DataCan

USER GUIDE

DataCan Mk.2 Logger

www.datacan.ca

Table of Contents

History of Changes

Rev. No.	Date	Pages	Author	Description of Changes
1	November 27, 2019	54	Mathieu Johnson	Initial Release version

About This Guide

This document is intended as a supplement to formal training. DataCan is constantly working to improve its products. We must therefore reserve the right to change designs, materials, specifications, and prices without notice. DataCan declines any liability that may arise out of the potential inaccuracies in this guide.

This guide assumes that you have some computing and tool knowledge. For more information, contact your local service representative.

www.datacan.ca

info@datacan.ca

We thank you for any feedback or comments that will help us to continue to improve our products and service.

Warnings and Conditions

WARNING – Care shall be taken to avoid ignition hazards due to impact or friction during transportation and installation.

WARNING – The casing of this device is not isolated from the internal circuit. Care must be taken to avoid grounding issues.

WARNING – Battery pack replacement is the only user maintenance activity internal to the logger. Any substitution or modification to any components may impair intrinsic safety.

1 Introduction

DataCan Services Corp. provides technology-driven downhole measurement solutions that deliver productivity, quality, and safety. We design, manufacture, and service 200°C plus hybrid platform instruments, patented multi-cycle instant-close shut-in tools, reservoir management systems, and a suite of quartz and piezo-resistive pressure measurement instruments. We offer specialized solutions that will help you improve productivity in your applications.

We are the leader in ultra-high temperature circuit design, manufacturing, and packaging.

- Our part selection process ensures the best long term reliability is provided.
- Our fully automated surface mount assembly procedures ensure the highest quality circuit is constructed every time with minimal heat impact.
- Our Hybrid design and construction techniques will enable DataCan and its customers to reliably enter the 177ºC to 225ºC market.
- Our metal-to-metal seal and fully welded designs prevent potential leaks.

2 Product Description

The Surface Logger Mk.2 is used to measure and record 2 input pressures, and a process temperature by RTD probe. It is intended to work outside in a wide variety of environments with a weatherproof housing and connections. The data can be exported to a microSD™ card through the DataCan Logger Data Transfer Module, then loaded onto a PC to be read by the DataCan Download software.

The main unit can be screwed onto the wellhead to measure readings such as tubing, casing, and vent pressures.

The logger is powered by an internal battery pack; it cannot be powered with an external source.

NOTE: To conserve battery power always stop the logger from logging when the logger is not in use.

The DataCan download software operates and controls all of DataCan's downhole and surface products. The software can be used to program tools, download the information stored on the tool memory, graph tool data, and create reports containing relevant job information. The software runs on Windows XP/Vista/7/8/10.

The logger is intrinsically safe. Certified to CAN/CSA C22.2 No 60079-0, CAN/CSA C22.2 No 60079-11, ANSI/UL 60079-0, ANSI/UL 60079-11, CAN/CSA C22.2 No 142 and UL508.
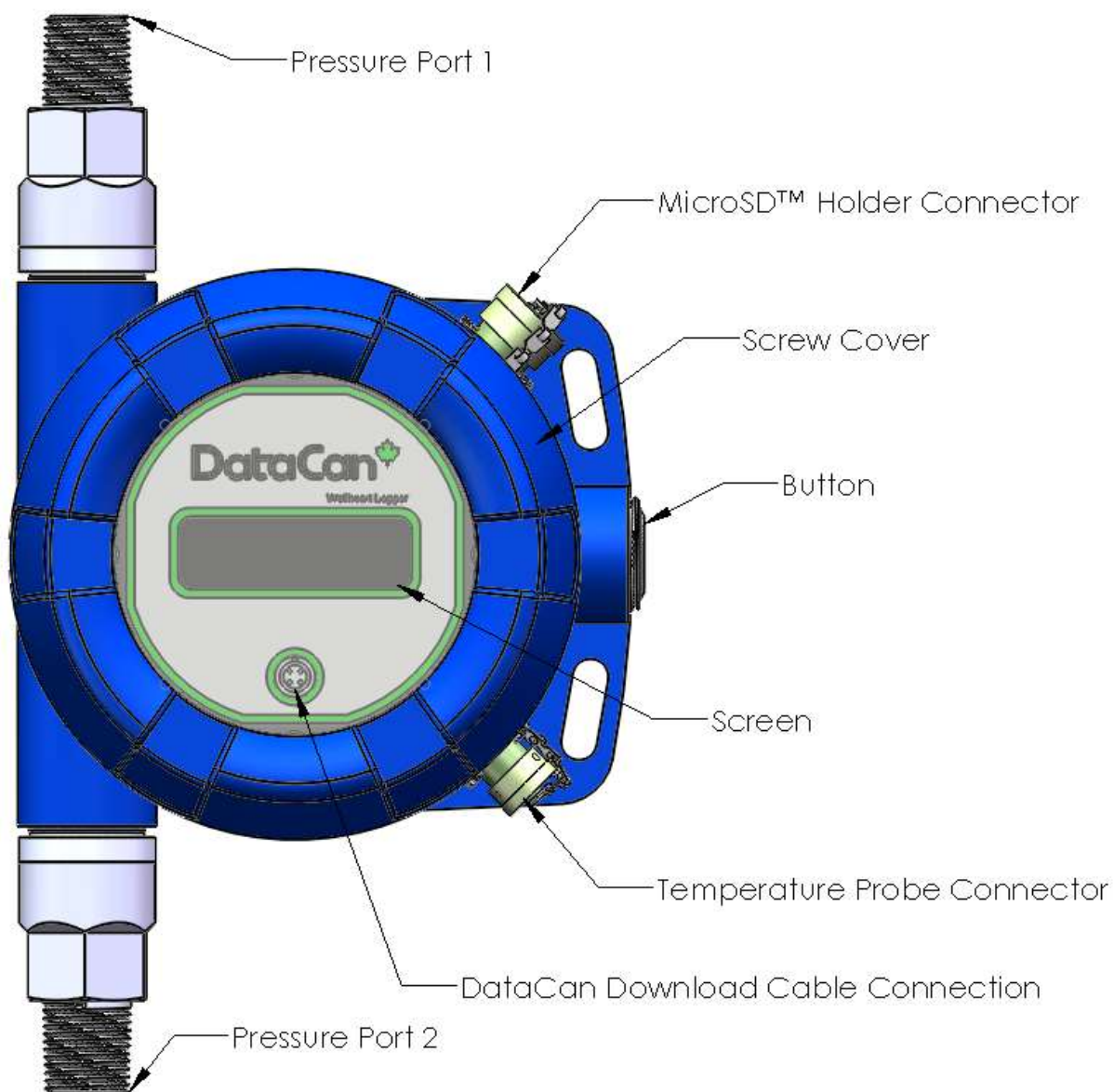With a rating of:
Class1, Zone 0, AEx ia IIC T3 Ga
Class1, Div 1, Group: A B C D T3;
Ta -40C to + 80C

2.1 Physical Overview

There are eight exterior components of the logger:

Pressure Port 1

MicroSD™ Holder Connector

Screw Cover

Button

Screen

Temperature Probe Connector

DataCan Download Cable Connection

Pressure Port 2

2.2 Physical Specifications

The Logger can be ordered to measure pressures ranges up to 10,000 psi.

The logger is housed in a weather-proof casing that requires the screw cover to be on tight and any unused connections to have their respective covers attached. The microSD™ holder interfaces with the logger through a waterproof connector, but the holder is not environmentally protected itself. Do not leave the holder attached to the logger when not downloading data.

The logger is intrinsically safe throughout the operational range of -40 °C to +80 °C. The Pressure sensor is rated to operate through -30 °C to 80 °C, outside this range the pressure sensor accuracy may be affected.

Description	Minimum	Maximum	Units
Pressure Sensure operational Temperature	-30	80	°C

Table 1: Temperature rating of the pressure sensor.

2.3 Physical Connections

There are three electrical connections on the logger. Two are for use in a hazardous location: the RTD probe connector and the microSD™ holder connector.

The **Download** connection is not for use in hazardous locations. It is used for setup and memory download when connected to a PC, and is not normaly used during logging. The download connection is for use with the DataCan Download Cable ONLY.

WARNING: DO NOT plug in a download cable into a unit with no battery or a dead battery. DO NOT leave the download cable plugged in when changing the battery. Unintended logger behaviour may occur.

2.4 Battery

Only the DataCan Mk.2 Logger battery pack, part number 109748, can be used in the DataCan Wellhead Logger Mk.2. The battery pack is a moderate discharge primary lithium cell, with a 125 mA fuse installed. Do not short circuit the terminals of the battery pack; it is protected by a fuse,

DataCan

and if the fuse blows the pack is unusable. Do not try to open the battery pack or bypass any of its safety features. The parameters of the pack are listed in table 2.

Description	Value	Units
Maximum open Circuit voltage	3.67	VDC
Nominal Voltage	3.6	VDC
Max Current	1.04	ADC
R_{int} min	0.86	Ω
Fuse current	0.125	A
Max Power	0.664	W

Table 2: Battery pack parameters

2.5 Data Overview

DataCan download software is designed to be as user friendly as possible while offering features not found on competitor communication software.

DataCan's products are designed to store data to memory. Whether the memory is located downhole inside of a memory recorder or at the surface in a surface read-out box or logger, the architecture of the data storage and retrieval remains the same.

DataCan stores data in "Jobs". Every job has a start time and end time. For a logger, the start time is when the operator starts the logger logging. The end time for a job the last sample taken when the data was downloaded on a current job, or when logging was stoped. See Section 3.3 Starting and Stopping logging for more information.

NOTE: If the battery is disconnected, like when the battery is changed, after a battery is reconnected the logger must connect to the DataCan Download software to set the time.

Jobs can be downloaded individually or as a set. Jobs can also be merged together during download. Jobs are not deleted by the act of re-programming the tool; the only way to delete a job is to instruct the software to perform the delete jobs command. You must delete all of the jobs at once.

You can sample any pressure gauge, surface box, or logger in real time and save files in real time to a remote location.

3 DataCan Download Software Installation

Each tool shipment comes with a DataCan USB Flash Drive that contains all of the files you need to install the software program and USB drivers.

Before installing DataCan Download Software, you should have your computer ready with one of the following operating systems: Windows XP/Vista/7/8/10.

To install DataCan Software from the Flash Drive:

- Insert the Flash Drive into a USB Port
- Open the **DataCan Download Software** folder.
- Double click the **setup.exe** file to launch the DataCan Software installation.
- Follow the instructions leading to the completion of the software installation.

New releases are available for download on our website https://www.datacan.ca/downloads.

3.1 Download Cable Drivers

If you are using Windows Vista or later and are connected to the internet, the driver for the cable should automatically install the first time the cable is plugged in.

4 Connecting to the DataCan Download Software and Configuring Logger

4.1 Getting Started with the Software

DataCan download software contains five main sections. Navigate between the five different sections by clicking the buttons shown below. The active section's button is highlighted green.
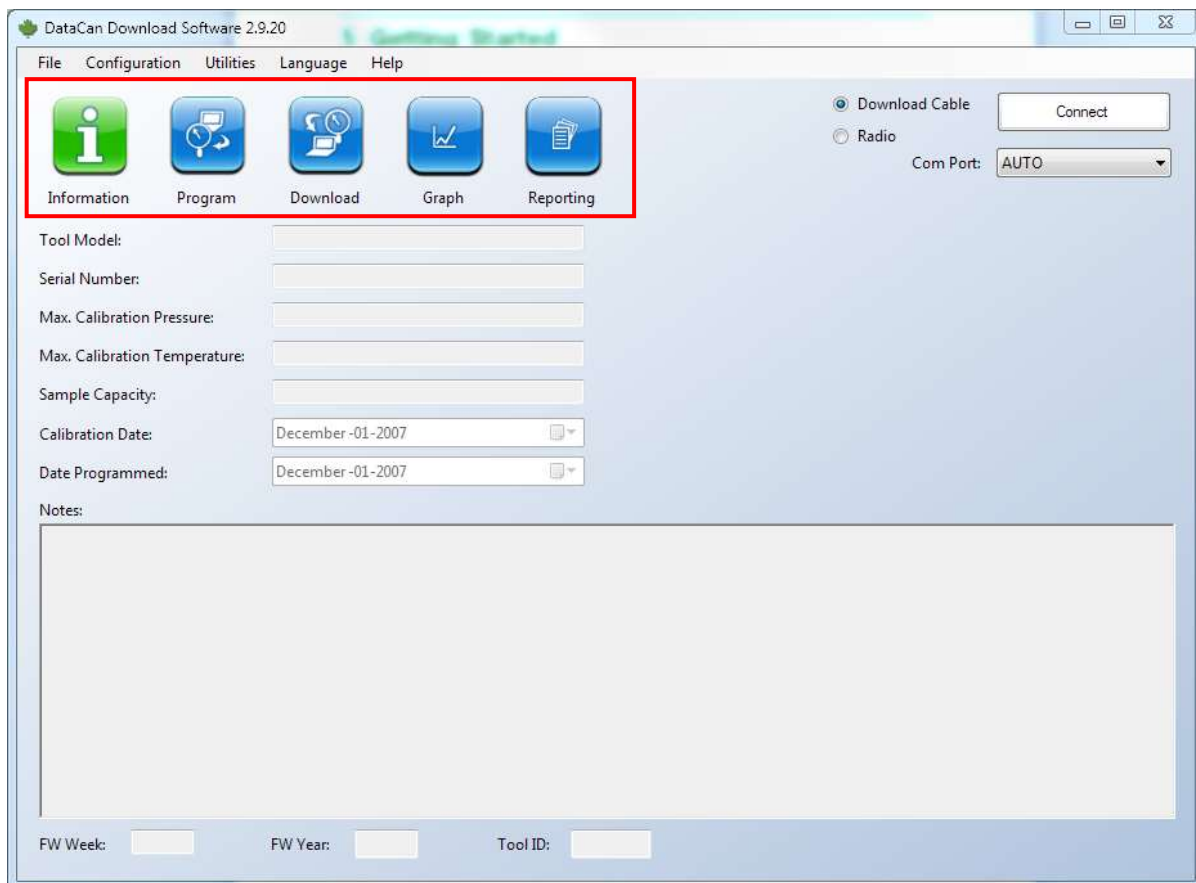
The five sections are as follows:

Info – See information about the connected tool.

Program –Program the tool.

Download –Download data from the tool memory.

Graph – Create graphs and tables of the downloaded data.

Reporting – Create detailed reports of job information.

The software also has five menus containing additional features. Navigate between the five menus by clicking the menu title shown below.
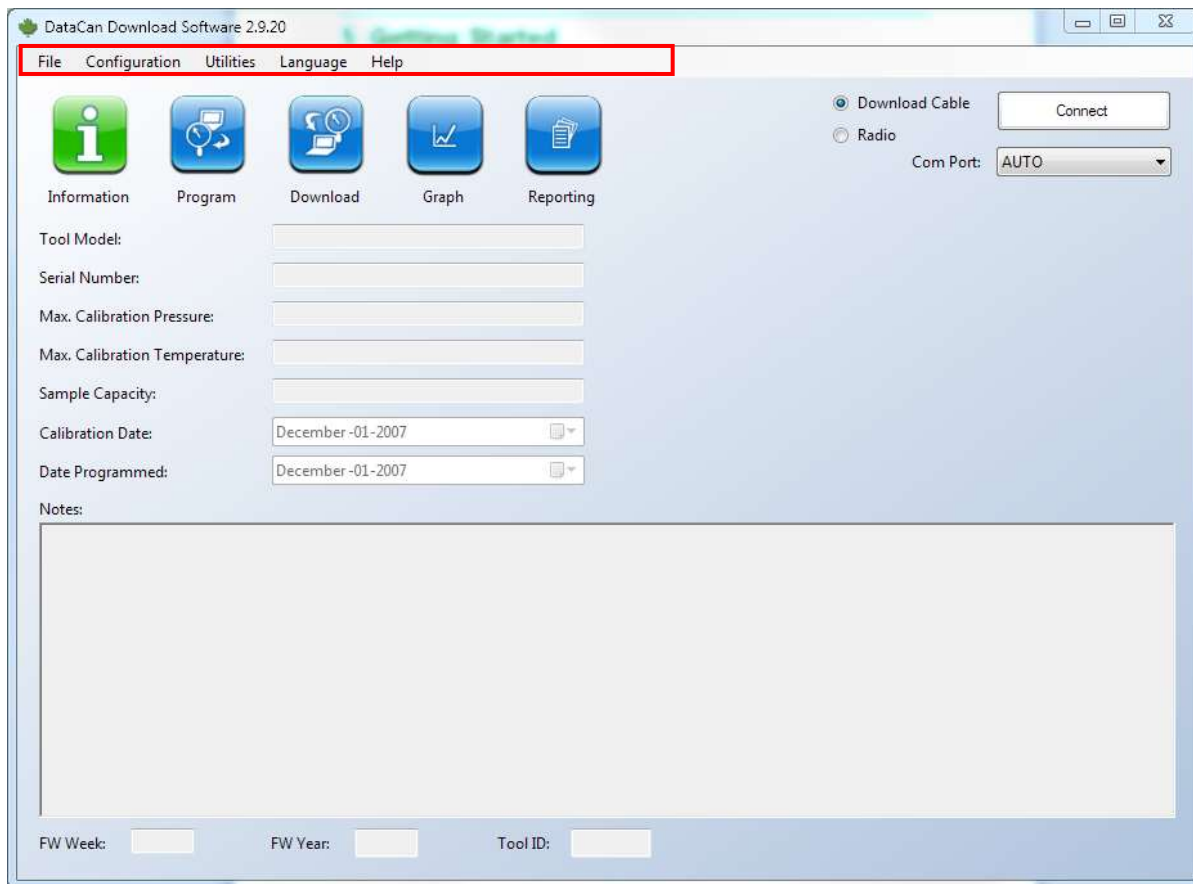
The five menus are as follows:

Graph – Open, close and save jobs in graph and tabular form in the Graph Section.

Configuration – Change the settings of the connected tool.

Utilities – Calculate battery usage and perform real time sampling with the connected tool.

Language – Switch between English, Mandarin Chinese, and German languages.

Help – View graph help and software version details.

4.2 Connecting the Logger to Software

Once the DataCan Download Software and the USB drivers have been installed you are ready to initiate communication with the tool.

Ensure the logger has a non-dead battery installed before attempting to communicate. The logger needs power to communicate to the PC.

WARNING: Do not leave the download cable connected to a logger with a dead or disconnected battery.

Remove the screw cap. Connect the green tool connection end of the DataCan Download Cable to the round 4-pin connection on faceplate that is normally underneath the screw cap. Connect the USB end to a receptacle on your computer.

Open DataCan Download Software. You will be directed to the info page shown below. Click on the **Connect** button.
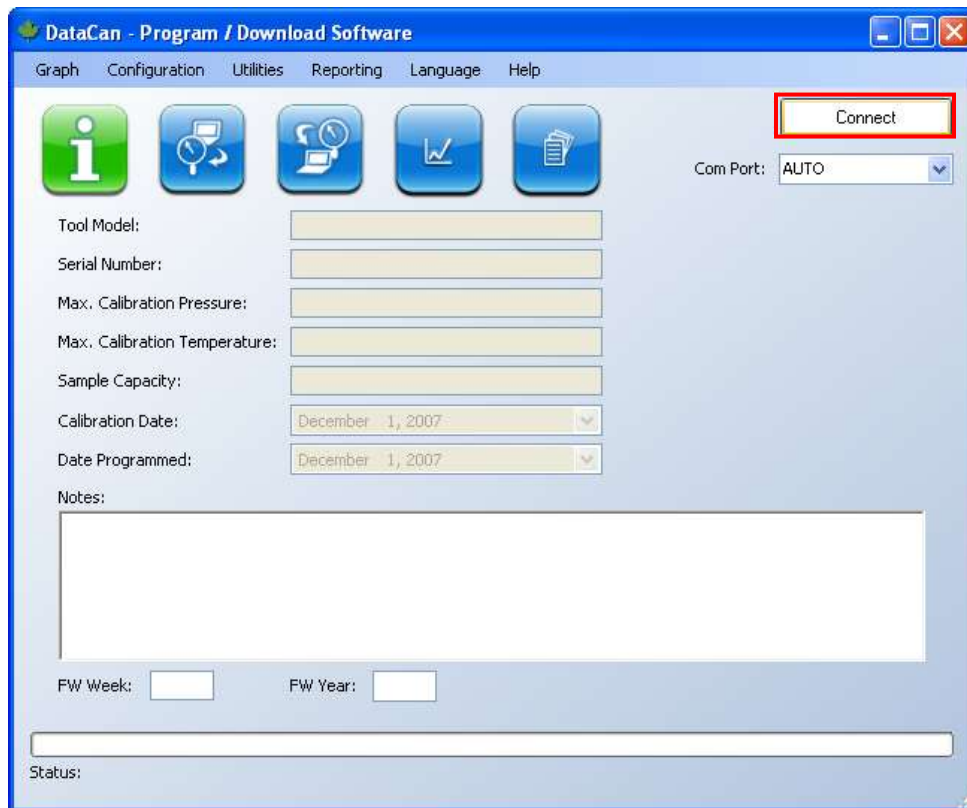
On connect, you may be prompted to set the time and date. If so, automatically set by clicking "OK".
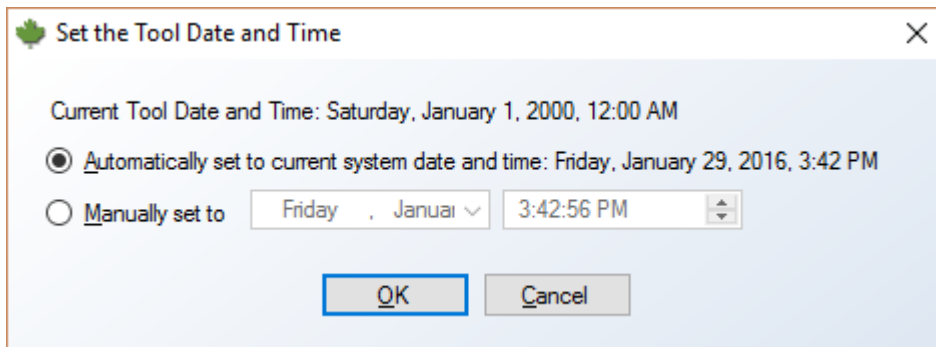
Once the software has established communication the Tool Model, Serial Number, Max Calibration Pressure, Max Calibration Temperature and Sample Capacity fields will fill with information from the tool.

You may test the real time clock chip by pressing "Get Time." The time / date should update to the correct time.
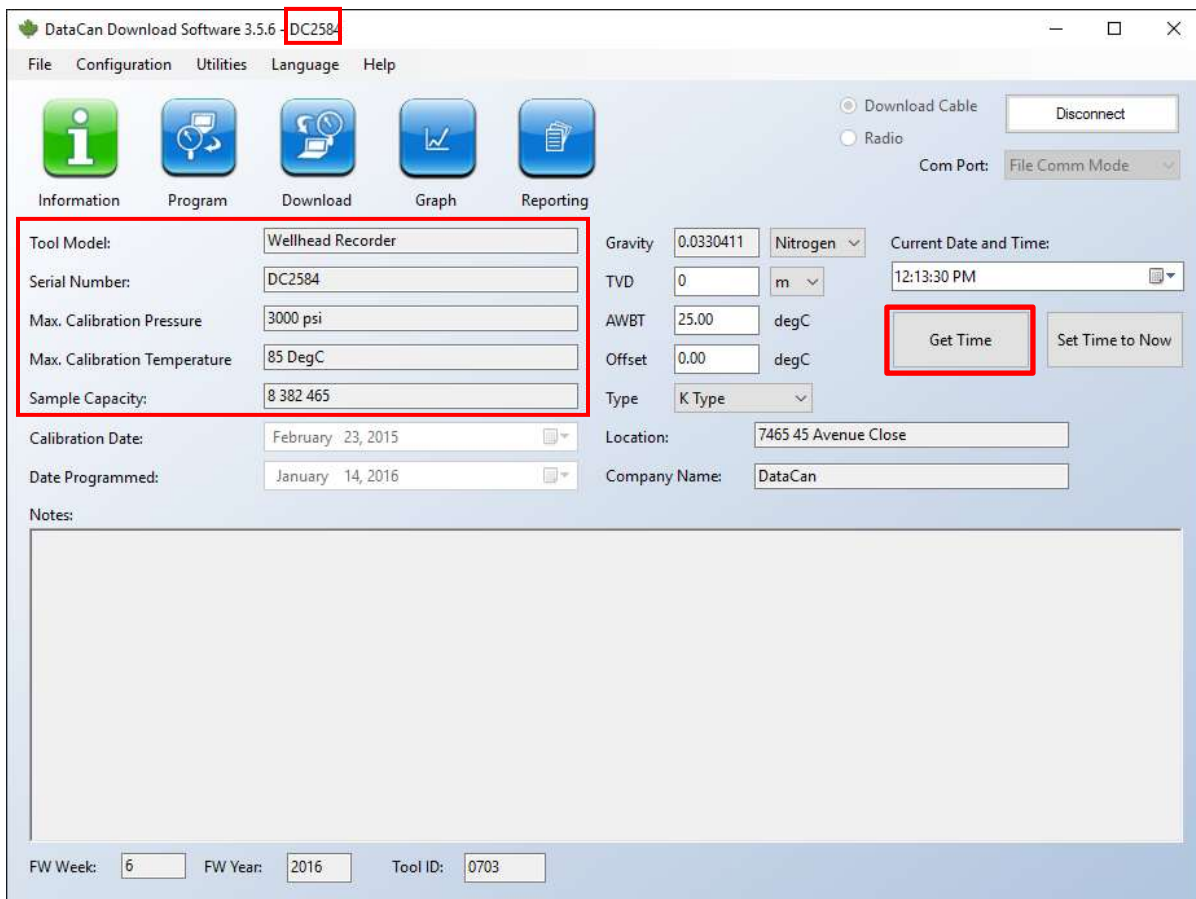
To disconnect the tool from the PC simply press the **Disconnect** button and unplug the tool.

4.3 Programming the Logger

Enter the Program section by clicking on the following icon. Here you can create programs and store programs to the tool memory.
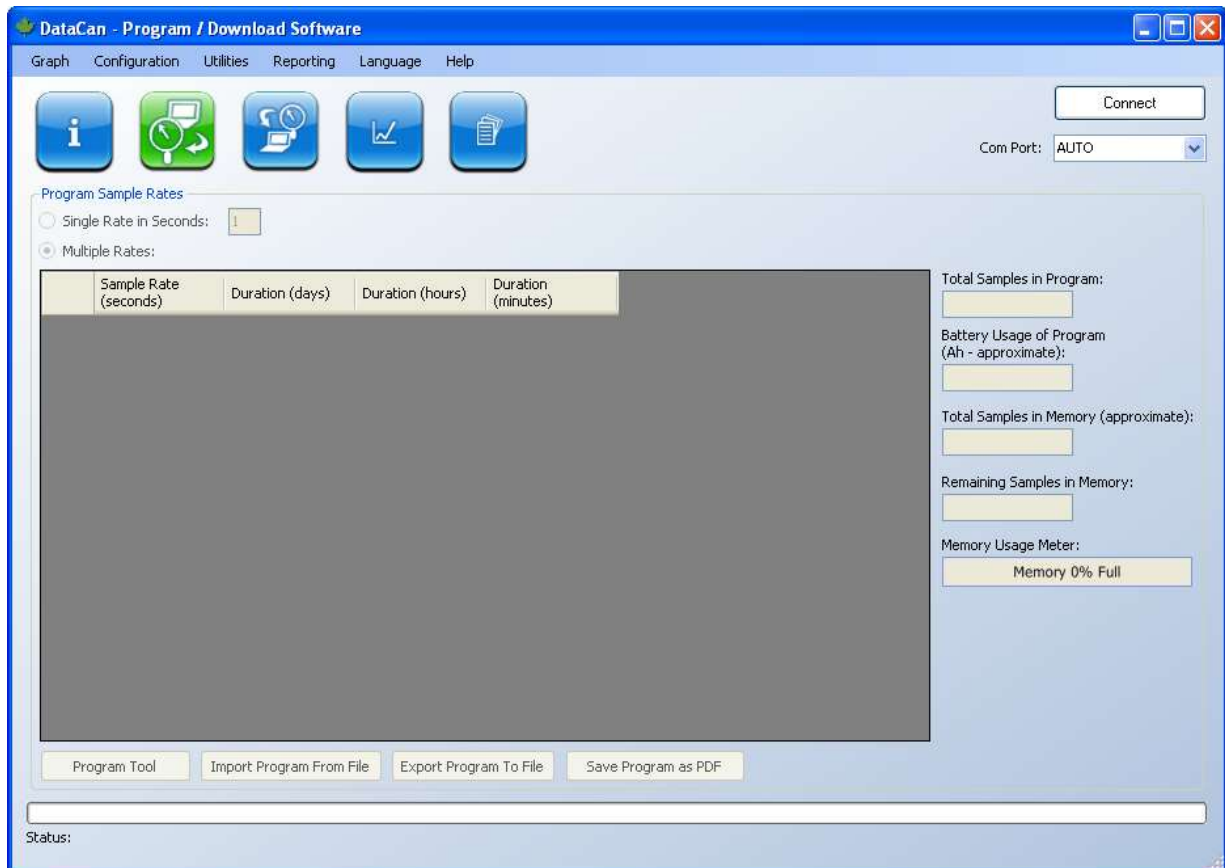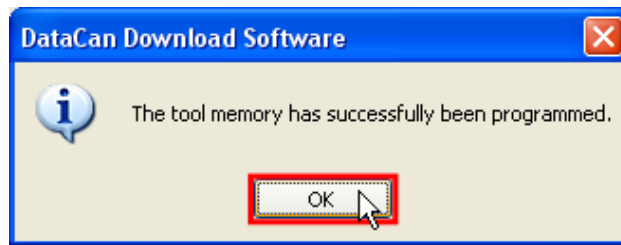
4.3.1 Single Rate Program

To create a program using a single sample rate select the **Single Rate in Seconds** radio button under the **Program Sample Rates** heading. Enter the desired sample rate in the field provided. For example, if 3 is entered the tool will sample once every three seconds. The **Total Samples in Program**, **Battery Usage of Program, Total Samples in Memory, and Remaining Samples in Memory** will be calculated automatically. The **Memory Usage Meter** visually displays the percentage the samples of memory have used from the total. Click the **Program Tool** button to save the program to the tool memory. **Note** that all sensors connected to the logger will be sampled at the sample rate.
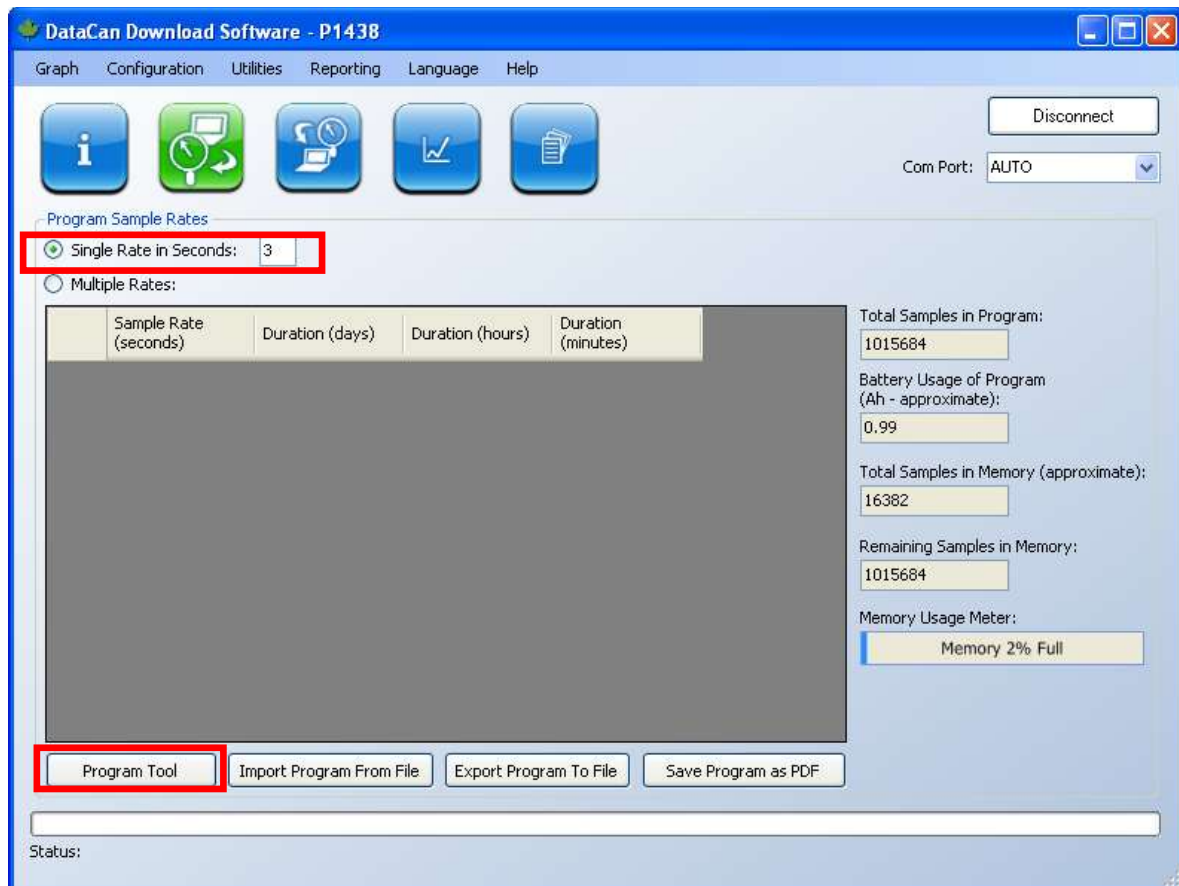
A pop up window will appear when the program has been loaded on the tool. Click **OK**.

A DataCan Gauge Program Sheet will pop up which shows the details of the program entered into the tool memory. You can either choose to discard the sheet or save it to the PC as a pdf file. If you choose to save the sheet enter your name in the blank field provided and press the **Save** button. This creates a record of the tool program that can be referred to when the tool is in operation.

NOTE: Faster sampling rate means shorter battery life. The sampling rate should be chosen appropriate to your application. See section 2.4 for more information on battery life.

4.3.2 Multiple Sample Rate Program

To create a program using multiple sample rates select the **Multiple Rates** radio button under the **Program Sample Rates** heading. Enter the desired sample rates and durations in the fields

provided. Up to 16 steps can be entered in the program. When all the programs are completed the tool will default to 30-second sample rate and continue until the memory is full.

The **Total Samples in Program** and **Battery Usage of Program** will be calculated automatically. Click the **Program Tool** button to save the program to the tool memory.

When the programming is complete a pop up window will tell you the tool memory has been programmed successfully. Press **OK**.
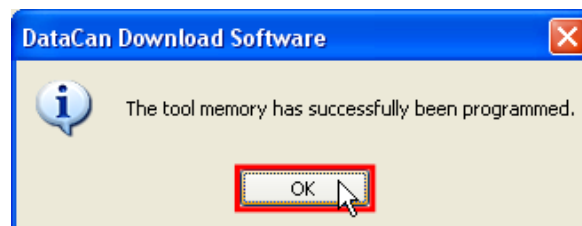
A DataCan Gauge Program Sheet will pop up which shows the details of the program entered into the tool memory. You can either choose to discard the sheet or save it to the PC as a pdf file. If you choose to save the sheet enter your name in the blank field provided and press the

Save button. This creates a record of the tool program that can be referred to when the tool is in operation. The sheet also shows the overrun time which is the time it takes to fill the tool memory after all the program steps have completed and the default sample rate of 30 seconds kicks in.

4.4 Changing Units and Date Format

When the logger is connected to the download software, the user can change the pressure and temperature units as well as the date and time format that the data is saved as when downloaded.

Select **Configuration->Change Units** and a popup will appear.
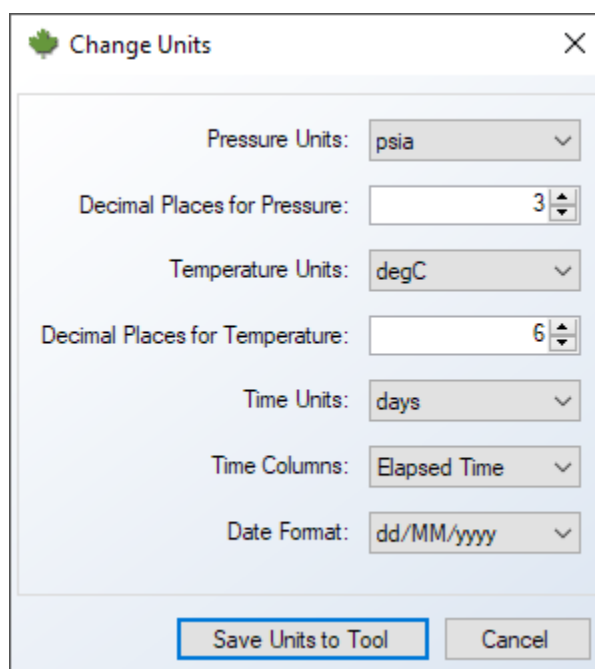
Use the menu to select the format desired. When selected press **Save Units to Tool**. A popup stating **The toll has been programmed successfully** when the tool is programmed.

4.5 Edit Tool Information

DataCan Loggers allow the user to save some user information to the logger. The "Location:" and "Company Name:" fields are recorded to the beginning of a job when ever a job is started. if a user changes the lo can be read at the begining the .txt job files. These fields are intended to allow operators of multiple units to label units according to how they use them. For example if a user changes the "Location:" field when the logger is moved from one site to another, and starts a new job when the logger is installed at the new site, they can use the Location tag to know which jobs were recorded at which location.

The "Notes:" field is a larger section that can be used to keep notes on the tool such as when maintenance occurred. It is only readable when the tool is connected to the download software.

To edit the tool information fields enter **supervisor mode** by pressing **Ctrl + Shift + D** simultaneously on the keyboard. The background of the fields will change from grey to white and you will be able to enter the required information. Press the "Save Notes to Tool" button to store this information to the gauge memory. It is necessary to save the new information to the gauge memory by pressing the **Save Notes to Tool** button that appears only when in supervisor mode.

A pop up window will indicate when the changes have been made. Click **OK**.
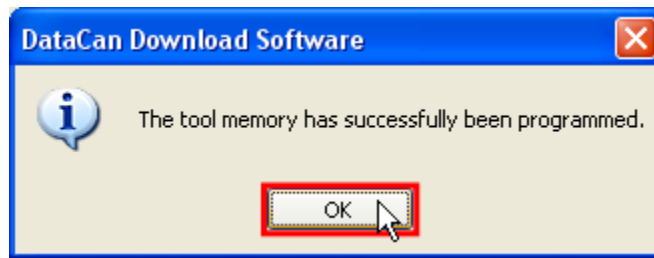
When in supervisor mode, be careful not to edit the Tool Serial Number as it will make it difficult to identify the downloaded log.

5 Logger Operation

5.1 Overview

The basics of the logger interface are:

- If the screen is off, the button always turns on the screen.
- After stopping logging, programing, or powering on, the logger is asleep.
- To start logging, the button must be pressed 5 times quickly.
- When logging, the screen displays pressure and temperature readings. Two pressure (Pressure Port 1 and 2) and the RTD temperature reading are displayed at the same time. During sleep, after the first press, the screen displays how many more button presses are required to start logging.
- The pressure fitting is to be connected to the pressure port to be measured.
- When a Logger Data Transfer Module that contains a microSD™ card is connecter to the logger it will download all of its logs on to the card.
- The Download connection is for connecting the Logger to the DataCan Download software and requires a DataCan Logger Download cable. It is used to set the sampling rate, set the time, and set the user site information. It is only accessable by removing the screw cap and is not for use in a hazardous location.

5.2 Starting and Stopping Logging

Once the sample rate is programmed, to start logging, press the button 5 times quickly. After the first button press, the screen will turn on and display the number of presses left to start logging. The logger will start a new job in memory every time logging is started.

To stop logging press an hold the button until the screen displays the message

Release Then
Press Again
To Stop Logging

Then follow the instructions on the screen. Release the button then press and hold for 4 seconds until the screen displays

Logging Stopped

Once logging has stopped the logger is asleep. It is recommend that the logger is put in this mode when not in use. This will help conserve the battery power.

There are two other ways to stop the logger. The first way is to reprogram the logger. Connecting to the download software and reprograming the sampling rate, even with the same rate, will cause the logger to go to sleep. The second method is to disconnect the battery.

5.3 Downloading Data Using the Data Transfer Module

Ensure the Data Transfer Module has the provided microSD™ card in it. Connect the holder to the microSD™ download connector on the logger.

Once the holder is connected, it will start downloading all new data.

If the download is interrupted or fails, remove the holder and reconnect it to the logger.

When the download is complete, disconnect the Data Transfer Module from the logger. Leaving the Module connected to the logger will result in increased power consumption that will decrease the battery life, and the Module is not environmentally sealed.

It is recommended that the same microSD™ card be used on the same logger each download. This is because the Data Transfer Module employs a smart download function that only downloads data that is not already on the Card, reducing download time. If a new card is used all the data on the logger is downloaded. A single module and single card can be used on multiple loggers.

The data can be viewed with the DataCan Download software on a PC. See section **Error! Reference source not found.** for downloading Data from the microSD™ card.

5.4 Recommended Settings

In order to improve power consumption for the Mark 2 Wellhead Logger, the following settings and practices are recommended:

1. Turn the screen off when not in use or set a screen timeout (see Section).
2. Remove the microSD™ holder from the logger when downloading is complete.
3. Reuse the same microSD™ card when downloading new data to decrease the download time.
4. Set an appropriate sampling time (see Section 4.3). More frequent sampling results in increased power consumption (see Section 7.2).

6 Installation

It is recommended to configure the sampling rate and ensure that the time is set correctly by connecting the logger to the DataCan Download Software before installation. See section 4 for information on how to connect and configure the logger.

6.1 Connections

There are three main connections associated with this logger, all of which have a ½" NPT threaded connection:

- Pressure Port 1
- Pressure Port 2
- RTD Probe
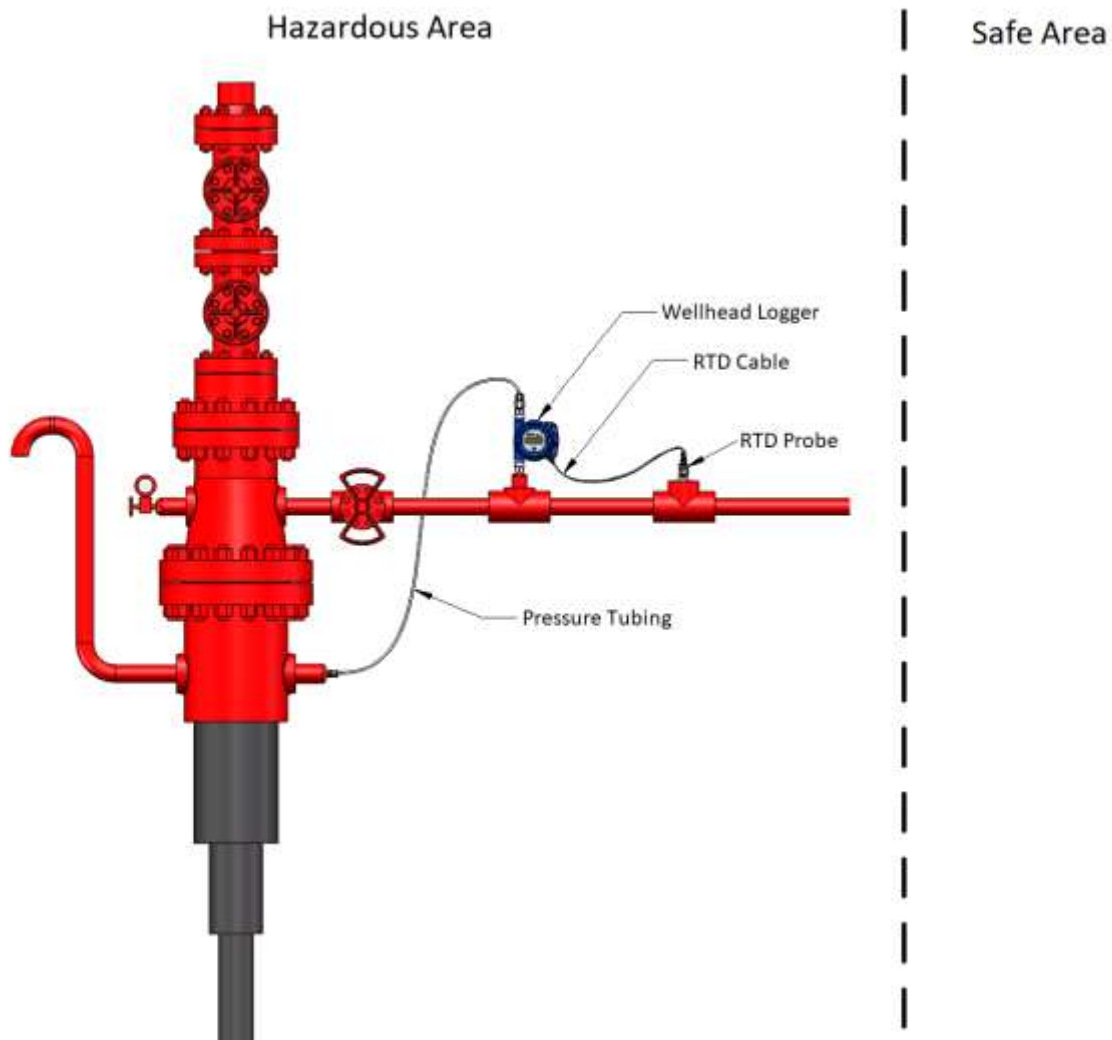
Pressure Port 1 threads directly to the wellhead via the ½" NPT connection. Pressure Port 2 connects to the wellhead by running pressure tubing from the logger to the wellhead. The RTD probe threads directly to the wellhead and connects to the logger via the RTD cable.

For best results DataCan recommends applying Teflon tape to all NPT threads before installation.

6.2 Screen Orientation

The screen orientation can be changed in 90° increments by the user to ensure that the data is readable in different installation orientations.

To change the screen orientation:

1. Unscrew the main screw cover.
2. Use a Philips screw driver to unscrew the four screws holding the display assembly to the housing.
3. Gently pull the display assembly away from the housing, being careful not to pull on the wire bundles connecting the assembly to the sensors in the housing.
4. Rotate the display to the desired orientation, being careful not to pull or pinch the wire bundles.
5. Refasten the display assembly to the housing using the 4 screws.
6. Screw the main screw cover back on.

7 Maintenance

There are a number of regular maintenance activities that are required to ensure the proper functioning

7.1 Regular Maintenance

- Inspect for damage or leaks
- Ensure all connections, including the lid, are secure/tight
- Lubricate the lid o-ring as needed (at least once a year)
- To maintain accuracy DataCan recommends recalibration once a year. The user can also verify readings against a known standard.
- Replace battery as needed

7.2 Battery Replacement

The Mk.2 logger is a battery powered device, and the battery must be periodically replaced. Only the DataCan Mk.2 Logger battery pack, part number 109748, can be used in the logger. Using any other battery may compromise intrinsic safety. Battery replacement is the only change to the logger the user is authorized to make.

Use Table 3 to estimate when battery replacement is required.

Sampling Rate	Battery Life
1 second	1.2 years
5 seconds	3.5 years
30 seconds	6.2 years
1 minute	6.7 years

Table 3: Estimated Battery Life vs. Sampling Rate

To replace the battery:
1. Unscrew the main screw cover.
2. Use a Philips screw driver to unscrew the four screws holding the display assembly to the housing.

3. Gently pull the display assembly away from the housing, being careful not to pull on the wire bundles connecting the assembly to the sensors in the housing.

4. Disconnect the battery connector from the back of the display assembly.

5. Unclip the old battery from the housing.

6. Clip in the new battery to the housing.

7. Connect the new battery to the connector on the back of the display assembly.

8. Refasten the display assembly to the housing using the 4 screws, being careful not to pull or pinch on the wire bundles.

9. Screw the main screw cover back on.

10. You may need to reset the clock for the logger after replacing the battery. To do this, connect to the logger using the **DataCan Download Software** (see Section 4.2) and click "Set Time to Now".

7.3 Cleaning

To clean the logger use hot soapy water and a soft cloth. Do not use anything small or pointy that might damage the sensor. Do not allow the electronics or electrical connections to get wet. If they do get wet disconnect the battery and allow them to dry completely before reconnecting the battery.

8 Loading Data to the DataCan Download Software

8.1 Loading Data from the microSD^{TM} Card

In order to download data from the microSD^{TM} card

- Remove the card from the Data Transfer Module and connect the card to a computer using a microSD^{TM} card reader.
- Open the Drive that contains the microSD^{TM} card and open the folder with the serial number of the logger you wish to load data from.
- The Serial number folder with have at least one folder with a number, open the highest numbered folder. (These folders are titled with the number of times the logger has been erased. If the logger is erased and then the same card downloads more data a new folder will be created.)
- Open **DataCan Download Software** and go to the **Graph** tab.
- Drag the LOGDATA.BIN file from the folder into the **DataCan Download Software**.
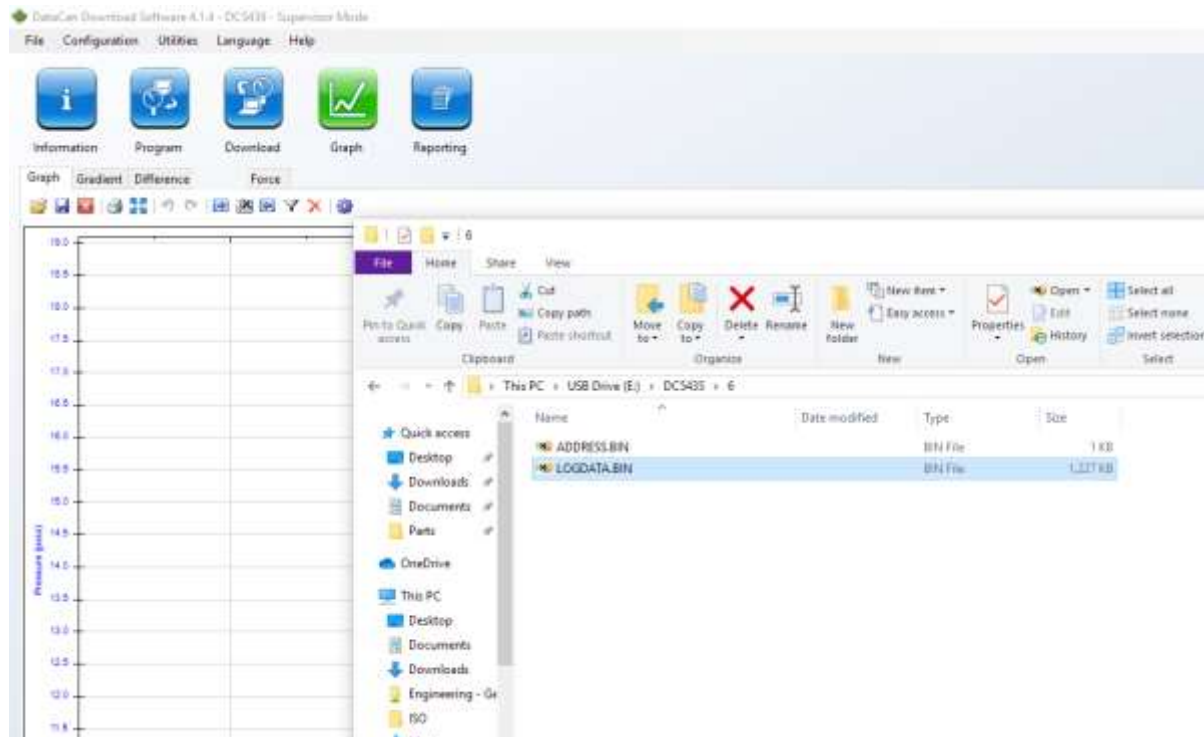
- A popup will appear in the download software of all of the jobs the tool had in its memory when the Data Transfer Module was connected. Select the jobs you wish to save to your PC, and click **Download**.
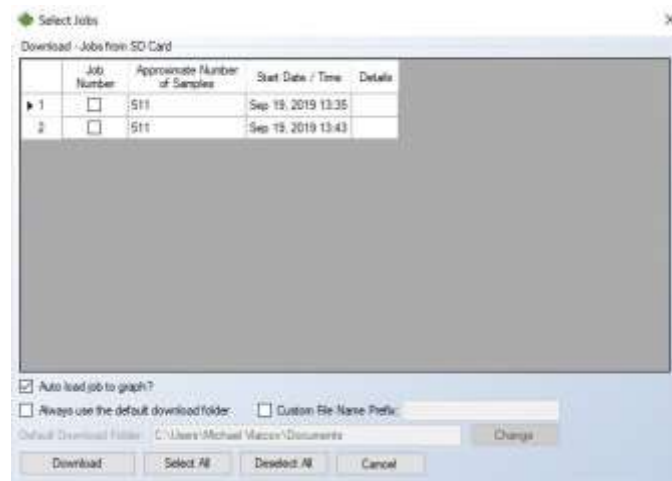
- If you selected multiple jobs, you may append the files to be saved as a single data file by clicking yes, or click No and save the jobs as individual data files.

- Then you must select where on you PC you wish to save the data file/files.
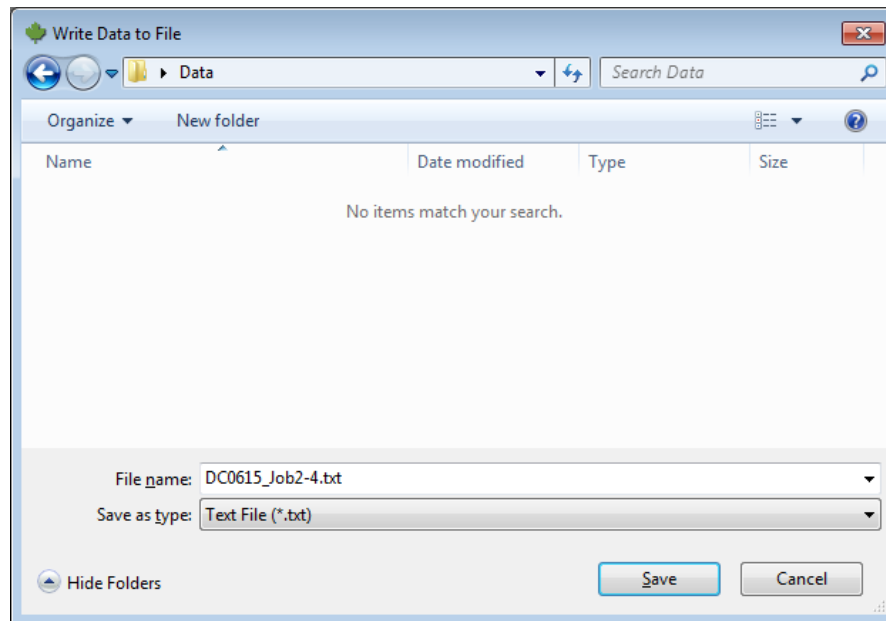
The software automatically converted the data file to a text (ASCII) file based on the settings saved in the tool memory. To change Units, please refer to the Configuration Menu in Section 8.2.

If **Auto load job to graph?** was enabled then the graph will display the data you download. Otherwise you can open the data file in the graph. See section 9 for more about how to use the graph.

8.2 Loading Data Using the DataCan Download Cable

In addition to downloading the data to a microSD™ while in the field, a user can download directly to a PC while in a safe environment. They must first connect to the logger using the DataCan Download cable and software.

- Enter the Download section by clicking on the following icon. Here you can view recorded jobs and download data.

The **Jobs in Tool Memory** section lists the jobs recorded in the tool memory when the tool is connected to the PC. Number of samples, maximum pressure, maximum temperature, and duration columns are updated once the data is downloaded from the tool.

- Select the check box next to the jobs that you want to download to your PC and click the **Download** button.
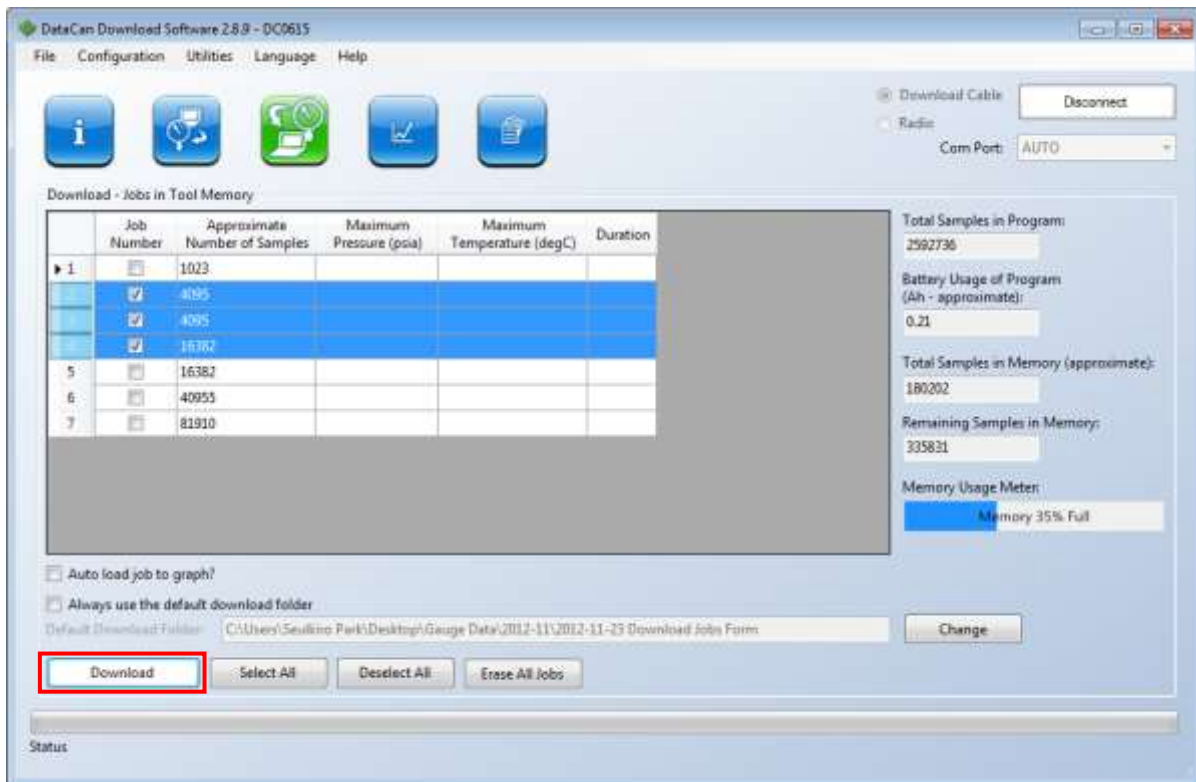
- If you selected multiple jobs, a pop up window will ask you if you want to append the files. If you click on the **Yes** button it will save the multiple jobs to the PC as a single file. If you click the **No** button it will save the jobs as individual files. Click **Yes**.
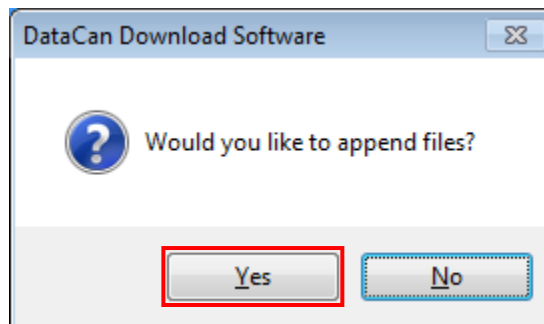
Select a location to save the data file from the tool. Press the **Save** button.
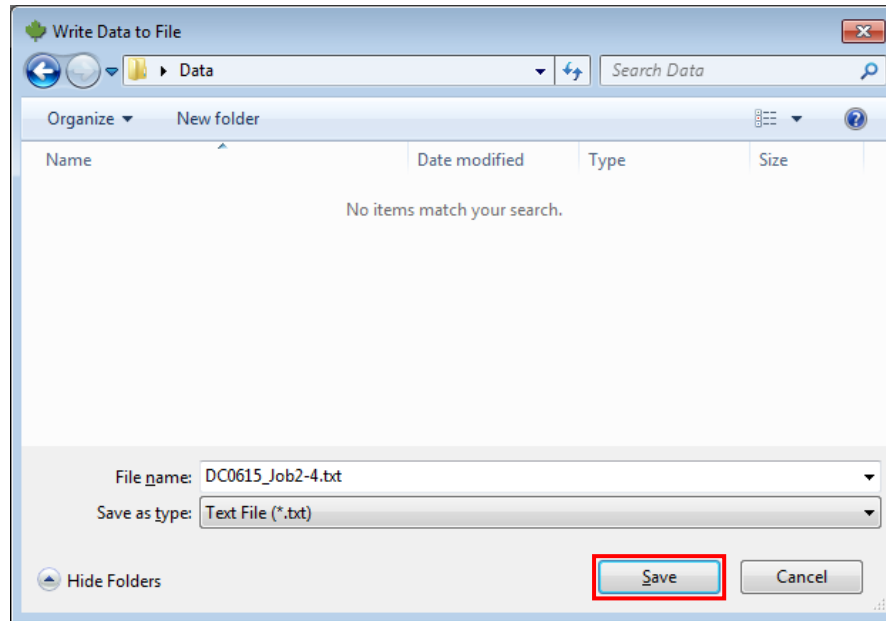
When the jobs are finished downloading a pop up window will tell you that the download was successful. Click **OK**.
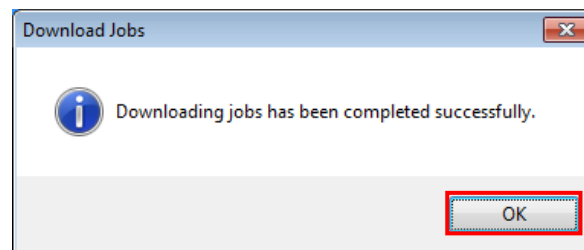
Notice that number of samples, maximum pressure, maximum temperature, and duration columns are now updated after the data is downloaded from the tool.

The software automatically converted the data file to a text (ASCII) file based on the settings (see Configuration section shown below) saved in the tool memory. To change Units, please refer to the Configuration Menu in Section 8.2.

8.3 Erase Jobs from Memory

When the data from the tool has been downloaded onto a PC you can erase the jobs contained within the tool memory. This frees up space in the tool memory for future jobs.

To erase the jobs from the memory, select the **Erase All Jobs** button.
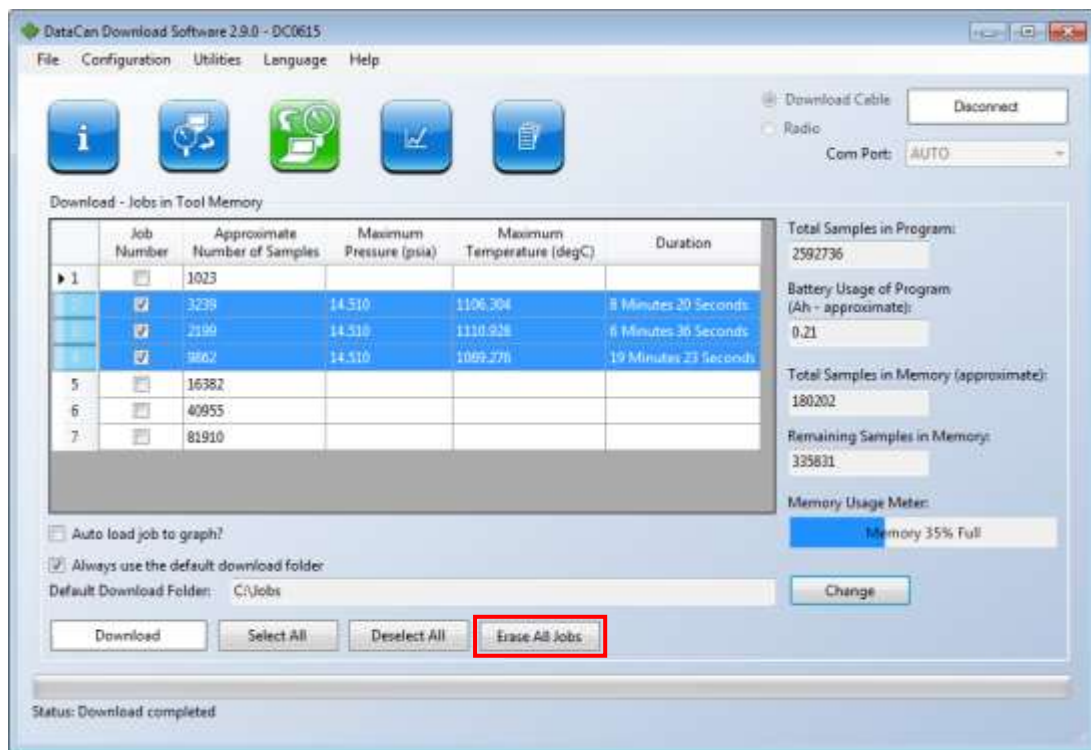
A window will appear that confirms you want to delete all of the jobs from the tool. Click **Yes** to proceed.

You cannot erase individual jobs as this would result in fragmented memory.

You must erase all jobs at once.

Do not disconnect until complete.

9 Graph

The Graph section of the DataCan Download Software is a powerful tool with a lot of tools to present data.

To enter the Graph section click on the Graph button.
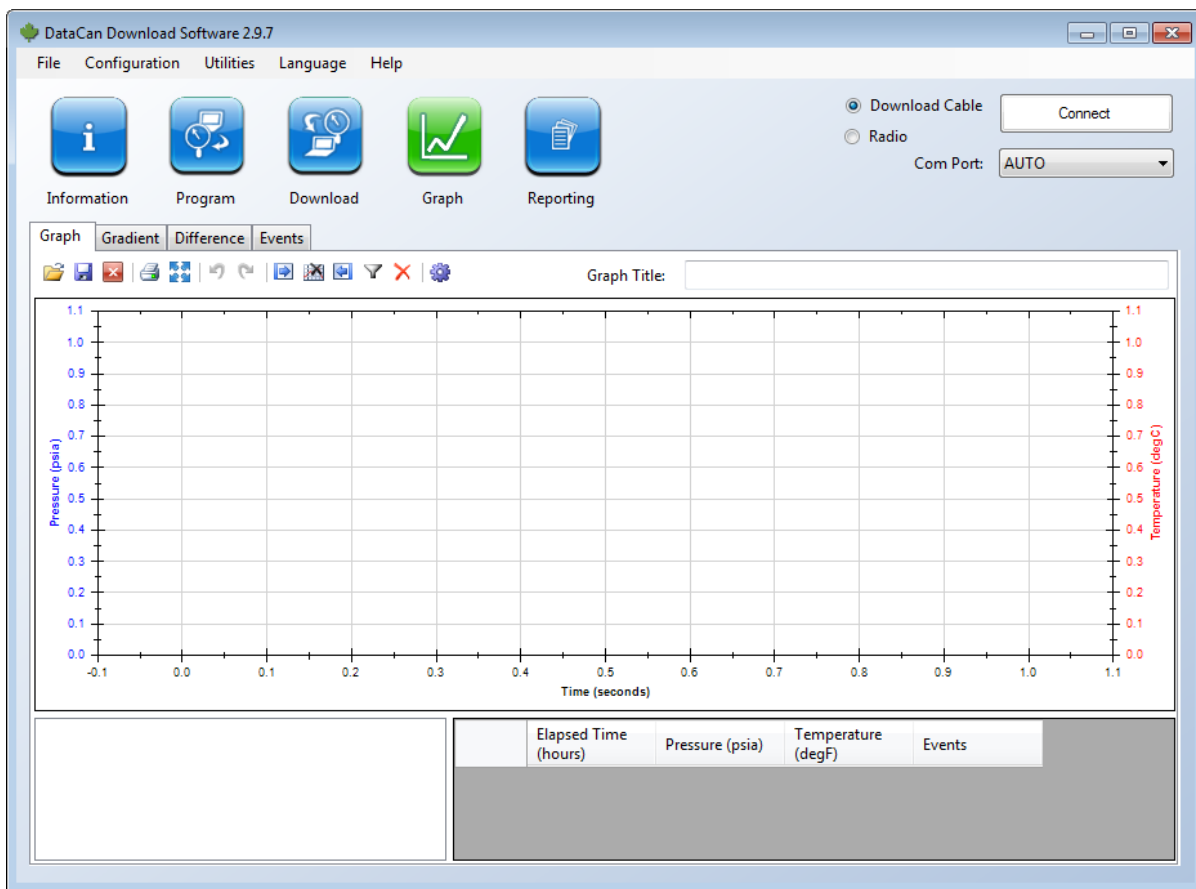
9.1 About the Graph

The graphing section is used to manipulate and present data in a graphical format. Here you can:

- Delete portions of the data to remove the beginning and end portions of a job that are not useful.
- Filter the data to reduce the file size.
- View multiple data sets at one time.
- View a difference plot to see if two gauges are tracking each other.
- Zoom in and out of the graph to look at pressure, temperature, acceleration, or other data variances.
- Modify the data to adjust for gauge annomolies.
- Change the start time to align multiple data sets.
- Create a gradient plot and make annotations for a report.

There are 5 main areas of the graphing screen:

1) The view tabs 2) The action buttons 3) The legend 4) The graph 5) The data table.
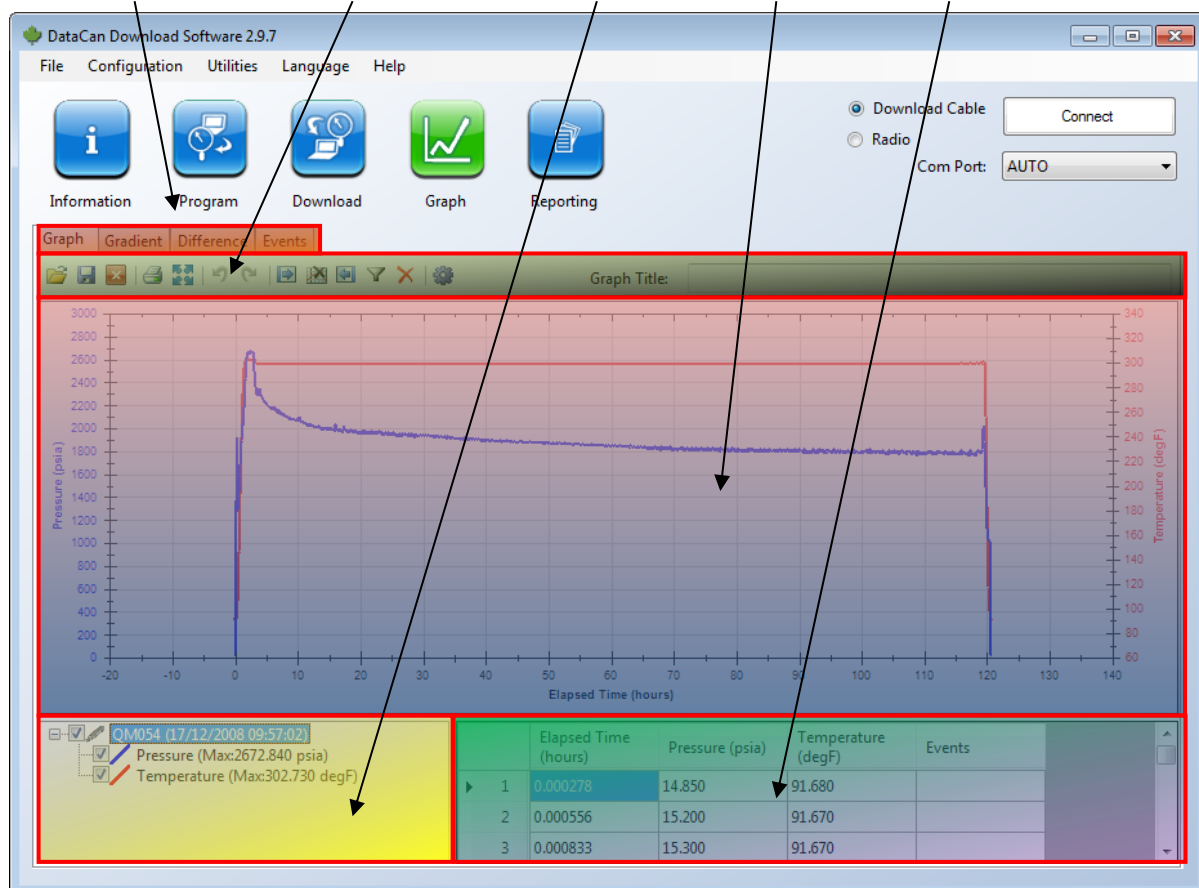
At any time, you can move your mouse to one of the section boards and adjust the size of each section.

The view tabs allow you to move from the main data graph to the gradient table and gradient graph and to the difference graph.

The action buttons on the top side perform a variety of useful functions. You can select large portions of data to delete or filter. You can move to full screen mode, undo changes you make, and save the data file. Each action button is described as follows:

📂	Open	➡️	Left Boundary
💾	Save As		Reset Lines
❌	Close All Graphs	⬅️	Right Boundary
🖨️	Quick Print	🔽	Filter
	Full Screen Mode	✖️	Delete
↩️	Undo	⚙️	Units / Settings
↪️	Redo		

The legend is important when graphing multiple plots of data. You can select which data sets to view, you can change the color and size of the respective data curves, and you can adjust the start dates for each data set.

The graphing section displays a graph of the data. The blue curve is defaulted to the pressure data, the red curve is defaulted to temperature data. The pressure scale is automatically generated on the left and the temperature scale is automatically generated on the right. The bottom of the graph shows the time as it was recorded in the data file. A right click of the mouse button over the graph pops up another menu of actions for the user to perform.

The data table at the bottom right side of the graph screen shows a table from the active data file.
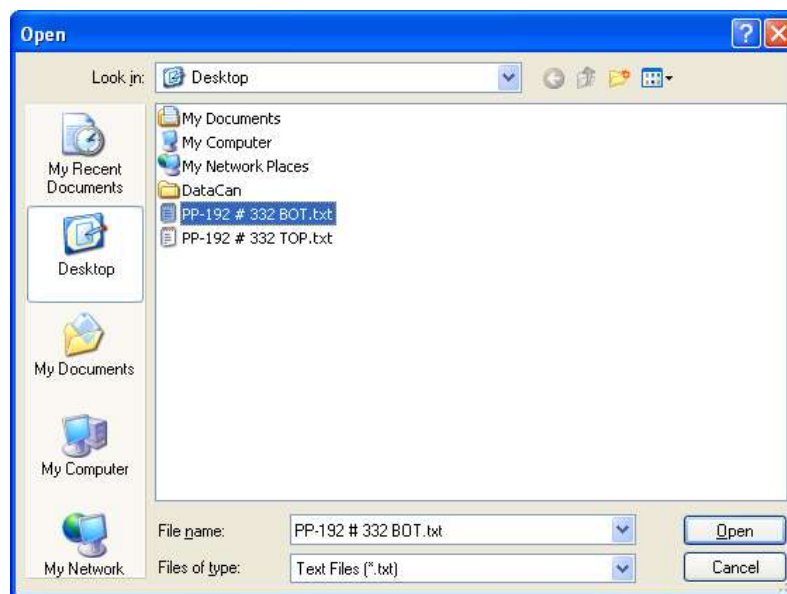
9.2 Open Graph from Data File

There are two ways that you can load a data set into the graph. First, you can load a graph from a data file located on your computer. Second, you can automatically load the data that you downloaded from your gauge.

You may create a graph from any file that you have downloaded and saved to your computer as previously outlined in downloading section of this manual.

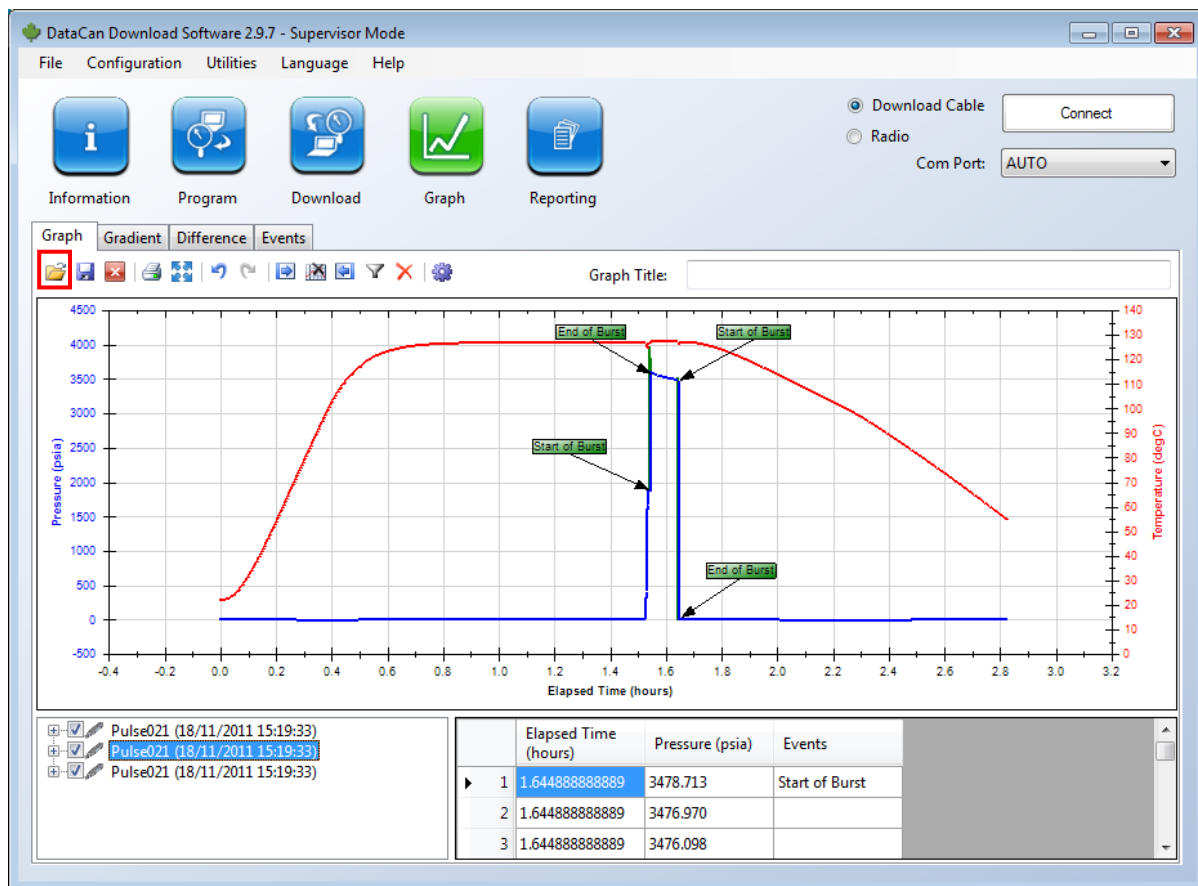Click on the **Graph** button and go to **File >Open**
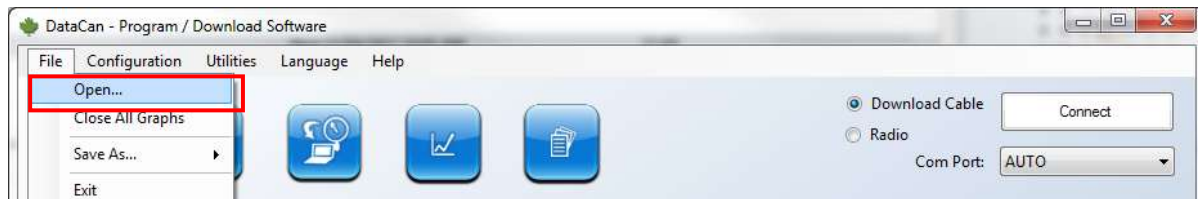
This brings up the browse window. Select the file you want to graph and click **Open**

9.2.1 Open Graph From Data File – Quick Button

The second way to open a graph is by using the Quick Button on the top of the graph as highlighted in the image below.

9.2.2 Open Graph From Data File – Drag and Drop

The third way to open a graph is to open the folder containing your text file in Windows Explorer. Drag the file from Windows Explorer into the graph screen in the DataCan Download Software.
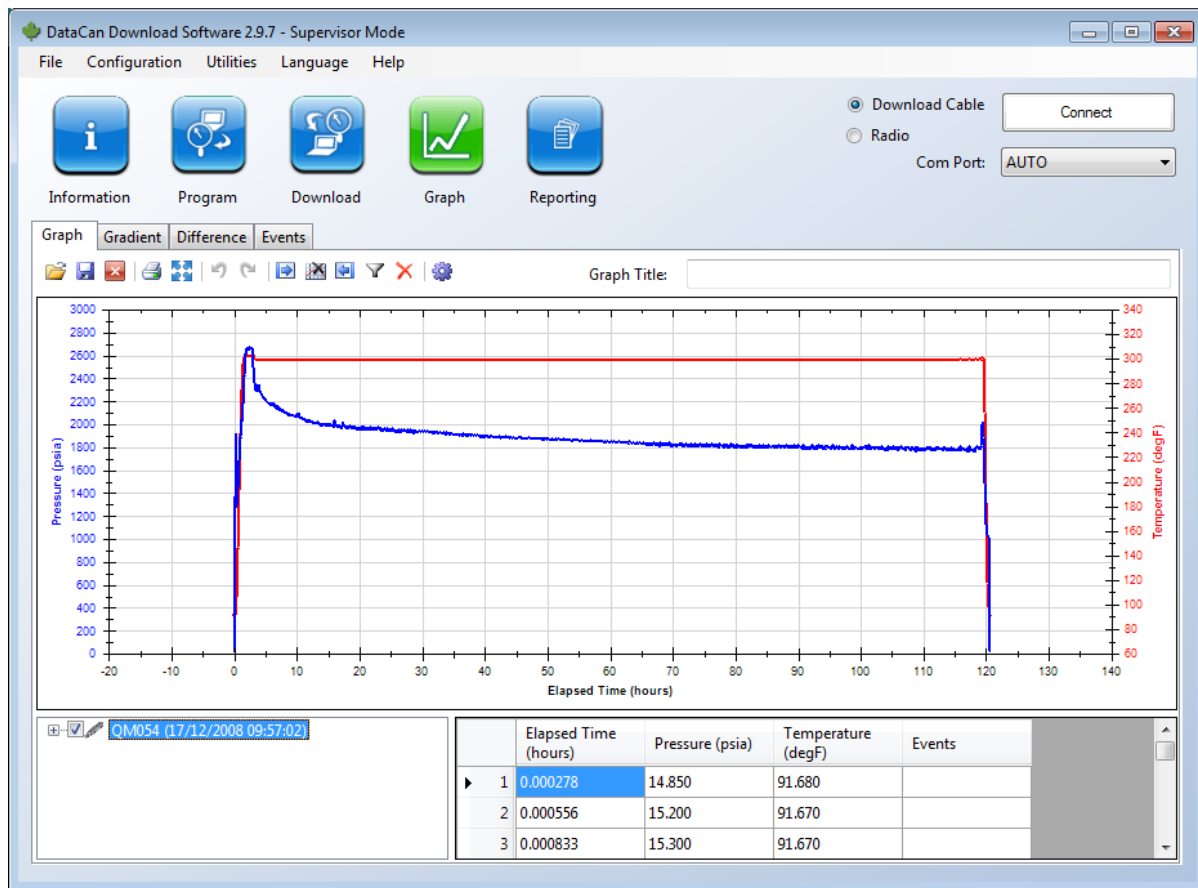
To add another data file to the graph, repeat the above process. You can add up to 4 different data sets.

9.3 Append Data

Two or more data files can be placed one after the other by using the append feature. This occurs when more than one data file are opened with the same gauge serial number(s).

There are two options when appending data:
1) **Concurrent Time** – This feature ignores the start time of the appended data. Instead the first data set of appended files is started immediately following the last data set in the first file.
2) **Keep Start Times** – All data from each data set retains its original time stamp. If there is a large time gap between the two (or more) data sets, the gap will still remain in the data.
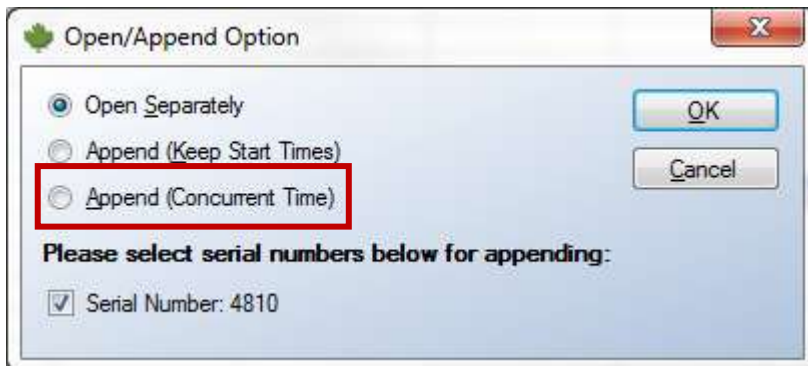
9.3.1 Concurrent Time

In the menu, select "File -> Open". You can either select multiple files with the same serial number or you can repeat the "File -> Open" process to open a second file with the same serial number.

Select the file you would like to append and click the "Open" button.

A new dialog pops up. Click "Append (Concurrent Time)" and click the "OK" button.

9.3.2 Keep Start Times

In the menu, select "File -> Open". You can either select multiple files with the same serial number or you can repeat the "File -> Open" process to open a second file with the same serial number.

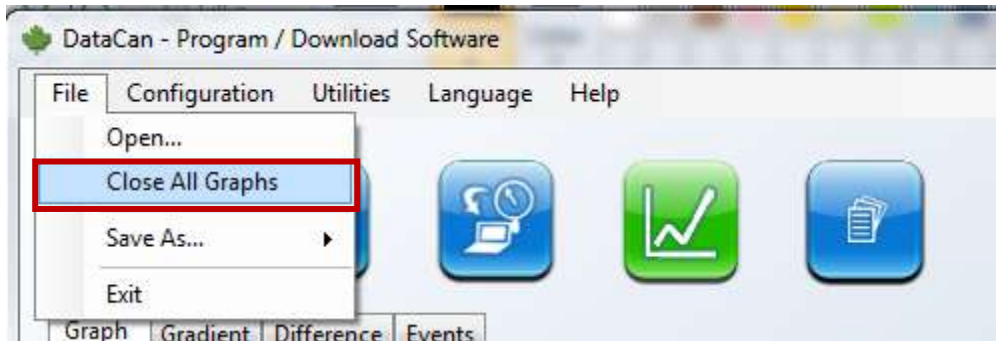Select the file you would like to append and click the "Open" button.

A new dialog pops up. Click "Append (Keep Start Time)" and click the "OK" button.
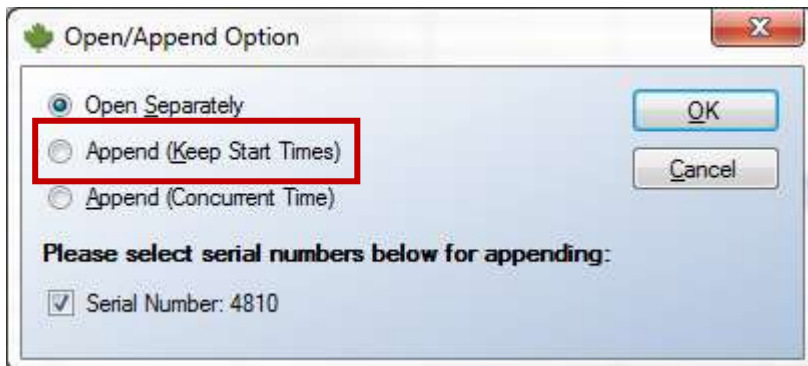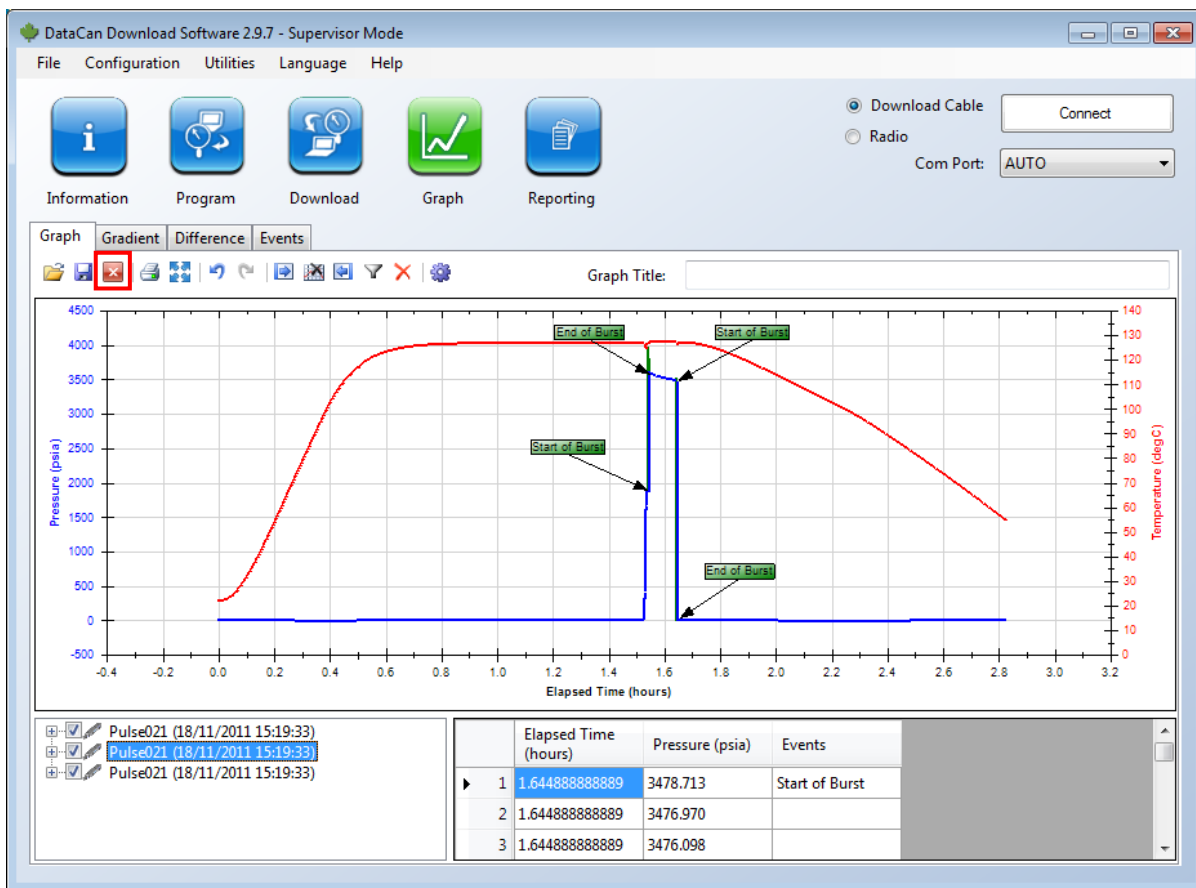
9.4 Close All Graphs

To close the graphs that you have opened press **File** and go to **Close All Graphs.**

9.4.1 Close All Graphs – Quick Button

Alternatively, you can close all graphs by using the Quick Button located on the top side of the graph screen.

9.5 Open Graph Automatically

A graph can automatically be created when the data is downloaded from the tool onto your computer by using the Autograph feature.

By default, the autograph feature is turned off. The reason is that it takes more of your computer processing power to download the data and plot the data at the same time. In most cases, customers download data and then create the graph or report at a different time.

If multiple jobs are downloaded simultaneously only the last job selected In Tool Memory list will be graphed.

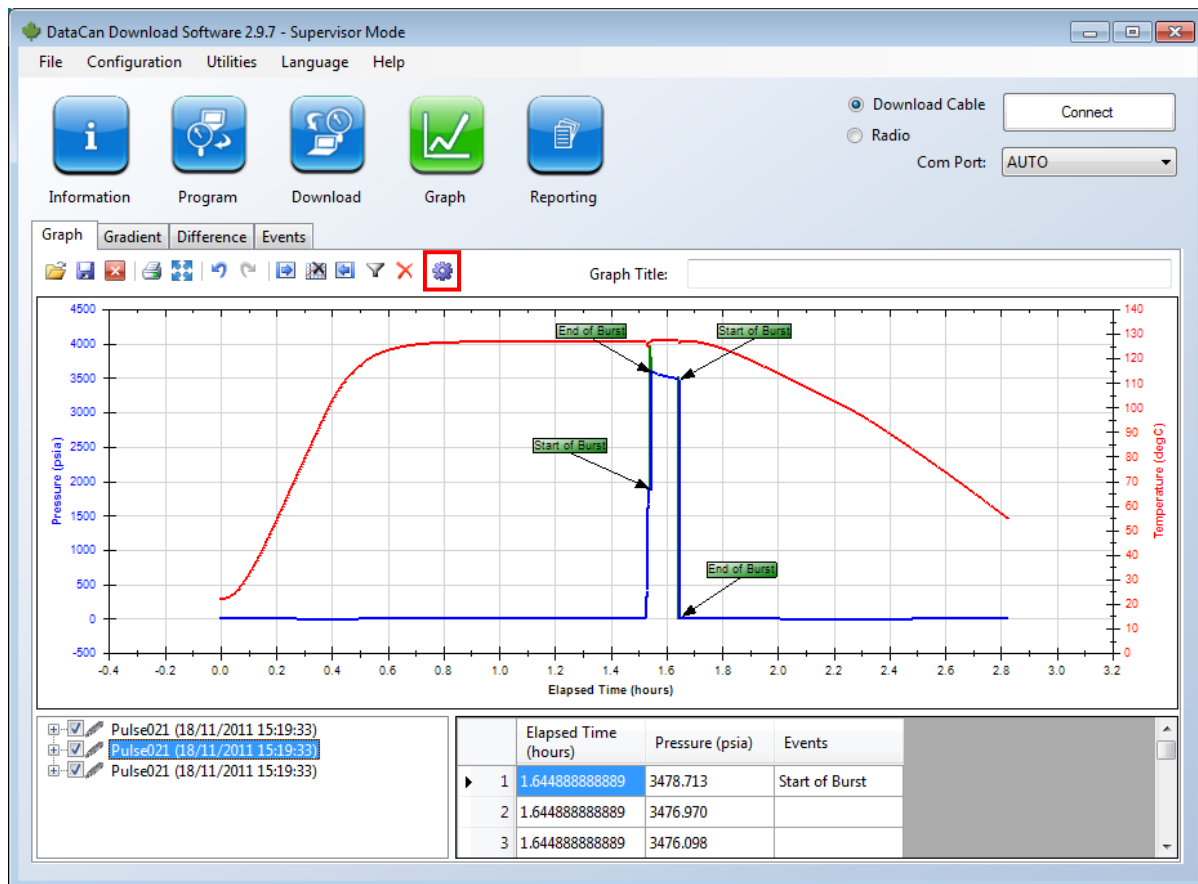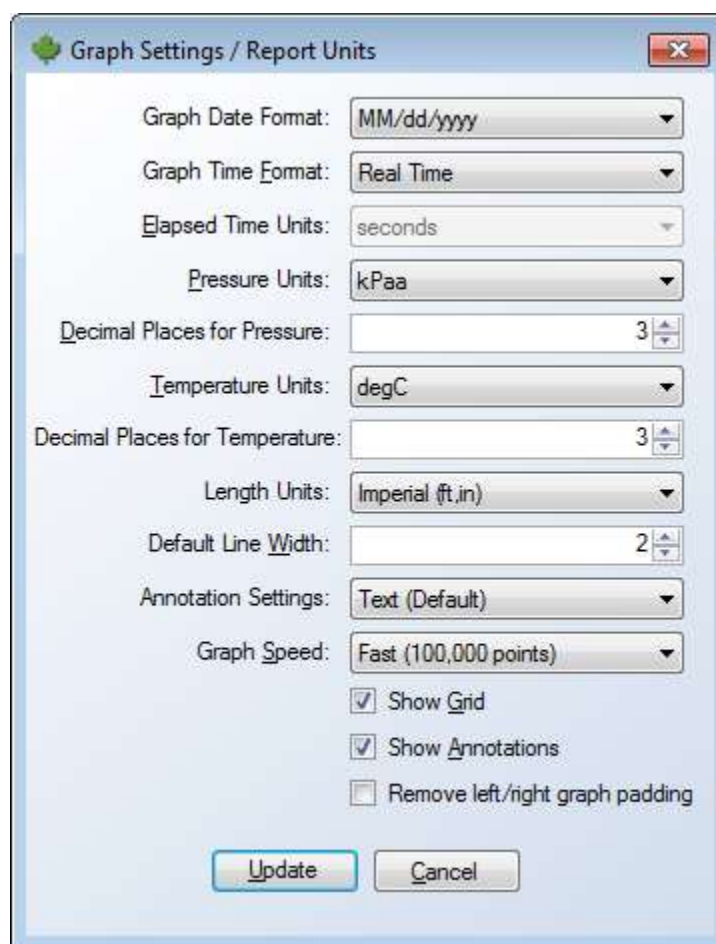This feature is enabled in the "Download" section of the software.
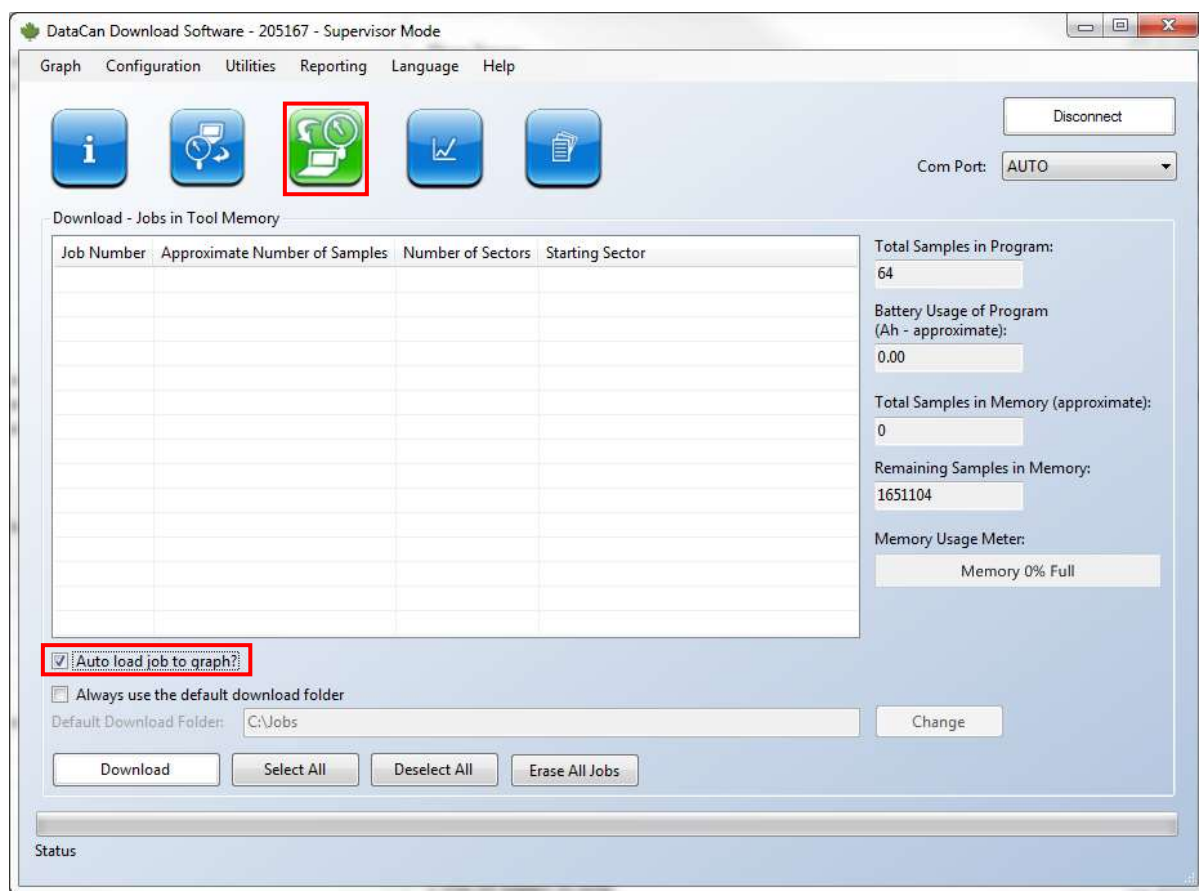
Activate the Autograph feature by selecting the check box beside **Auto load job to graph?**

Once the "Auto load job to graph" option is activated, then the downloaded jobs will automatically appear in the graph screen after the data is downloaded from the tool.

9.6 Graph Setup

The graph setup allows you to change the graph units, change data grid and annotations

visibility settings. Enter graph setup by clicking the Quick Button ⚙ located on the top side of

the graph screen as highlighted in the image below.

Change the available options to what suits your jobs needs and click the Update button at the bottom of the tab.

9.6.1 Graph Time Format

This option will change both how the graph is displayed as well as the time and date columns stored in the data file.

Real Time – The graph axis and data file show a calendar date and clock time.

Elapsed Time – The graph axis and data file show the elapsed time, or the time starting when the battery was plugged in (time zero).

Both – Date, Real Time and Elapsed Time columns are stored in the data file. The graph time axis is in Real Time.

9.6.2 Elapsed Time Units

This can be in either: seconds, minutes, hours or days.

9.6.3 Pressure Units and Temperature Units

Change to the desired unit of measurement for pressure or temperature.

9.6.4 Decimal Places for Pressure

The number of digitals after the decimal place can be changed for pressure.

9.6.5 Length Units

This changes the units used for the depth when using gradient points.

9.6.6 Default Line Width

The user can change how thick each plotted line appears.

9.6.7 Annotation Settings

This option will change how graph annotations are displayed.

Text (Default) – Event text will be shown in the annotation.

Numeric Annotations – A number representing the order in which the point appears in the graph. Displaying a number instead of text can minimize the chance of the text overlapping on the graph. The number displayed for each annotation / gradient is the same as the index used in the Events Table.

Time/Press/Temp/Text – The event annotation will include the Time, Pressure, and Temperature of the data for the corresponding event, followed by the event text.

Gradients annotations will always contain Depth, Pressure, and Temperature, except when shown as numeric annotations.

9.6.8 Graph Speed

When trying to graph large data sets on slower computers it is best to change the "Graph Speed" setting to "Fast". This draws a maximum of 100000 points for every data set in the graph. If any important data does not show up on the graph because of the filtering, change this graph setting to "Show All Points".

9.6.9 Show Grid

The legend and data table at the bottom of the graph screen can be hidden by unchecking the **Show Grid** checkbox.

9.6.10 Show Annotations

All the annotations and gradient point markers on the graph can be hidden by unchecking the **Show Annotations** checkbox.

9.6.11 Remove Left/Right Graph Padding

If the **Remove Left/Right Graph Padding** box is unchecked, the left and right padding will be added to the graph to center the graph. If checked, the padding will be removed.
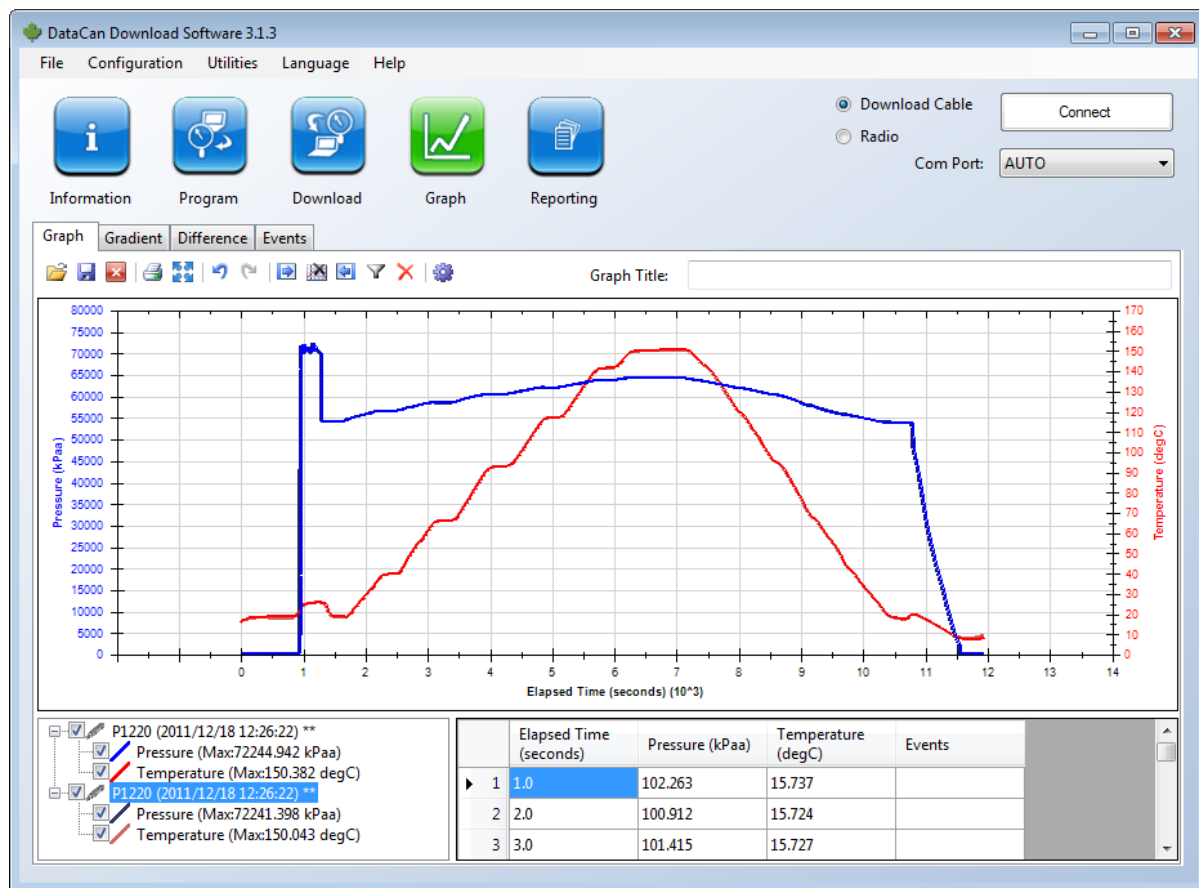
Graph with left/right padding.
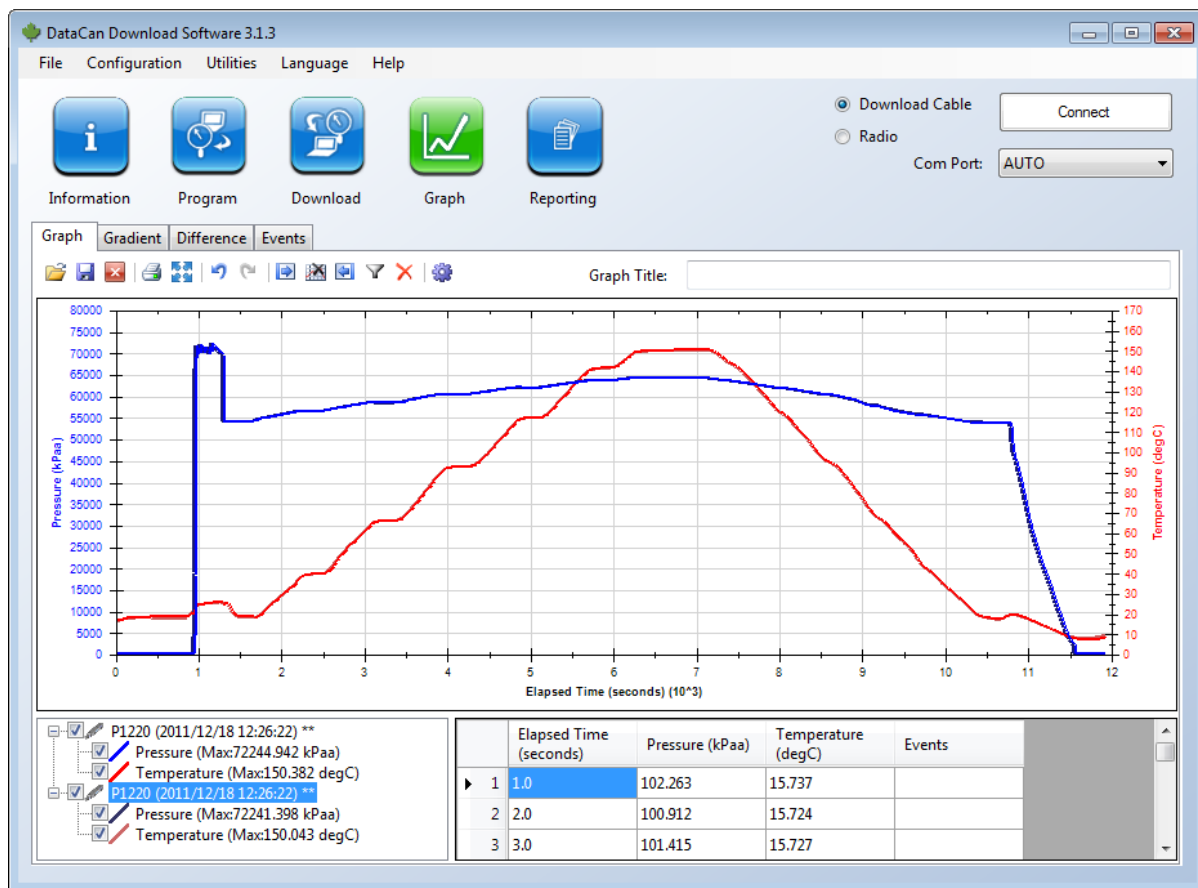
Graph without left/right padding.