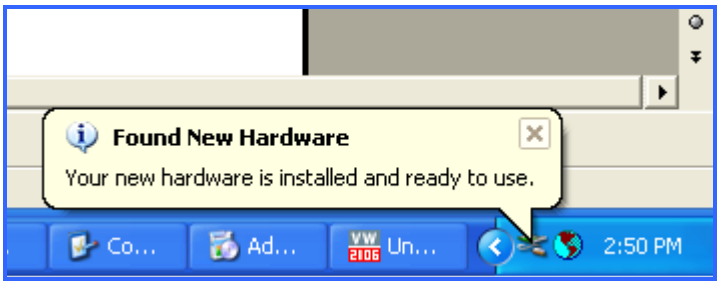


Figure 91 – New Hardware Installed Confirmation

Alternatively, correct installation of the device drivers can be verified by navigating to the *Windows Control Panel*, choosing *System* and then selecting the *Hardware* tab. Clicking on *Device Manager* will bring up the following screen:

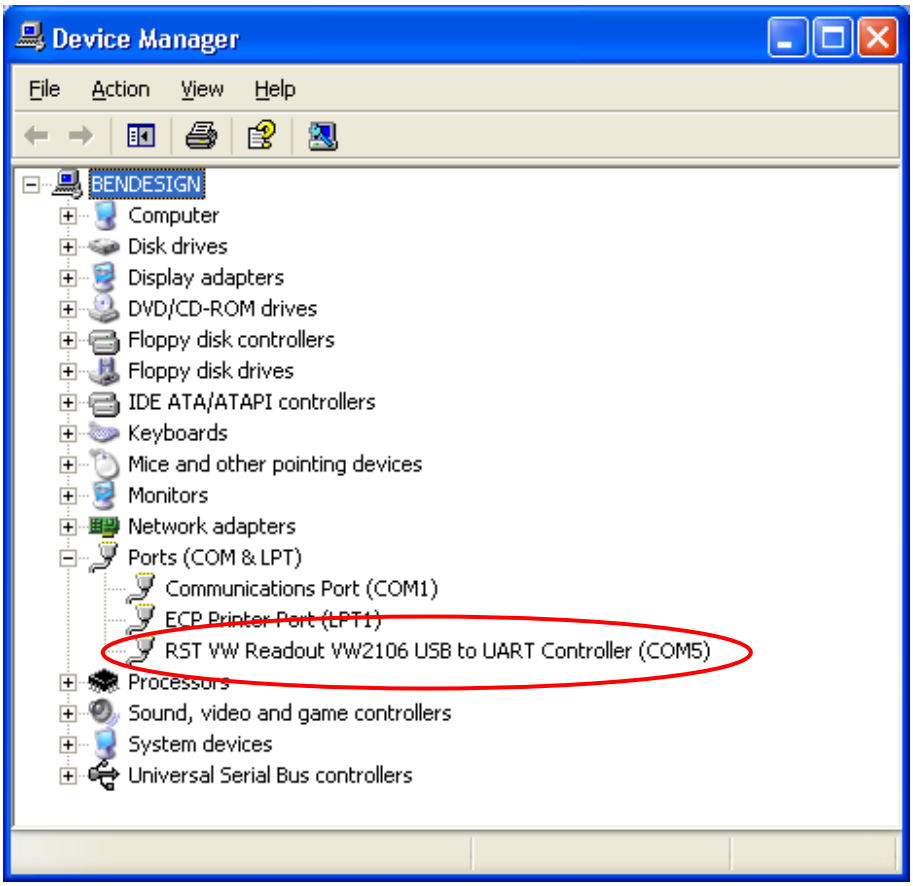


Figure 92 – WindowsXP Device Manager

If the driver was installed correctly, the RST VW Readout VW2106 USB to UART Controller port will appear as in Figure 84 above. If the driver has not been installed correctly, yellow exclamation mark will appear next to the device. Once the above has been verified, note the COM number which has been assigned to the USB serial port. This will vary from computer to computer, in this example it is COM5.

Close the device manager and launch the RST Readout Host Software. The RST Readout Host Software should now connect to the readout. Confirmation can be made by looking at the status bar (Figure 1).

15.2 MICROSOFT™ WINDOWS VISTA AND WINDOWS7, 8.1, 10 INSTALLATION PROCEDURE

The following instructions contain VW2106 dialog screen shots. TH2016 dialogs will be very similar.

After successful installation of the RST Readout Host software, click on "First Gen Driver Install" in RST Instruments->RST Readout Host->Tools. The following screen will be shown:

Figure 93 – First Gen Driver Set Installation on Windows Vista and 7, 8.1, 10

Click ***Install…*** and then press **OK** when installation finishes.

Figure 94 – Install Complete

After successful installation of USB to UART device drivers, the readout should be connected to the host computer. Press any key on the readout to power up the unit, if not already done so. The MS Windows system should detect the new device and display hardware installation status, as shown on Figure 87.

Figure 95 – New Hardware Status for Controller

After successful installation, the yellow message balloon (Figure 88) should be shown in the lower right hand corner stating that all device drivers are installed and ready to use.

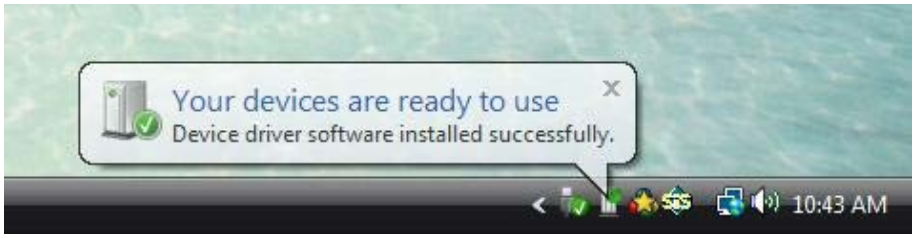


Figure 96 – New Hardware Installed Confirmation

Alternatively, correct installation of the device drivers can be verified by navigating to the *Windows Control Panel* and choosing *System.* Clicking on *Device Manager* will bring up the following screen:

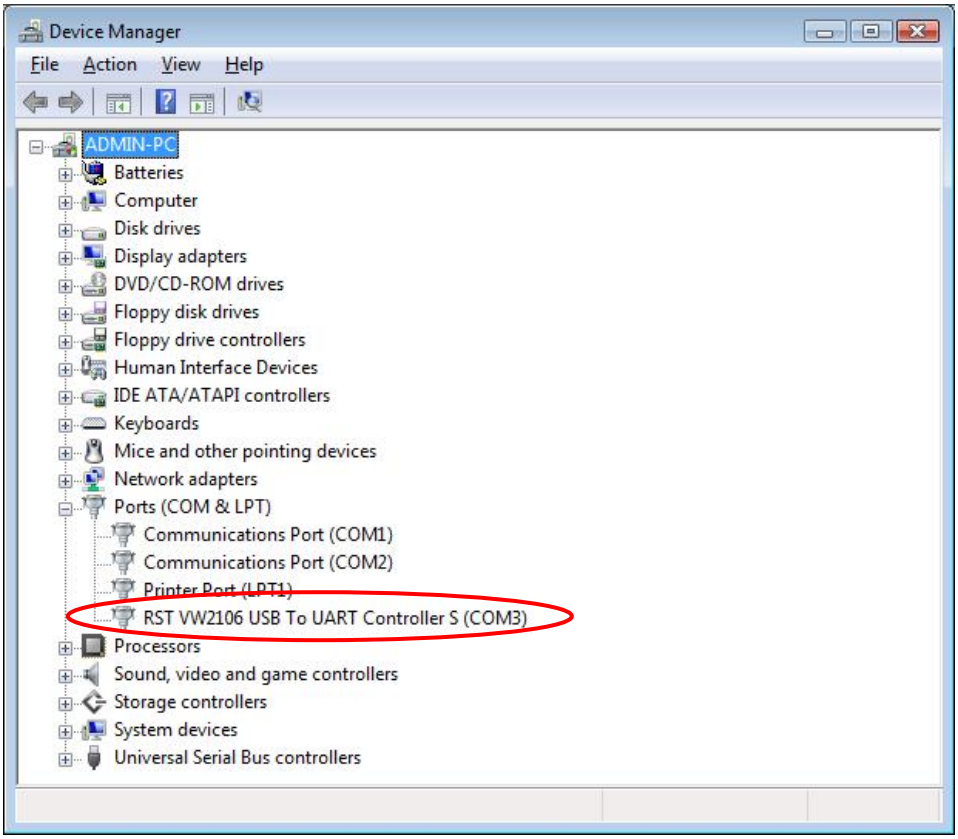


Figure 97 – Windows Vista and Windows 7, 8.1, 10 Device Manager

If the driver was installed correctly, the RST VW Readout VW2106 USB to UART Controller port will appear as in Figure 97 above. If the driver has not been installed correctly, yellow exclamation mark will appear next to the device. Once the above has been verified, note the COM number which has been assigned to the USB serial port. This will vary from computer to computer, in this example it is COM3.

Close the device manager and launch the RST Readout Host Software. The RST Readout Host Software should now connect to the readout. Confirmation can be made by looking at the status bar (Figure 1).

16 USB TO UART CONTROLLER DRIVER SET INSTALLATION – READOUT ID VR0460 OR GREATER, TR5452 OR GREATER, ALL OTHER RST READOUTS

For VW2106 or TH2016, note the serial number on sticker underneath readout lid. Go back to section 14. if the serial number is VR0459 or less, or TR5451 or less. For other RST Readouts USB driver installation, follow the instructions below.

The RST Readouts require a set of drivers installed on the host computer in order to communicate over USB communication port. All steps must be completed for USB communication to work correctly.

It is recommended to install the drivers from Microsoft Windows Update if internet connection is available. This will ensure the most up to date drivers are used. Just connect the readout to desktop or laptop PC using included USB cable. Follow onscreen prompts for easy installation.

In case internet connection is not available, use the included CD. Current USB drivers and software can be also downloaded from RST Instruments website http://www.rstinstruments.com.

The following outlines a procedure for installing the USB to UART Controller Driver Set on Microsoft™ WindowsXP, Microsoft™ Windows Vista and Microsoft™ Windows7 platforms. The actual screenshots may differ but the steps will be very similar.

16.1 MICROSOFT™ WINDOWSXP INSTALLATION PROCEDURE

The following instructions contain VW2106 dialog screen shots. Other instruments dialogs will be very similar.

After successful installation of the RST Readout Host software, click on "Second Gen Driver Install" in RST Instruments->RST Readout Host->Tools. The following screen will be shown:

Figure 98 – Second Gen Driver Set Installation on Windows XP

Click ***Next***.

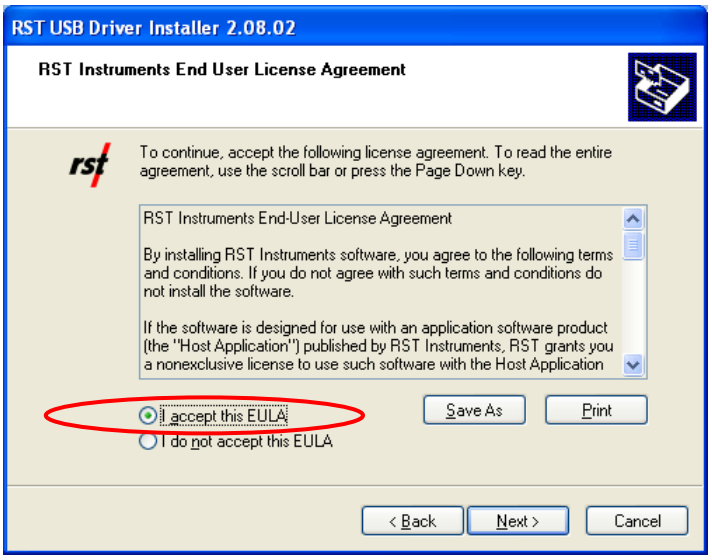


Figure 99 – New Hardware Wizard for USB to UART

Select your acceptance of RST Instruments End User License Agreement, click ***Next***.

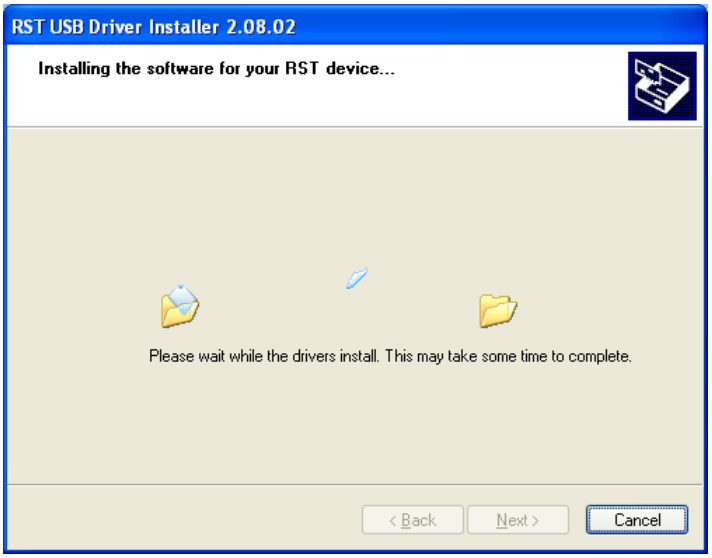


Figure 100 – New Hardware Wizard for USB to UART – File Transfer

The Wizard will install device drivers and display the following screen. Click ***Finish*** to complete device drivers installation.

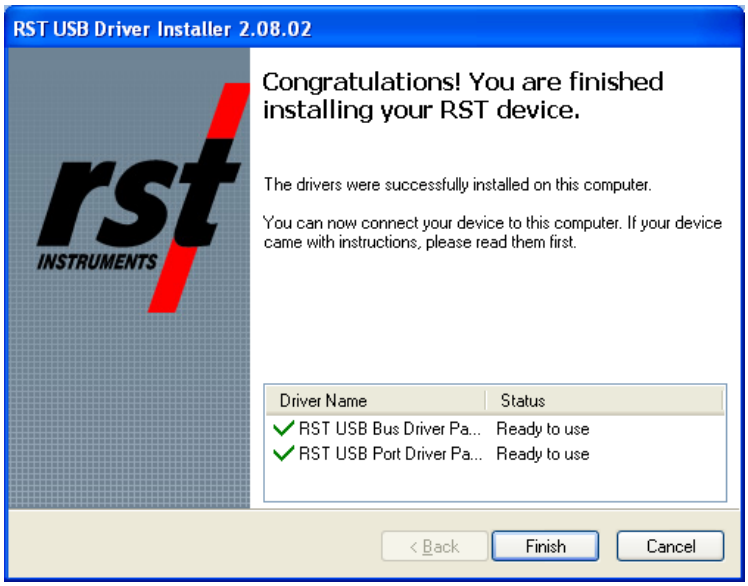


Figure 101 – New Hardware Wizard for USB to UART – Install Complete

After successful installation of USB to UART device drivers, the readout should be connected to the host computer. Press any key on the readout to power up the unit, if not already done so. The MS Windows system should detect the new device and display the yellow message balloon (Figure 94) in the lower right hand corner stating that all device drivers are installed and ready to use.

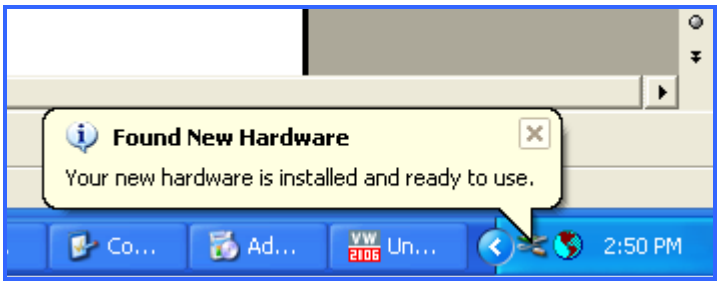


Figure 102 – New Hardware Installed Confirmation

Alternatively, correct installation of the device drivers can be verified by navigating to the *Windows Control Panel*, choosing *System* and then selecting the *Hardware* tab. Clicking on *Device Manager* will bring up the following screen:

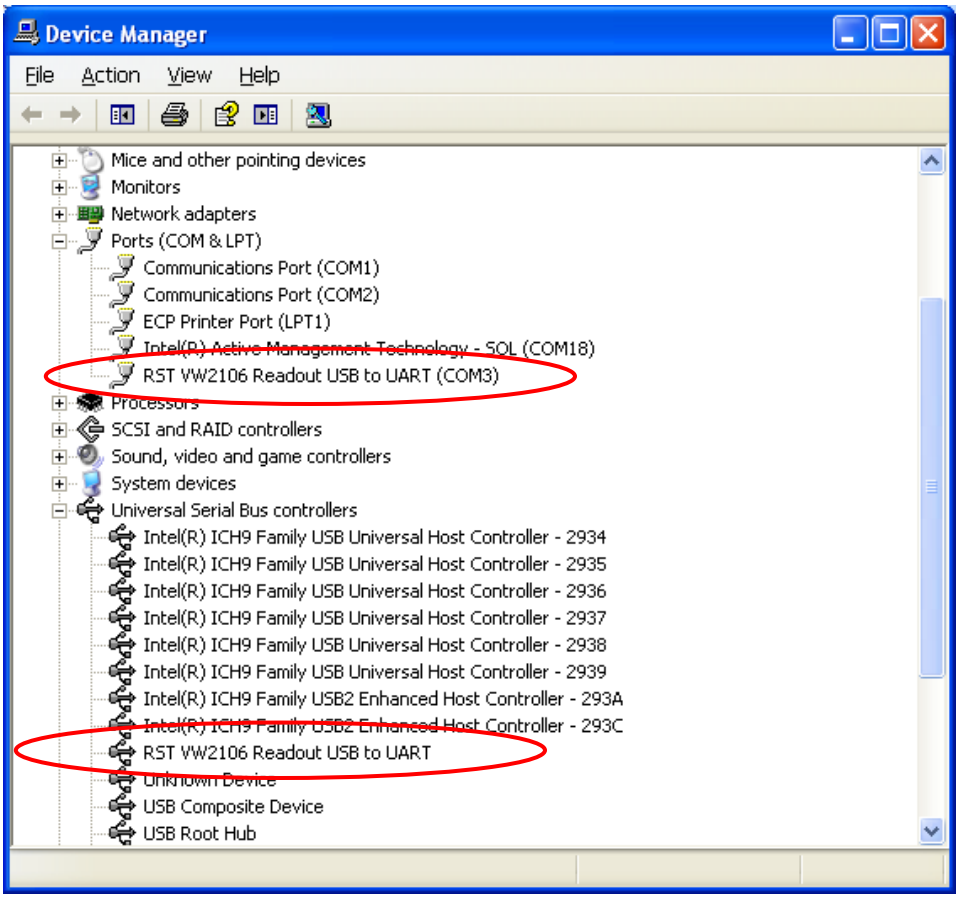


Figure 103 – WindowsXP Device Manager

If the driver was installed correctly, the RST Readout USB to UART Controller port will appear as in Figure 103 above. If the driver has not been installed correctly, yellow exclamation mark will appear next to the device. Once the above has been verified, note the COM number which has been assigned to the USB serial port. This will vary from computer to computer, in this example it is COM3.

Close the device manager and launch the RST Readout Host Software. The RST Readout Host Software should now connect to the readout. Confirmation can be made by looking at the status bar (Figure 1).

16.2 MICROSOFT™ WINDOWS VISTA AND WINDOWS7, 8.1, 10 INSTALLATION PROCEDURE

The following instructions contain VW2106 dialog screen shots. Other RST Readouts dialogs will be very similar.

After successful installation of RST Readout Host software, click on "Second Gen Driver Install" in RST Instruments->RST Readout Host->Tools. The following screen will be shown:

Figure 104 – Second Gen Driver Set Installation on Windows Vista and 7, 8.1, 10

Click **Next**, the following dialog appears:

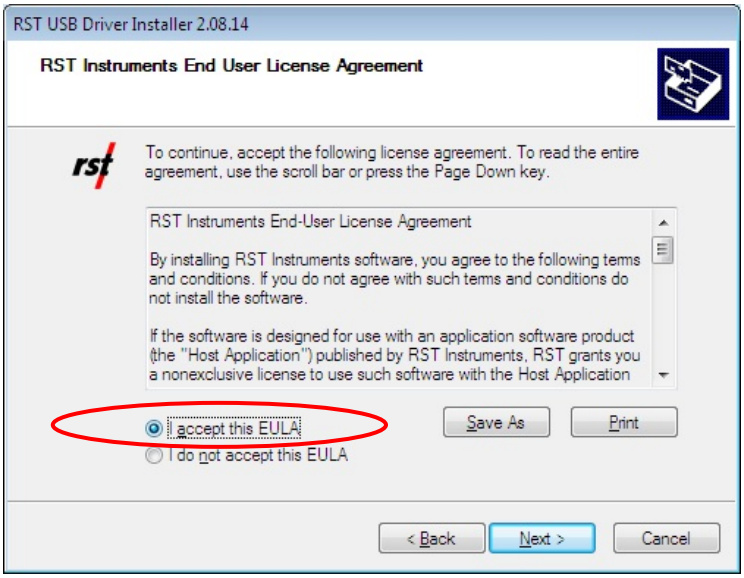


Figure 105 – USB to UART Driver Set Installation

Select your acceptance of RST Instruments End User License Agreement, click ***Next***.

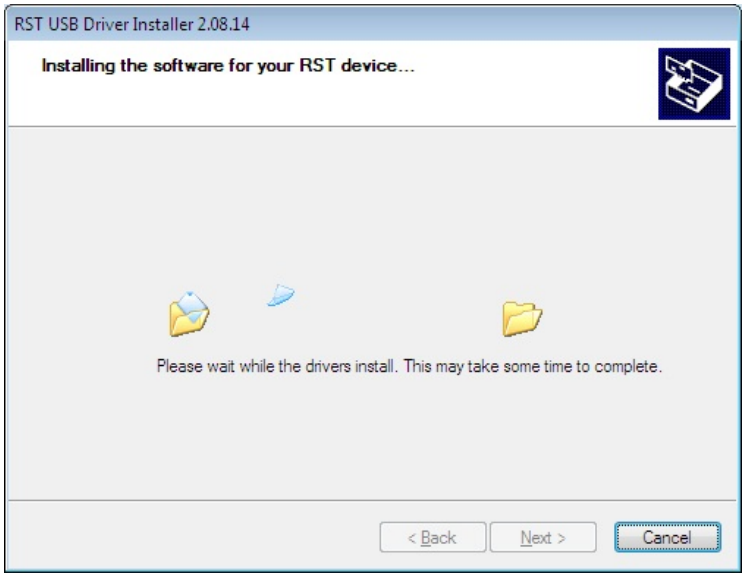


Figure 106 – USB to UART Driver Set Installation – File Transfer

The Wizard will install device drivers and display the following screen. Click ***Finish*** to complete device drivers installation.

Figure 107 – USB to UART Driver Set Installation – Install Complete

After successful installation of USB to UART device drivers, the RST Readout should be connected to the host computer. Press any key on the readout to power up the unit, if not already done so. The MS Windows system should detect the new device and complete the USB serial port installation, as shown on following dialogs:

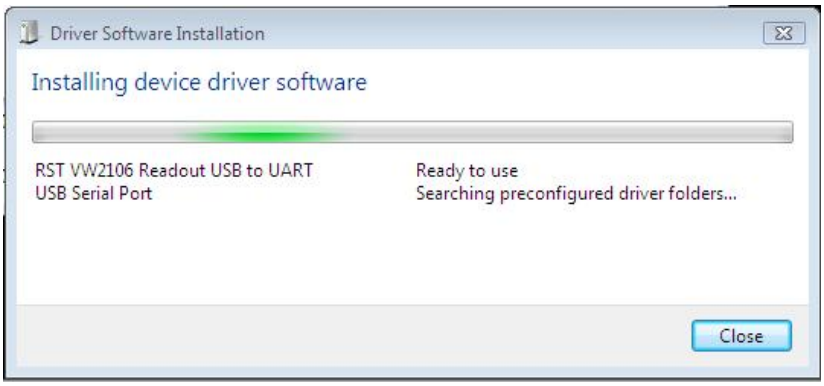


Figure 108 – USB Serial Port Driver Installation

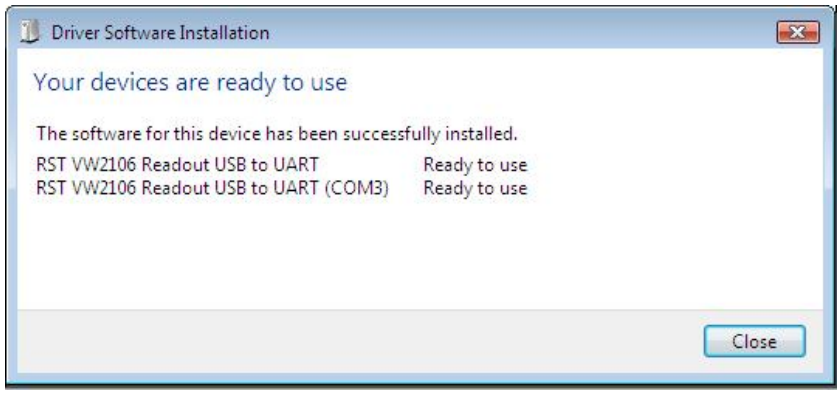


Figure 109 – USB Serial Port Driver Installation Complete

Click **Close** and MS Windows will display the yellow message balloon (Figure 110) in the lower right hand corner stating that all device drivers are installed and ready to use.

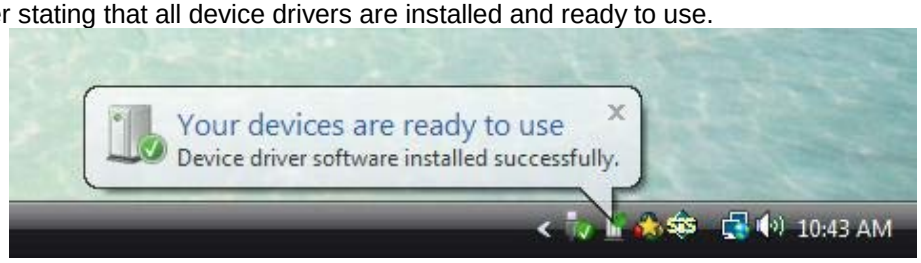


Figure 110 – New Hardware Installed Confirmation

Alternatively, correct installation of the device drivers can be verified by navigating to the *Windows Control Panel* and choosing *System.* Clicking on *Device Manager* will bring up the following screen:

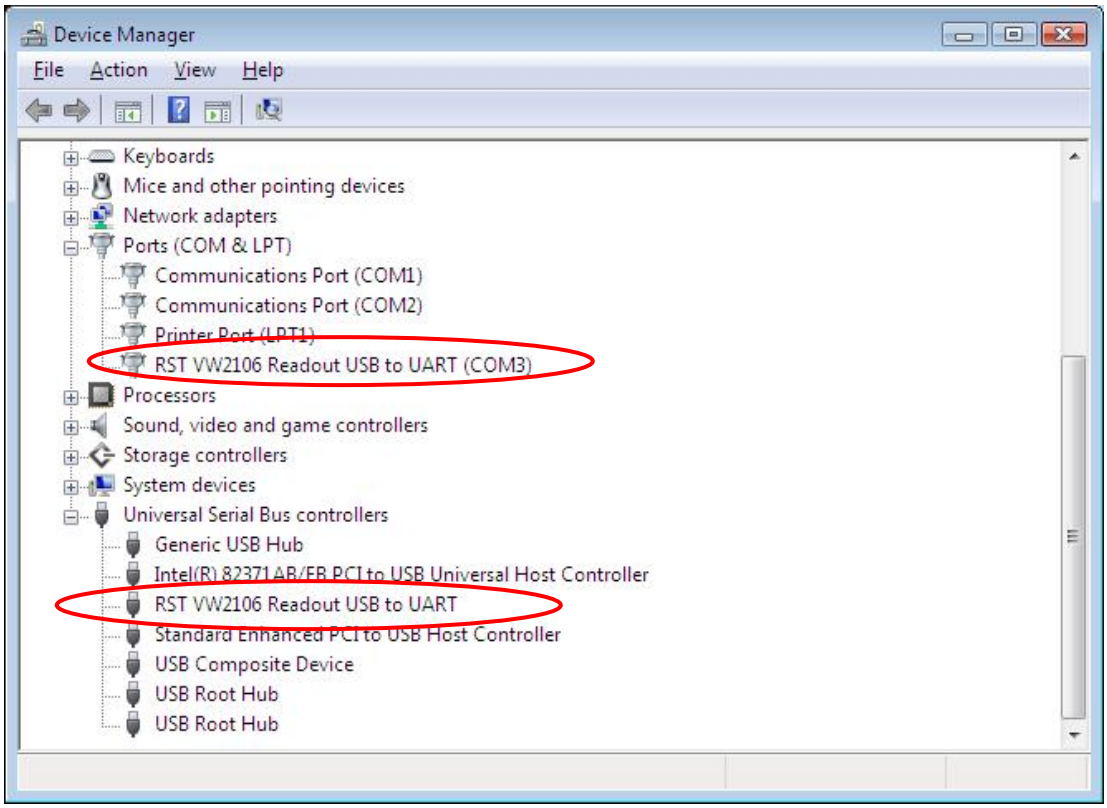


Figure 111 – Windows Vista and Windows 7, 8.1, 10 Device Manager

If the driver was installed correctly, the RST Readout USB to UART port will appear as in Figure 103 above. If the driver has not been installed correctly, yellow exclamation mark will appear next to the device. Once the above has been verified, note the COM number which has been assigned to the USB serial port. This will vary from computer to computer, in this example it is COM3.

Close the device manager and launch the RST Readout Host Software. The RST Readout Host Software should now connect to the readout. Confirmation can be made by looking at the status bar (Figure 1).

17 TROUBLESHOOTING

1. Cannot connect to the RST Readout:

   Most of the connection problems are caused by incorrectly installed USB to UART Driver Set.

   a. Please ensure that the drivers are installed by navigating to the *Windows Device Manager* and verifying that the USB to UART Controller appears under *Ports(COM & LPT)* as shown in Figure 84 – WindowsXP Device Manager in Section 14.1.2 or in Figure 97 – Windows Vista and Windows 7, 8.1, 10 Device Manager.

   b. Select *Edit* and *Port* and ensure that the COM port number match the COM port number assigned to the USB to UART Controller in Windows Device Manager.

   c. Verify that the USB cable is plugged into USB port on host computer and USB socket on the readout box.

   d. Check to ensure that no other software is using the USB port

   e. Turn off the readout and close the RST Readout Host software. Turn on the readout box, wait until startup logo screen disappears and start the RST Readout Host software. The LCD screen should display “Host connection” when connected to host computer.

2. Program Crashes:

   a. Ensure that a *.csv is not open in Excel while trying to change the configuration of the readout in the software. Close the software before opening any *.csv files.

   b. Don’t interrupt the program when it is downloading or uploading data. Wait until the progress indicator disappears from the status bar.

3. Toolbar buttons and pull down menus are disabled – not accessible:

   a. Disconnect the USB communication cable from the readout. Connect back USB cable. The software will reinitialize and restart.

18 CONTACT US

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