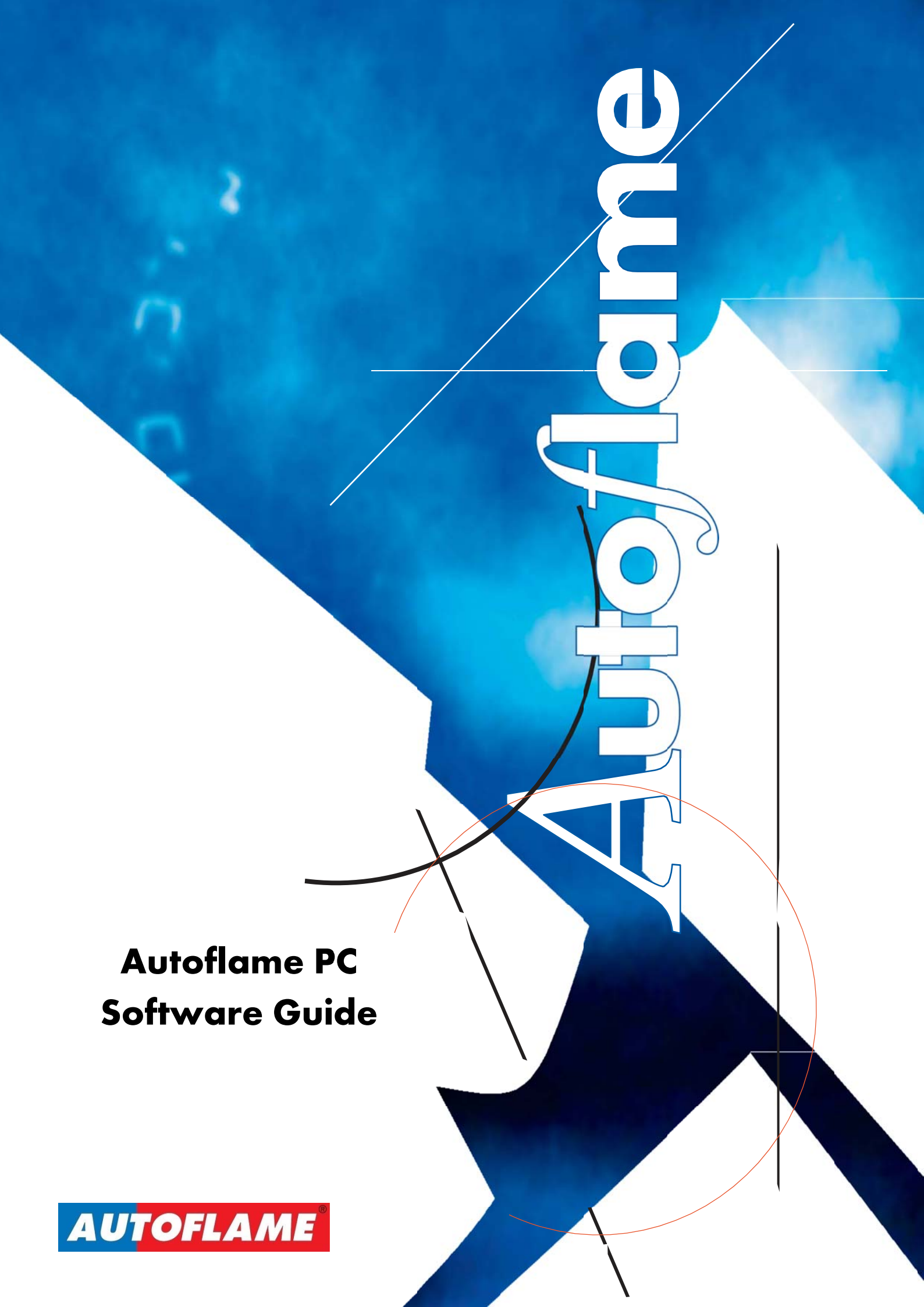

Autoflame PC Software Guide

AUTOFLAME®

Autoflame PC Software Guide

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Contents

1 IR UPLOAD/DOWNLOAD

1.1 IR UD Requirements

1.1.1 Introduction

The IR Upload/Download (IR UD) software is a tool used to store the MM's commissioned data on a PC. A download of an MM contains information on:

- MM Type (Mk7 MM, Mini Mk7 MM, Mk6 MM, or Mini Mk6 MM)
- Software versions (BC, MM, DI)
- MM Serial Number
- Number of times commissioned on that fuel
- MM ID number (as set in option 33)
- Combustion curve – fuel, air and VSD positions, and gas, air and draft pressure
- Options and parameters settings
- EGA commissioned values
- EGA trim data
- Fuel flow metering values
- Lockout record
- Error record
- First outs label and setup
- Water level commission data
- Expansion options settings
- Water level alarm record
- TDS settings
- Bottom blowdown settings

The commission data from an MM can be uploaded to another MM; see section 1.3 on downloading/uploading commission data.

Note: When taking a download from an MM with older software and uploading to a MM with newer software, it is important to go through the options and parameters, as there may be some changes in the default values in software updates. Please check the Tech Site Knowledge Centre for technical bulletins on latest software and any IR UD software updates.

1.1.2 MM/ PC Compatibility

The latest IR UD version which can be downloaded from the website can be used with the Mk7 MM, Mini Mk7 MM, Mk6 MM, Mini Mk6 MM and Mini Mk5 Evo.

The IR UD software is compatible with Windows XP, Windows 7 and Windows 8 for both 32bit and 64bit operating systems.

The IR UD software must be installed in Administrator mode.

The maximum distance the IR lead should be held away from the MM is 10cm, and the maximum length of the IR lead should not exceed 1.2m.

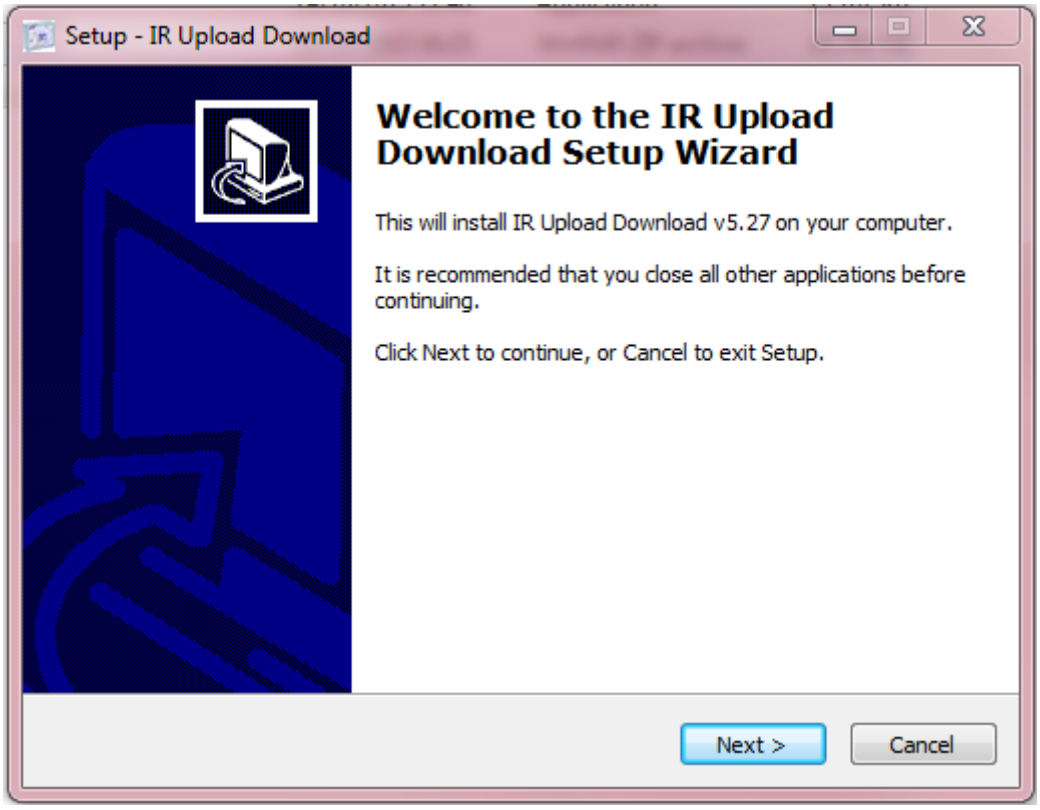
1.2 Installation

1.2.1 Install IR UD

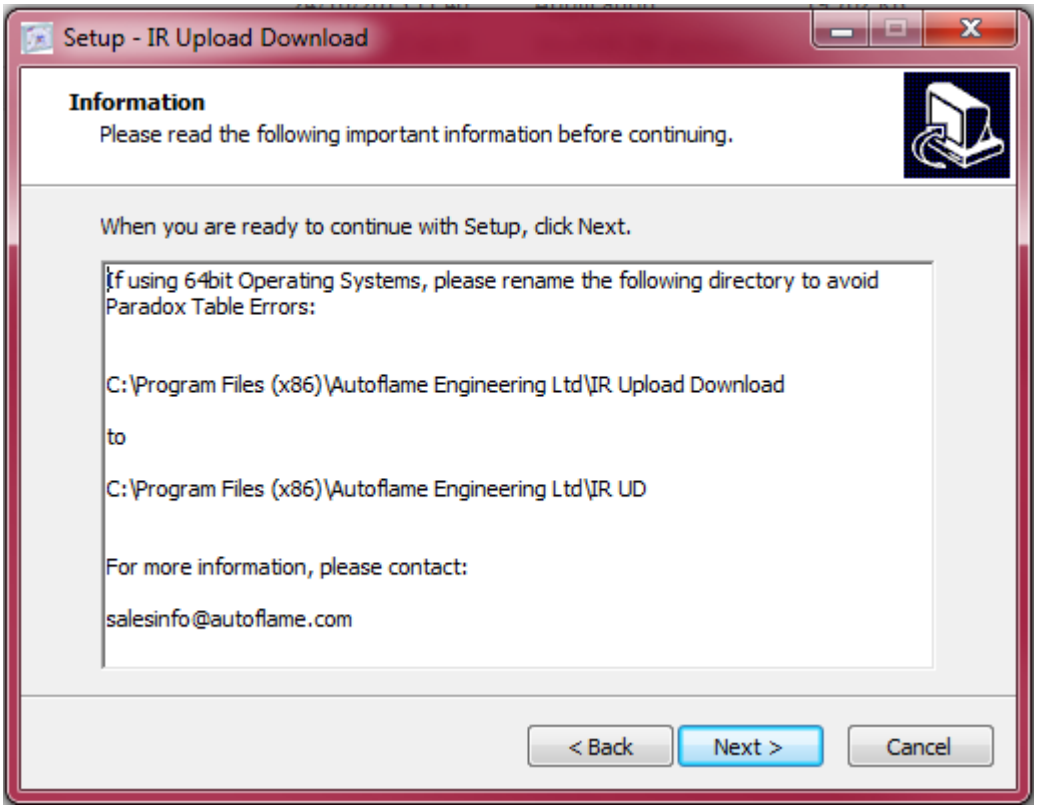
1. The IR UD software is provided on a USB stick with the IR lead when purchased (part number. MM60010), or alternatively, the software can be downloaded from the Tech Site Knowledge Centre on the website. The bin file relating to the IR lead will be required.

2. Extract the files from the zip folder and save to a PC location such as C:\Program Files or C:\Program Files (x86).

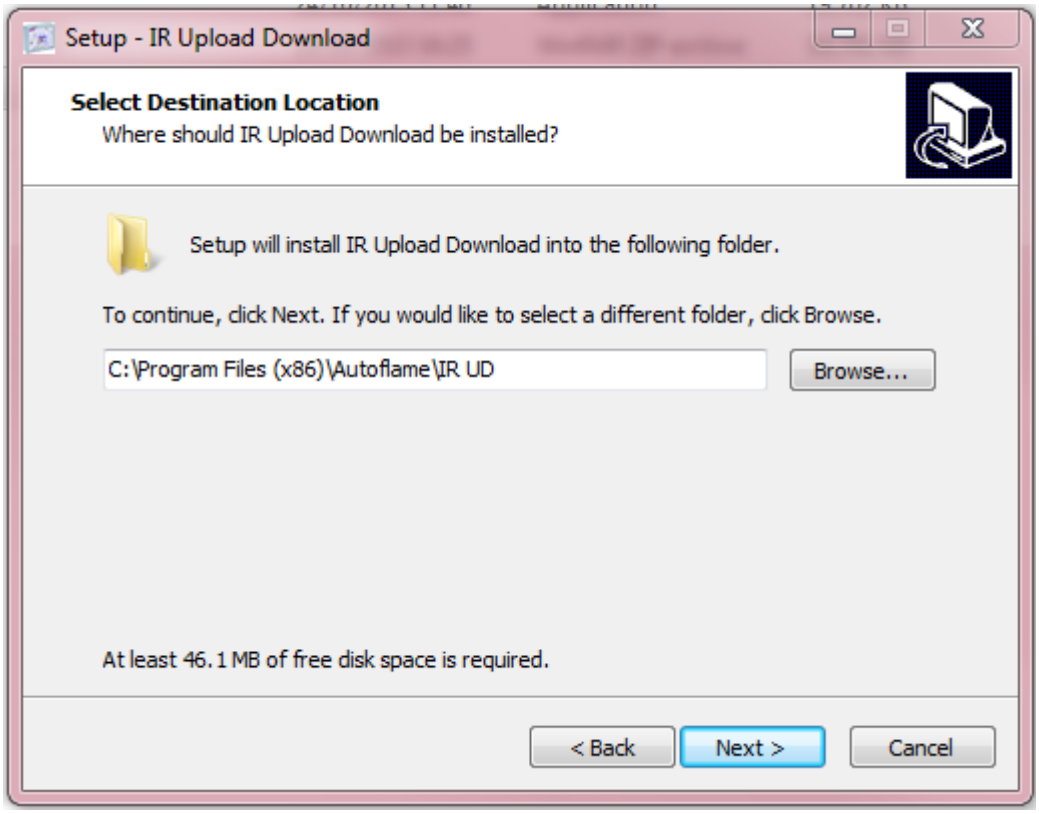
3. Right click on IR UD.exe and select 'Run as administrator'. The welcome box will appear. Click 'Next' to begin the installation.



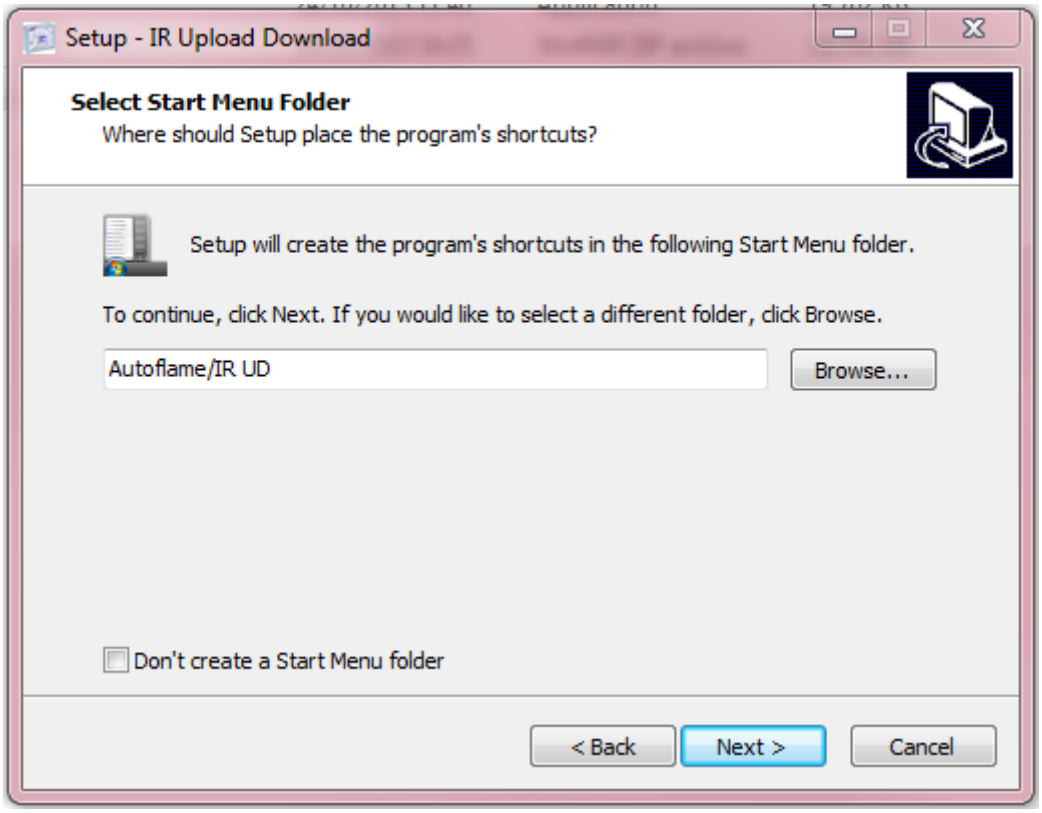
4. An Information screen will appear. If using 64bit operating systems, check that the software is installed into IR UD installation path as default. Then click 'Next' on the Information screen.



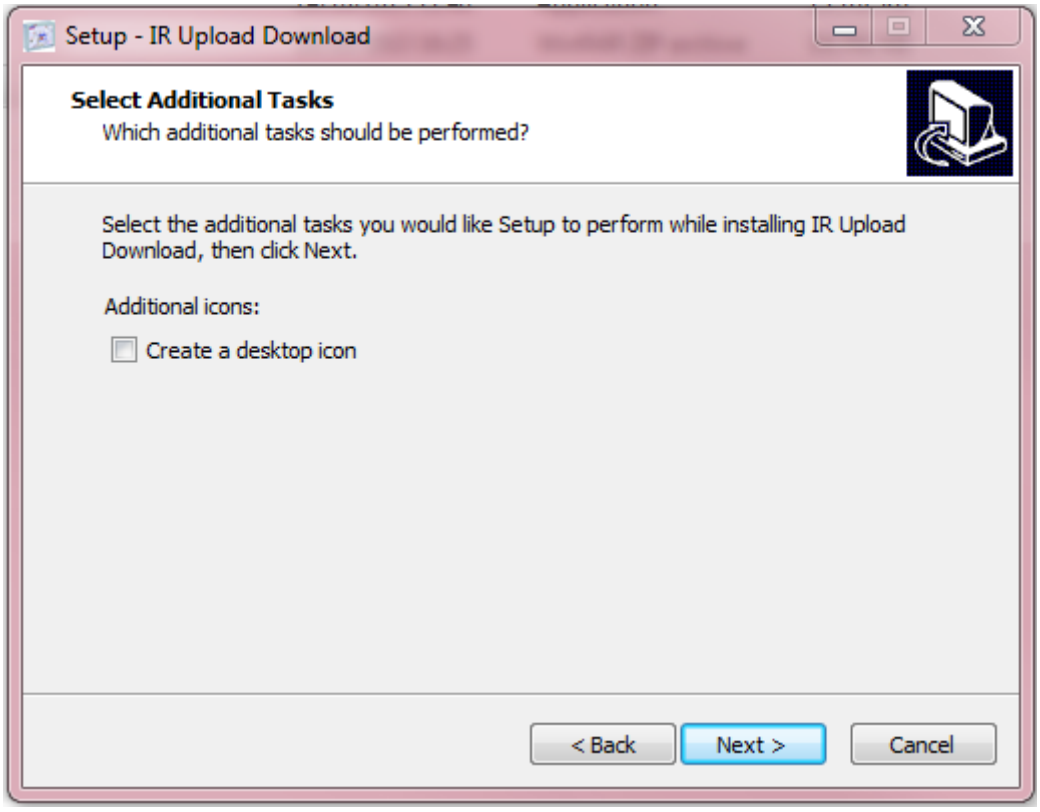
5. Select the destination folder for the IR UD software and then click 'Next'.



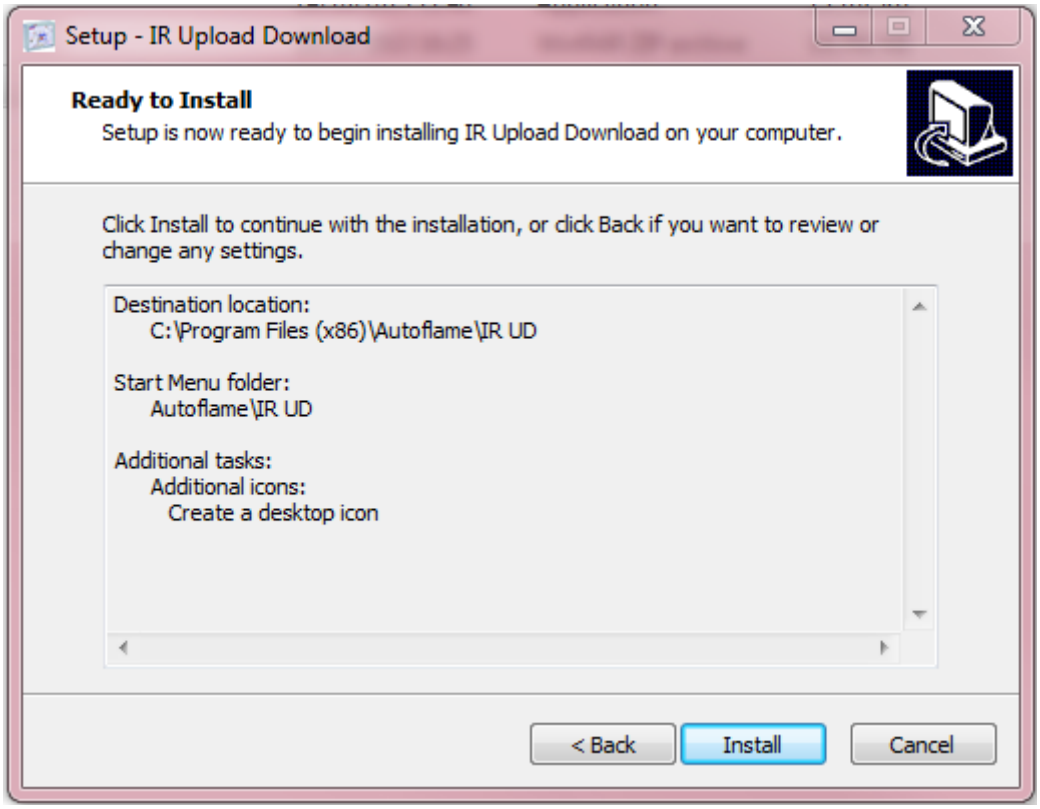
6. Choose if you would like a Start Menu folder, and change this folder if needed. Click 'Next'.



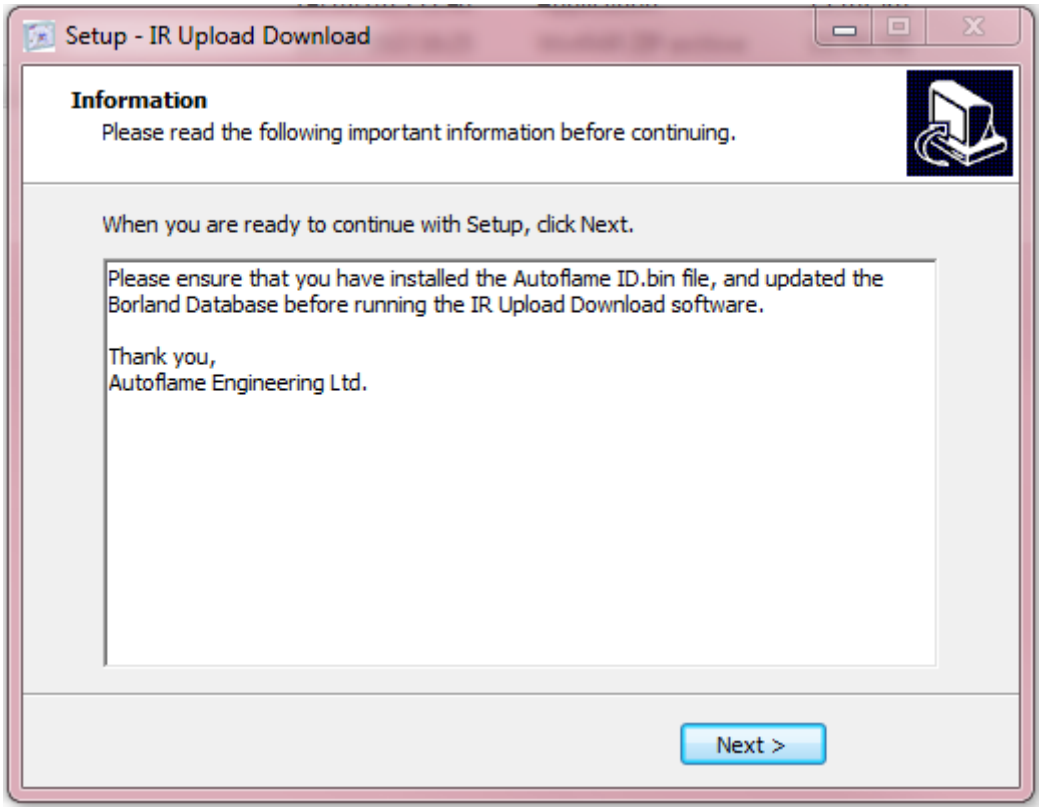
7. Choose if you would like a Desktop icon to be created. Click 'Next'.



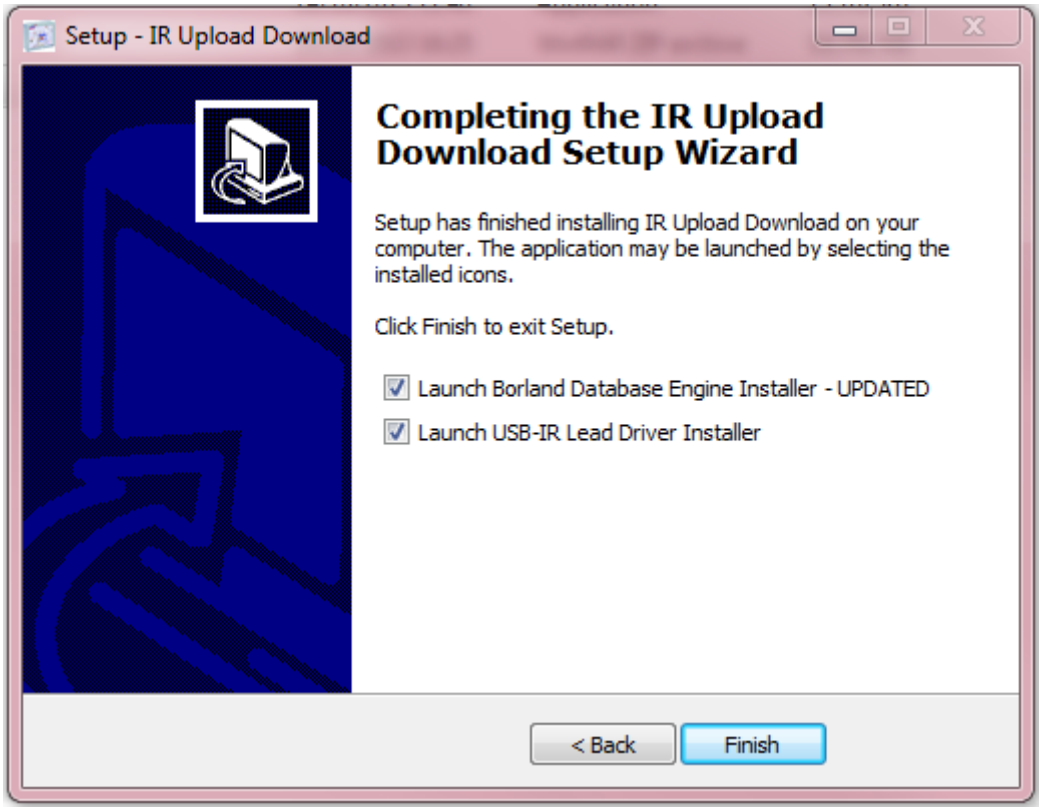
8. Check the installation settings, and then click 'Install'.



9. Click 'Next' to complete the install of the IR UD program.

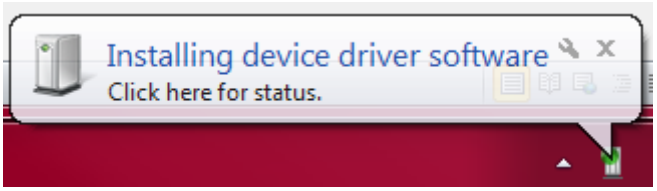


10. The Borland Database Engine and USB-IR Driver will now need to be installed. Select 'Launch USB-IR Lead Driver Installer' if you have the new USB style IR Lead. Both these installations will run simultaneously. If prompted by the USB Driver software to Modify, Repair or Remove, please select 'Modify'. Click 'Finish'.

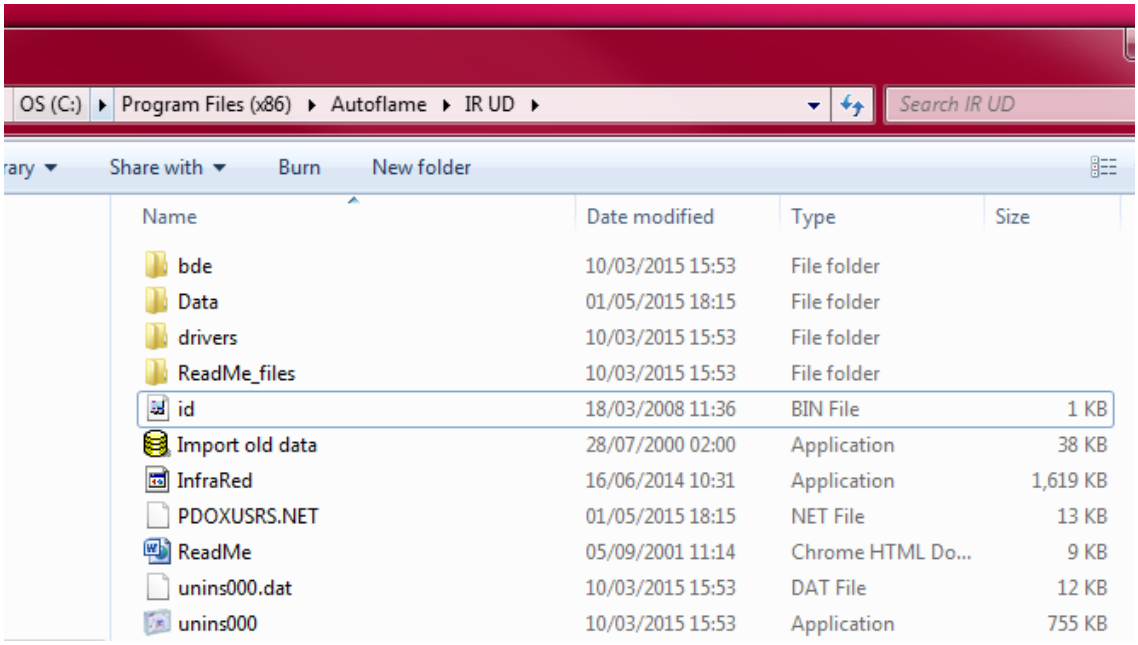


Note: If already installed, the Borland Database Engine will be updated.

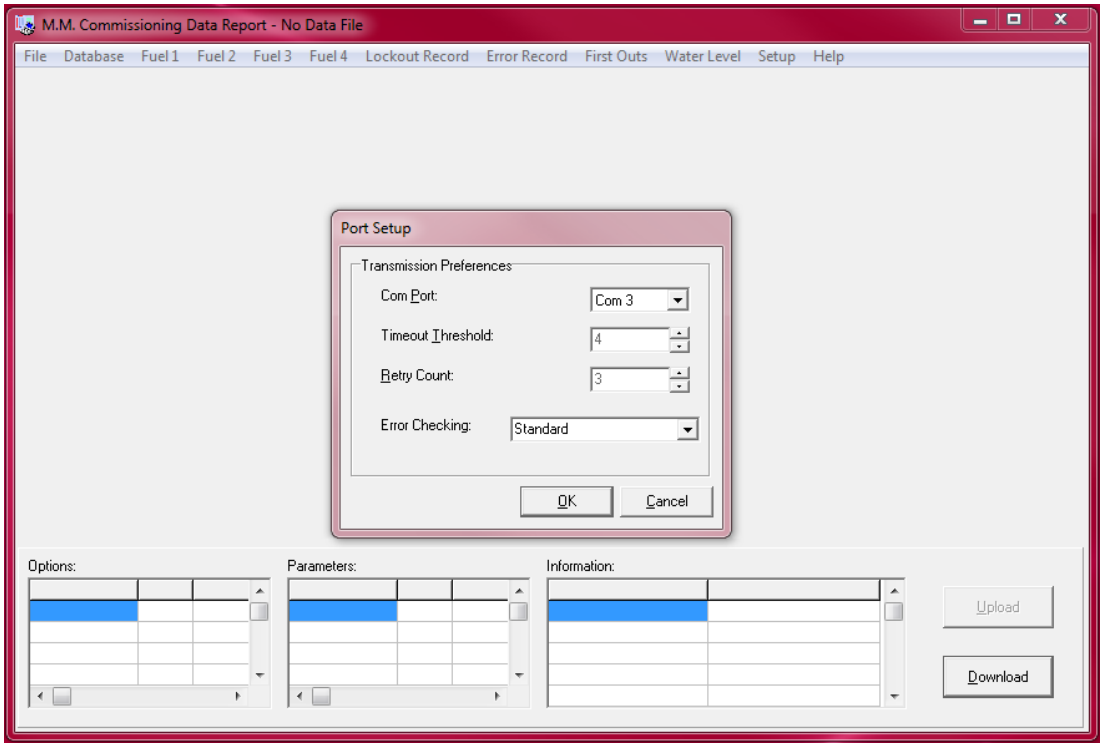
11. Insert the USB IR lead into the PC. The device driver software will be installed for the PC.



12. Save the ID.bin file for that IR lead in the same folder as where the IR UD software was saved in the install.



13. Open the IR UD program and go to 'Setup' to select the COM port for the IR lead, and check that the Error Checking is set to Standard for a Mk7 MM If using a Mini Mk7 MM, the Error Checking box should be selected as 'Mini Mk7 v 1.07 and later.'

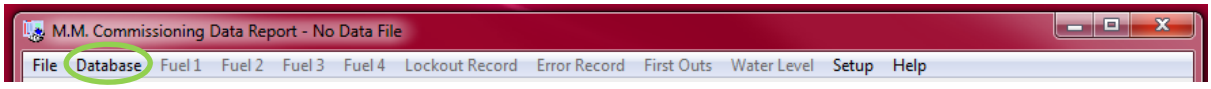


Note: If the COM Port needs to be changed via Device Manager, please see section 1.6.2.

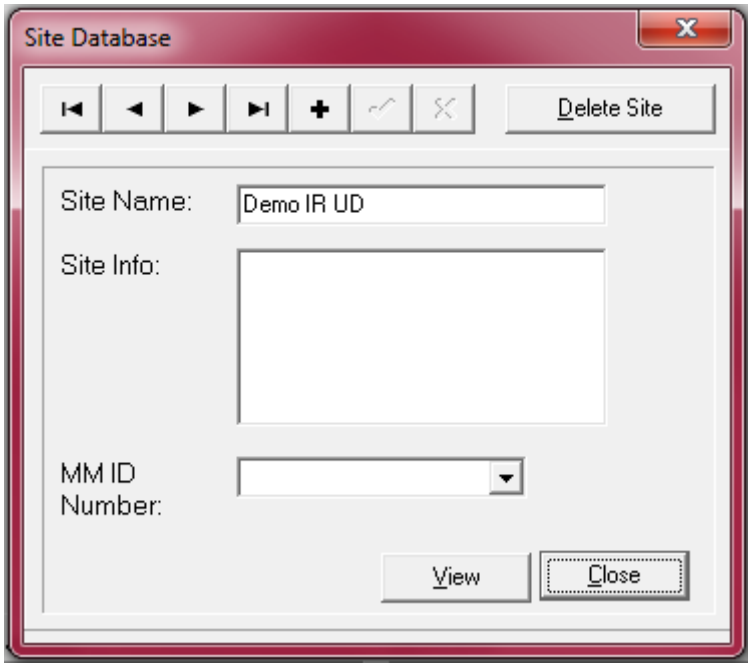
1.3 Downloading/Uploading MM Commission Data

1.3.1 Download Commission Data

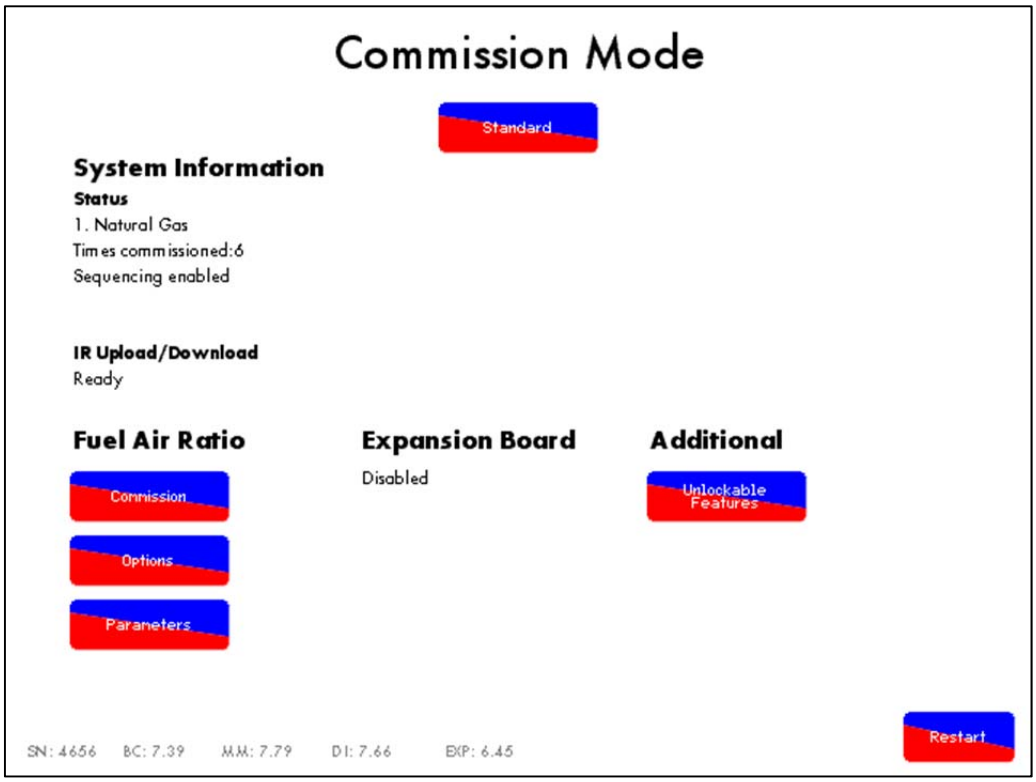
To create a site, click on 'Database'. Type in the site name, click '+' followed by the tick box, and then click 'Close'.



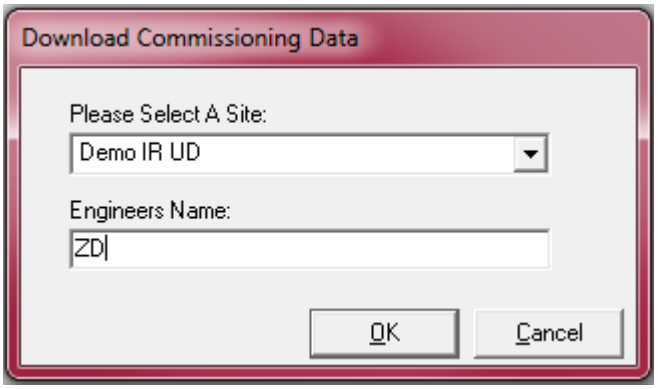
Note: To take a download from an MM, there must be at least one site created in the database.



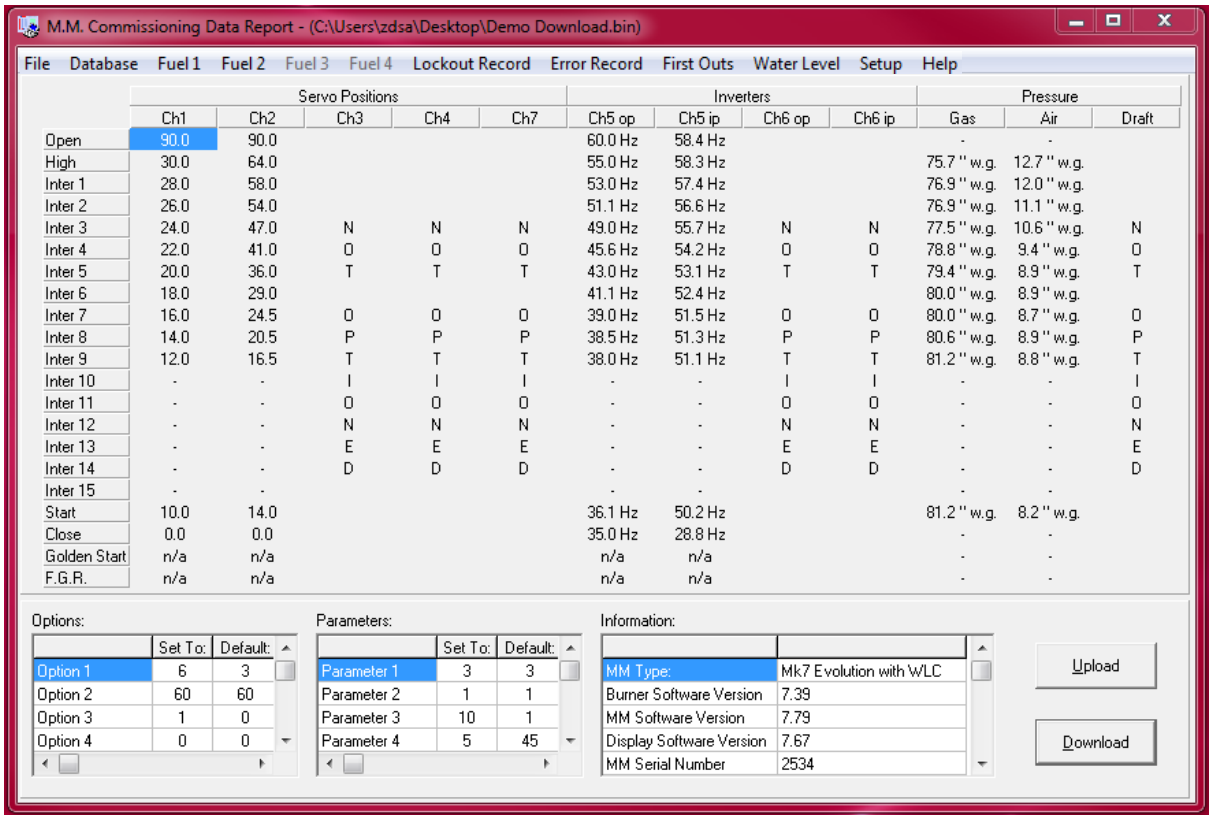
Now that a site has been created in the database, go into the password screen of Commissioning mode on the MM The Commissioning password does not need to be entered on the MM to take a download. When the MM is ready the 'IR Upload/Download ready' message will show on the screen, as shown below for the Mk7 MM



Hold the IR lead to the IR port on the MM Click 'Download' on the IR UD program and then select the site that you wish to save the data against, and type the engineer's name, click 'OK' to download the data from the MM



Once the download is complete, it is saved in the same location of as the IR UD program folder e.g. C:\Program Files (x86)\Autoflame\IR UD\Data. The commission data can also be saved in a specific location other than the Data file on the PC by clicking on 'File' and then 'Save As'.

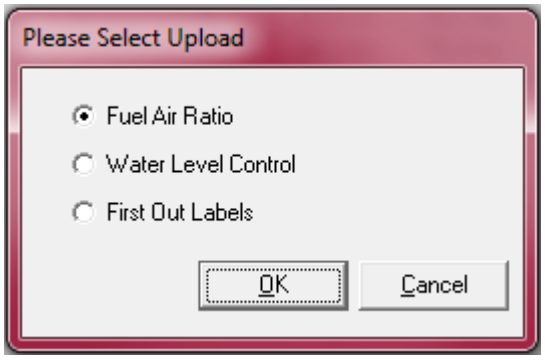


1.3.2 Uploading Commission Data

To upload commission data to the MM, go to Commissioning mode and enter the Commissioning password. Once the message 'IR Upload/Download' shows ready on the screen, the MM is ready for an upload.

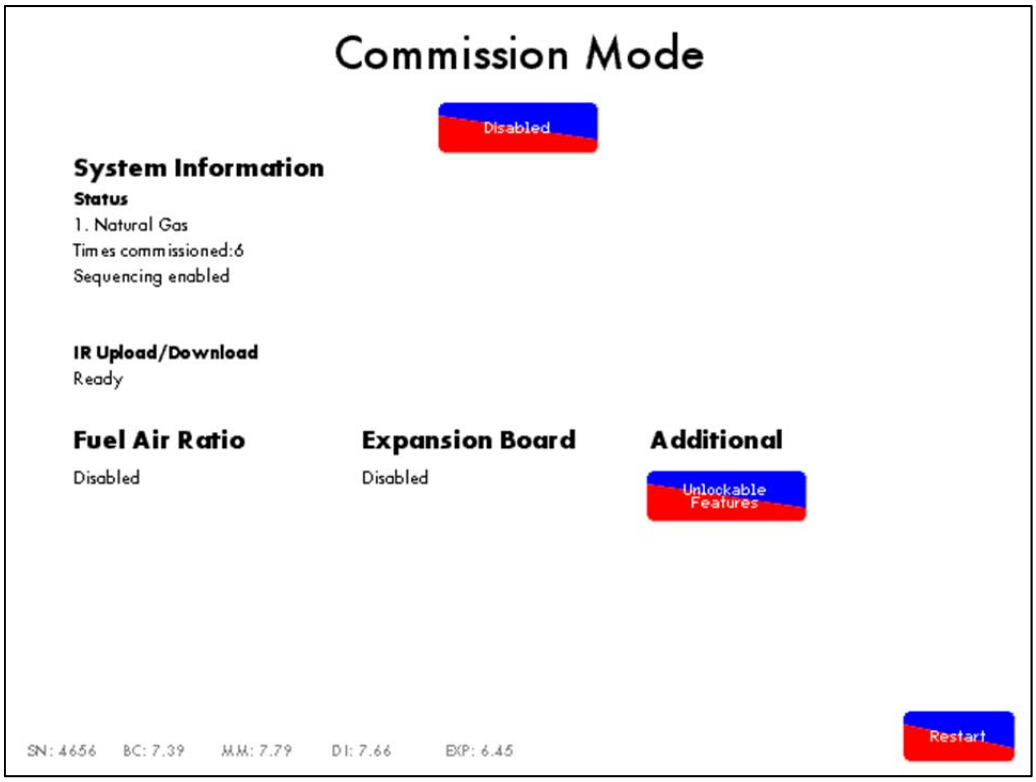
Open the commission data file on the IR UD program you wish to upload to the MM and click 'Upload'. Select whether you wish to upload the full commission data through 'Fuel Air Ratio', or just the 'Water Level Control' or the 'First Outs Labels.'

Hold the IR lead to the IR port on the MM Click 'OK' to upload the commission data.



The MM will then automatically restart once the data has uploaded successfully. You will be asked to enter the Commissioning password. Press 'Disabled' to set the MM to 'Standard' or 'Expansion Board Active.'

Note: If the fuel-air ratio commission data file contains a different password to the one originally set on the MM, the new upload password will become active.



****WARNING****

It is the responsibility of the Autoflame trained technician/engineer to ensure that after an upload all the options, parameters, expansion options and fuel/air ratio commission data are checked. Failure to do so could results in serious equipment damage, critical injury or death.

1.4 First Outs Labels

For First Outs capability, the Mk7 MM requires a water level or expansion PCB. To setup First Outs on a Mk7 MM, take a download of the commission data. On the IR UD program, click on the 'First Outs' tabs. Up to 15 First Outs can be added to the Mk7 MM

For each First Out required, type in a label; this label will appear on the Mk7 MM. The 'Active High' box defines if a high voltage or a low voltage causes the First Out to fail. If the box is ticked, the Mk7 MM will recognise the First Out as failing if there is a line voltage input on the relevant First Out terminal. If the box is un-ticked, the Mk7 MM will recognise the First Out as failing if there is no line voltage input on the relevant First Out terminal on the expansion PCB.

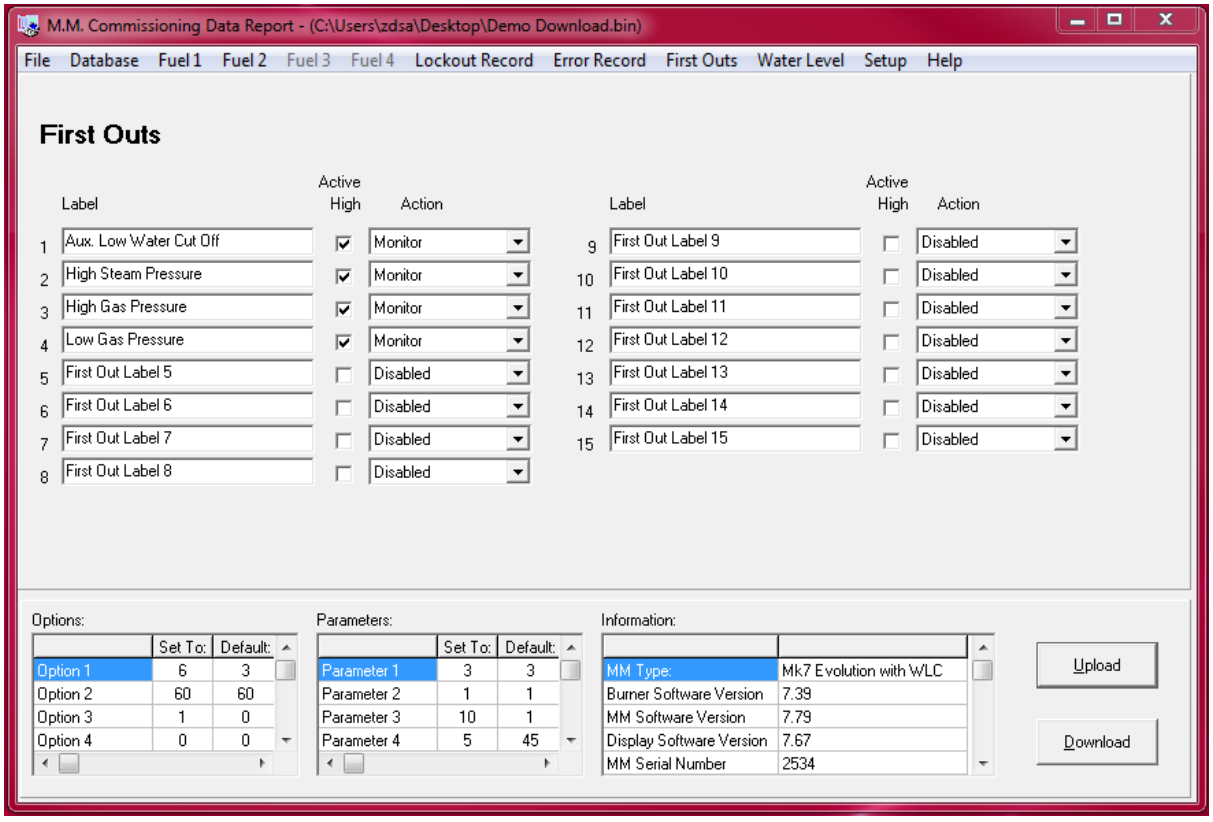
The Action box defines what action the MM takes if the First Out fails:

Disabled – First Out does not appear on the MM screen (not in use), there will be no action if it fails.

Monitor – First Out status is viewed on the MM screen. The MM will display if the First Out fails, but the burner will continue to operate. This is not logged on the MM, but is logged on the Mk7 DTI

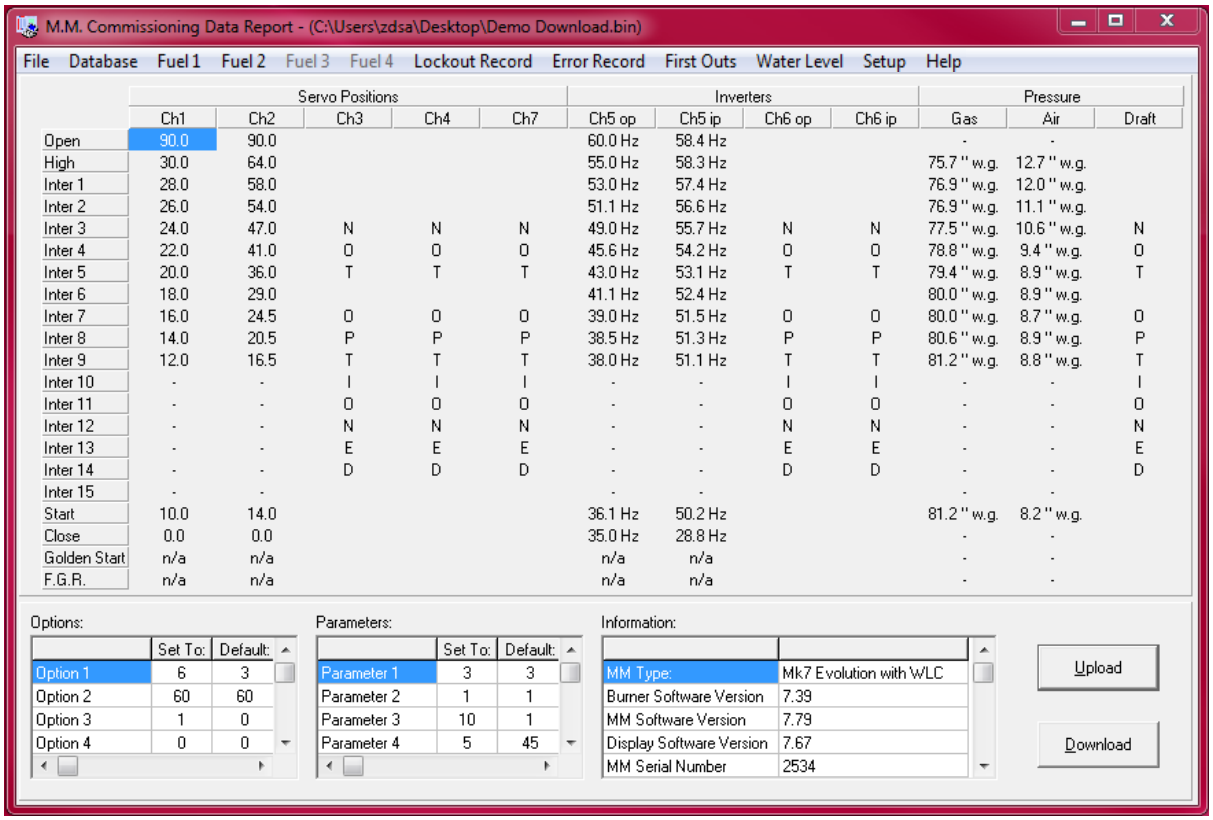
Recycle – The burner will stop firing but will start up again once the error has been rectified with no manual intervention. This is logged on the MM and the DTI, one at a time.

Non-Recycle – The burner will stop firing and will require a manual lockout reset for the burner to start up again. This is logged on the MM and the DTI, one at a time.

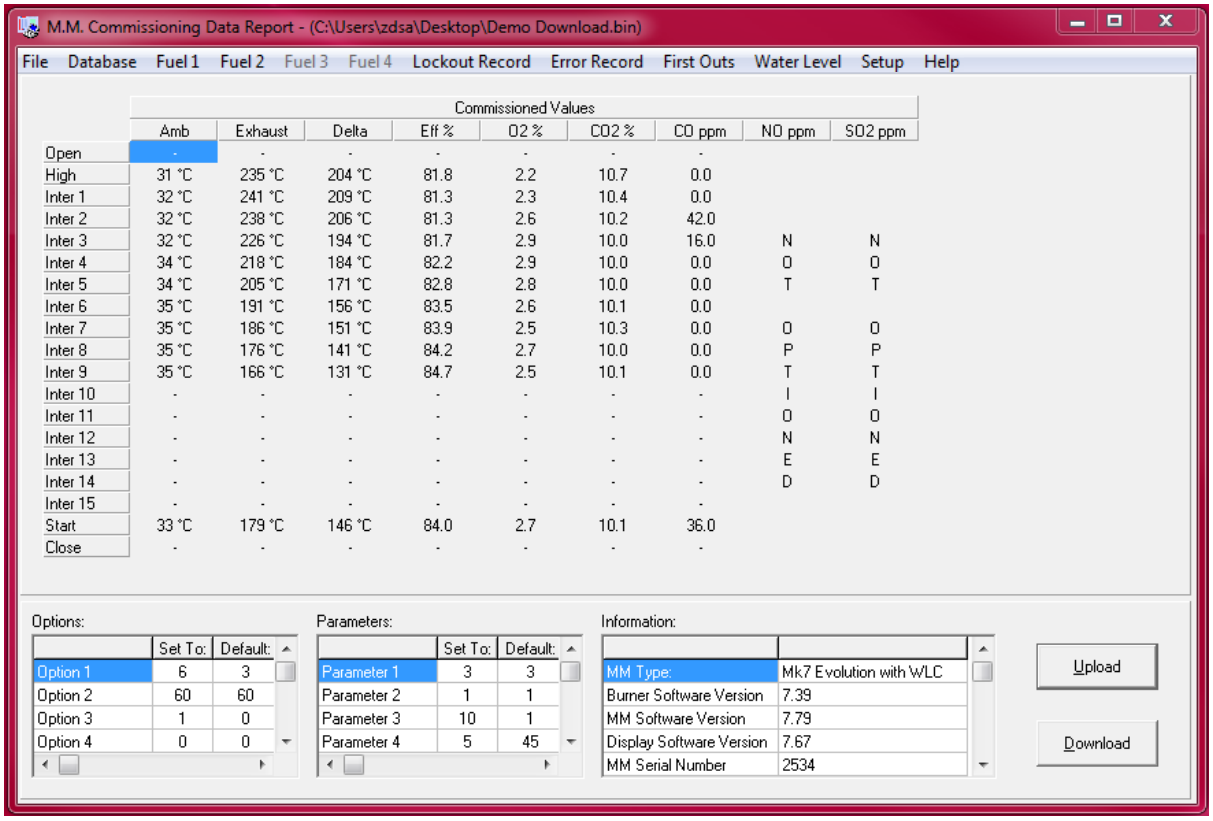


1.5 IR UD Information

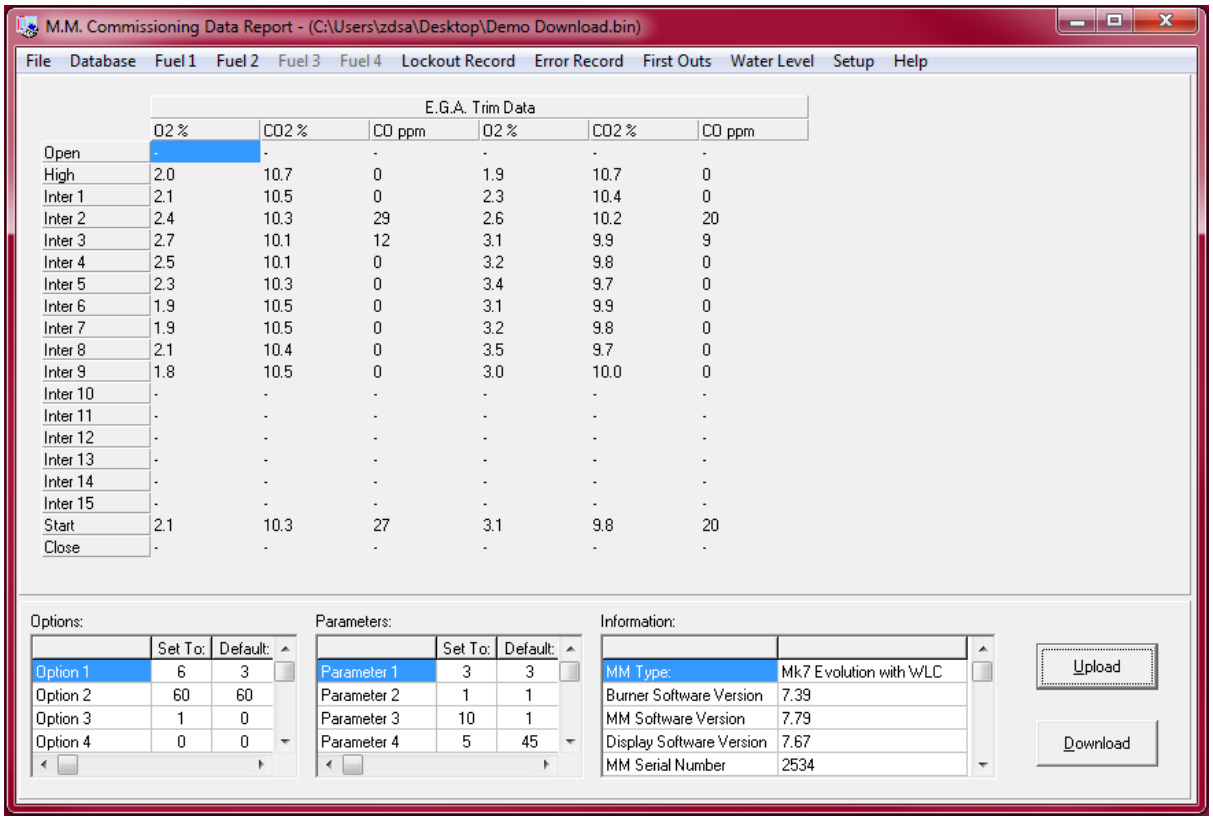
Click on an available 'Fuel' tab (Fuel 1, Fuel 2, Fuel 3 or Fuel 4) and then click on 'MM' to view the combustion curve fuel, air and VSD positions as well as the options and parameters settings and the MM system information.



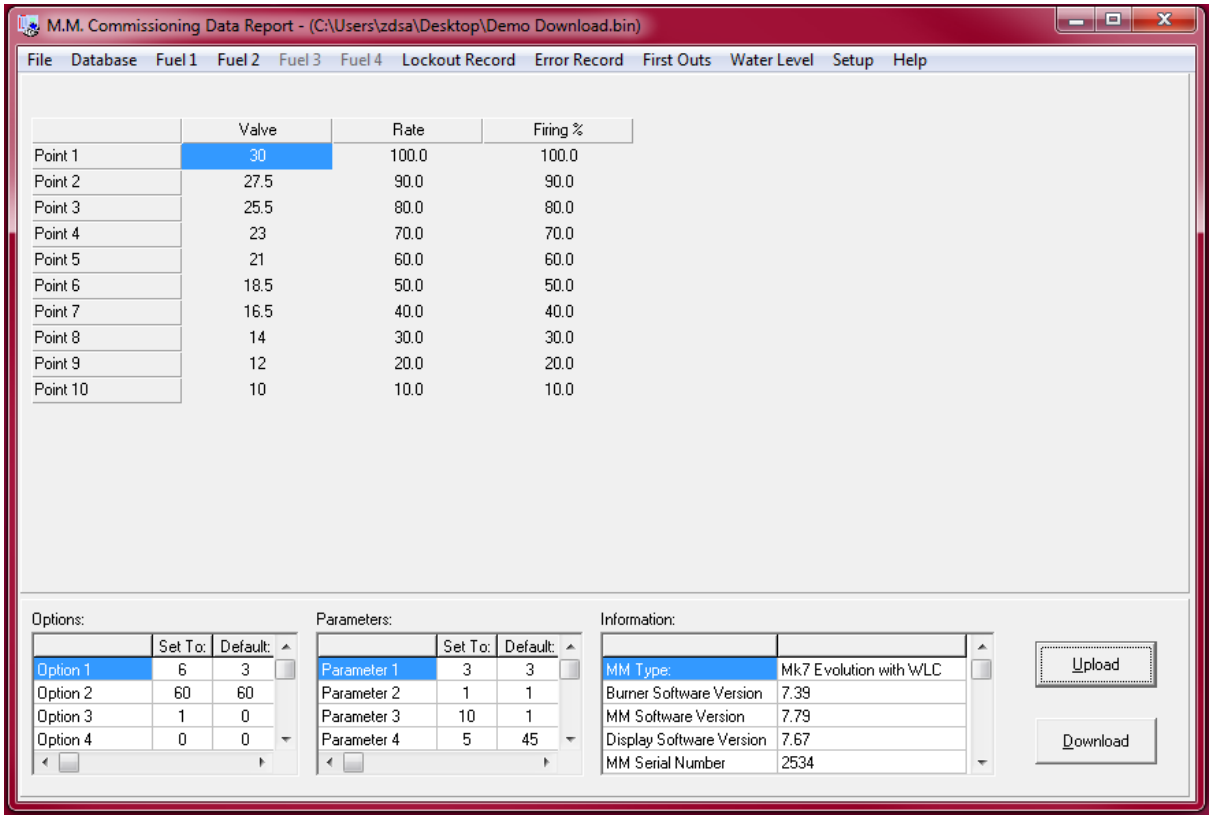
Click on an available 'Fuel' tab and then click on 'EGA' to view the exhaust commissioned values.



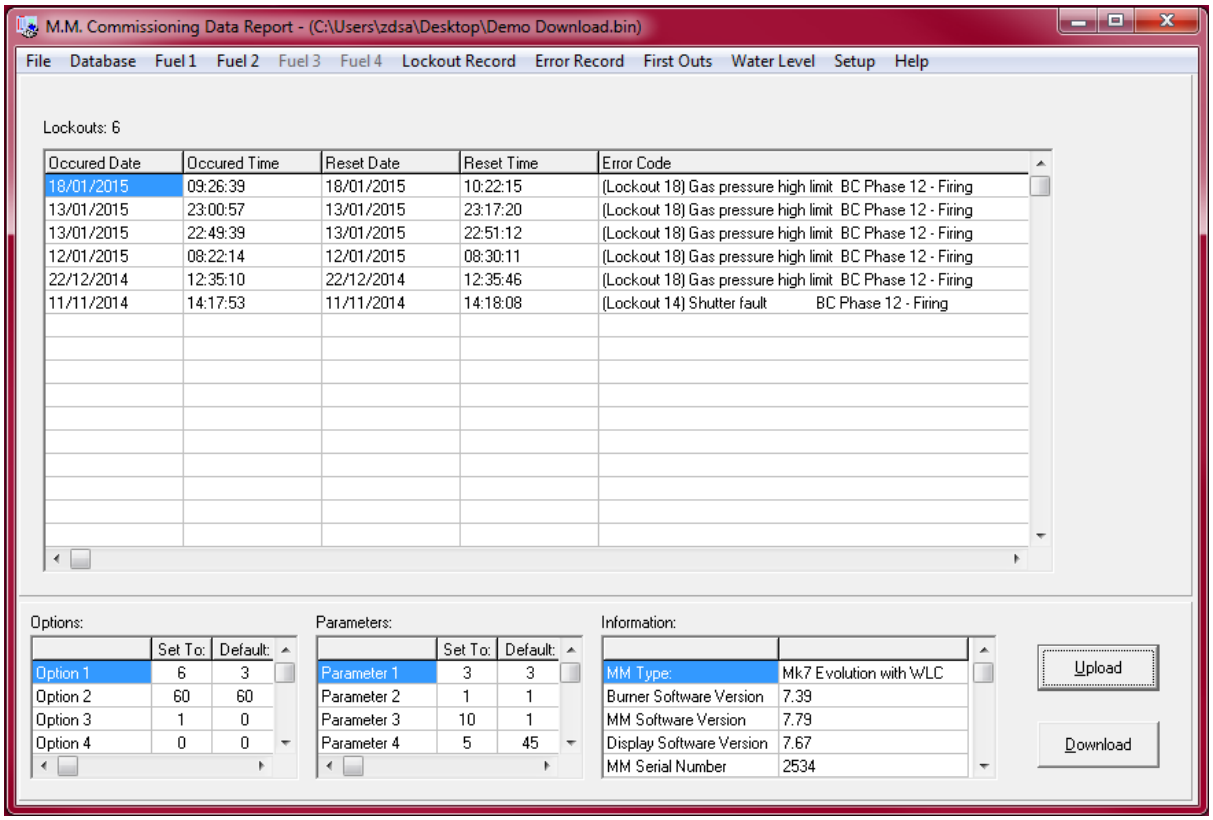
Click on an available 'Fuel' tab and then click on 'EGA Trim' to view the commissioned trim data.



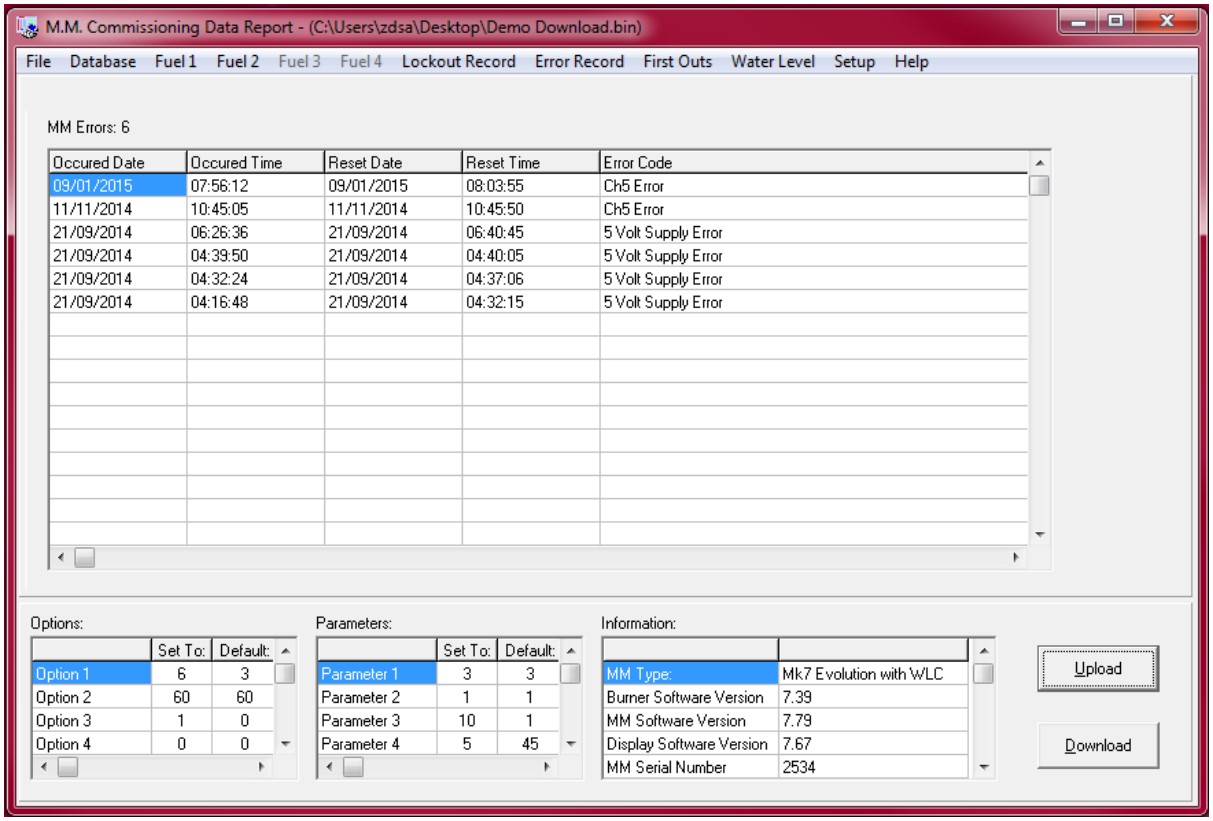
Click on an available 'Fuel' tab and then click on 'Flow Metering' to view the fuel flow metering values.



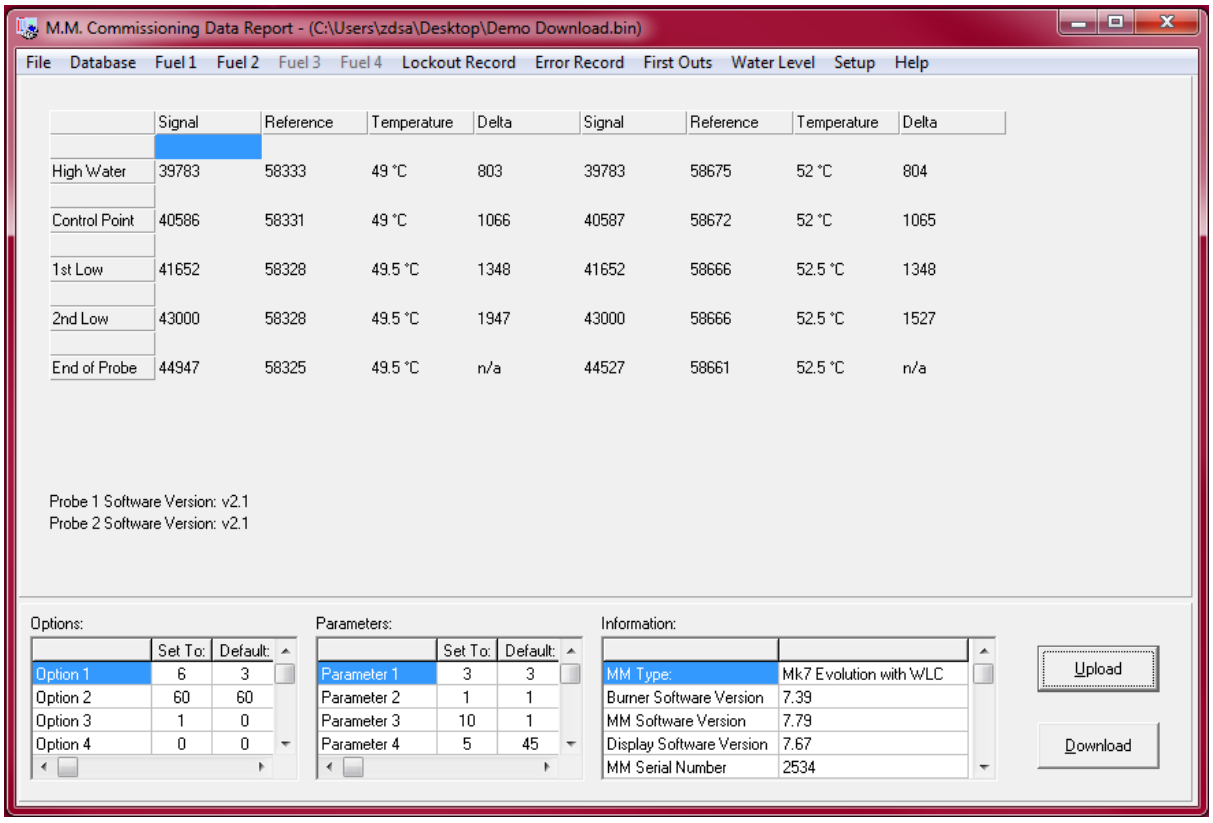
Click on the 'Lockout Record' tab to view the burner lockout history.



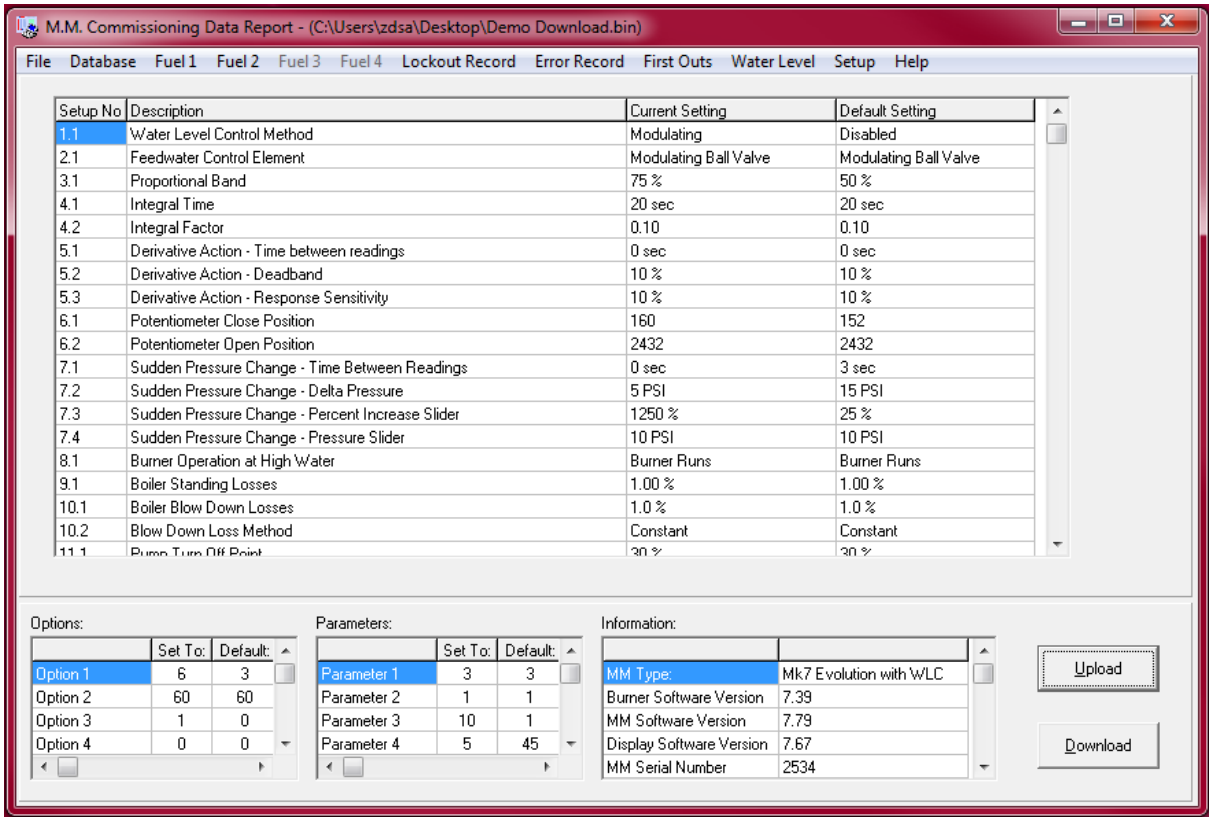
Click on the 'Error Record' tab to view the MM error history.



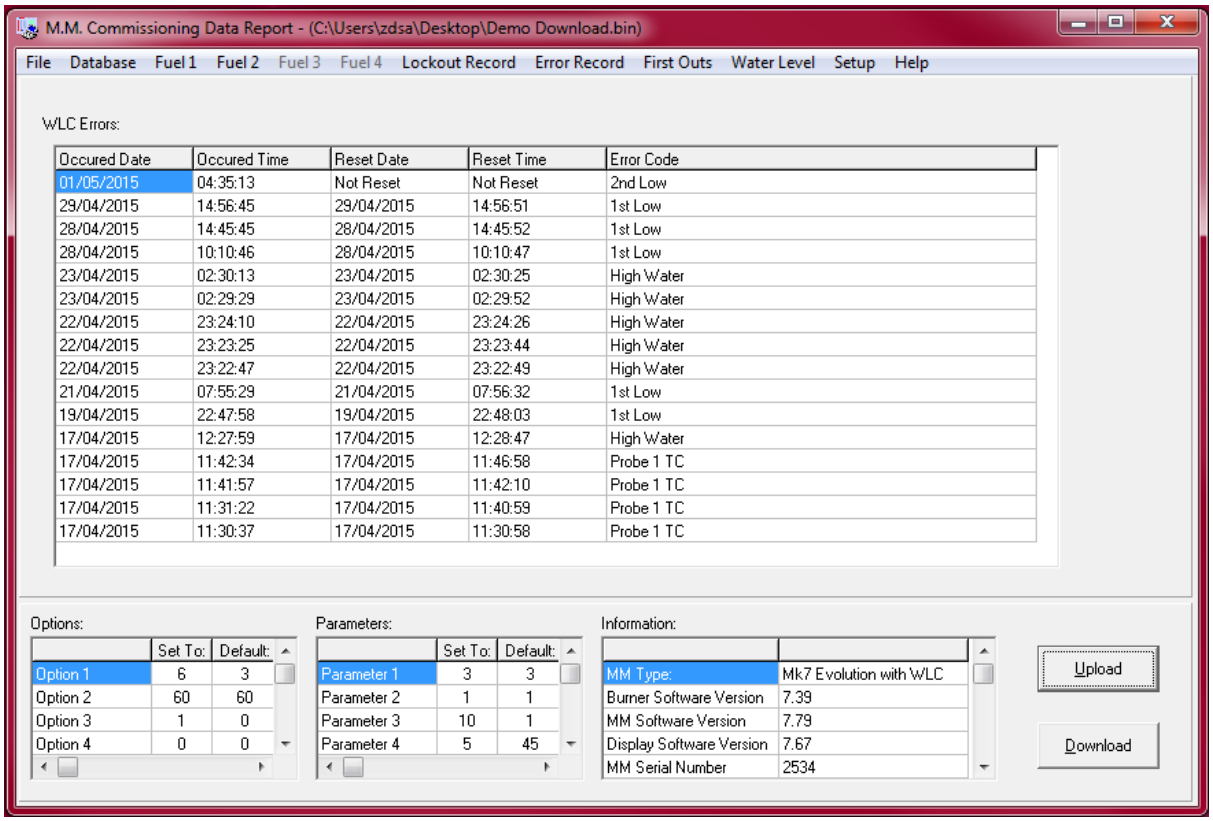
Click on the 'Water Level' Tab and then 'Commission Data' to view commissioned water level control.



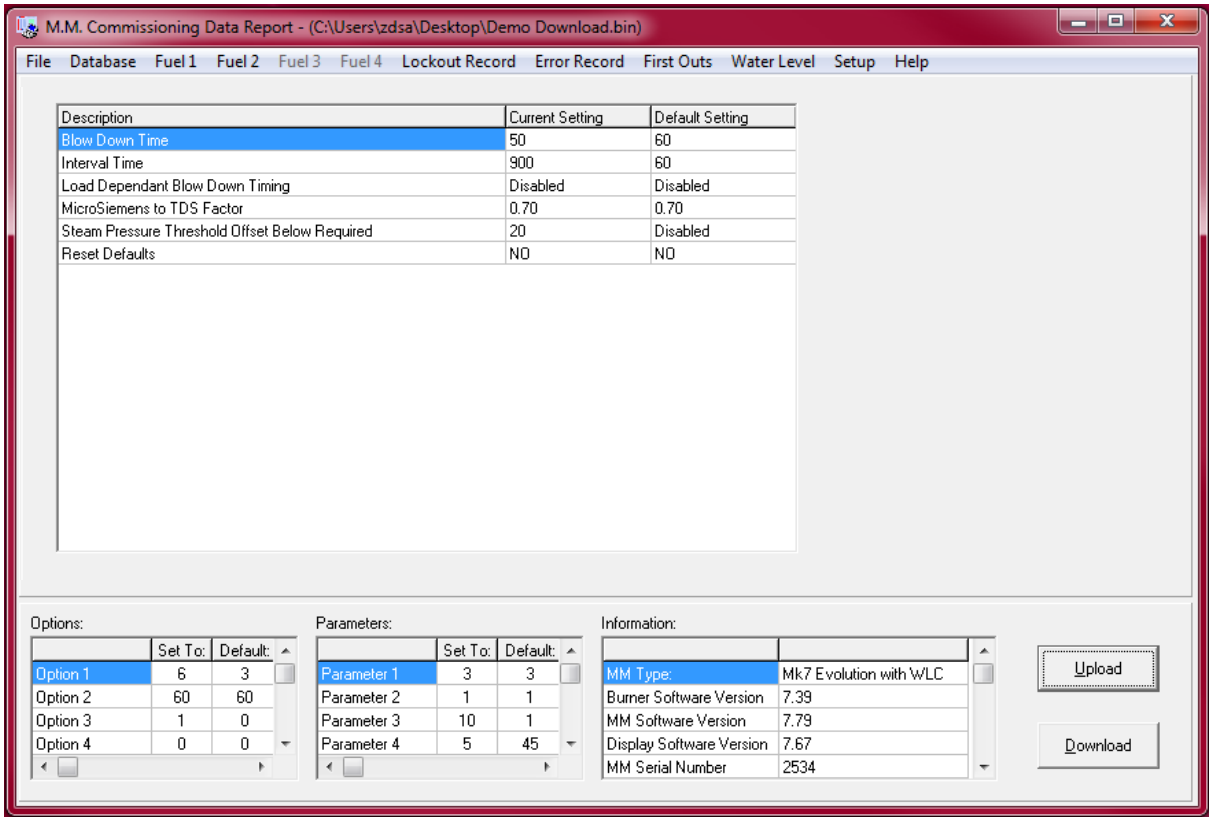
Click on the 'Water Level' tab and then click on 'Configuration Data' to view the Expansion Options.



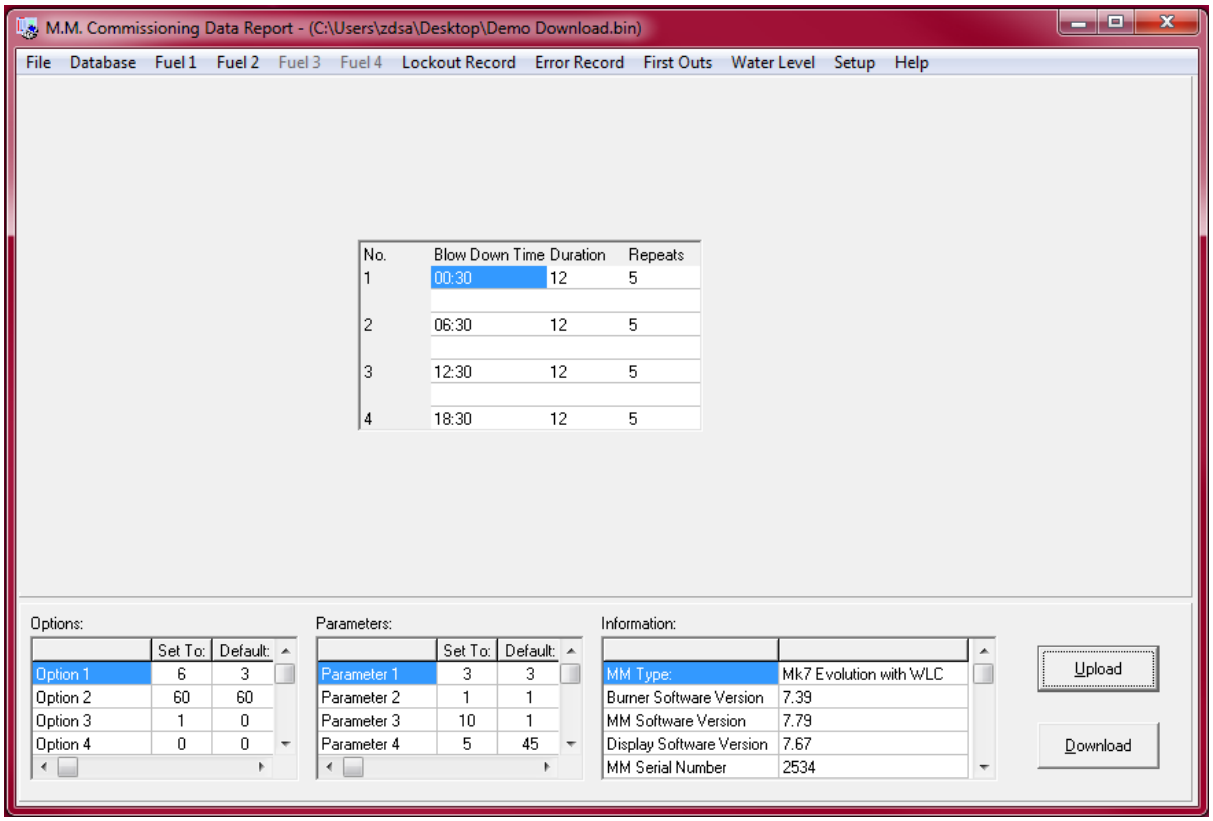
Click on the 'Water Level' tab and then click 'Alarm Record' to show the expansion board alarms.



Click on the 'Water level' tab and then click 'Top Blowdown' to view the TDS settings.



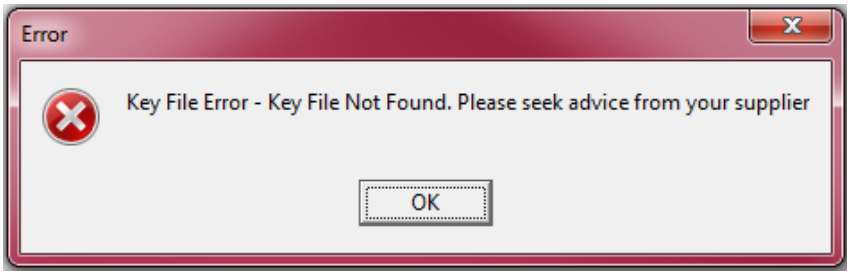
Click on the 'Water Level' tab and then click 'Bottom Blow Down' to view the bottom blowdown times.



1.6 Troubleshooting

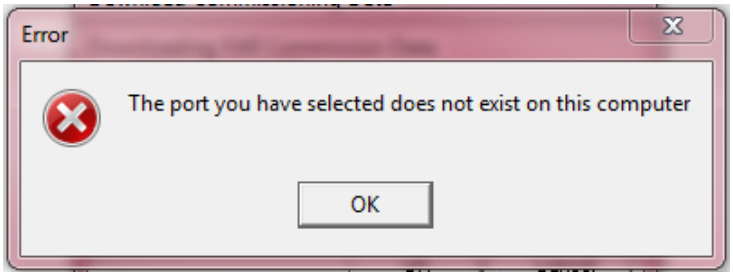
1.6.1 Key File Error

If after installing the IR UD program, the following error message appears, please check you have saved the ID bin file for that IR lead in the IR UD program folder (see section 1.2.1 step12). If this error continues, uninstall the program and re-install in Administrator mode.

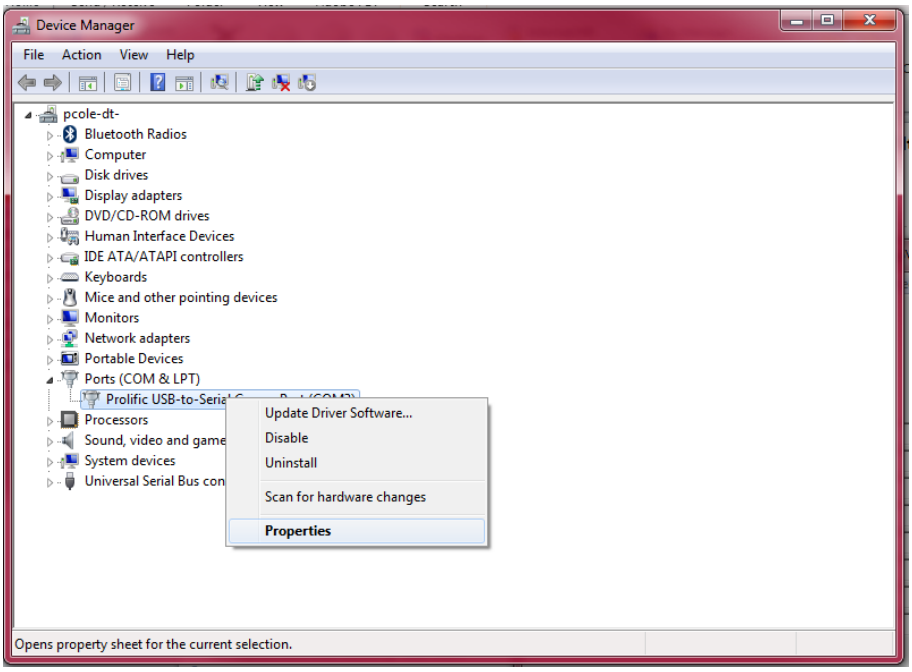


1.6.2 COM Port

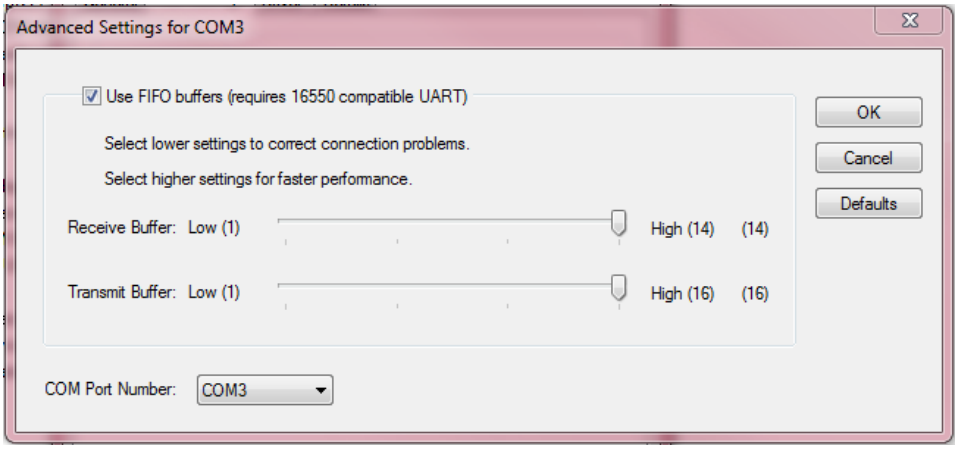
When trying to take a download of an MM or upload commission data to an MM, if the follow error message appears, the COM port will need to be setup.



Try another port in the IR UD setup. If the error continues, go to Device Manager on your PC, click on 'Ports' and right click on the Port you are using for the IR lead, and click on 'Properties'.



Click on 'Port Settings', then 'Advanced', and then change the COM Port Number.



1.6.3 Invalid Argument to Time Encode

When taking a download of an MM, the error 'Invalid Argument to Time Encode' appears on the PC, this is due to the time clock memory failing, which is a result of possible battery failure. To reset the time clock memory:

1. Reset lockout history on the MM by setting parameter 63
2. Reset all totalised flow metering on the MM by setting parameter 64
3. Reset the burner history on the MM by setting parameter 65
4. Reset the time of the unit by Set Clock in Run mode
5. Force a new lockout e.g. prolonged lockout reset
6. Reset the lockout
7. Take the download of the commission data

Should this error continue, the MM will need to come back for inspection/repair.

1.6.4 Invalid Floating Point Operation

When taking a download of an MM or opening up an existing download, if the error 'Invalid Floating Point Operation' appears on the IR UD screen, this indicates that option 57 has been set for fuel flow metering to be calibrated, but the fuel flow metering has not been entered.

Enter the fuel flow metering on the MM and then re-take the download of the commission data.

2 DOWNLOAD MANAGER

2.1 Download Manager Requirements

2.1.1 Introduction

The Download Manager allows you to download and upload commissioning data from and to the Mk8 MM or Mini Mk8 MM. The previous IR Upload/Download software used for the Mk7 MM and Mini Mk7 MM (section 1) is not compatible with the Mk8 MM or Mini Mk8 MM Please contact Autoflame for more information.

The available information on the commission data download of a Mini Mk8 MM includes:

- Device Type
- Device ID
- Serial Number
- Site and Engineer
- Date of Download
- File location on PC
- Software versions
- Combustion curve – fuel, air and VSD positions, gas and air pressure values
- EGA commissioned values
- EGA trim data
- Fuel flow metering values
- Run times
- Boiler configuration
- Options and parameter settings
- Burner lockout history
- MM error history
- EGA error history
- System log

2.1.2 PC Compatibility

It is compatible with Windows XP, Windows 7 and Windows 8, for both 32bit and 64bit formats. The software must be installed in Administrator mode.

2.1.3 Serial Number and Activation Code

The IR lead (pt. MM60010) can be used for both the IR Upload/ Download software and the Download Manager software.

When installing the Download Manager software onto a PC, a unique License Code is generated for that PC; an Activation Code will be required to activate the Download Manager software for that License Code. The Download Manager software can be purchased in the following three ways:

Purchase MM80010

1. You will receive an IR lead and the Download Manager software on a USB stick with a Serial Number.
2. Install Download Manager software onto PC (section 2.2)
3. Go to http://www.autoflame.com/download-manager/ and request an Activation Code using the serial number on the USB stick.
4. If the Activation Code has not already been sent for that Serial Number, we will send you the Activation Code to activate this software. If an Activation Code has already been sent for that Serial Number of Download Manager software, we will require a Purchase Order for a new Serial Number (part number MM80010NLB). Then submit a new request for an Activation Code using the new Serial Number given with the Order Acknowledgement.

Purchase MM80010/NLA

1. You will receive the Download Manager software on a USB stick with a Serial Number.
2. Install Download Manager software onto PC (section 2.2)
3. Go to http://www.autoflame.com/download-manager/ and request an Activation Code using the Serial Number on the USB stick.
5. If the Activation Code has not been given for that Serial Number, then we will send you the Activation Code for the unique License Code generated on your PC. If an Activation Code has already been sent for that Serial Number of Download Manager software, we will require a Purchase Order for a new Serial Number/Activation Code (part number MM80010NLB). Then submit a new request for an Activation Code using the new Serial Number given with the Order Acknowledgement.

Download from website

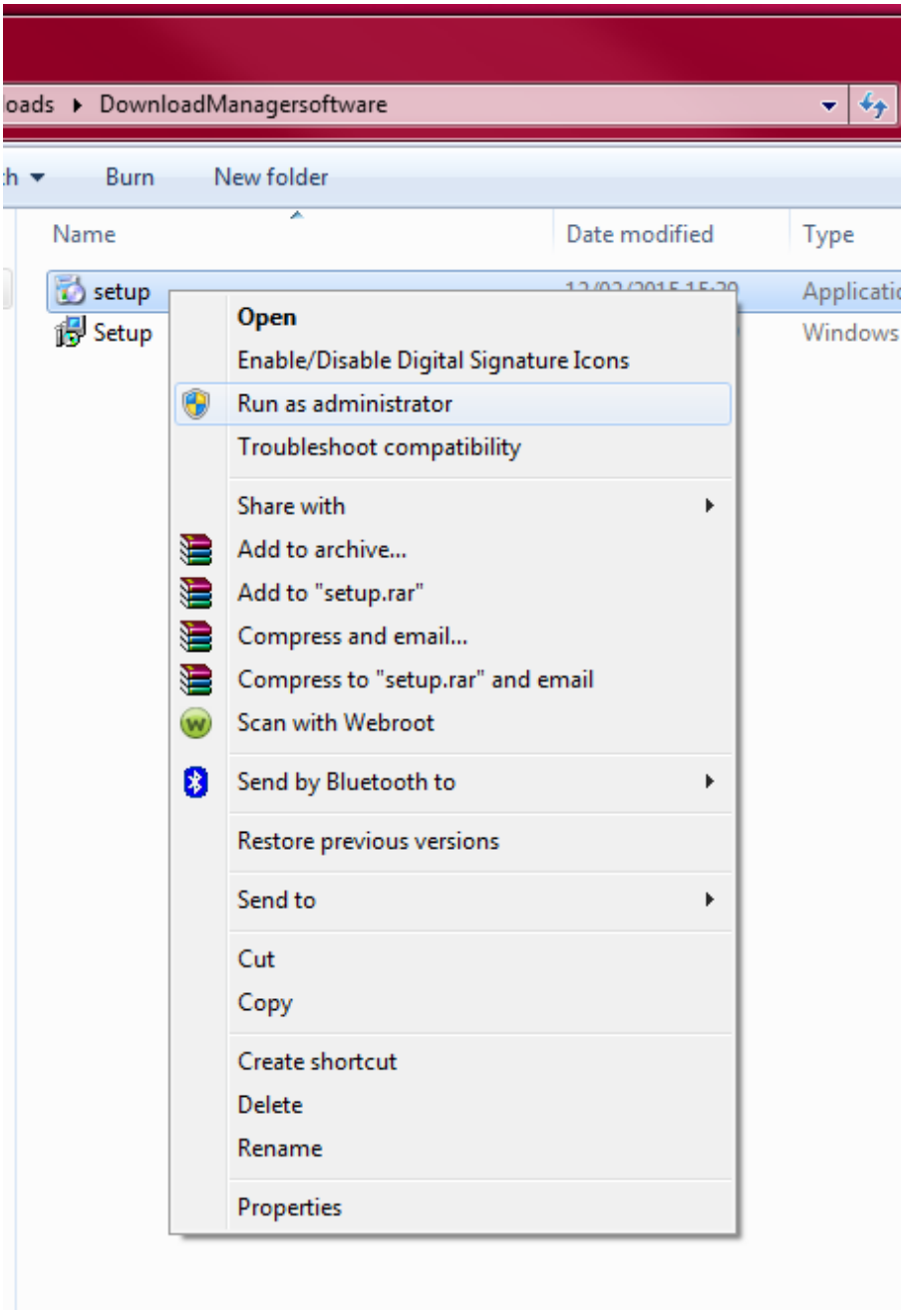
1. Go to Tech Site Knowledge Centre and save Download Manager software to your PC.
2. Install Download Manager software onto PC (section 2.2)
3. We will require a PO for a new Serial Number (part no. MM80010/NLB).
4. Go to http://www.autoflame.com/download-manager/ and request an Activation Code using the Serial Number provided in the Order Acknowledgement.

Note: For each Serial Number, there will be one unique License Code, and therefore one Activation Code, so for each PC the Download Manager software is installed on, you will need a new Serial Number and Activation Code. The Serial Number (00001+) refers to the USB Stick with the Download Manager software provided with IR lead MM80010 nd Serial Number (5000+) refers to the USB stick MM80010/NLA. If you have downloaded the software from the website, we will issue a new Serial Number (10000+) for MM80010/NLB. Please keep this on record for future reference.

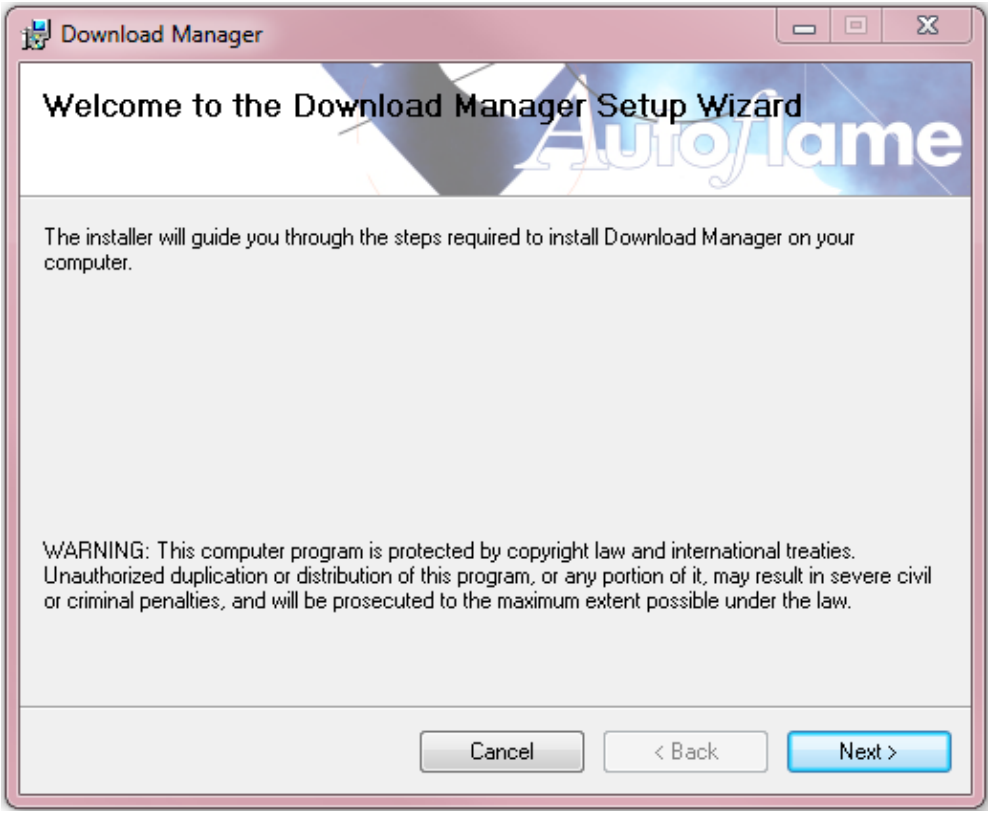
2.2 Installation

2.2.1 Installing onto PC

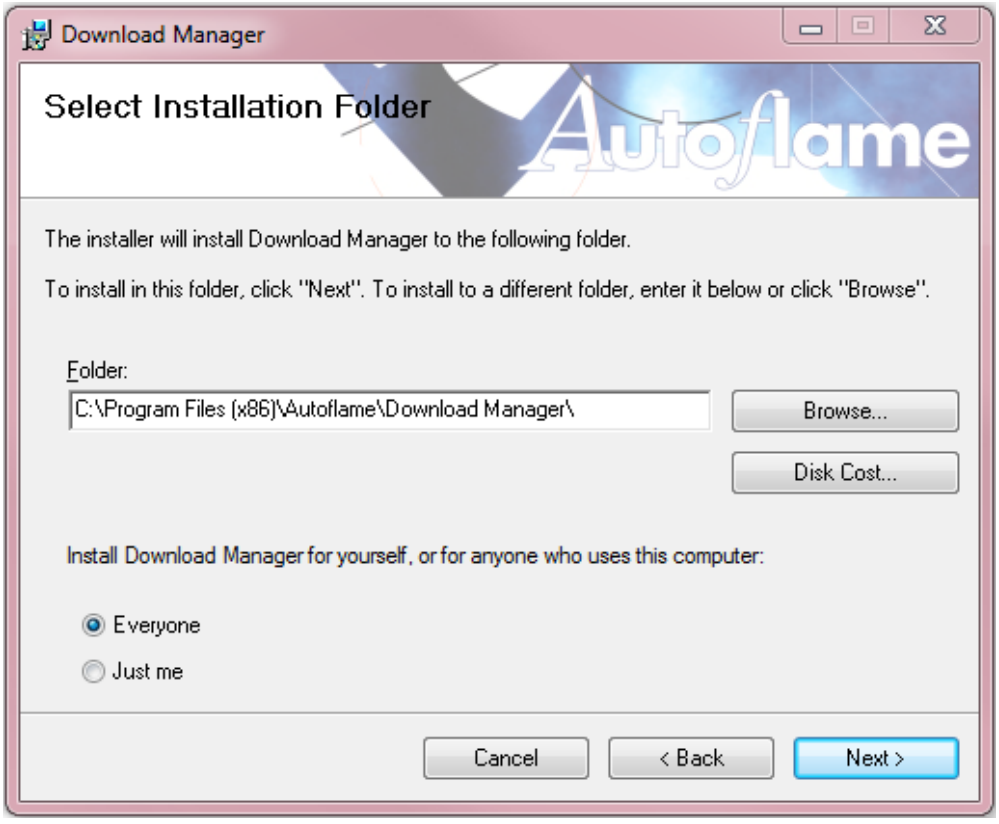
1. Either from the USB stick (MM80010 or MM80010/NLA), or downloaded from the website, right click on ‘setup’ file (Application) and click on ‘Run as Administrator’.



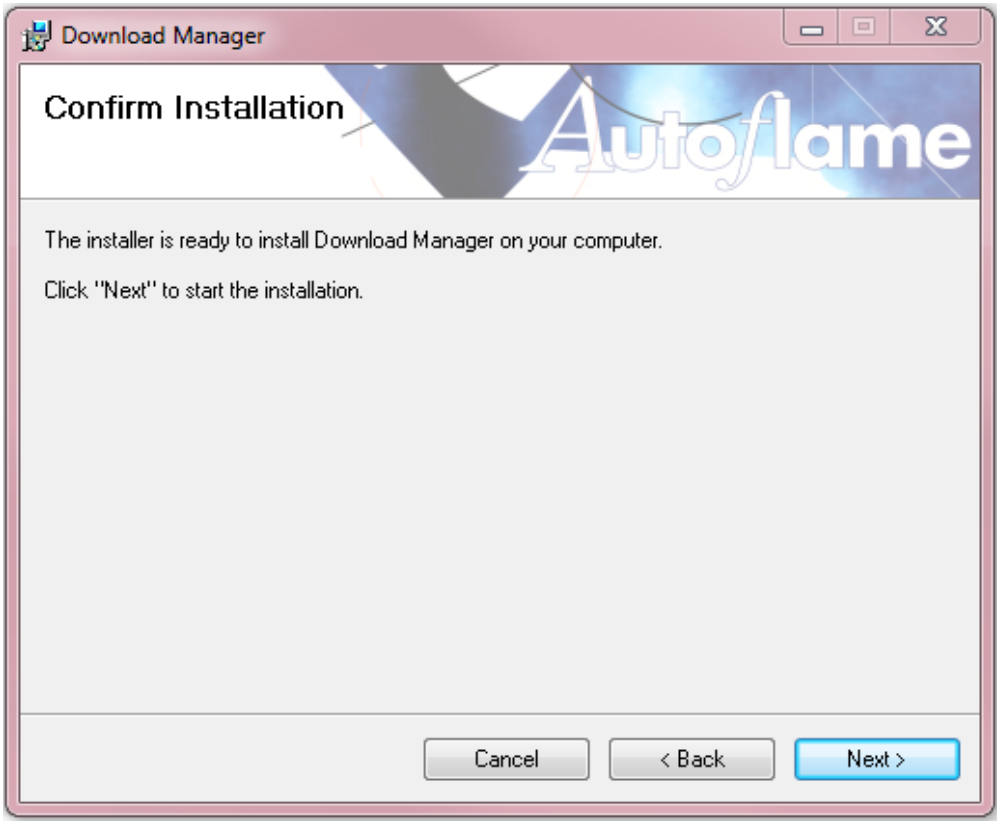
2. The Download Manager Setup Wizard box will appear. Click 'Next' to begin the installation.



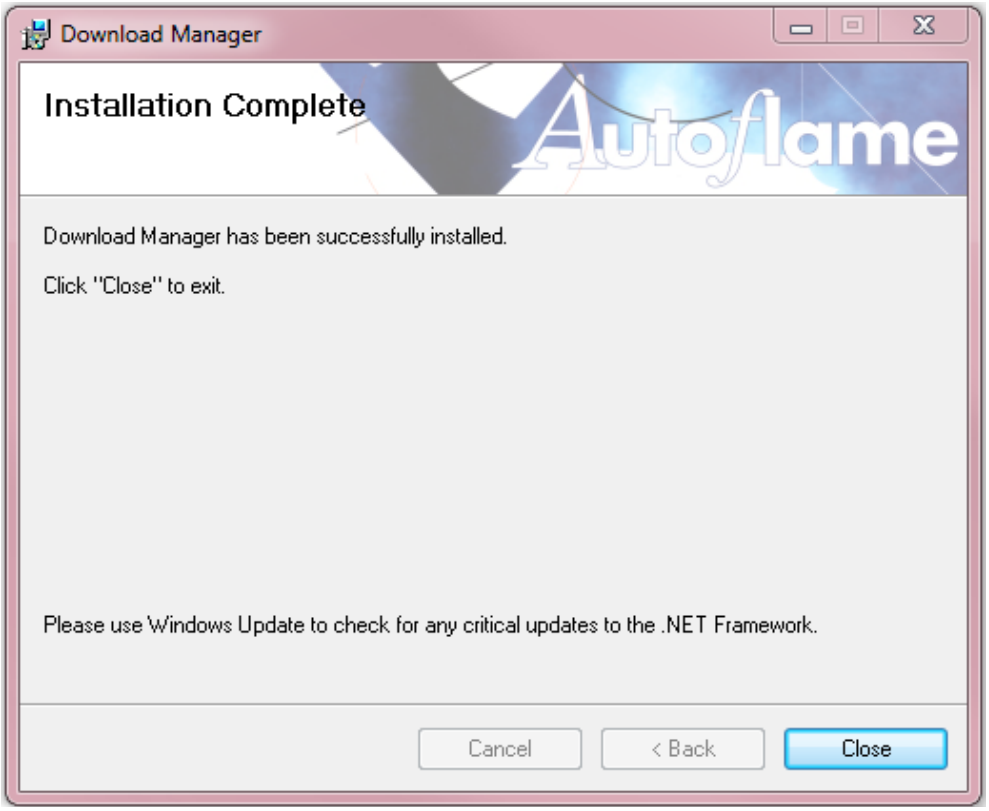
3. Choose a location for the software, such as C:\Program Files (x86)\Autoflame\Download Manager\ and then click 'Next'.



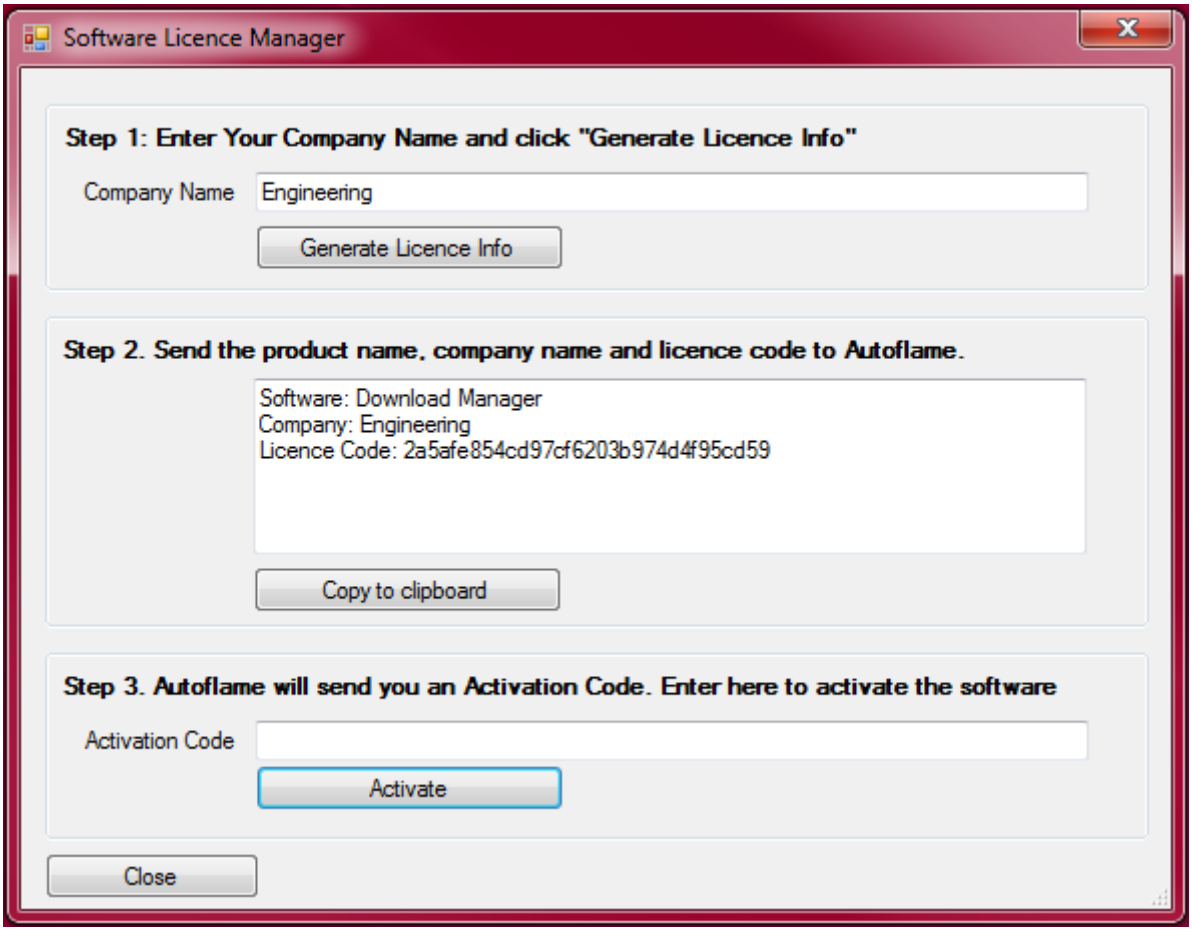
4. Click ‘Next’ to proceed with the install.



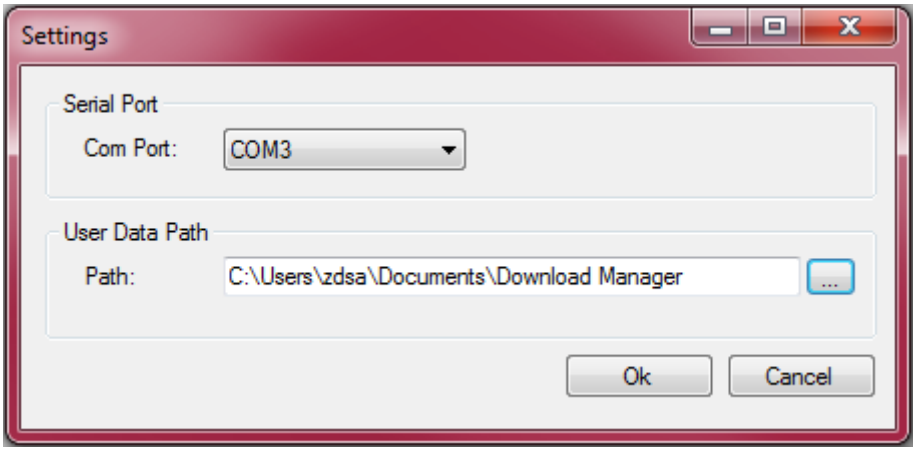
5. Once the installation is complete, click ‘Close’ to exit.



6. Open the Download Manager software. Enter the Company Name and click 'Generate Licence Info.' Go to www.autoflame.com/download-manager/ to request an Activation Code (please see section 2.1.2 for more information). Please copy the Company Name entered exactly when requesting an Activation Code using the online form.



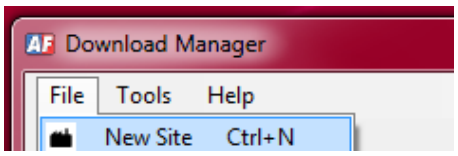
7. If the COM port has not been set up already, click on 'Tools', and then select the COM port which the IR lead is associated to. To set up where the commission data files are saved for the Download Manager program, change the User Data Path as required.

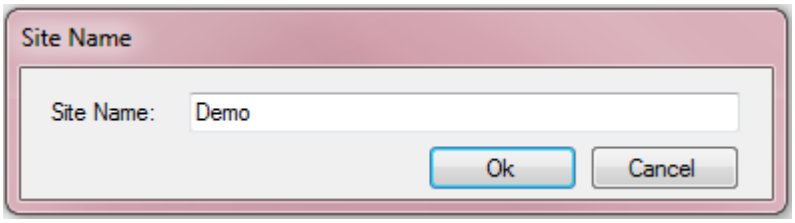


2.3 Downloading/Uploading Commission Data

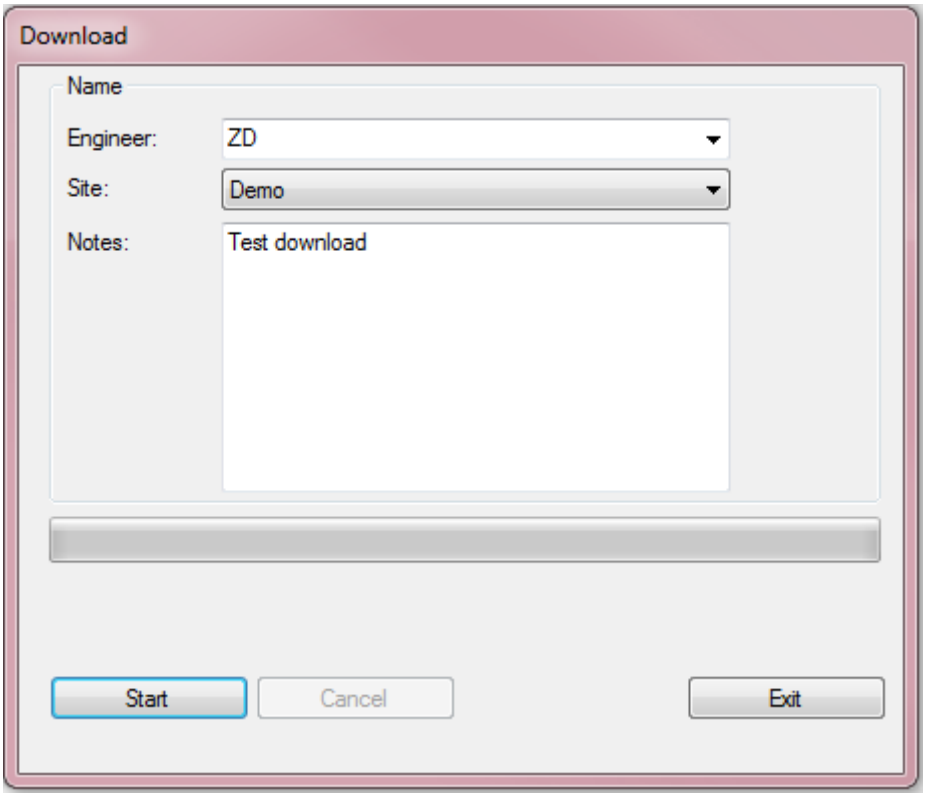
2.3.1 Downloading

1. Before taking a download of the MM, you will need to create Site – you will not be able to take a download if no site exists). Click on 'File' and then 'Site' or click on the tab. Type a Site name.





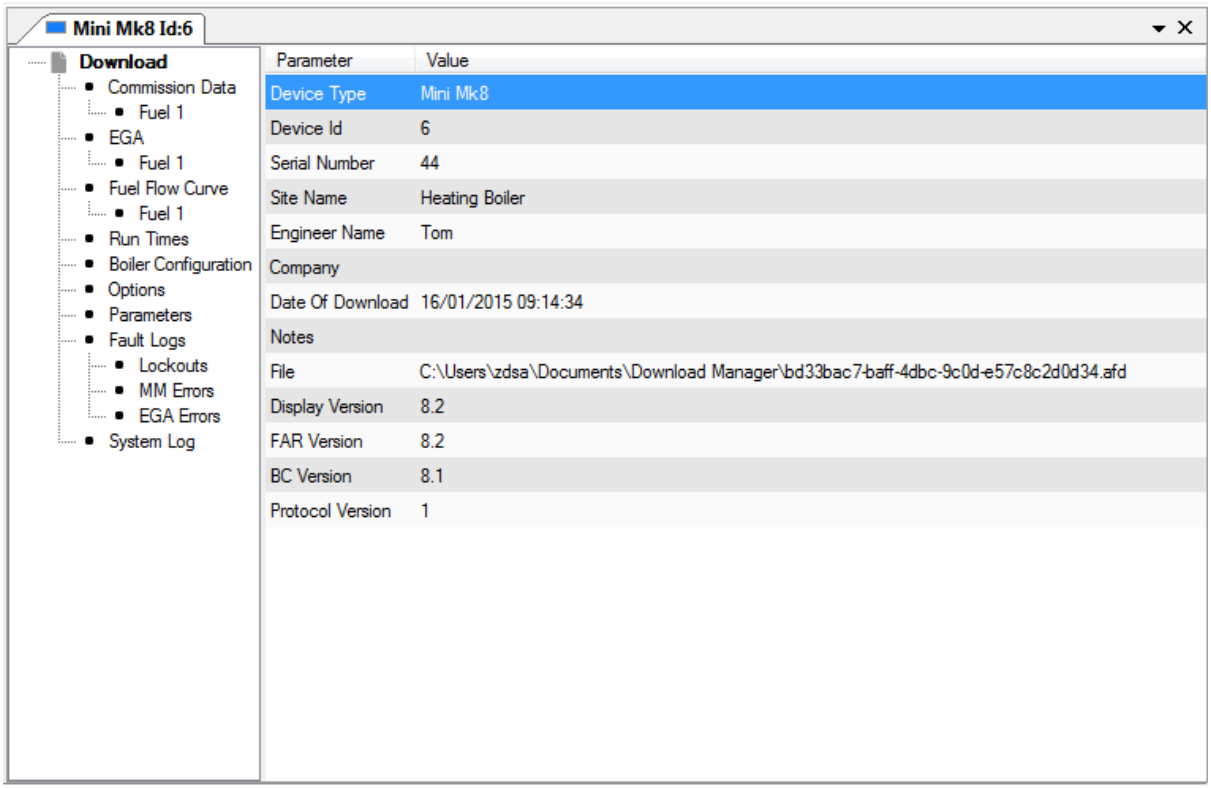
2. Right click on the new 'Site' and click 'Start Download', or click on the tab. Type the Engineer's name, and choose the Site. Here, you can add notes for that commission data download.



On the Mini Mk8 MM, go into the password screen of Commissioning Mode, the password does not need to be entered to take a download of the commission data.

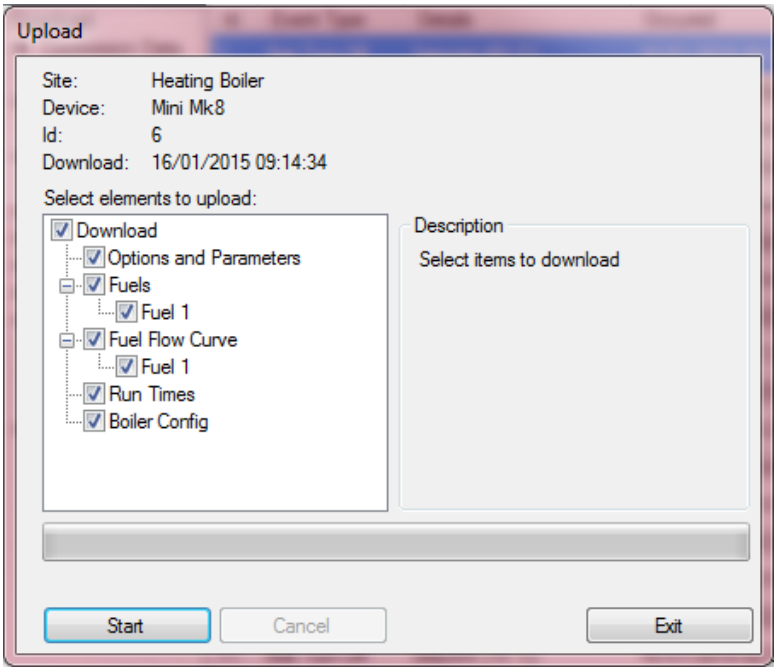
Holding the IR lead to IR port on the MM, click 'Start' on the Download Manager program. Packet 9 is the System Log, so this may take a few minutes to download.

3. Once the data transfer is complete, an overview of the commission data download will appear on the Download Manager program.



2.3.2 Uploading

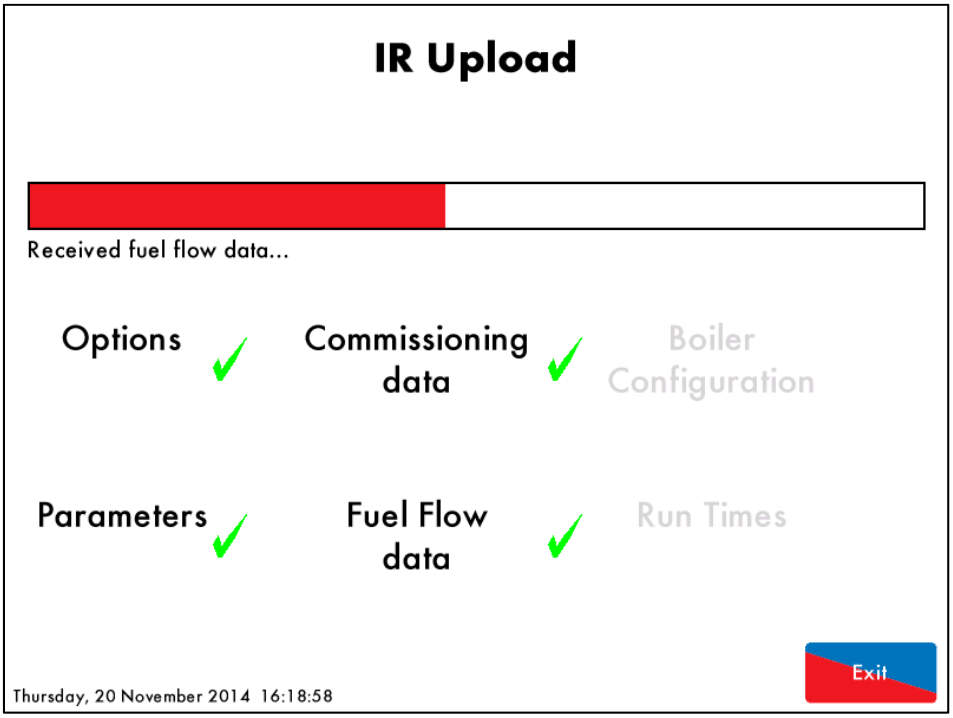
1. Click on the commission data file you wish to upload to the Mini Mk8 MM, and right click and click 'Upload', or click on . Select which data you wish to upload to the MM.



2. To upload commission data to the MM, go into Commissioning mode on the MM and enter the password. In the Commission Mode screen press 

.

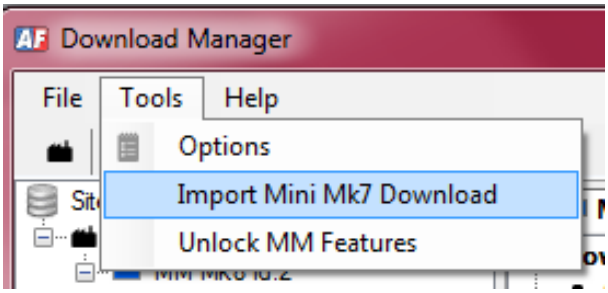
3. Holding the IR lead to the IR port on the Mini Mk8 MM, click 'Start' on the Download Manager program. Once the upload is complete, the MM will restart.



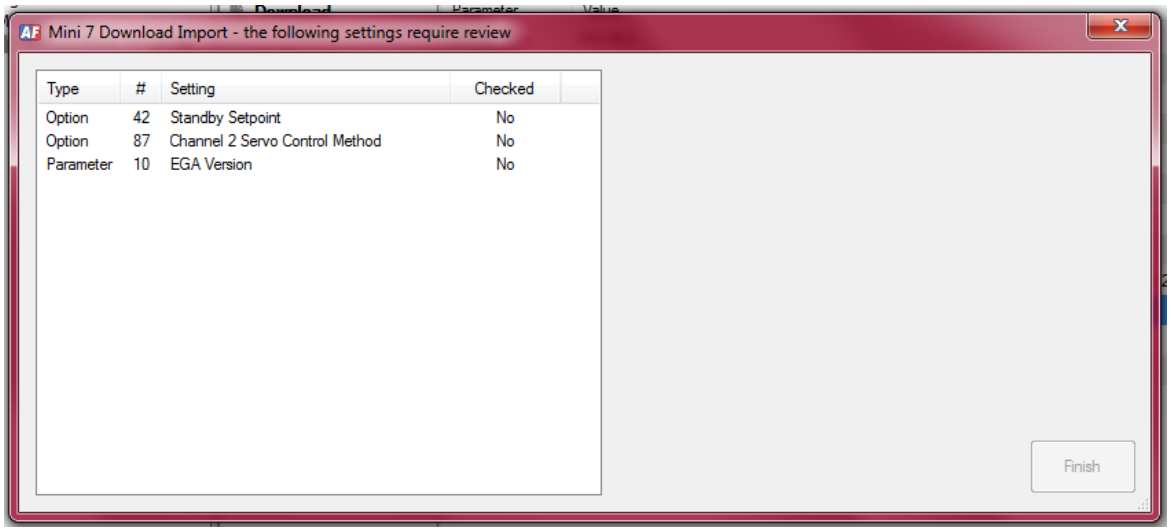
2.3.3 Mini Mk7 Evo to Mini Mk8 MM Data

With Download Manager version 8.05 onwards, it is possible to convert an IR Upload/Download data file from a Mini Mk7 Evo to a Mini Mk8 MM *afd Download Manager data file.

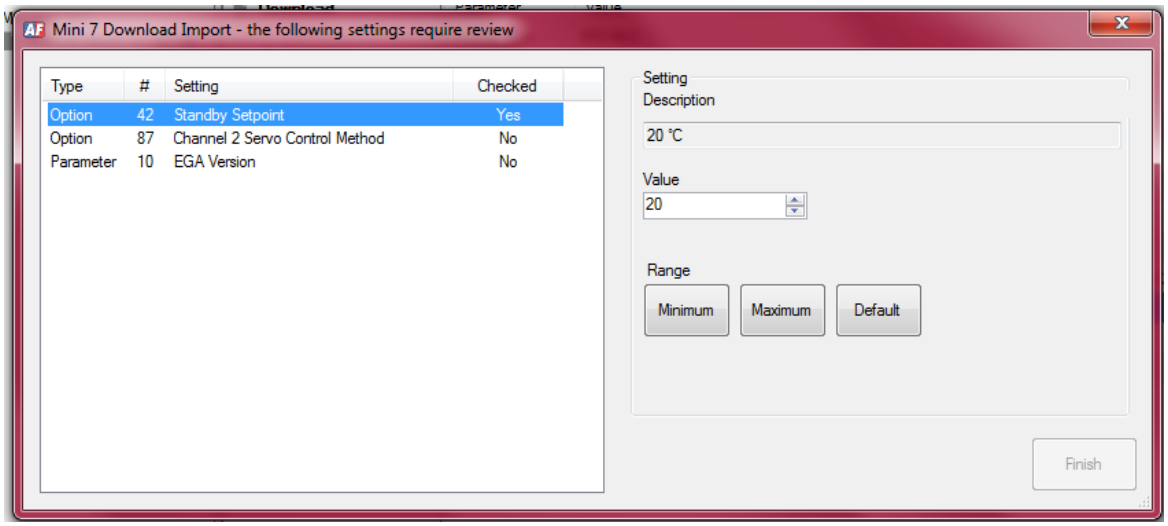
Click on tools and then click 'Import a Mini Mk7 Download.'



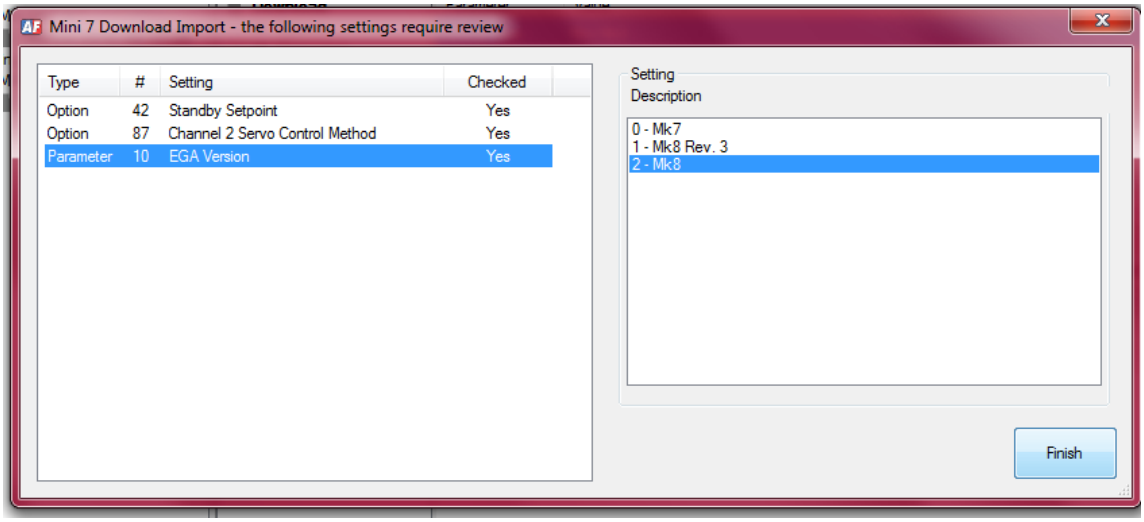
Choose the file to open from the PC. A box will appear to indicate what options/parameters must be reviewed, see example below:



Click on the option/parameter and change the setting relevant to the Mini Mk8 MM.



Once a listed option/parameter has been reviewed, it will change Yes under the 'Checked' column. After reviewing all the listed options/parameters, click 'Finish.'



****Warning****

It is the responsibility of the combustion engineer to check all combustion data, including options and parameters.

After checking all options and parameters, the download is now ready to be uploaded to a Mini Mk8 MM using the IR lead, see section 2.3.2.

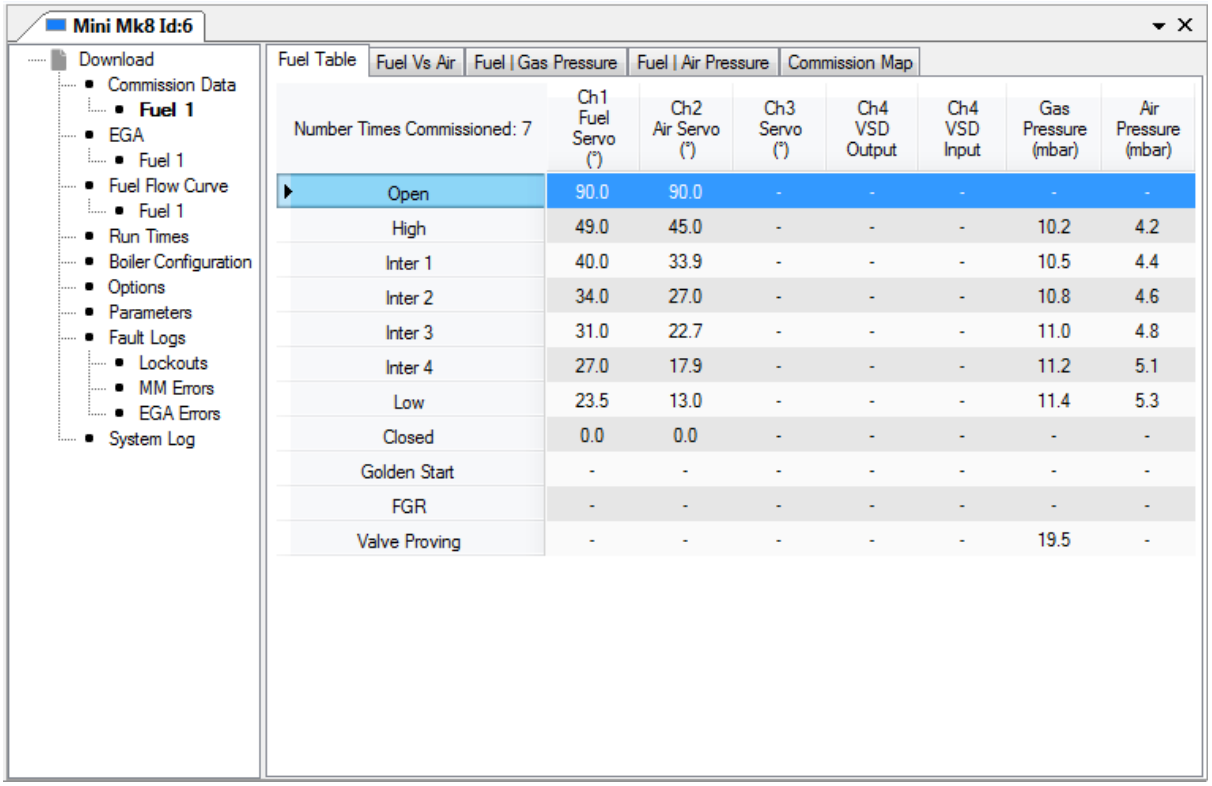
2.4 Importing/Exporting a Download

To open an existing commission data file, go to 'File' and click 'Import Download' or and choose the file to open.

To save a commission data file, go to 'File' and click 'Export Download' or and choose which location to save the download.

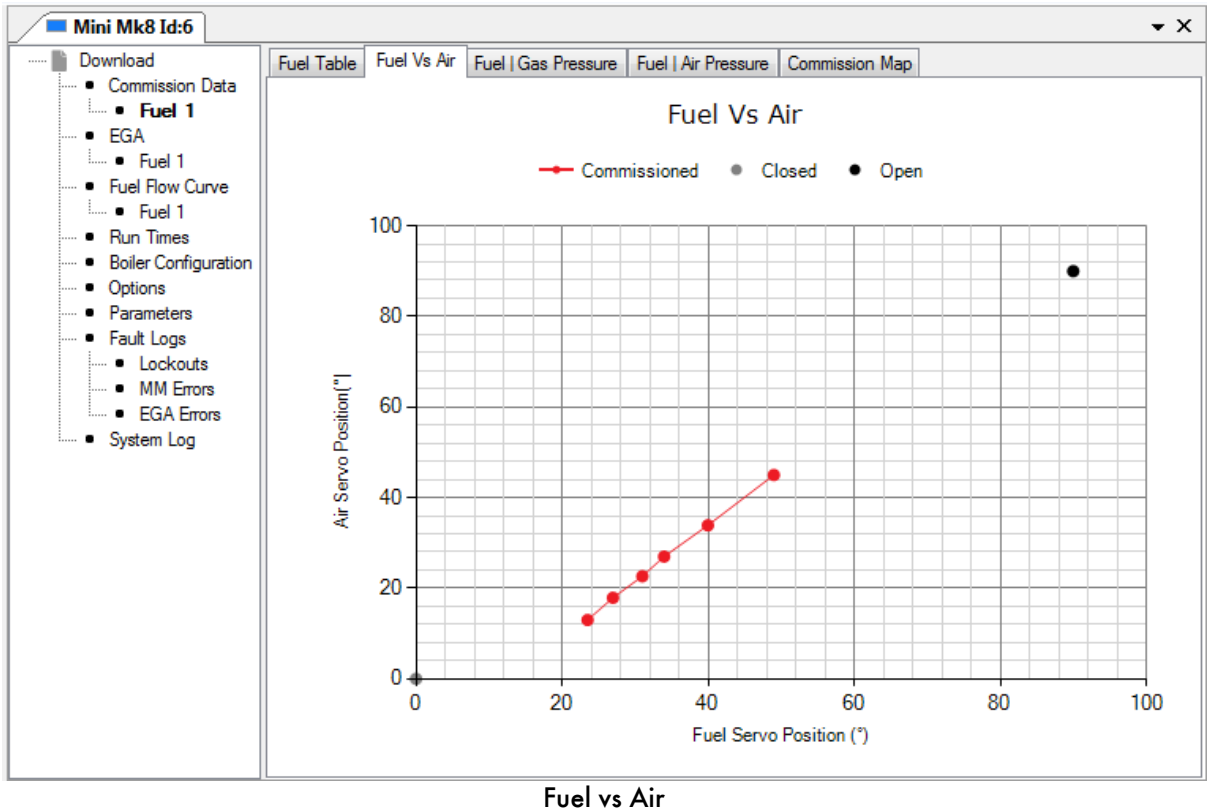
2.5 Download Manager Information

Click on the available 'Fuel' under 'Commission Data' to view the commissioned combustion curve.

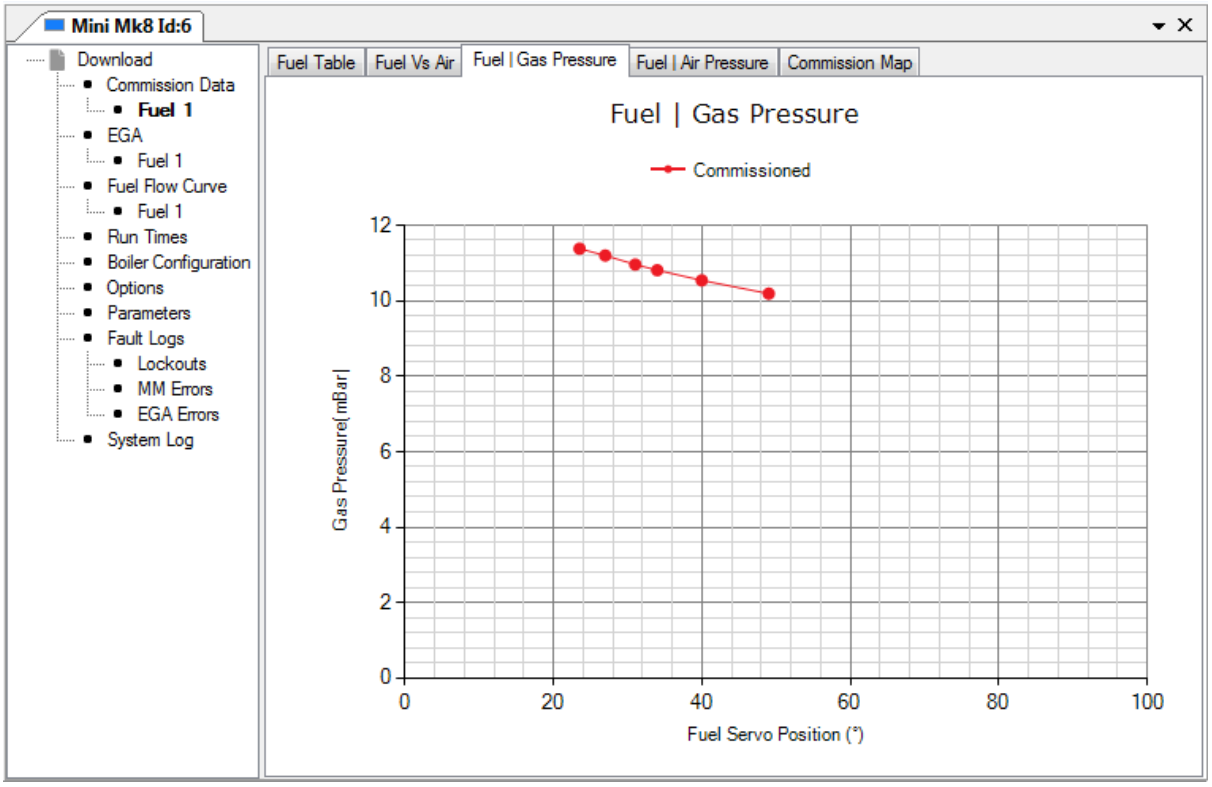


Number Times Commissioned: 7	Ch1 Fuel Servo (°)	Ch2 Air Servo (°)	Ch3 Servo (°)	Ch4 VSD Output	Ch4 VSD Input	Gas Pressure (mbar)	Air Pressure (mbar)
Open	90.0	90.0	-	-	-	-	-
High	49.0	45.0	-	-	-	10.2	4.2
Inter 1	40.0	33.9	-	-	-	10.5	4.4
Inter 2	34.0	27.0	-	-	-	10.8	4.6
Inter 3	31.0	22.7	-	-	-	11.0	4.8
Inter 4	27.0	17.9	-	-	-	11.2	5.1
Low	23.5	13.0	-	-	-	11.4	5.3
Closed	0.0	0.0	-	-	-	-	-
Golden Start	-	-	-	-	-	-	-
FGR	-	-	-	-	-	-	-
Valve Proving	-	-	-	-	-	19.5	-

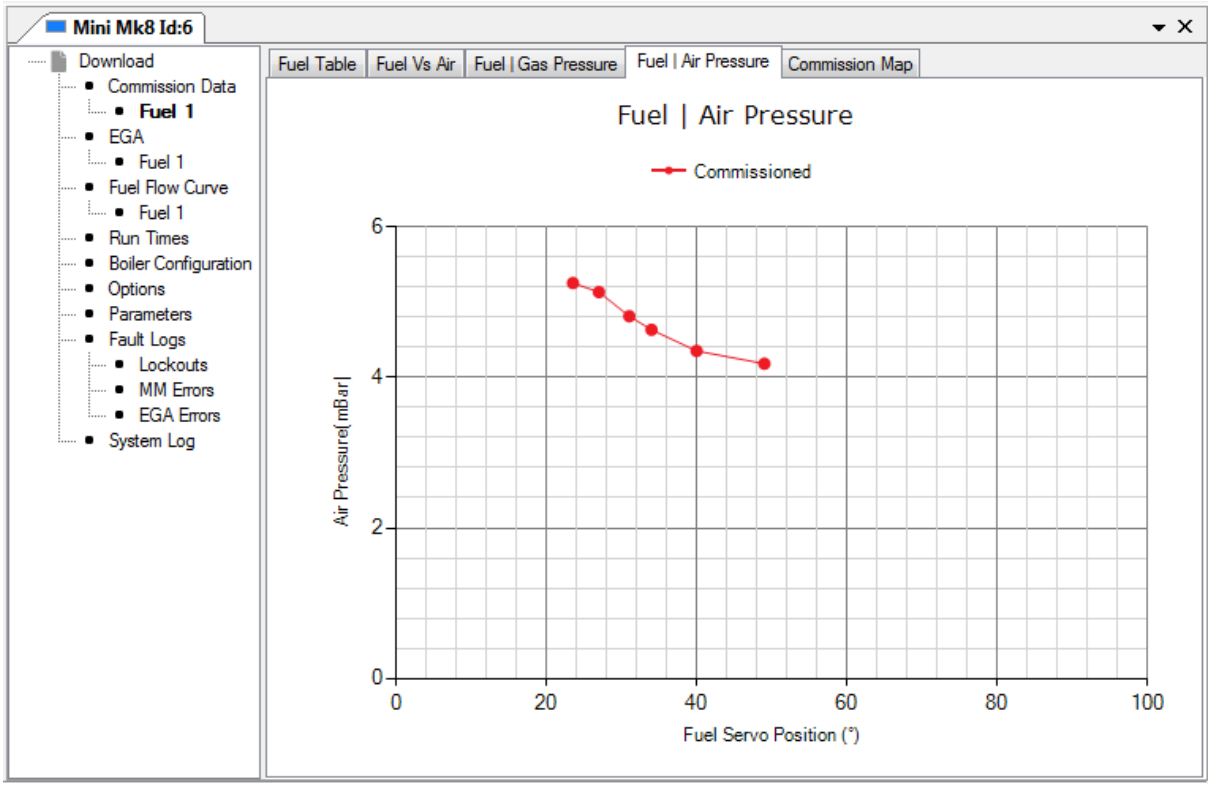
Fuel Table



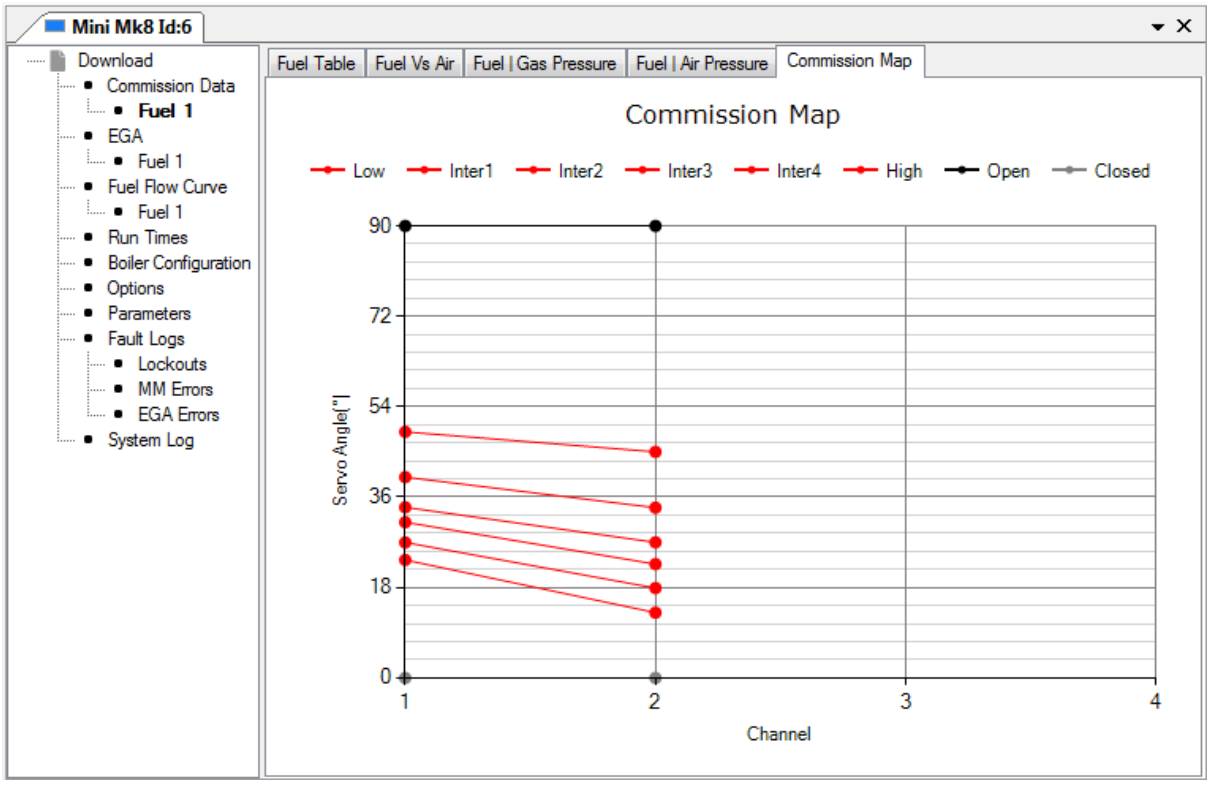
Fuel vs Air



Fuel Gas Pressure

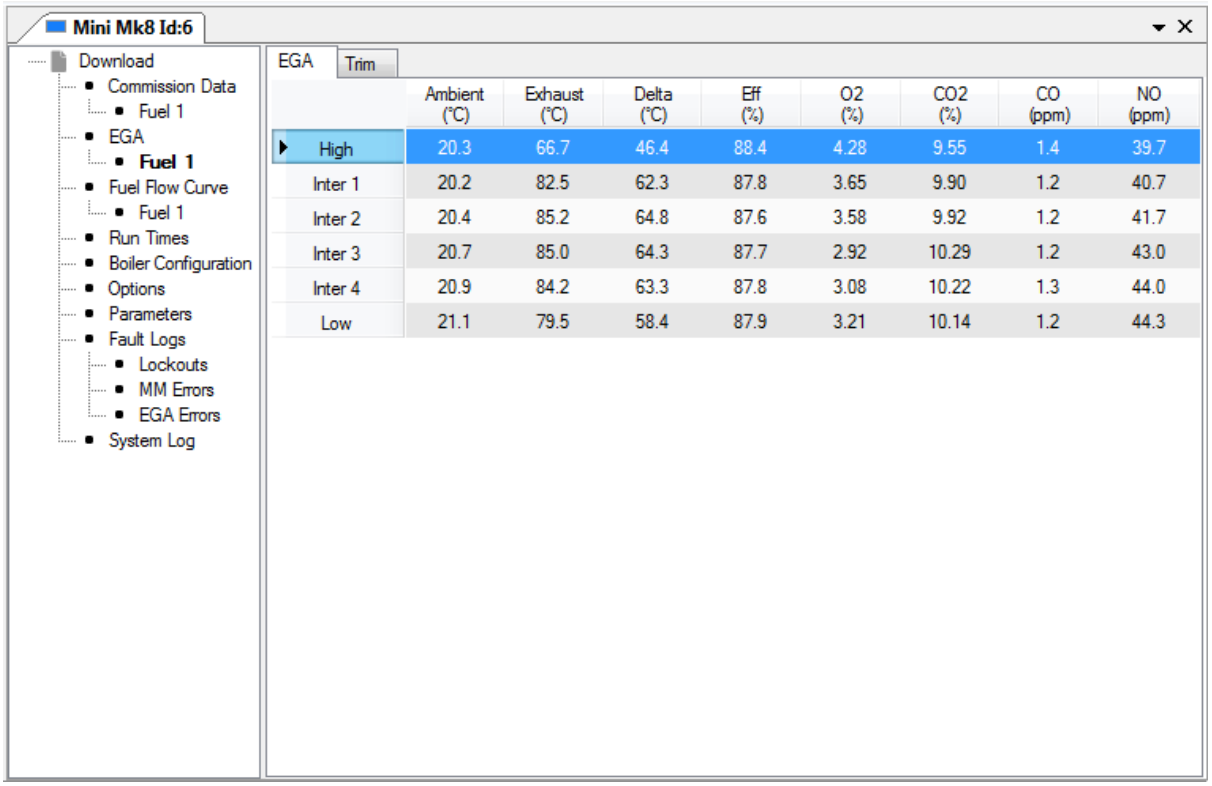


Fuel Air Pressure



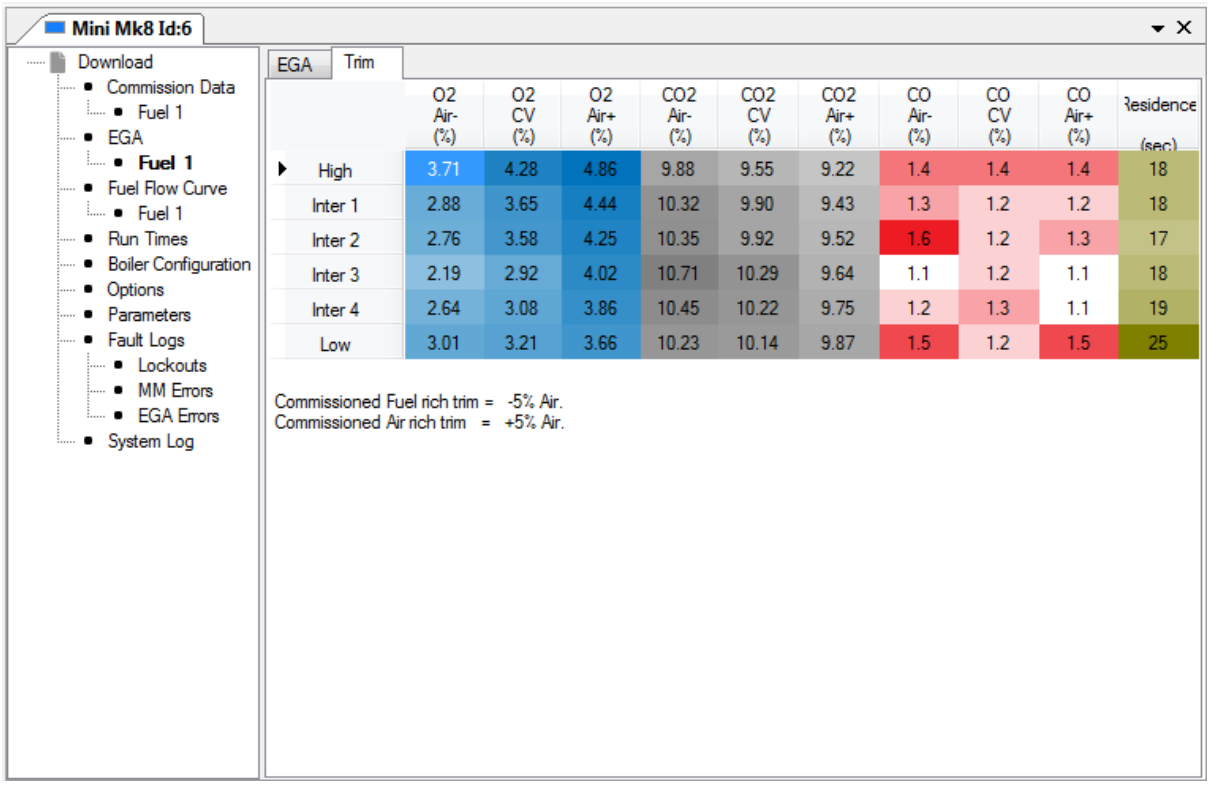
Commission Map

Click on the available 'Fuel' under 'EGA' to view the commissioned exhaust values and the trim data.



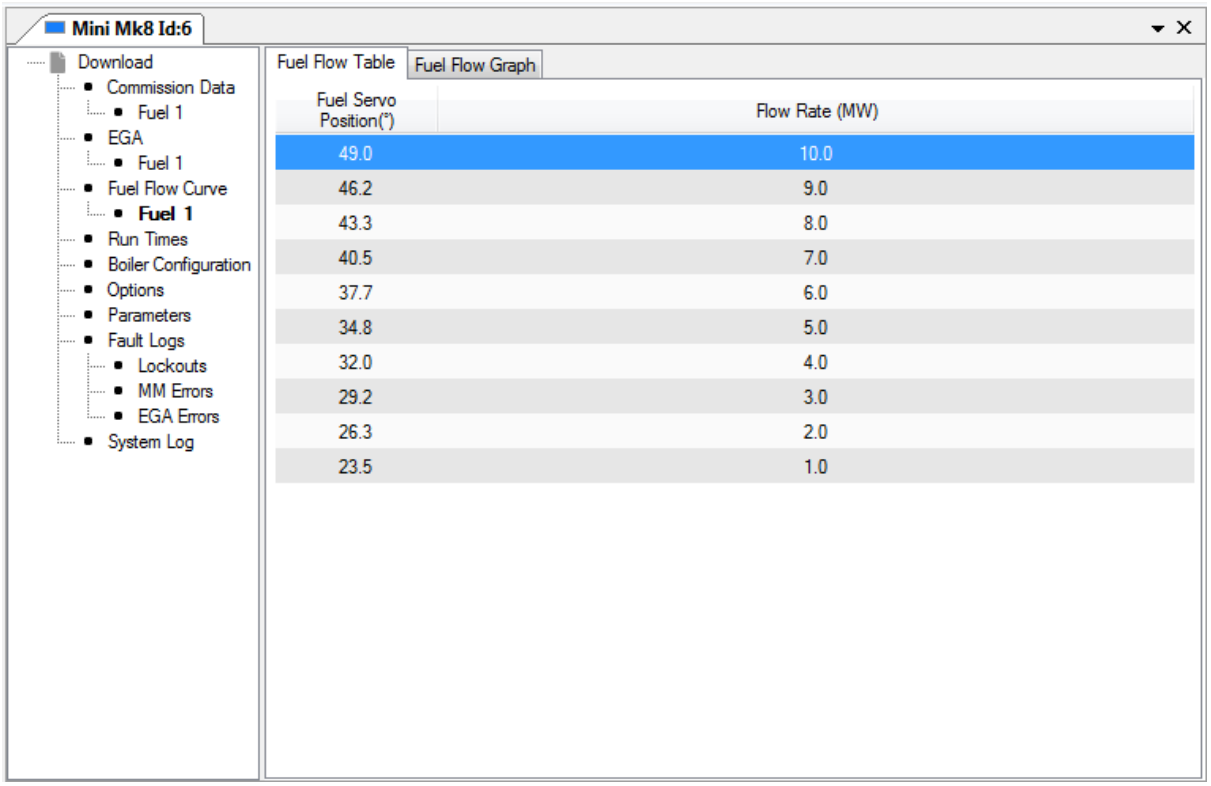
	Ambient (°C)	Exhaust (°C)	Delta (°C)	Eff (%)	O2 (%)	CO2 (%)	CO (ppm)	NO (ppm)
High	20.3	66.7	46.4	88.4	4.28	9.55	1.4	39.7
Inter 1	20.2	82.5	62.3	87.8	3.65	9.90	1.2	40.7
Inter 2	20.4	85.2	64.8	87.6	3.58	9.92	1.2	41.7
Inter 3	20.7	85.0	64.3	87.7	2.92	10.29	1.2	43.0
Inter 4	20.9	84.2	63.3	87.8	3.08	10.22	1.3	44.0
Low	21.1	79.5	58.4	87.9	3.21	10.14	1.2	44.3

EGA Values

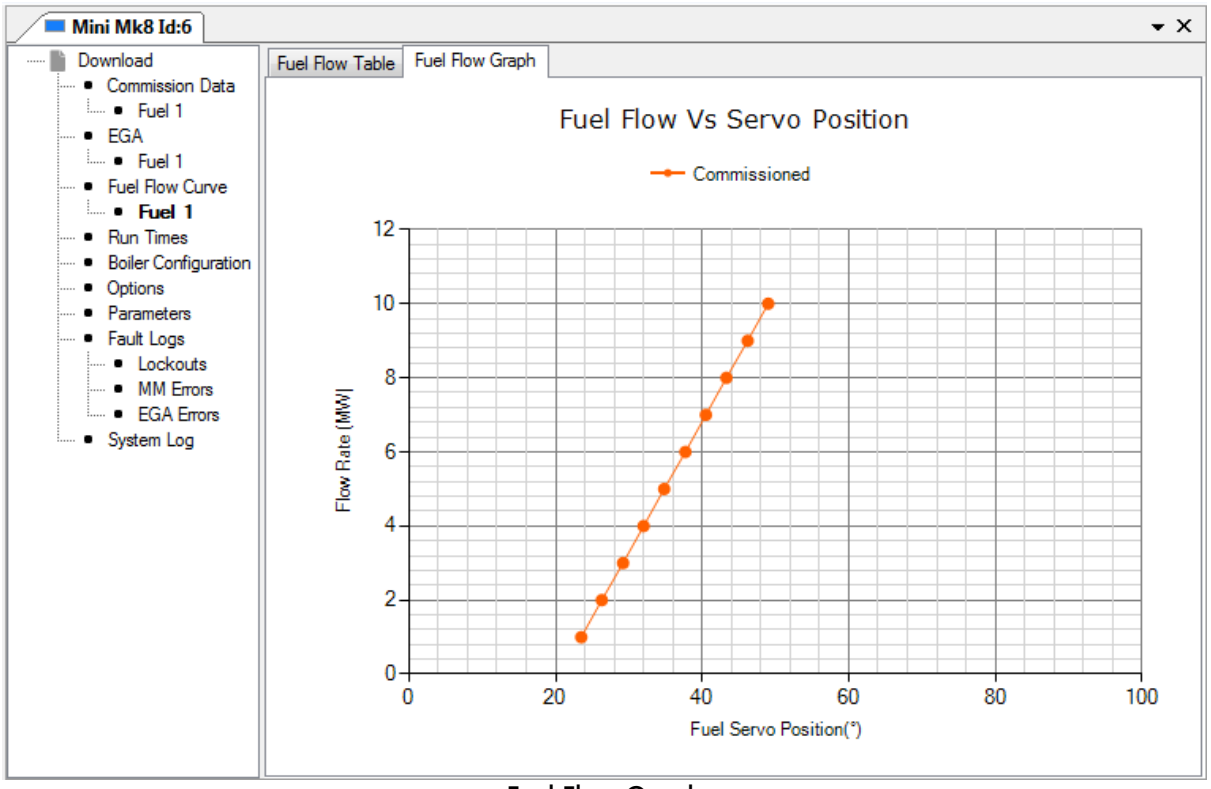


Trim Values

Click on the available 'Fuel' under 'Fuel Flow Curve' to view the fuel flow metering values.

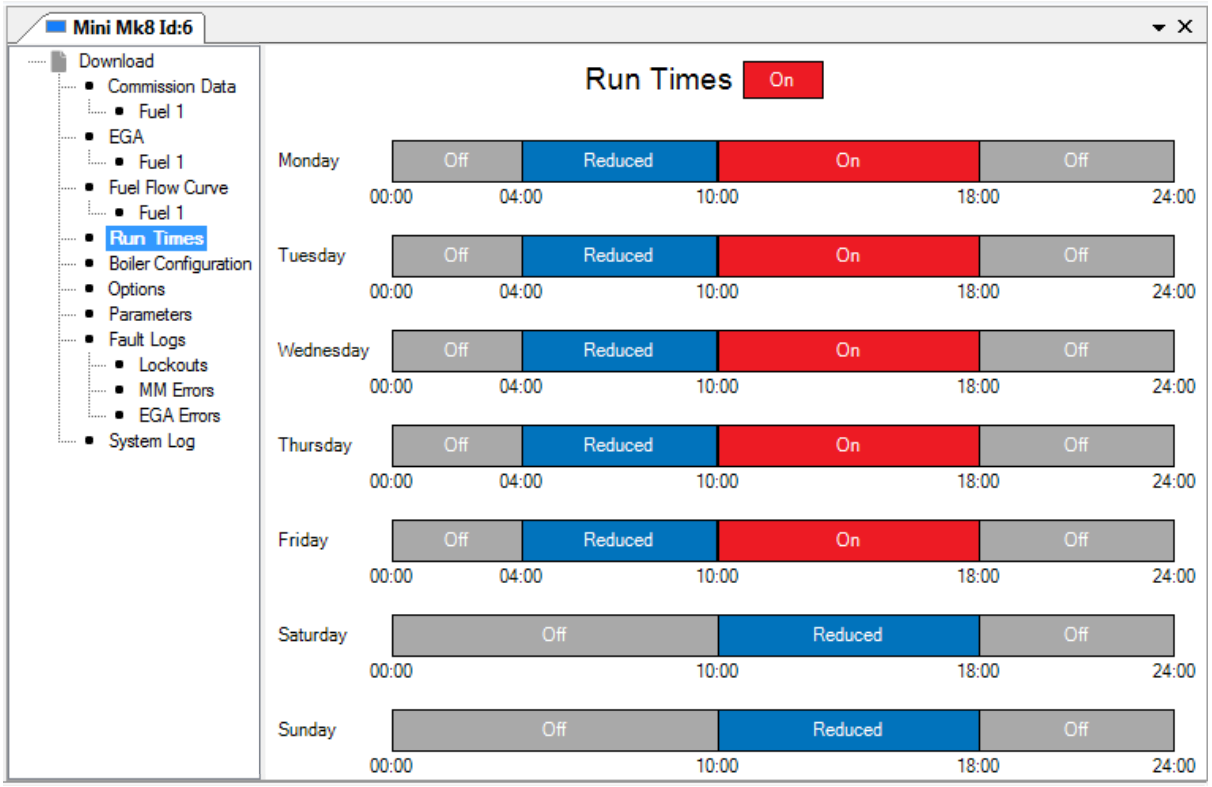


Fuel Flow Table



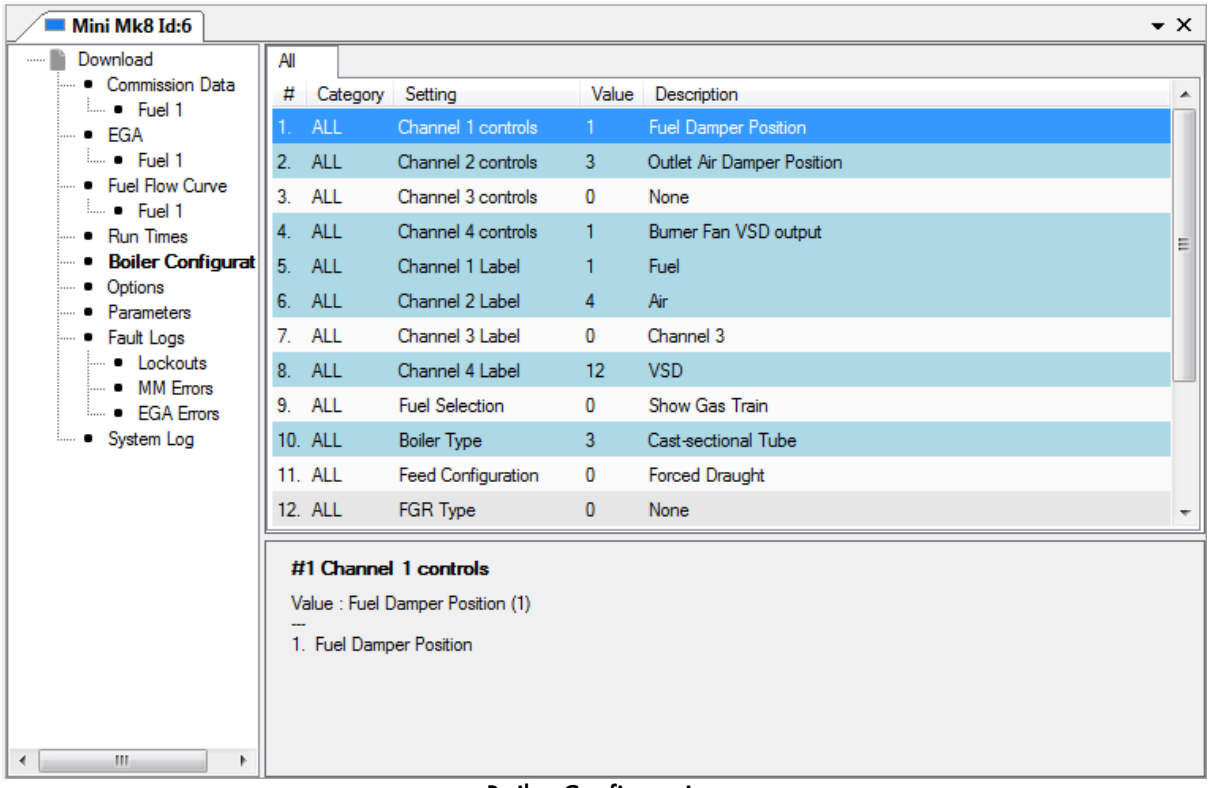
Fuel Flow Graph

Click on 'Run Times' to view how these are set.



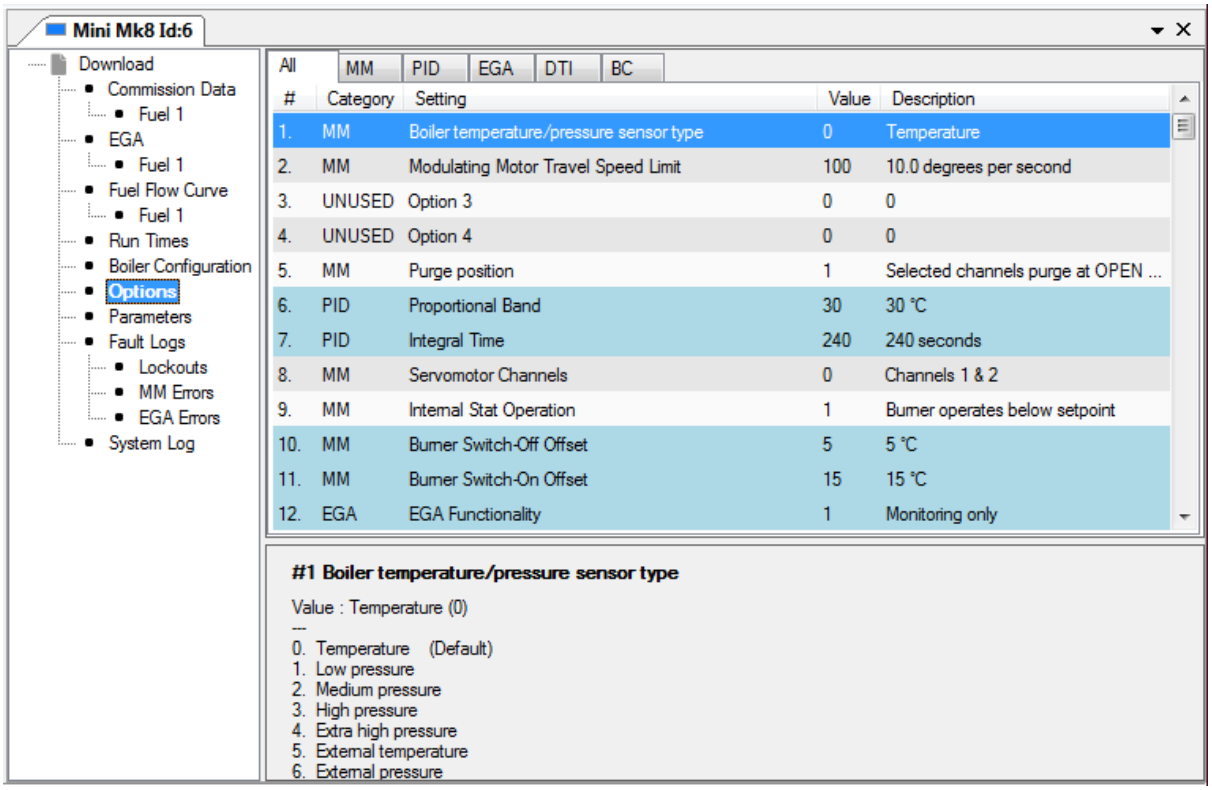
Run Times

Click on 'Boiler Configuration' to view how the home screen has been set up.



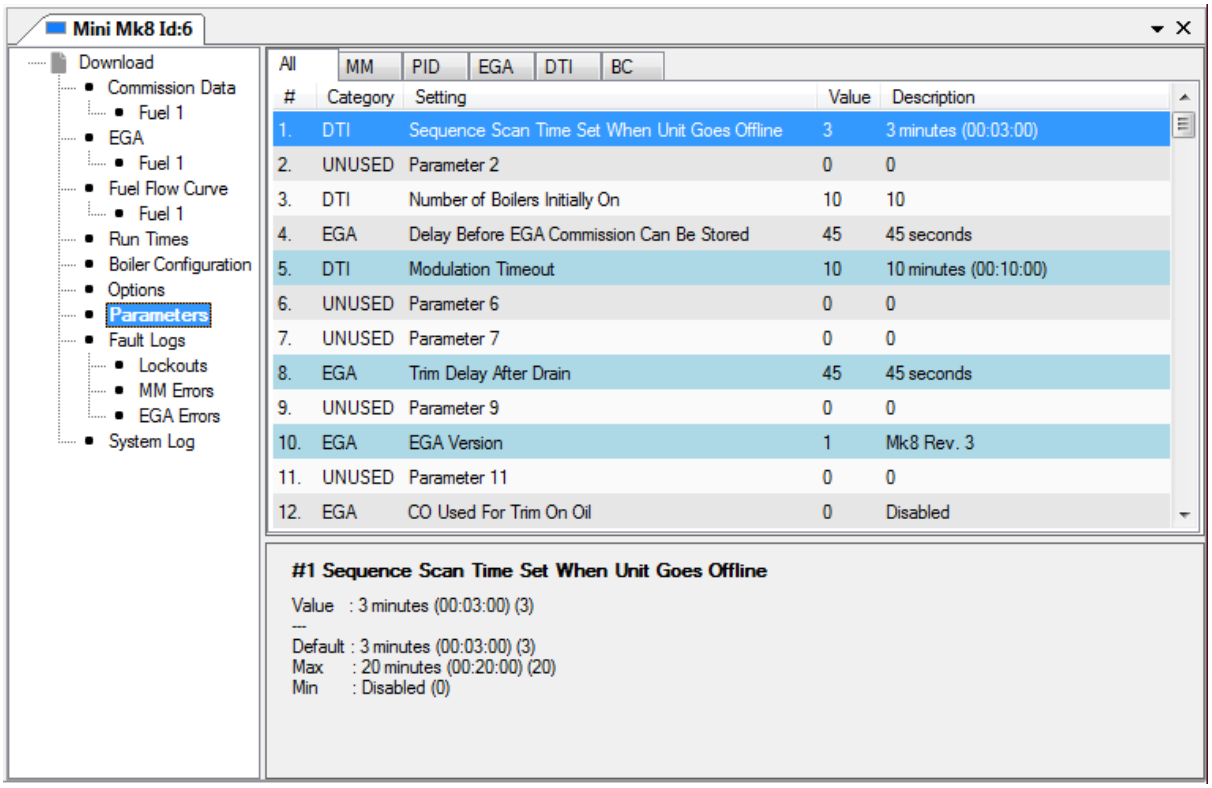
Boiler Configuration

Click on 'Options' view the settings and the default value for all the options.



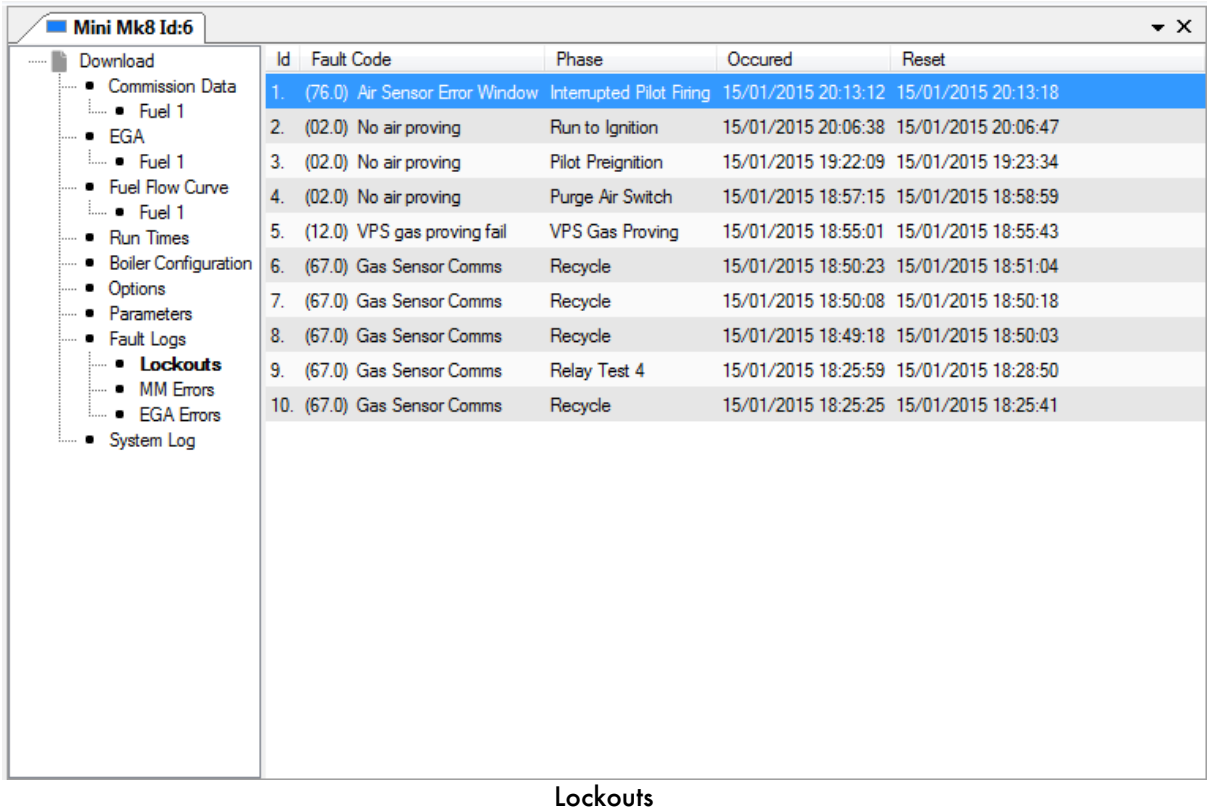
Options

Click on 'Parameters' to view the settings and the default values for all the parameters.



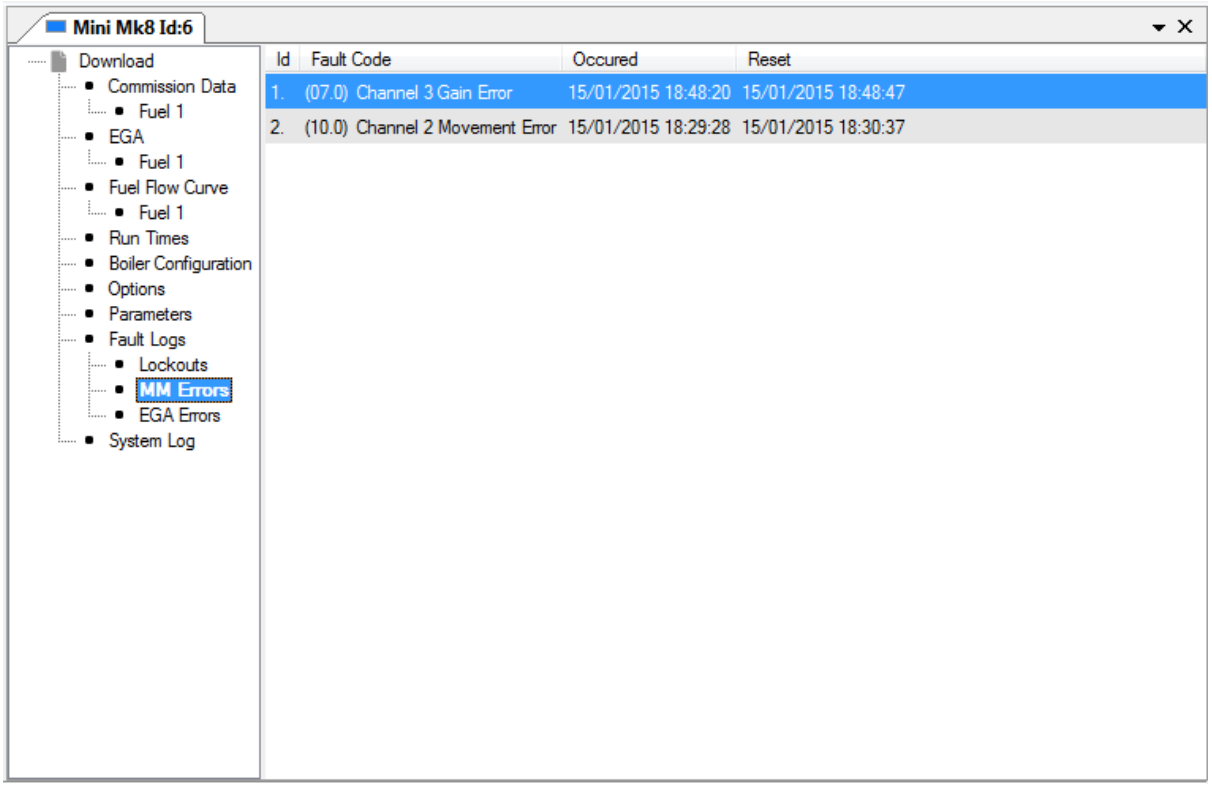
Parameters

Click on 'Lockouts' under 'Fault Logs' to view the burner lockout history.



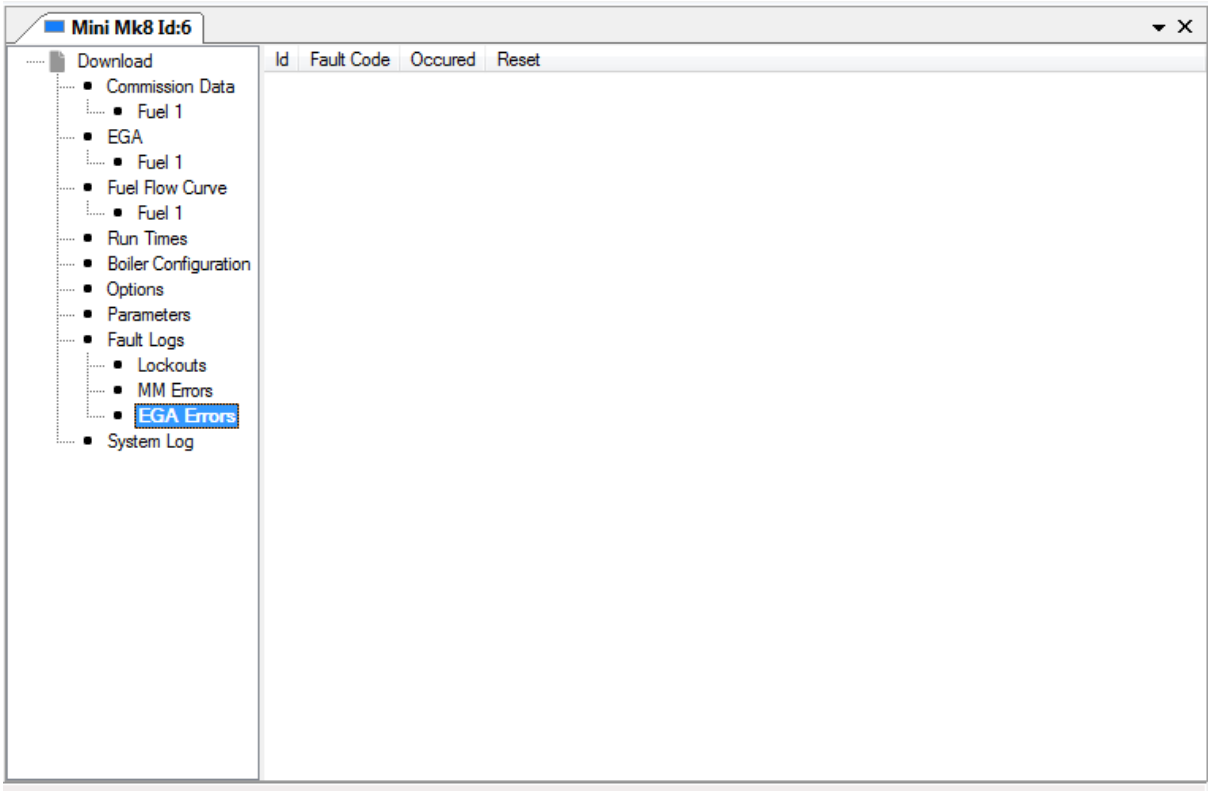
Lockouts

Click on 'MM Errors' under 'Faults Logs' to view the MM error history.



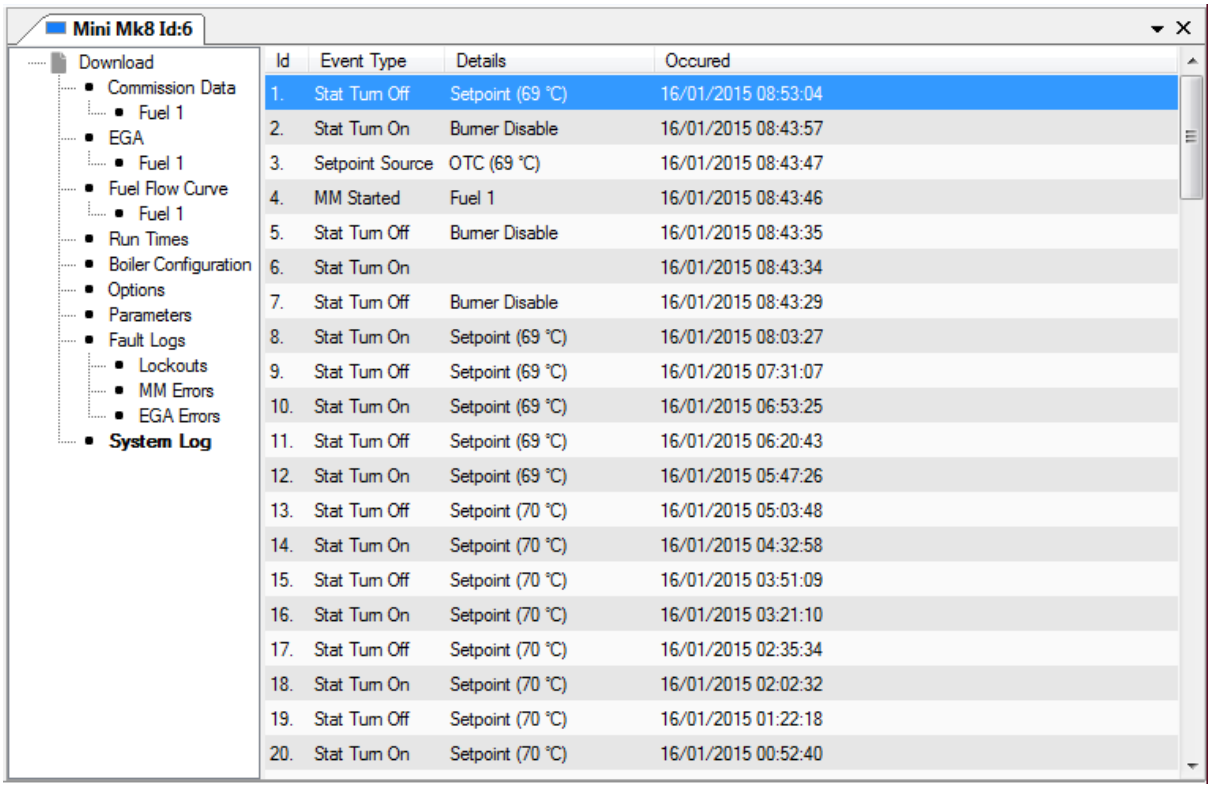
MM Errors

Click on 'EGA Errors' under 'Faults Logs' to view the EGA error history.



EGA Errors

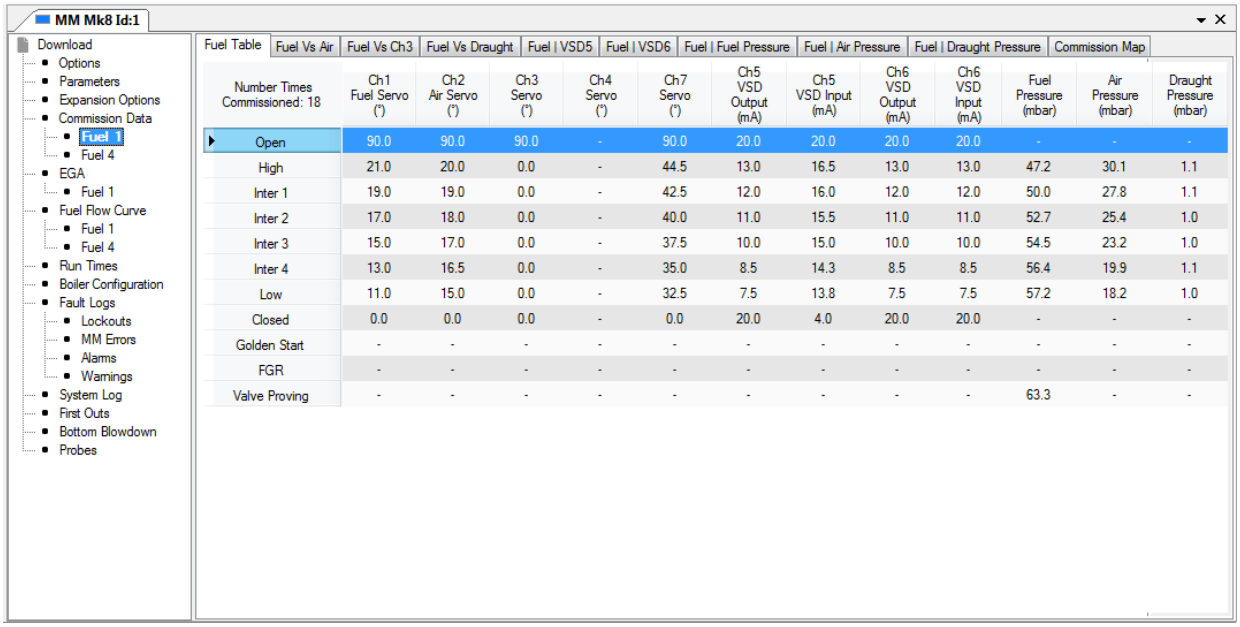
Click on 'System Log' to view information on how the burner has been running.



Id	Event Type	Details	Occured
1.	Stat Turn Off	Setpoint (69 °C)	16/01/2015 08:53:04
2.	Stat Turn On	Burner Disable	16/01/2015 08:43:57
3.	Setpoint Source	OTC (69 °C)	16/01/2015 08:43:47
4.	MM Started	Fuel 1	16/01/2015 08:43:46
5.	Stat Turn Off	Burner Disable	16/01/2015 08:43:35
6.	Stat Turn On		16/01/2015 08:43:34
7.	Stat Turn Off	Burner Disable	16/01/2015 08:43:29
8.	Stat Turn On	Setpoint (69 °C)	16/01/2015 08:03:27
9.	Stat Turn Off	Setpoint (69 °C)	16/01/2015 07:31:07
10.	Stat Turn On	Setpoint (69 °C)	16/01/2015 06:53:25
11.	Stat Turn Off	Setpoint (69 °C)	16/01/2015 06:20:43
12.	Stat Turn On	Setpoint (69 °C)	16/01/2015 05:47:26
13.	Stat Turn Off	Setpoint (70 °C)	16/01/2015 05:03:48
14.	Stat Turn On	Setpoint (70 °C)	16/01/2015 04:32:58
15.	Stat Turn Off	Setpoint (70 °C)	16/01/2015 03:51:09
16.	Stat Turn On	Setpoint (70 °C)	16/01/2015 03:21:10
17.	Stat Turn Off	Setpoint (70 °C)	16/01/2015 02:35:34
18.	Stat Turn On	Setpoint (70 °C)	16/01/2015 02:02:32
19.	Stat Turn Off	Setpoint (70 °C)	16/01/2015 01:22:18
20.	Stat Turn On	Setpoint (70 °C)	16/01/2015 00:52:40

System Log

The download from the Mk8 MM displays the data shown in the image below.



Number Times Commissioned: 18	Ch1 Fuel Servo (°)	Ch2 Air Servo (°)	Ch3 Servo (°)	Ch4 Servo (°)	Ch7 Servo (°)	Ch5 VSD Output (mA)	Ch5 VSD Input (mA)	Ch6 VSD Output (mA)	Ch6 VSD Input (mA)	Fuel Pressure (mbar)	Air Pressure (mbar)	Draught Pressure (mbar)
Open	90.0	90.0	90.0	-	90.0	20.0	20.0	20.0	20.0	-	-	-
High	21.0	20.0	0.0	-	44.5	13.0	16.5	13.0	13.0	47.2	30.1	1.1
Inter 1	19.0	19.0	0.0	-	42.5	12.0	16.0	12.0	12.0	50.0	27.8	1.1
Inter 2	17.0	18.0	0.0	-	40.0	11.0	15.5	11.0	11.0	52.7	25.4	1.0
Inter 3	15.0	17.0	0.0	-	37.5	10.0	15.0	10.0	10.0	54.5	23.2	1.0
Inter 4	13.0	16.5	0.0	-	35.0	8.5	14.3	8.5	8.5	56.4	19.9	1.1
Low	11.0	15.0	0.0	-	32.5	7.5	13.8	7.5	7.5	57.2	18.2	1.0
Closed	0.0	0.0	0.0	-	0.0	20.0	4.0	20.0	20.0	-	-	-
Golden Start	-	-	-	-	-	-	-	-	-	-	-	-
FGR	-	-	-	-	-	-	-	-	-	-	-	-
Valve Proving	-	-	-	-	-	-	-	-	-	63.3	-	-

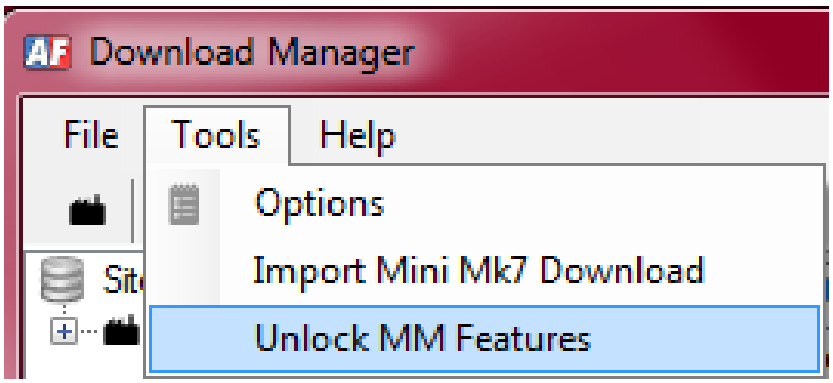
2.6 Unlocking Mk8 MM Expansion Features

The Mk8 MM expansion features which are required for the application must be unlocked on the MM. The unlock code will be need to purchased; the table below shows the part numbers for the unlock codes for the expansion features. The unlock codes are specific to the serial number of the Mk8 MM. Please contact Sales for pricing.

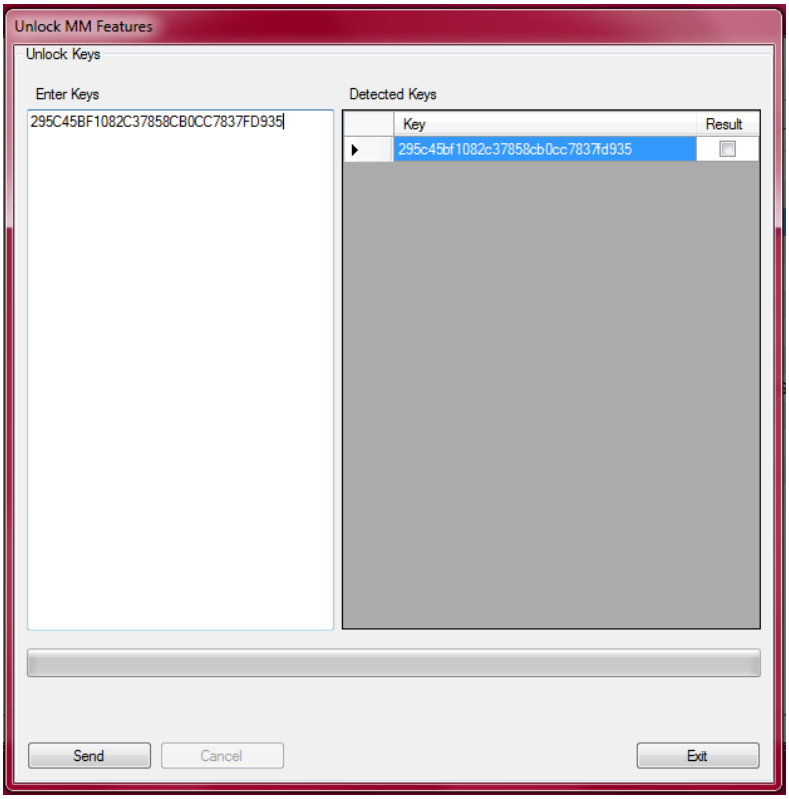
Unlockable Software Feature	Part Number
Autoflame Water Level	MK8001
Analogue Water Level (requires Autoflame Water Level)	MK8002
Top Blowdown	MK8003
Bottom Blowdown	MK8004
Draught Control	MK8005
Direct Modbus	MK8006
First Out Annunciation	MK8007
Fully Metered Combustion System	MK8008
Heat Flow (Steam Flow + Hot Water Flow)	MK8009

After ordering an unlockable software feature, please contact the Sales department with the serial number of the Mk8 MM and the AF reference number of the order, or alternatively send a purchase order to Sales with the part numbers for the unlockable software features required and the Mk8 MM serial number. The code to unlock that software expansion feature will be sent.

1. Click on 'Tools' and then 'Unlock MM Features' on Download Manager.



2. Copy and paste the unlock code(s) in the 'Enter Keys' column.



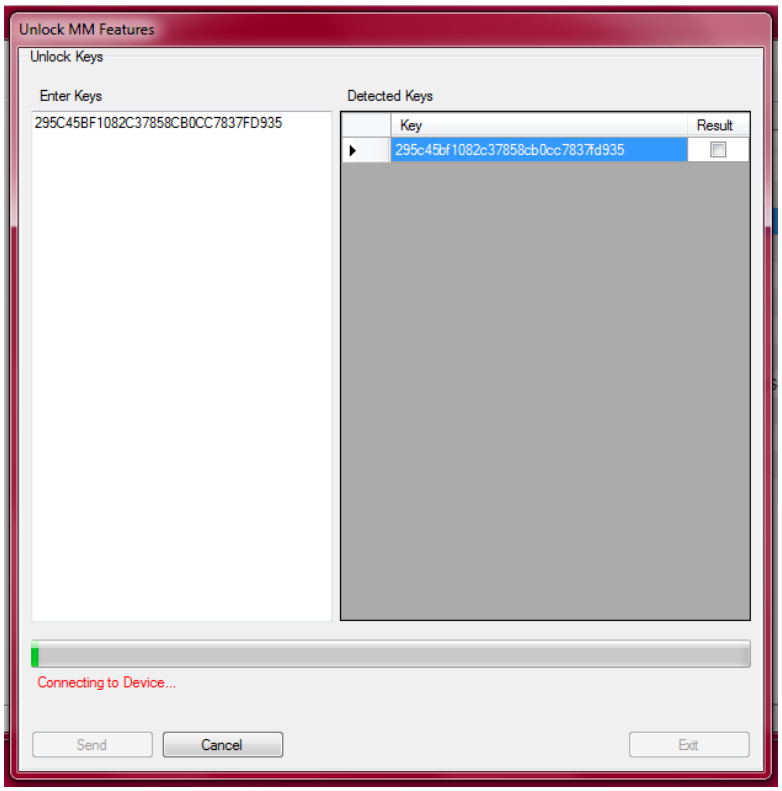
3. In Commission Mode on the Mk8 MM, press Expansion Features.

Expansion Features

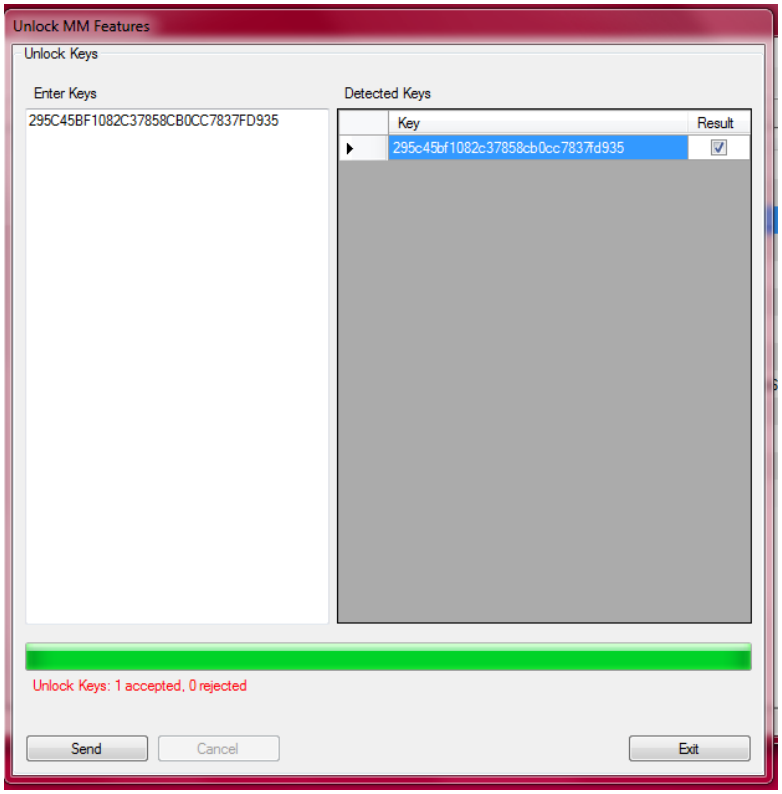
#	Feature	Status
1	First Outs	Locked
2	Autoflame Water Level	Locked
3	Analogue Water Level	Locked
4	Top Blowdown	Locked
5	Bottom Blowdown	Locked
6	Draught Control	Locked
7	Direct Modbus	Locked
8	Fully Metered System	Locked
9	Heat Flow	Locked

Exit

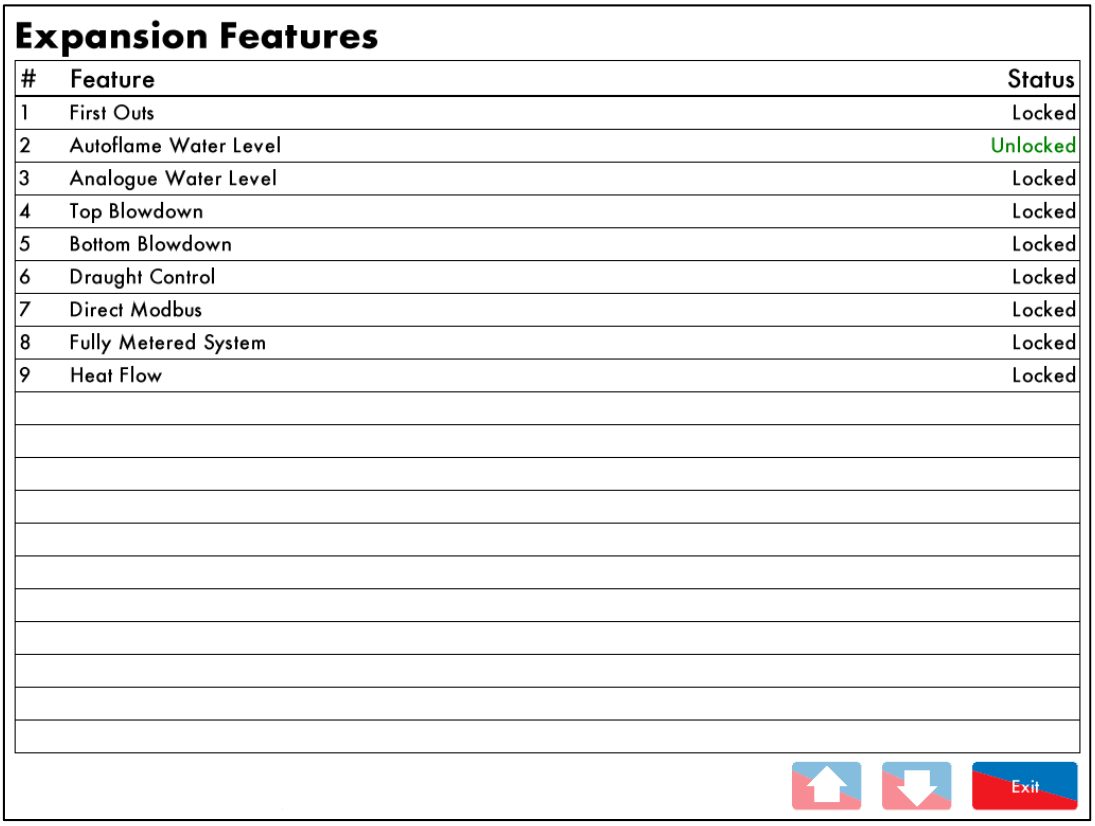
4. Hold the IR lead to the IR port on the Mk8 MM, and click 'Send' on the Download Manager Unlock MM Features box.



5. One the unlock code has been sent, the Download Manager will show a message to indicate how many keys have been accepted and how many rejected.



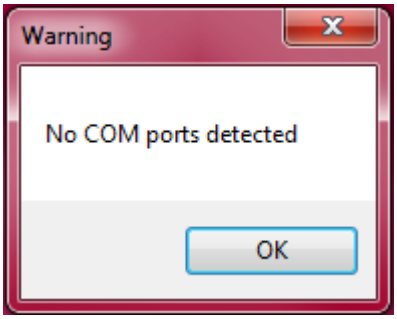
6. The expansion features will show as ‘unlocked’ on the Mk8 MM for the accepted codes.

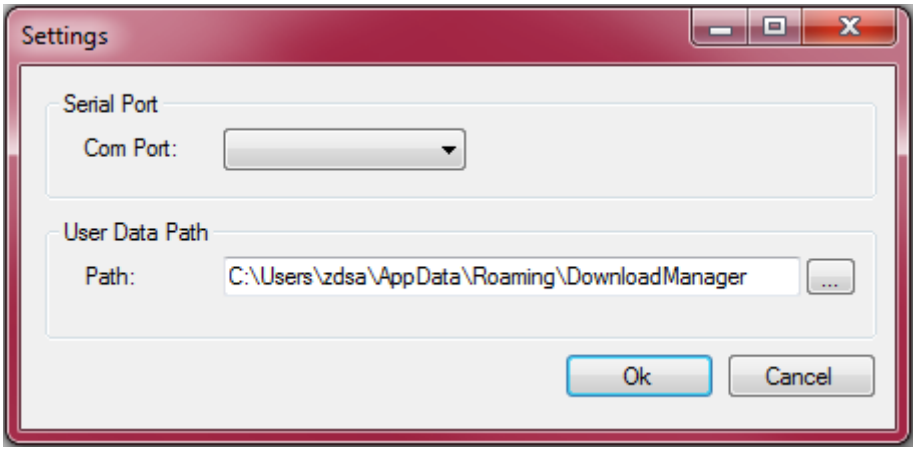


2.7 Troubleshooting

2.7.1 COM Port

If the warning 'No COM ports detected' appear when opening the Download Manager program, please check your COM port configuration, see section 1.6.2





3 CEMS AUDIT SOFTWARE

3.1 CEMS Audit Software Requirements

3.1.1 Introduction

The CEMS Audit Software operates in exactly the same way as the Mk7 DTI touch screen. On connection to the Mk7 DTI, an emulation of the DTI's screen is shown, which is controlled by using normal mouse clicks. There are two types of this CEMS Audit Software – Supervisor and Manager. The CEMS Audit Supervisor software is the package that comes as standard with the purchase of a Mk7 DTI The Supervisor software can be installed on multiple workstations, but allows access to only a single DTI The CEMS Audit Manager software allows access to multiple DTI's over a LAN or over the internet, but can only be installed on a single workstation. With the PC CEMS Audit Software, it is possible to dial in to the Mk7 DTI and access the boiler plant for real-time information on boiler status. Refer to the Mk7 DTI Set-Up Guide for more information on external connections.

To upgrade from the Supervisor software to the Manager software, please contact Autoflame Sales or an Autoflame Tech Centre.

CEMS Audit Software displays the same boiler plant information as the Mk7 DTI

3.1.2 DTI/ PC Requirements

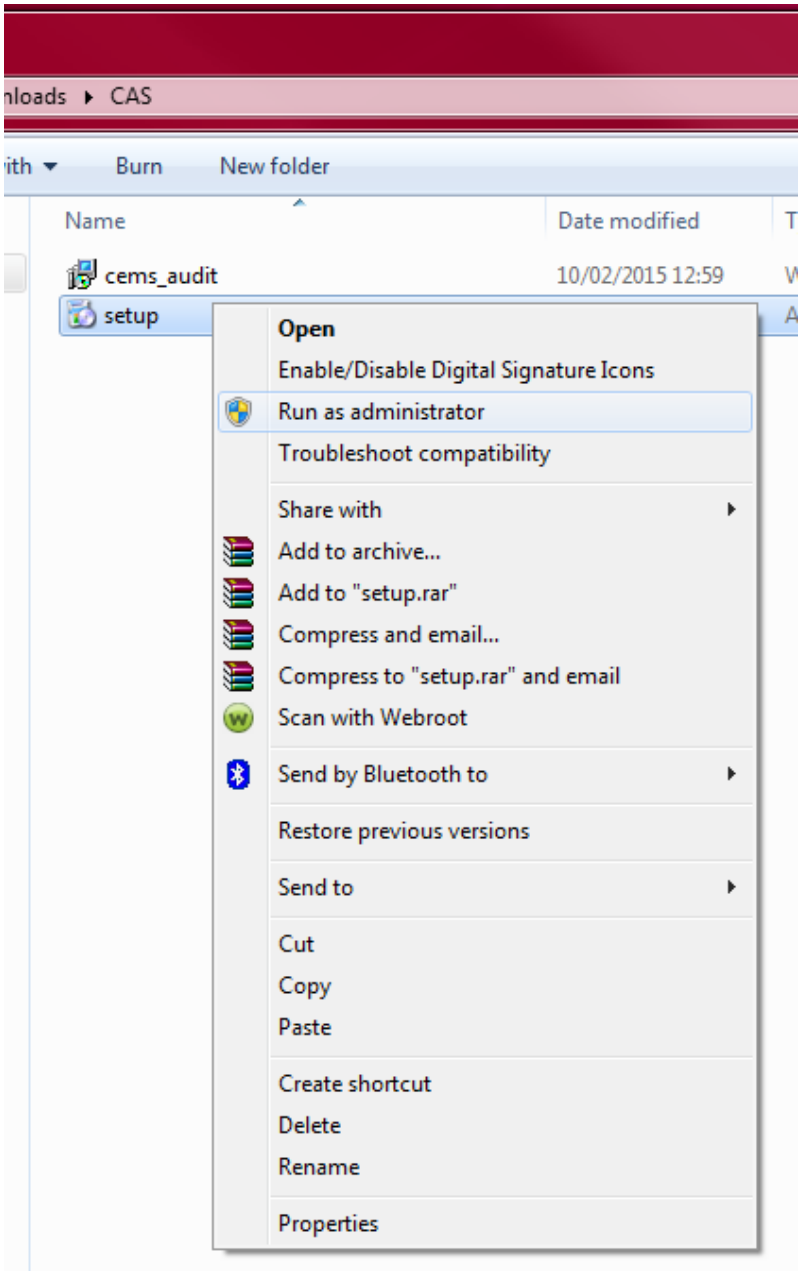
The CEMS Audit Software is used to access the boiler plant information from a Mk7 DTI, and must be the same version as the DTI software (e.g. software version 1.15 in the DTI, requires CEMS Audit Software 1.15).

CEMS Audit Software is compatible with Windows XP, Windows 7 and Windows 8 for both 32bit and 64bit formats. The software must be installed in Administrator mode.

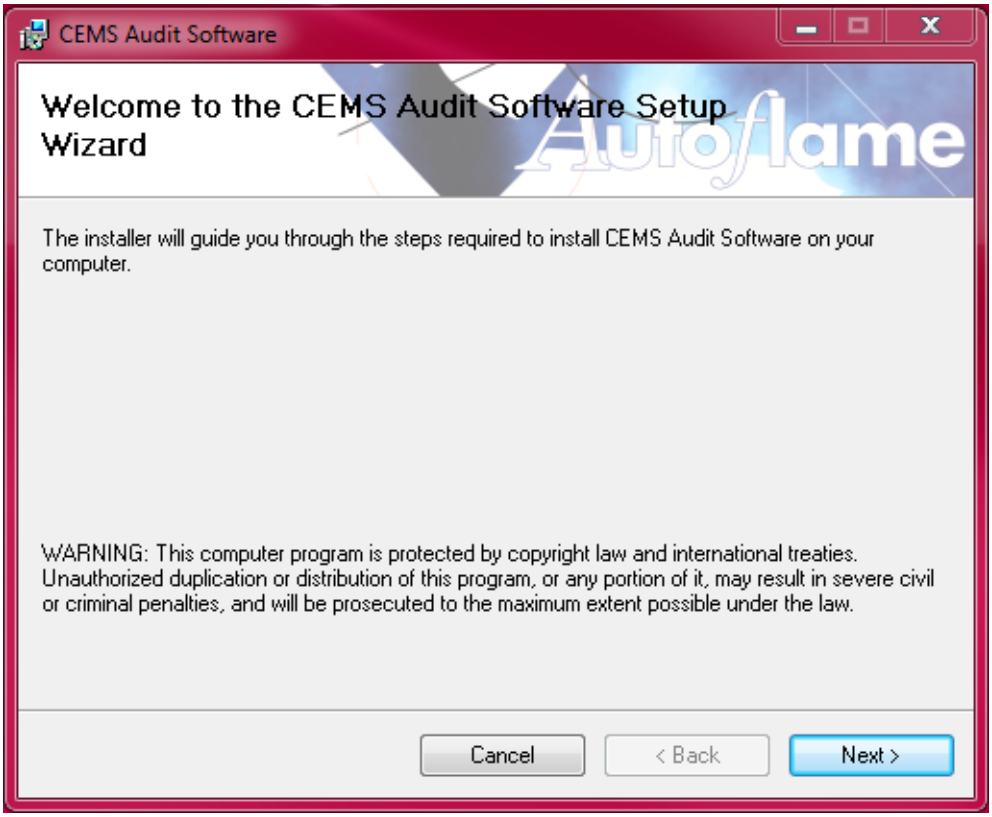
3.2 Installation and Set-Up

3.2.1 Installing CEMS Audit Software

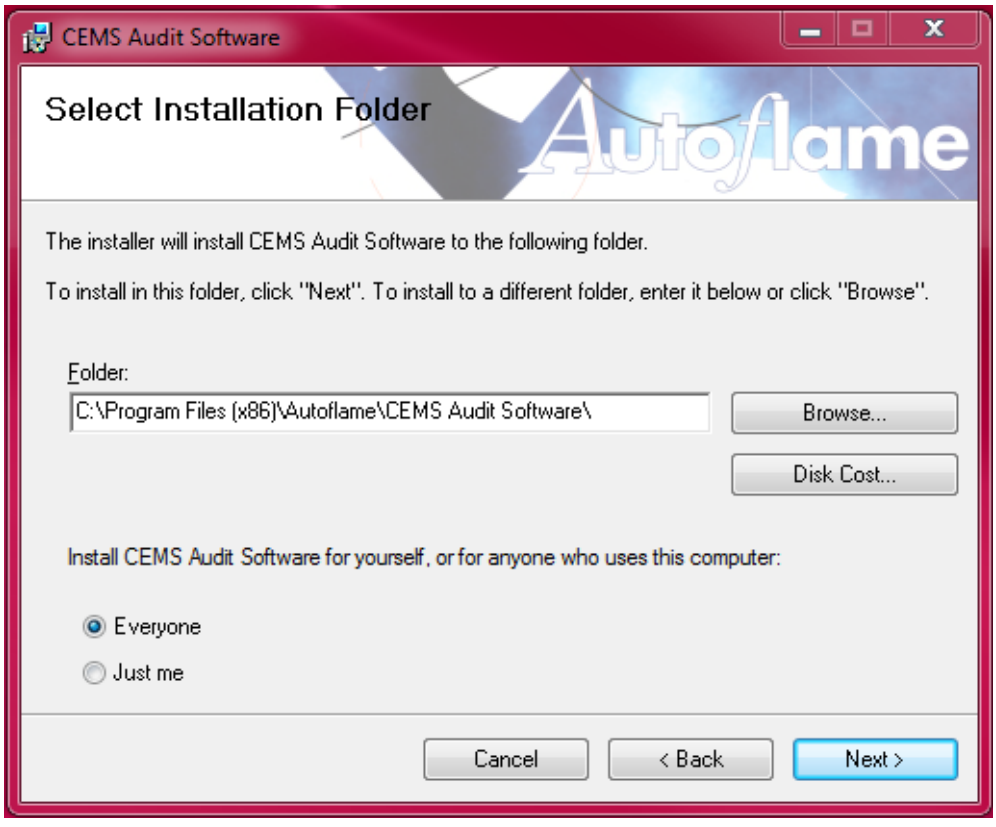
1. Either from the USB stick provided with the Mk7 DTI, or downloaded from the website, right click on the 'setup' file and click on 'Run as Administrator'.



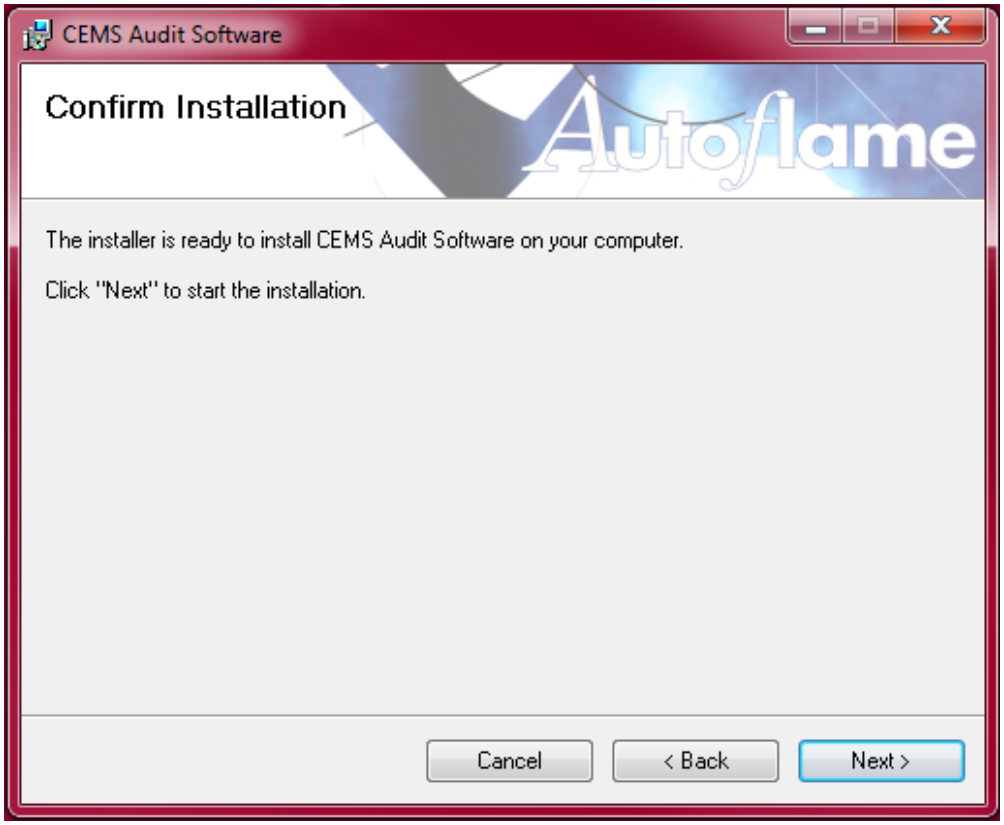
2. The CEMS Audit Software Setup Wizard box will appear, click 'Next'.



3. Choose a location for the software, such as C:\Program Files (x86)\Autoflame\Download Manager\ and then click 'Next'.



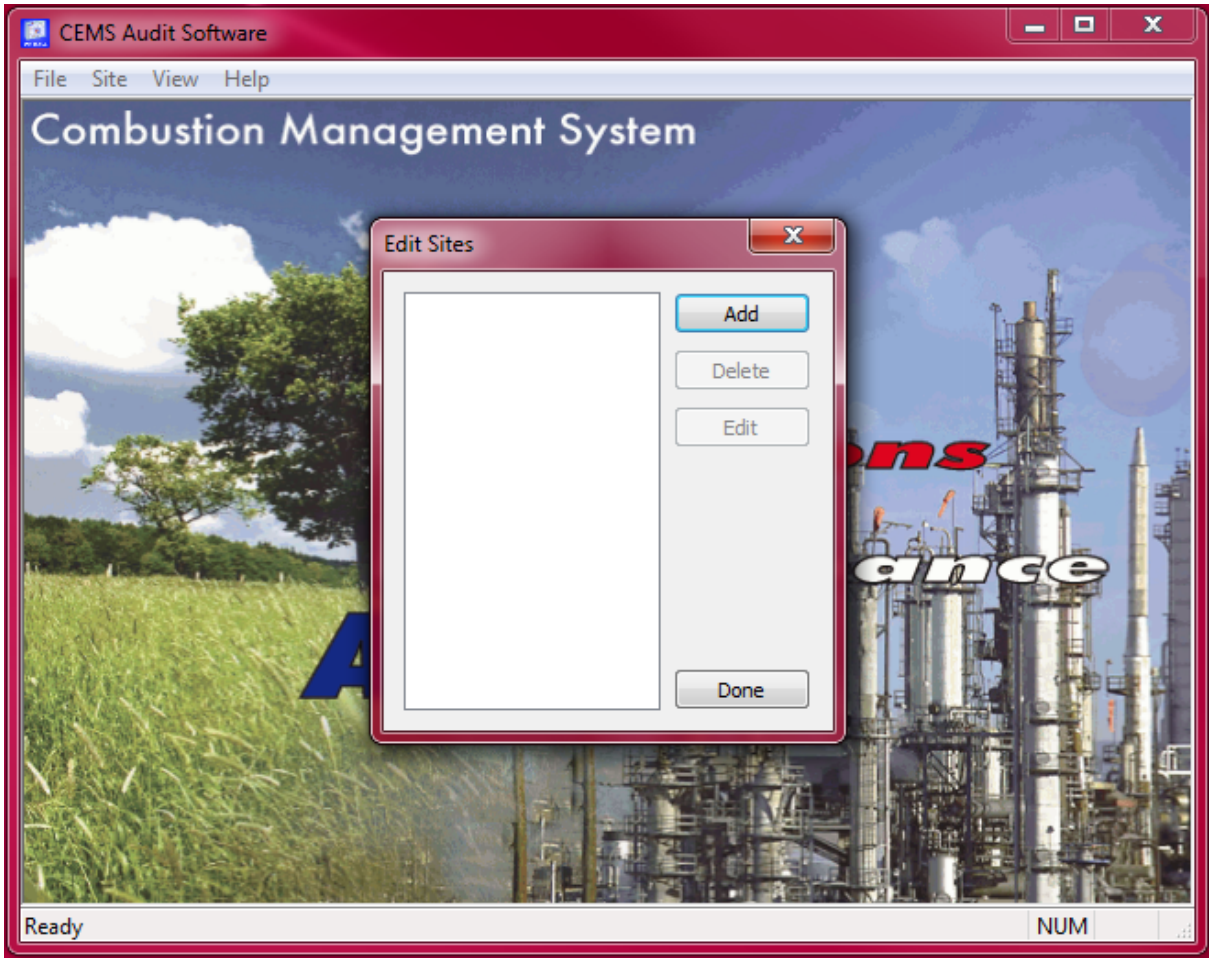
4. Click ‘Next’ to start the install, and then click ‘Close’ once the installation is complete.



3.2.2 Setting up a Site

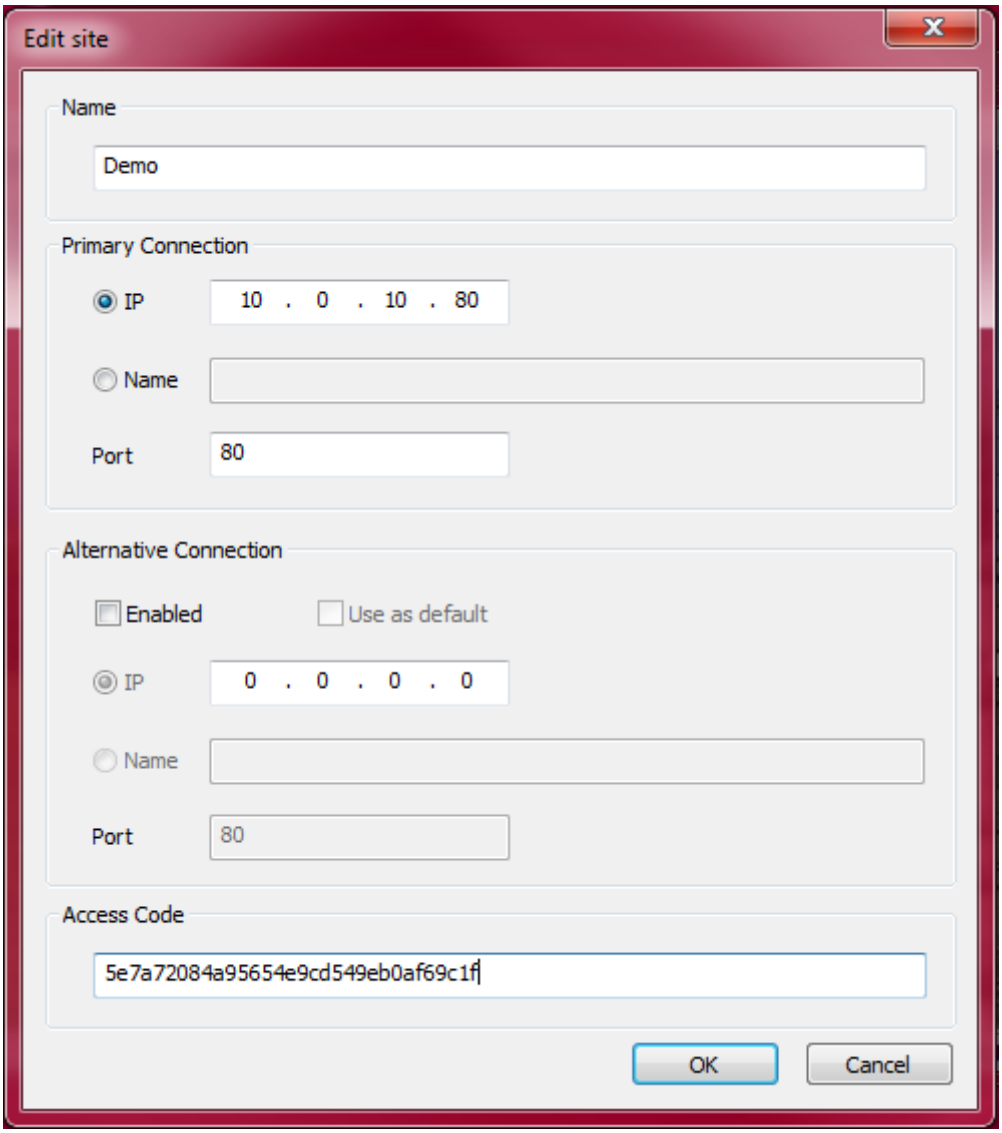
1. To access the Mk7 DTI information, you will need to be connected to the DTI through direct Ethernet connection from the Mk7 DTI to the PC, LAN connection, and Internet connection via routing. Please refer to the Mk7 DTI Set-Up Guide for more information on DTI connections.

2. Once the PC has been connected to the DTI, open the CEMS Audit Software on the PC. Click on 'Site', and then click 'Edit', and then 'Add'.

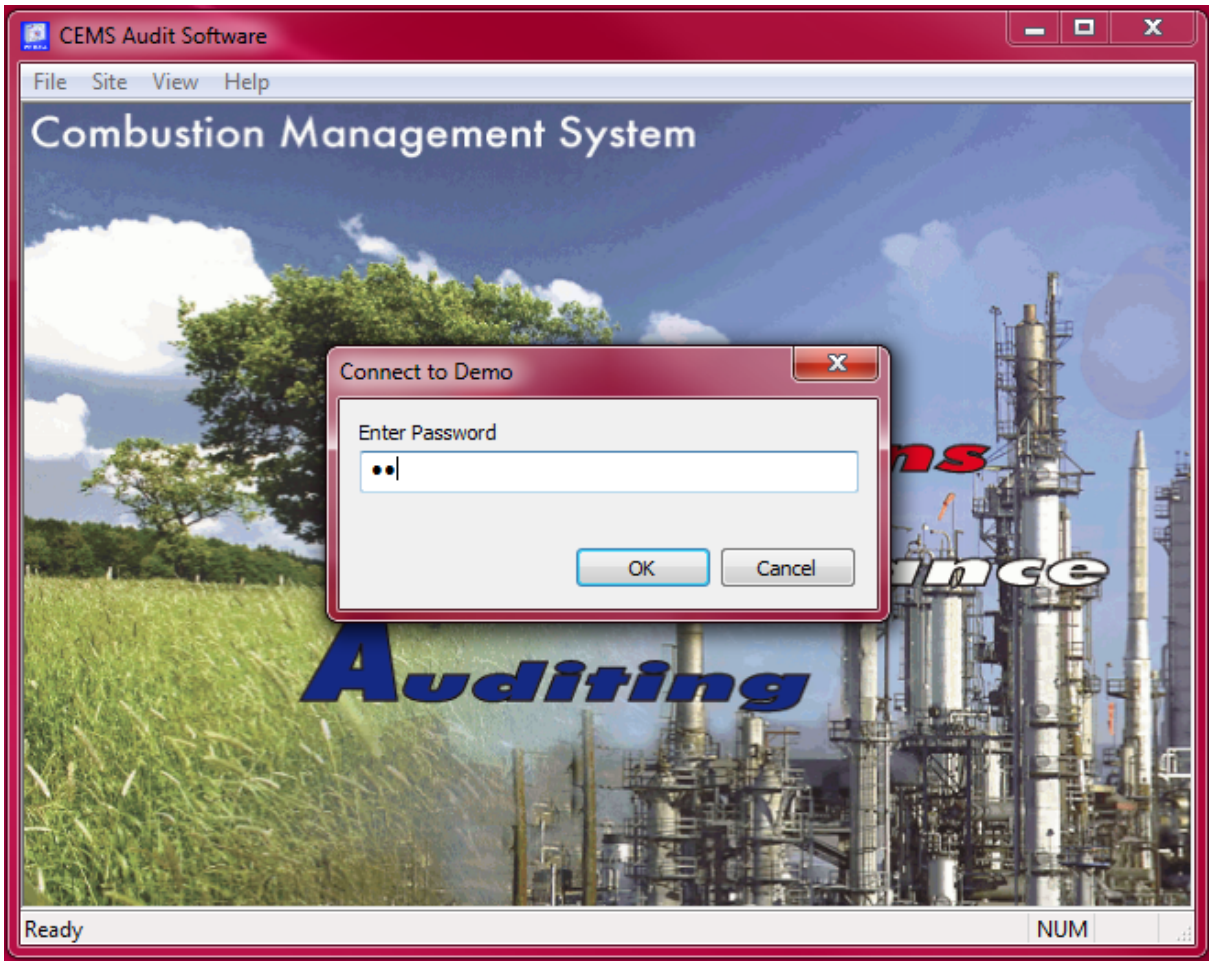


Note: With the Manager version of the CEMS Audit Software, multiple sites can be added. Please contact Autoflame for the required Activation Key.

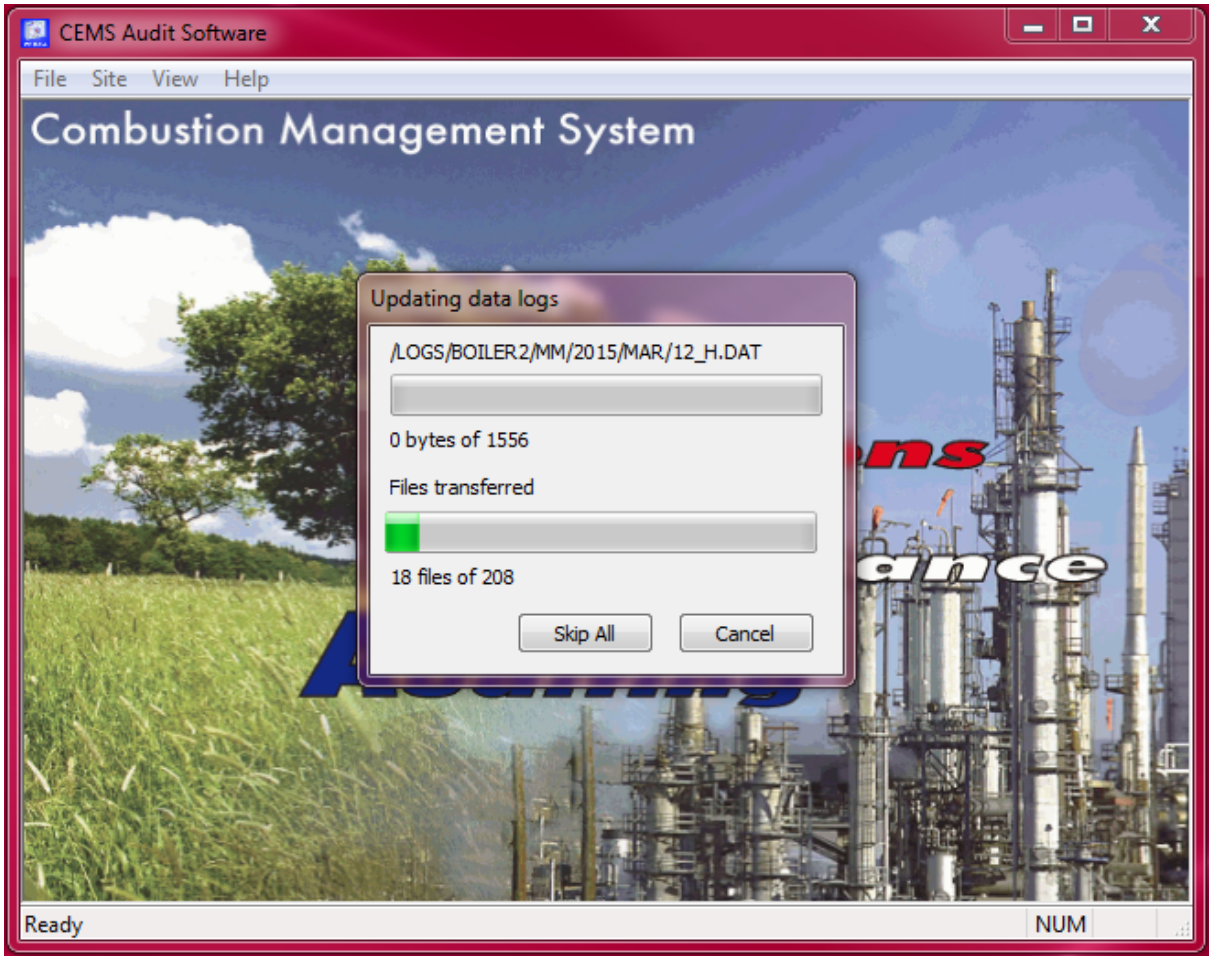
3. Enter the Site name, IP address for that DTI (see Network Setup screen on the D.T.I). The access code is provided with the DTI Click 'OK' once all the information has been entered, click 'Done'.



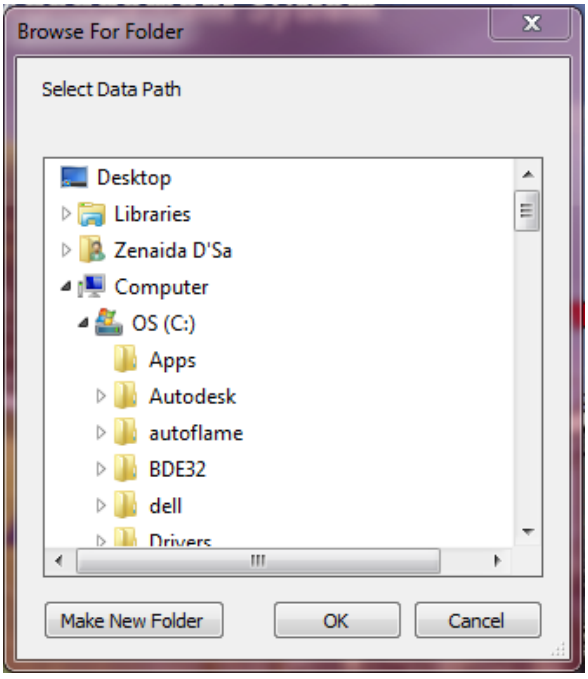
4. Once the Site has been added, go to 'Site', and then click 'Connect'. Only one user can connect to the DTI at a time, and the DTI screen must be at the home screen. Enter the password on the CEMS Audit Software – this password is the same as on the DTI Click 'OK'.



5. The data logs in the DTI will update to the CEMS Audit Software. All the logs will be stored in a folder location such as C:\ProgramData\Autoflame\CEMS Audit Software\site_00\LOGS.



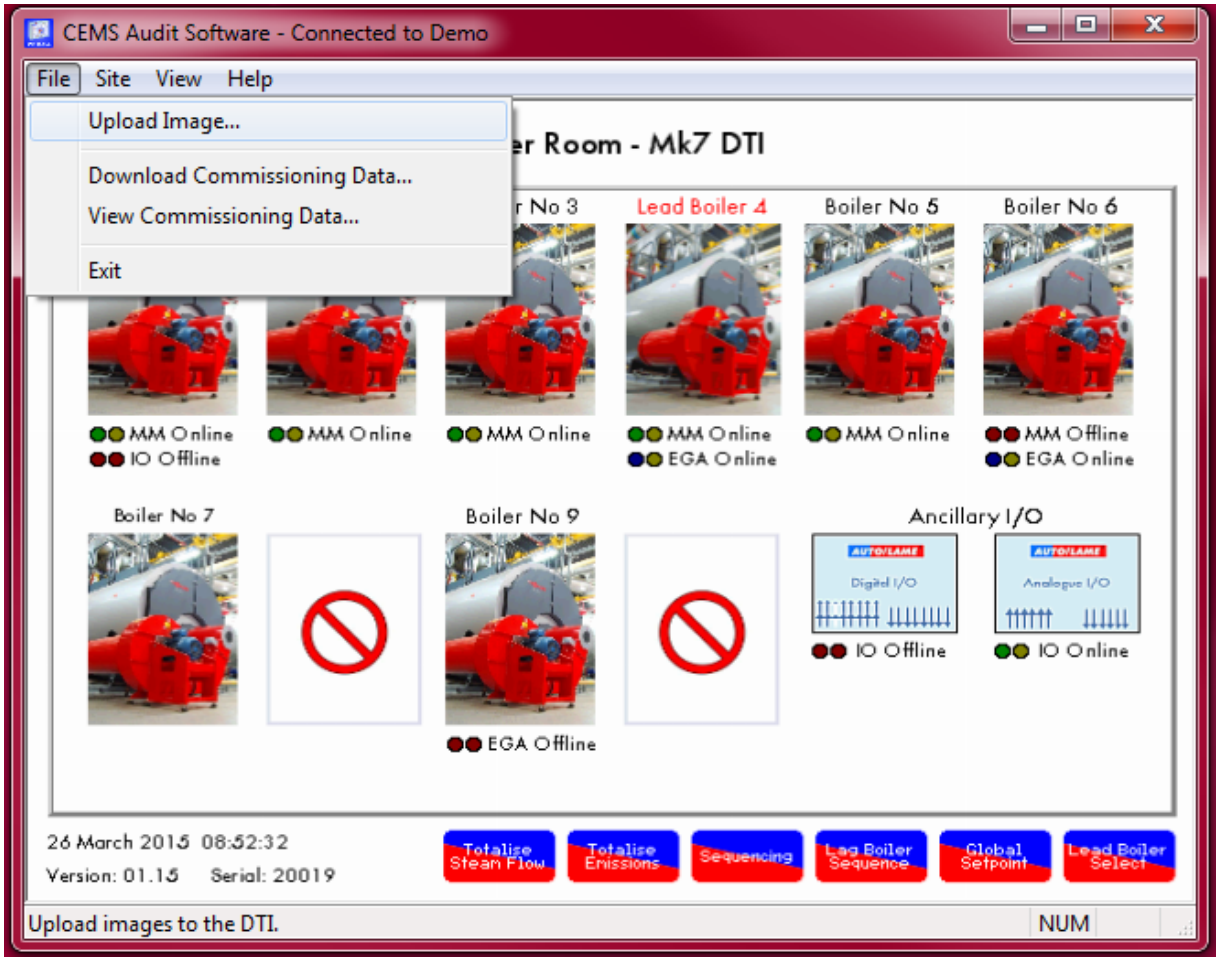
Note: This location can be changed by clicking on 'Site' and then 'Change Data Path.'



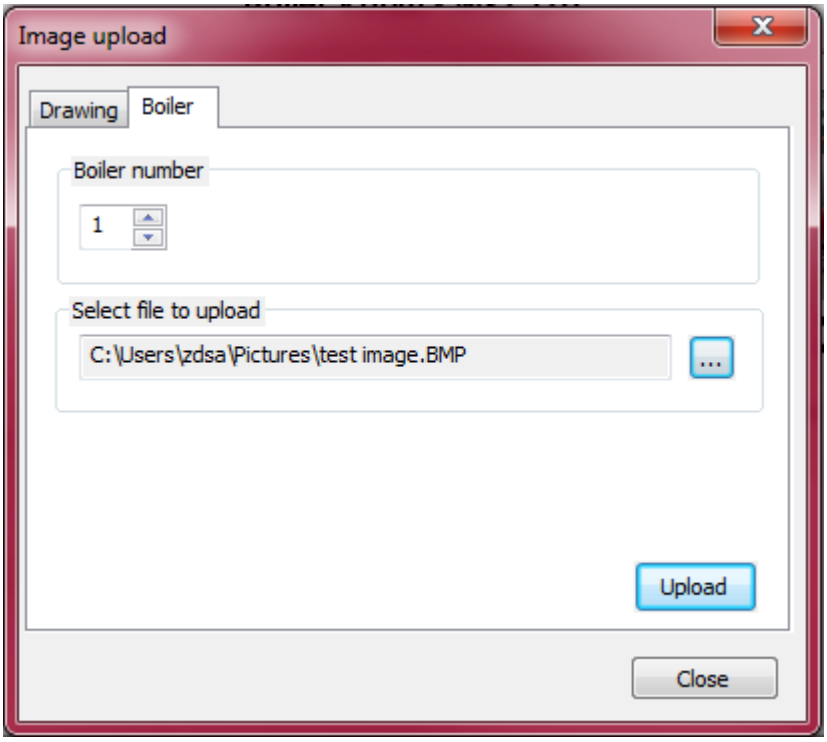
3.2.3 Uploading Images/Drawings

Once you connect remotely on your PC to the DTI you can upload images to display on the DTI home screen for the boilers in that loop, and also mechanical/ electrical drawings for each boiler. To do this, the images must be saved in bitmap format (*bmp).

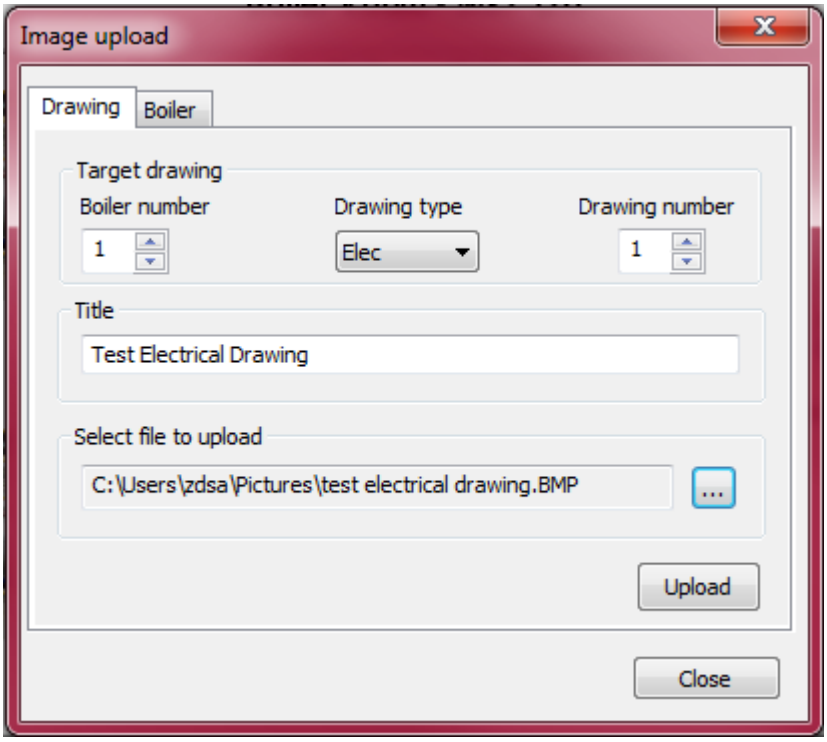
1. On the CEMS Audit Software, go to 'File', and then click 'Upload Images'.



2. To upload a boiler image, go to the 'Boiler' Tab. Select the boiler number, and the file to upload, and then click 'Upload'.

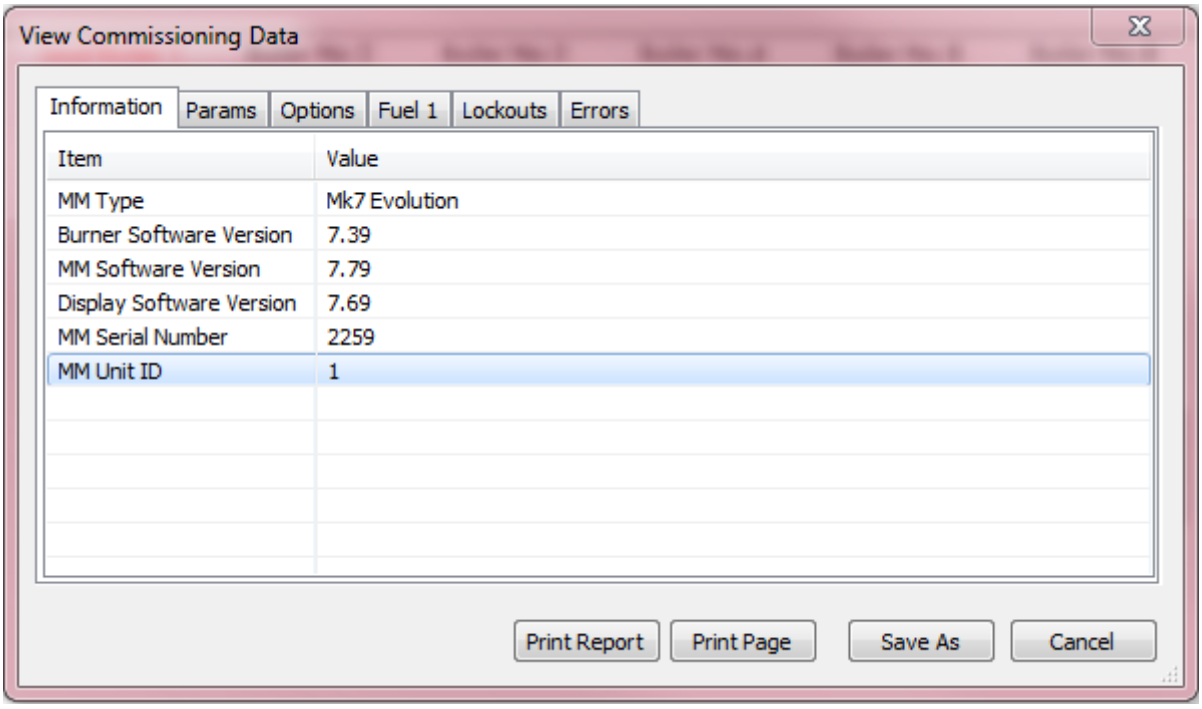


3. To upload technical/ electrical/ mechanical drawings for the boiler, go the 'Drawing' tab, and then choose the boiler number, drawing type, and drawing number. Enter a title, choose the file to upload, and then click 'Upload'.

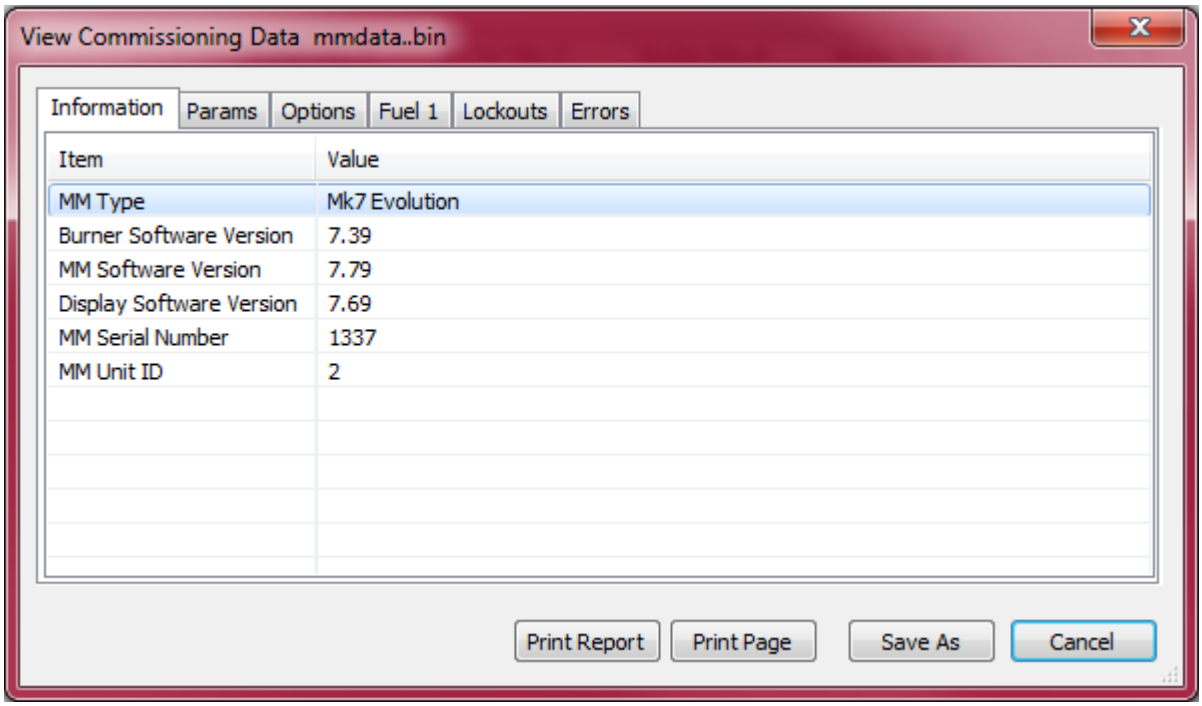


3.2.4 Download/View Commissioning Data

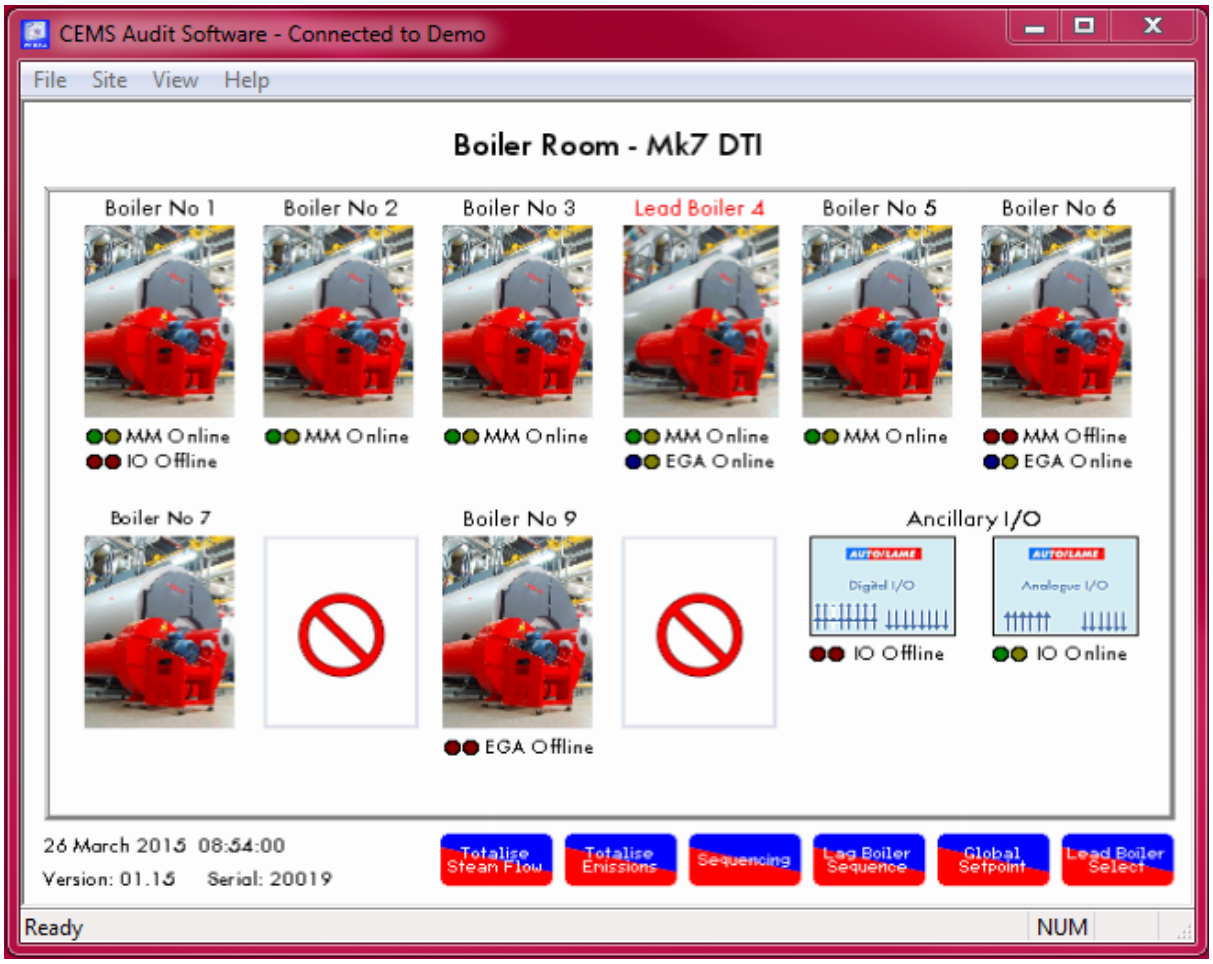
It is possible to download the commission data file from the CEMS Audit Software. Go to 'File' and then click 'Download Commissioning Data'. The files are then stored in a folder location such as C:\ProgramData\Autoflame\CEMS Audit Software\site_00\CONFIG.



Via the CEMS Audit Software, it is possible to view commission data files. Go to 'File' and then click 'View Commissioning Data'. Choose the *.bin file to view.

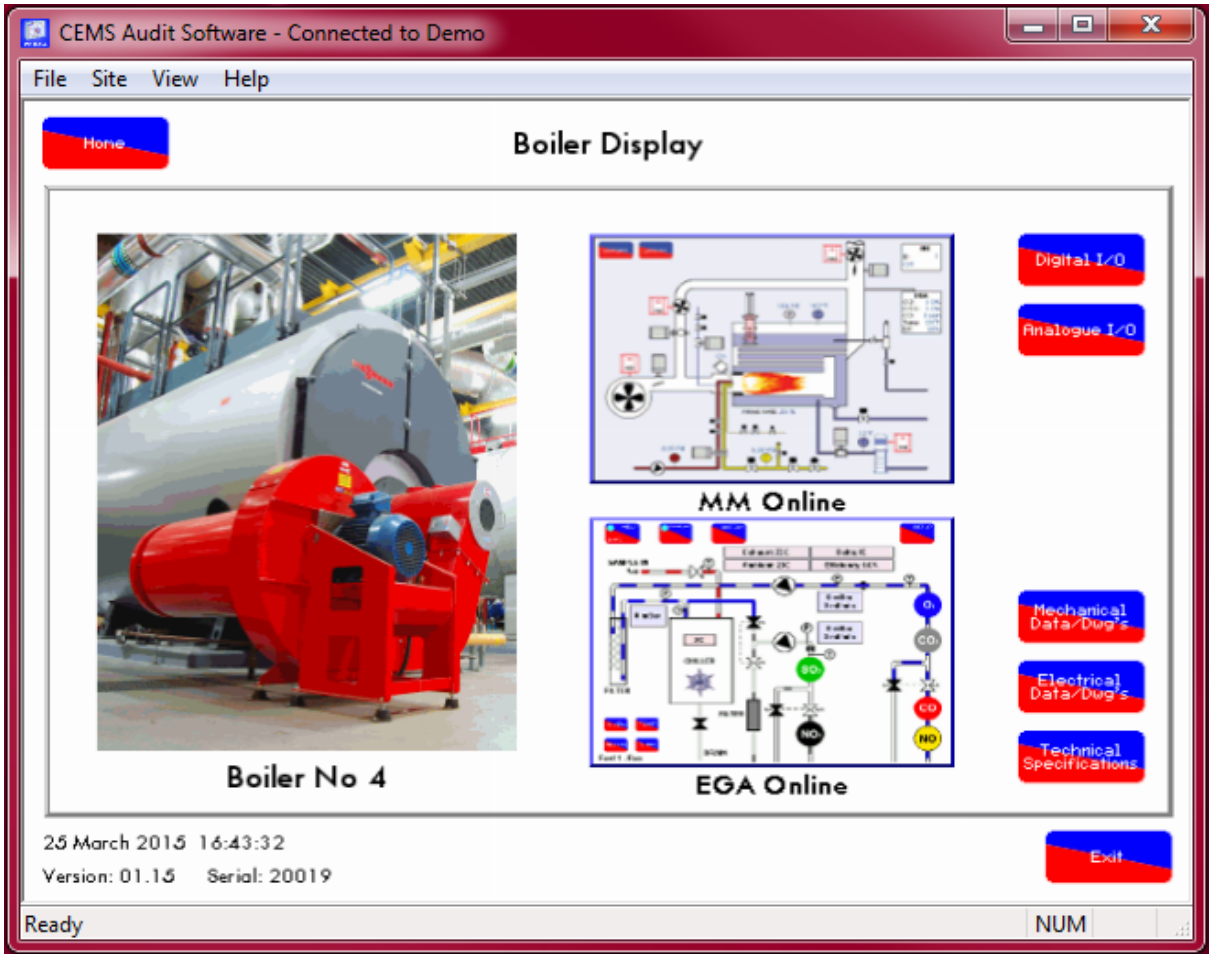


3.3 Information Screens



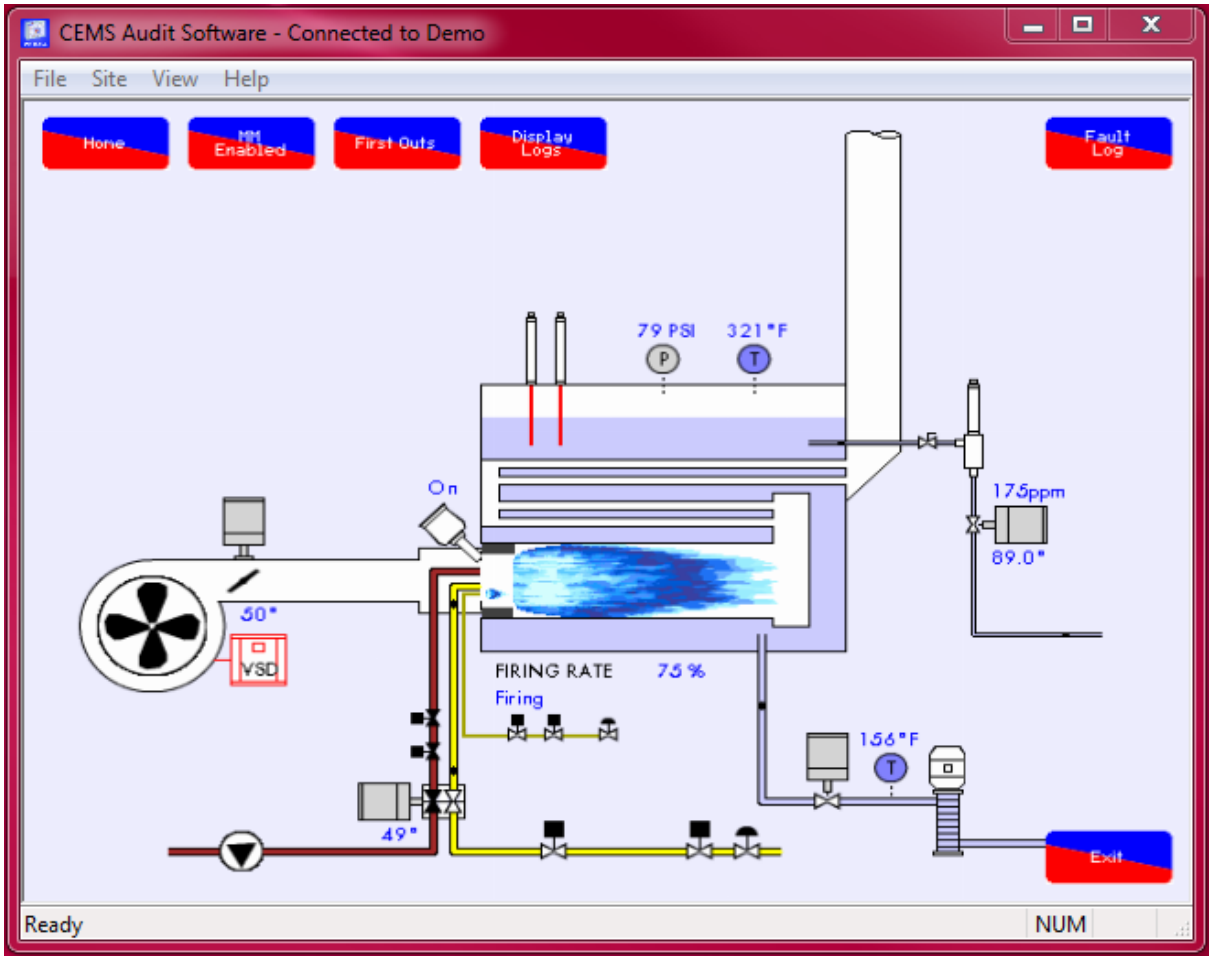
The CEMS Audit Software home screen gives the following information:

- Number of MMs
- EGAs associated with the burners
- Analogue or digital I/Os
- Status of the MMs – Loading, Online or Offline, Error or Lockout
- Lead MM
- Status of EGAs – Loading, Online or Offline, Error
- Data and time
- DTI Serial Number and Software version

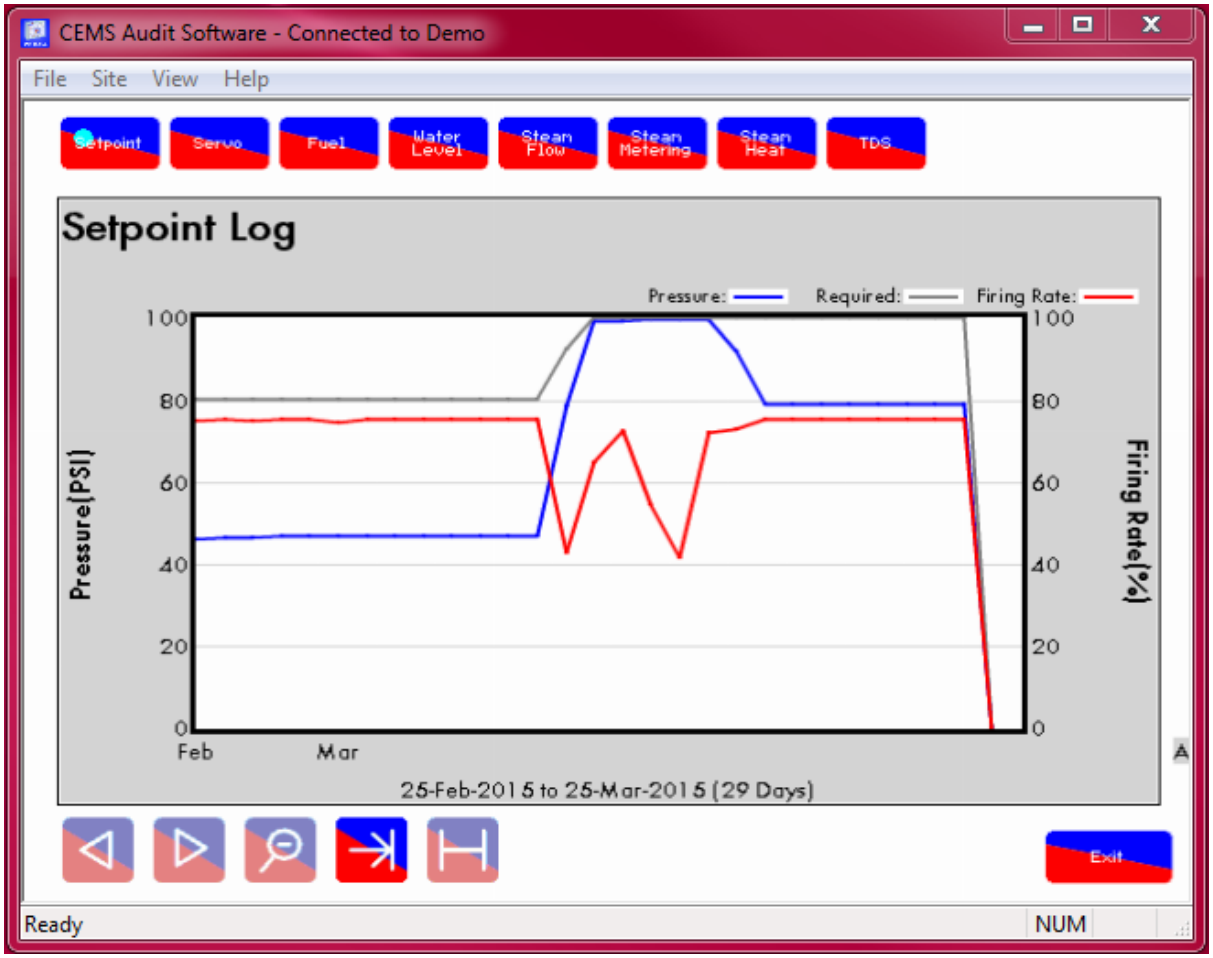


Once the boiler image has been clicked on the CEMS Audit Software home screen, the Boiler Display screen is shown.

- The boiler image on the left side of the screen can be modified, see section 3.2.3
- Clicking on the MM image will display an emulation of the MM screen.
- Clicking on the EGA image (if optioned) will display an emulation of the EGA screen.
- Clicking on the Digital I/O or Analogue I/O will display more information on the 3rd party equipment associated with that boiler.
- Clicking Mechanical Data/Dwgs, Electrical Data/Dwgs or Technical Specification as uploaded. See section 3.2.3 on how to upload these files.



The MM screen on the DTI will copy the screen from the MM As with the Mk7 MM or the Mini Mk8 MM, press on the components to view the information/history.



Click on Display Logs to view the logged data for up to 2 years, with data recorded at 1 minute increments. The following Display Logs are available:

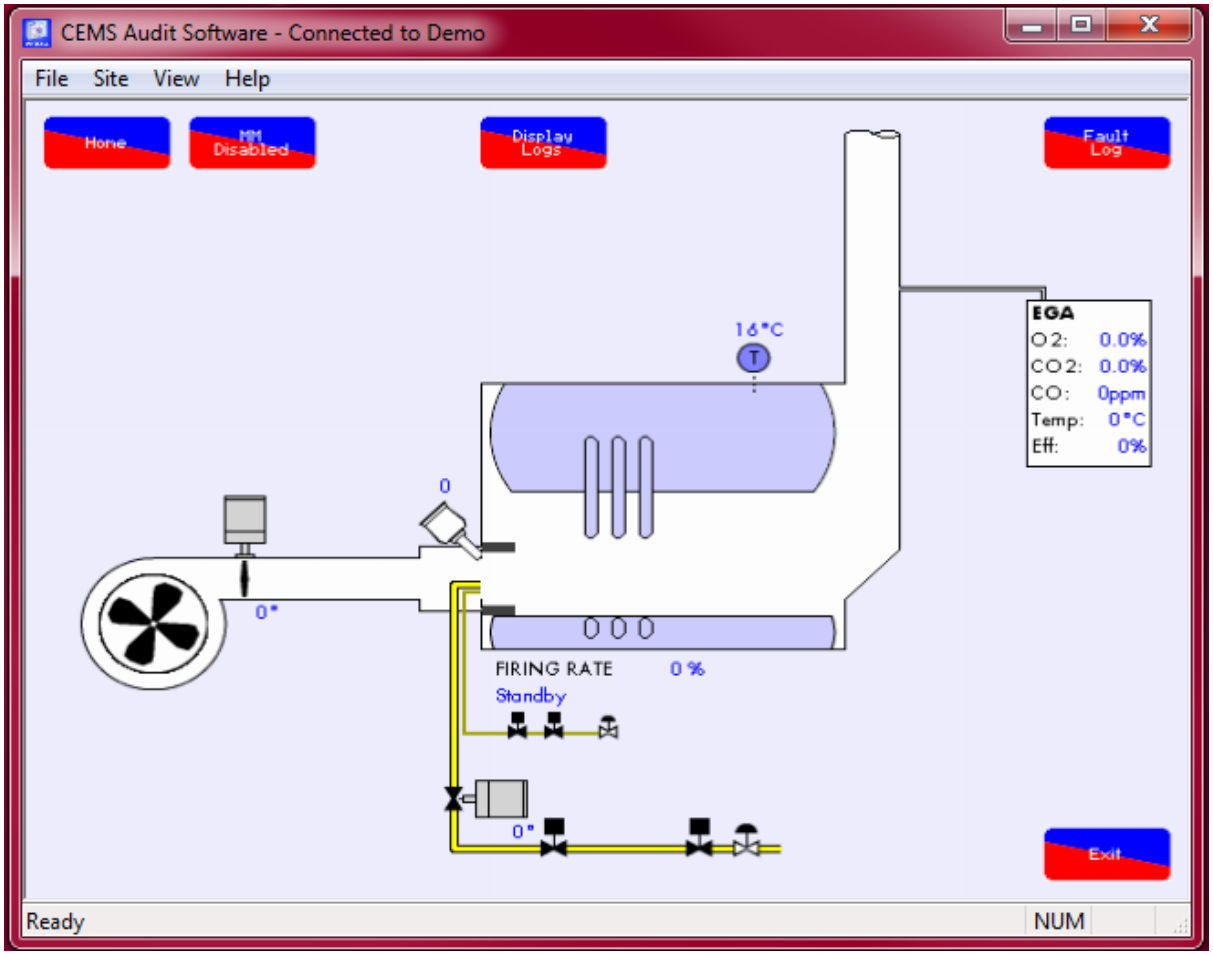
- Setpoint history
- Servomotor position history
- Fuel flow rate history
- Water level readings history
- Steam flow rate history
- Steam flow temperature history
- TDS history
- VSD history
- Feed water valve position history
- UV Scanner counts history
- Gas pressure sensor history (24 hours)

To zoom into data, press on two dates/times on the x-axis to zoom in between the two. Easy navigation buttons can be found on the bottom left hand side of the graph.

To view the sequencing information, go to the home screen and click on Sequencing.

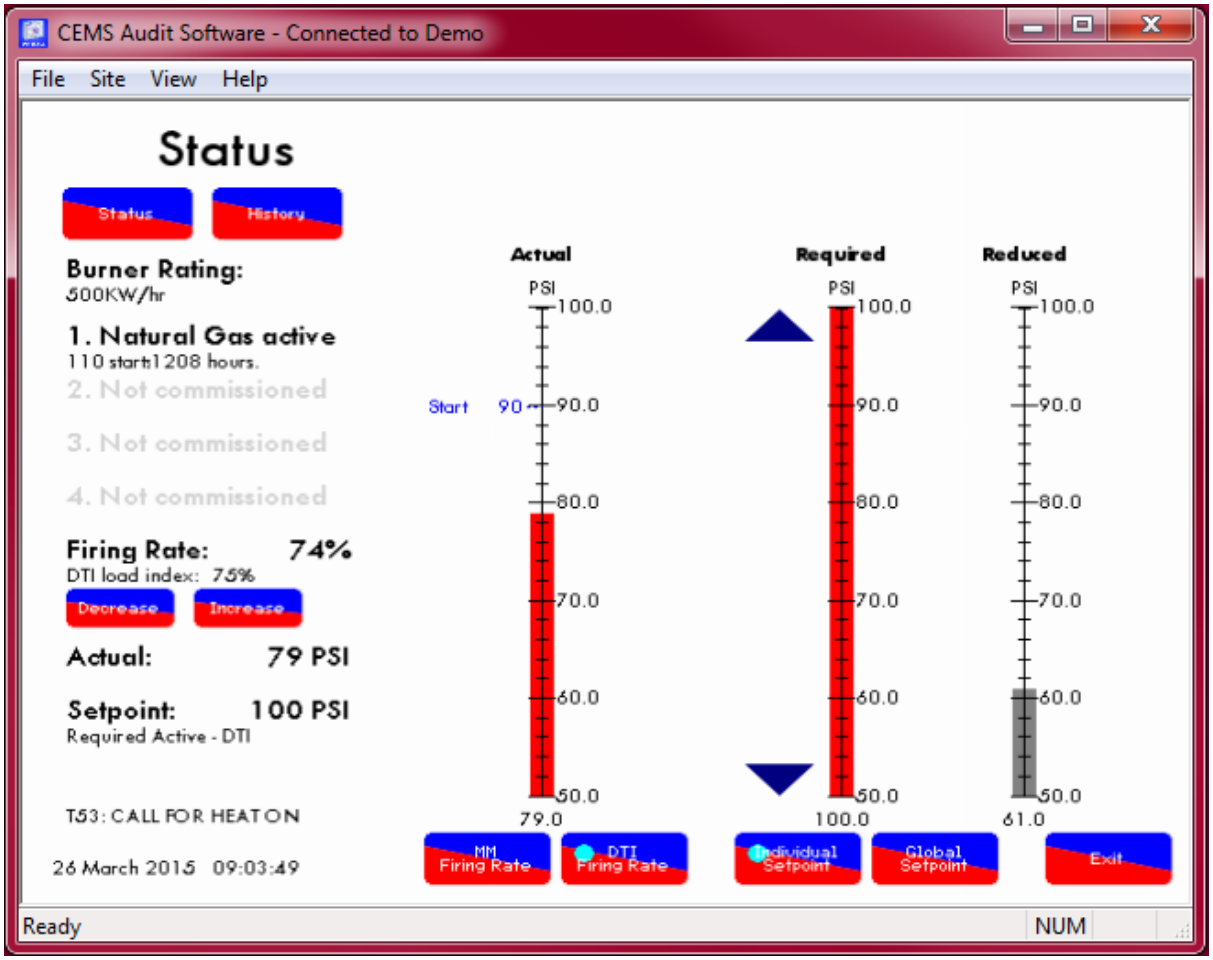
3.4 Remote Capability

3.4.1 Enable/Disable



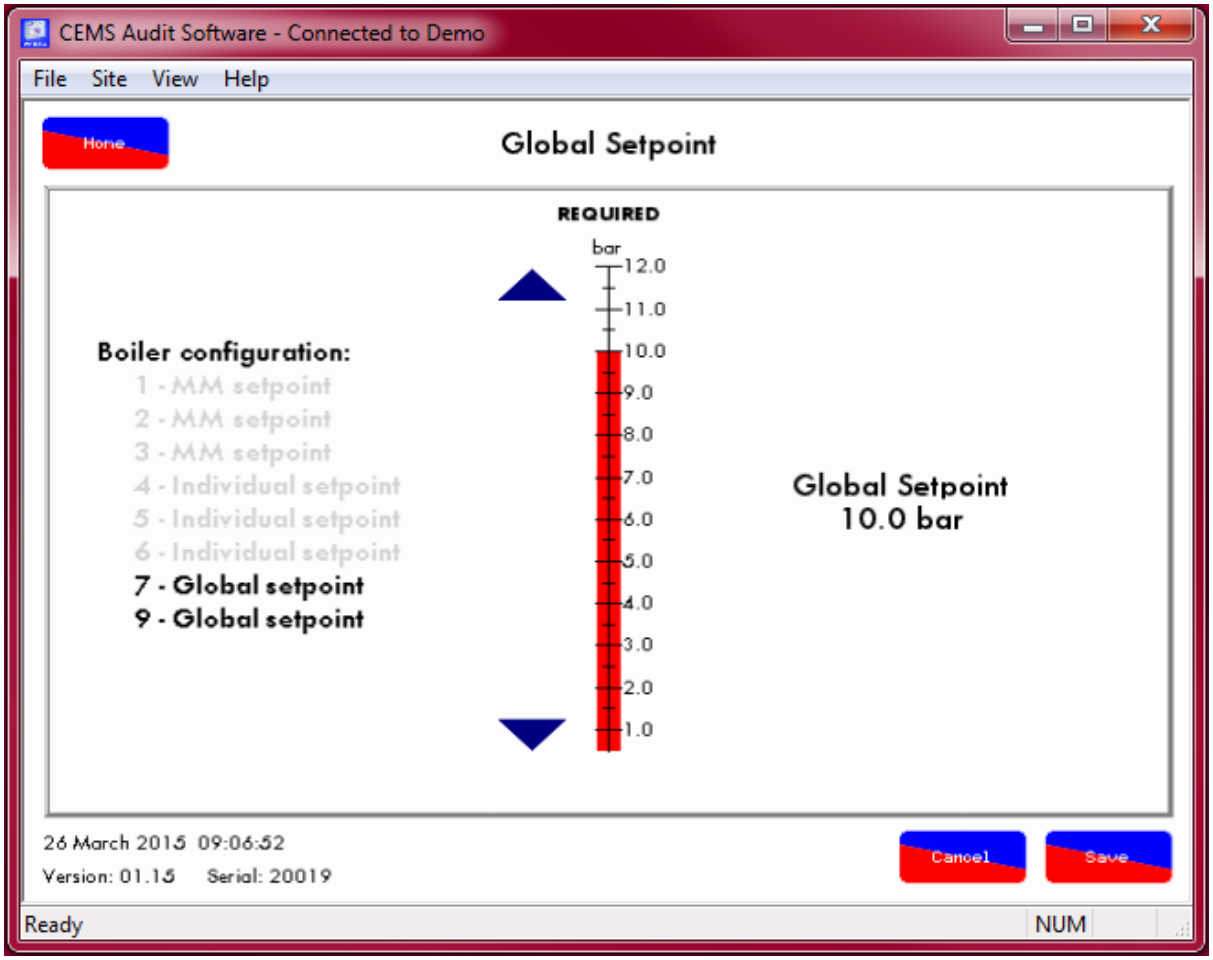
To enable/disable an MM, go to the MM screen and click on 'MM Enabled' or 'MM Disabled' as required. For enable/disable commands from the DTI, option 16 must be set to 2 or 3 on the MM

3.4.2 Setpoint Control



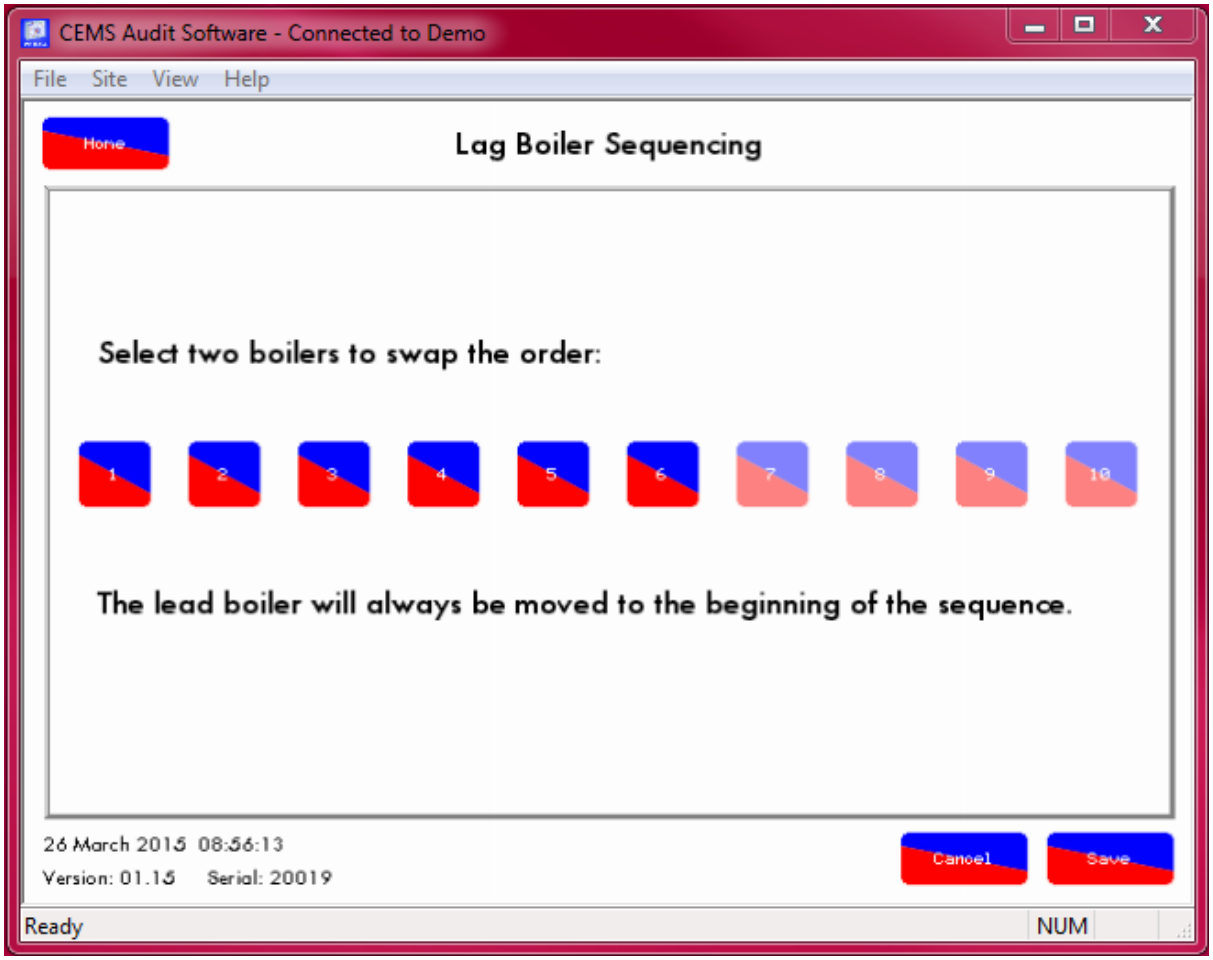
To change the firing rate, click on the MM, and then the flame to get the setpoint/firing rate screen. Click on 'DTI Firing Rate' to change the firing rate remotely CEMS Audit Software (like in Hand mode on the M.M).

Click on 'Individual Setpoint' to change the setpoint remotely for that MM To change the individual setpoint, option16 must be set to 2 or 3 on the MM



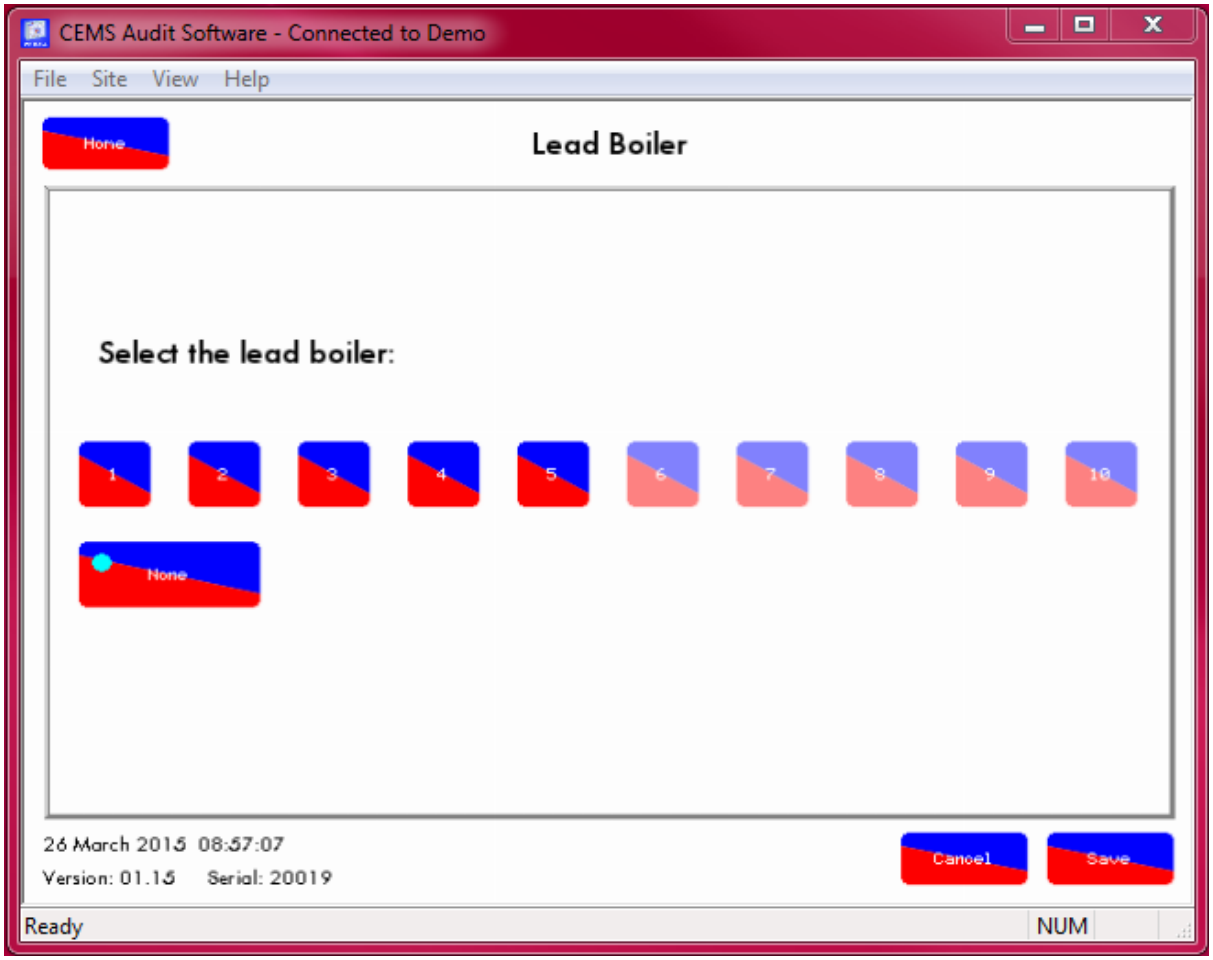
To change the global setpoint for all the boilers in that DTI loop, click on 'Global Setpoint' on the MM's setpoint/firing rate screen. Then click on 'Global Setpoint' on the home screen. Option 16 must be 2 or 3 on the MM

3.4.3 Lag Boiler Sequence Order



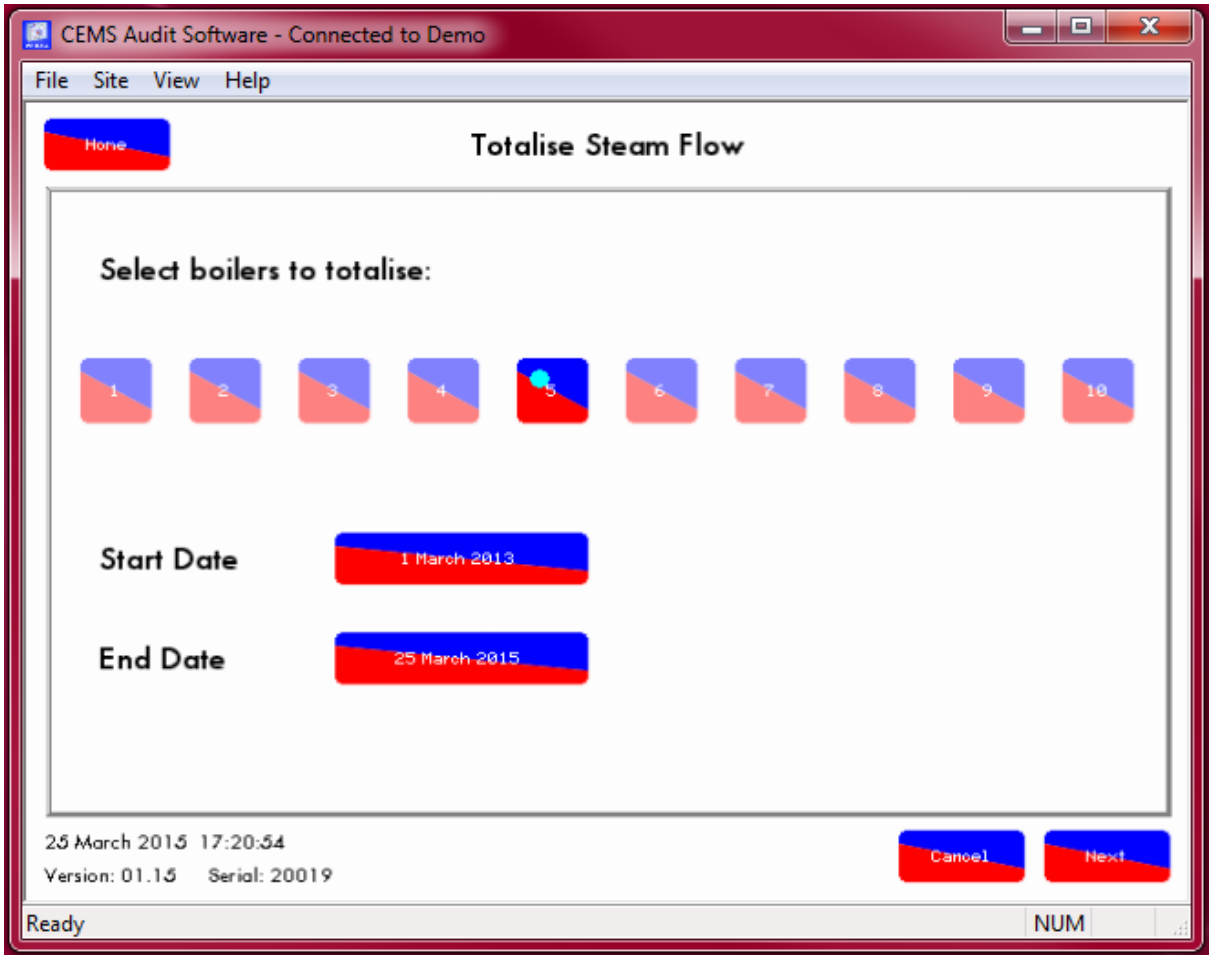
To change the lag boiler sequence, click on 'Lag Boiler Sequence' on the home screen, and choose which order to put the lag boilers. To change the lag boiler sequence from the DTI, option 16 must be set to 3, and parameter 101 must be set to 1 on the MM

3.4.4 Lead Boiler Select



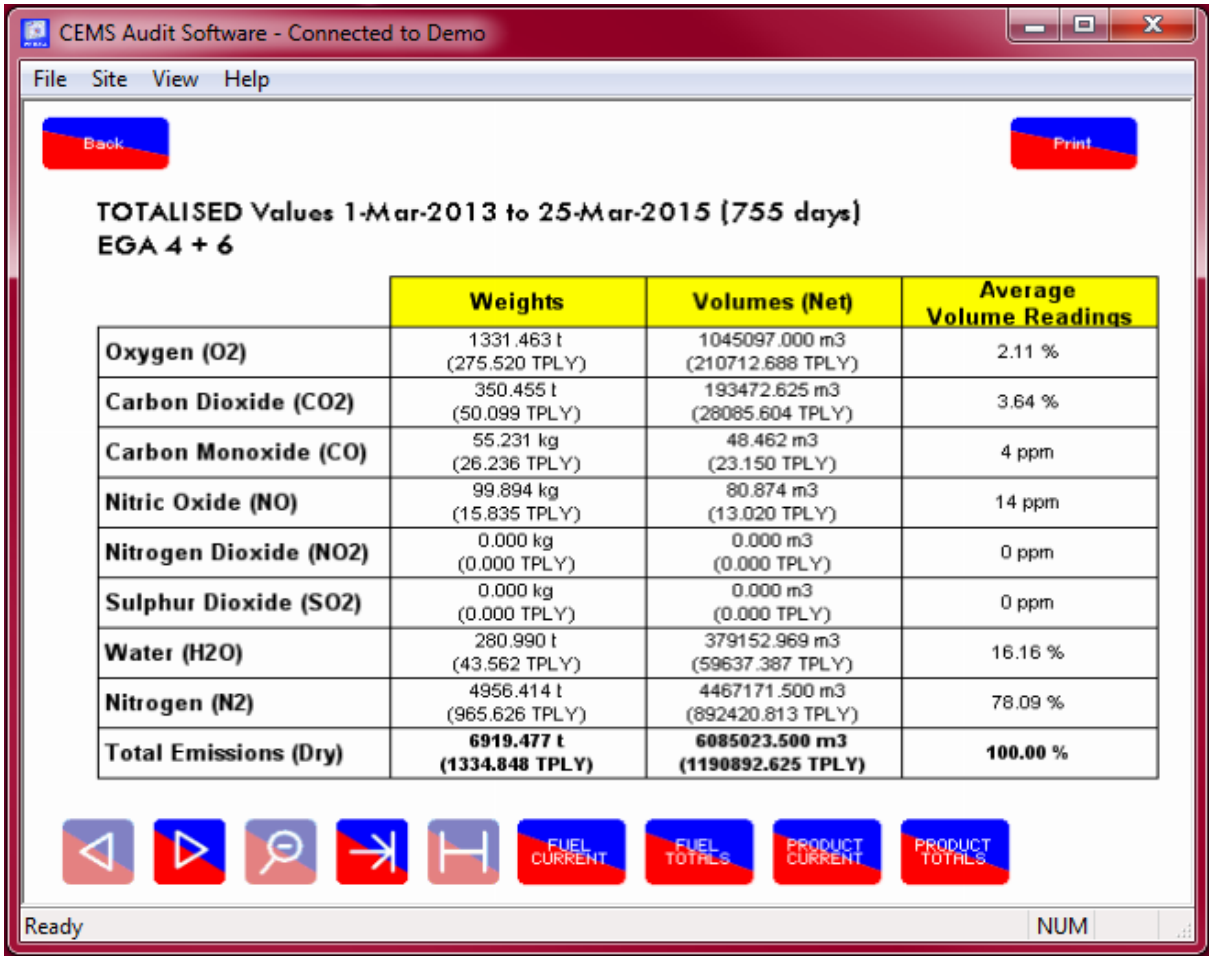
To change the lead boiler, click on 'Lead Boiler Select' on the home screen, and choose with boiler to be lead. Option 16 must be set to 3.

3.4.5 Totalise Steam Flow



To totalise the steam flow metering, click on 'Totalise Steam Flow' on the home screen, and select which boiler to totalise the steam flow metering for.

3.4.6 Totalise Emissions



	Weights	Volumes (Net)	Average Volume Readings
Oxygen (O2)	1331.463 t (275.520 TPLY)	1045097.000 m3 (210712.688 TPLY)	2.11 %
Carbon Dioxide (CO2)	350.455 t (50.099 TPLY)	193472.625 m3 (28085.604 TPLY)	3.64 %
Carbon Monoxide (CO)	55.231 kg (26.236 TPLY)	48.462 m3 (23.150 TPLY)	4 ppm
Nitric Oxide (NO)	99.894 kg (15.835 TPLY)	80.874 m3 (13.020 TPLY)	14 ppm
Nitrogen Dioxide (NO2)	0.000 kg (0.000 TPLY)	0.000 m3 (0.000 TPLY)	0 ppm
Sulphur Dioxide (SO2)	0.000 kg (0.000 TPLY)	0.000 m3 (0.000 TPLY)	0 ppm
Water (H2O)	280.990 t (43.562 TPLY)	379152.969 m3 (59637.387 TPLY)	16.16 %
Nitrogen (N2)	4956.414 t (965.626 TPLY)	4467171.500 m3 (892420.813 TPLY)	78.09 %
Total Emissions (Dry)	**6919.477 t (1334.848 TPLY)**	**6085023.500 m3 (1190892.625 TPLY)**	**100.00 %**

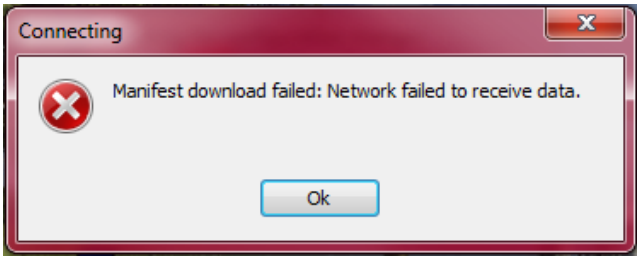
To totalise the emissions for the EGAs, click on 'Totalise Emissions' on the home screen, and select which E.G.As to totalise the emissions for.

Note: The emissions can be totalised for the Mk8 EGA and the Mk7 CEMS EGA

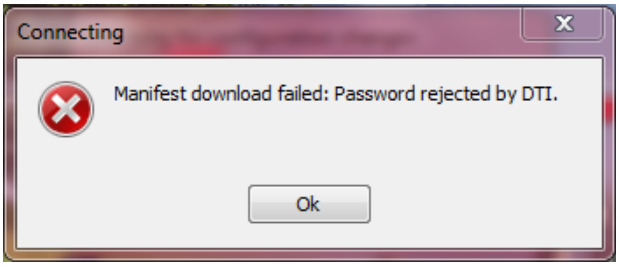
3.5 Troubleshooting

3.5.1 Manifest Download Failed

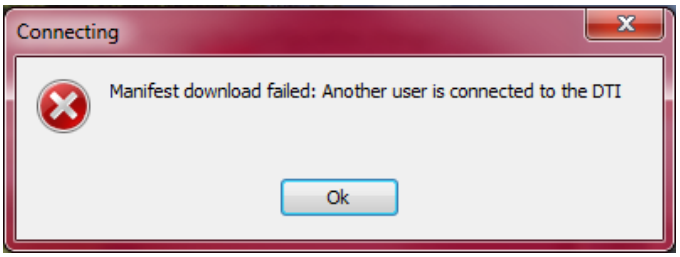
Network failed to receive data: When trying to connect to a DTI via the CEMS Audit Software, the following error indicates that the site setup is incorrect, check the IP address and access code.



Password rejected by DTI: The following error indicates that the password entered does not match the DTI password, ensure this is entered correctly. Please contact Autoflame if the password is lost.

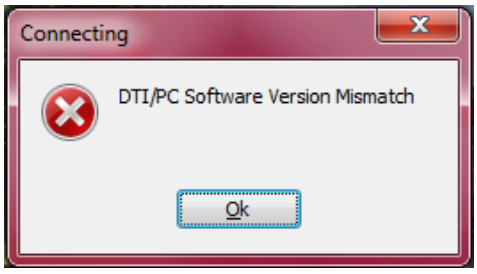


Another user is connected to the DTI: The following error indicates that either another user is connected to that DTI via CEMS Audit Software, or that the DTI screen is not at the home screen.



3.5.2 DTI/PC Software Version Mismatch

The following error indicates that the CEMS Audit Software does not match the DTI software version; please go to the Knowledge Centre on the website to download the latest CEMS Audit Software.



4 IO BOARD CONFIGURATOR

4.1 IO Board Configurator Requirements

4.1.1 Introduction

The Mk7 Universal Input/ Output Module (Mk7 I/O) enables 3rd party additional equipment in the boiler plant to be monitored by the Mk7 DTI Each Mk7 I/O unit has 16 digital line inputs, 8 volt free contacts, 6 analogue inputs and 6 analogue outputs. The analogue inputs and outputs can be configured for 0-10V, 0-20mA, or 4-20mA.

The Mk7 I/O module can be used in conjunction with a Mk7 DTI. The ranges of analogue inputs and outputs must be set via the IO Board Configurator software. Please refer to Section 3 Analogue and Digital Inputs/Outputs in the Mk7 DTI Set-up Guide for more information on the Mk7 I/O module.

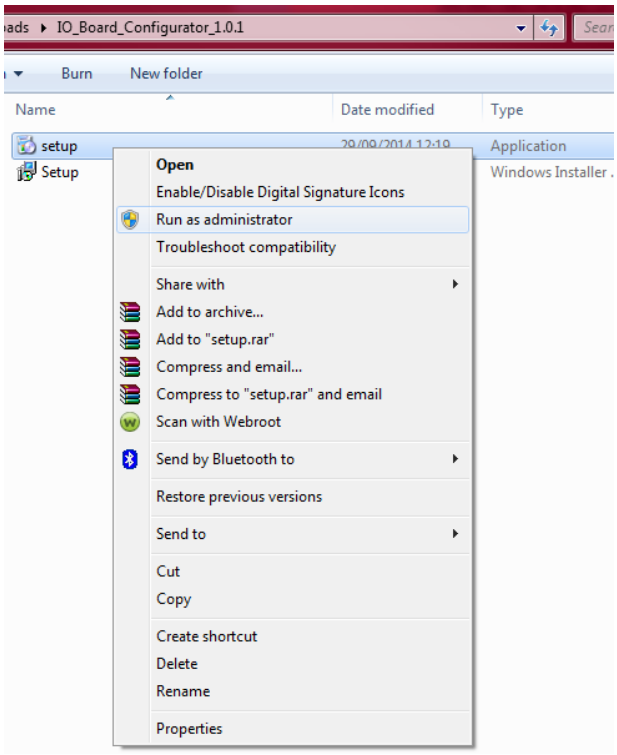
4.1.2 IO Board Configurator/ PC Requirements

The IO Board Configurator is used for the Mk7 I/O Module which is compatible with the Mk6 DTI and the Mk7 DTI. The IO Board Configurator is compatible with Windows XP, Windows 7 and Windows 8 for both 32bit and 64bit formats.

4.2 Installation and Set-Up

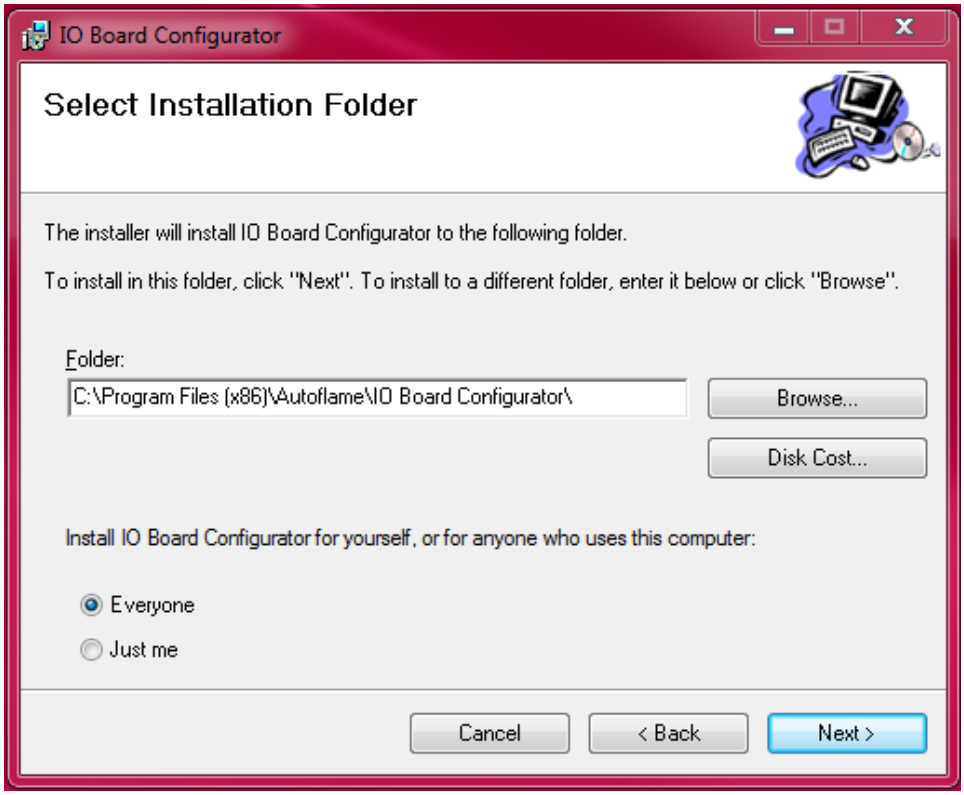
4.2.1 Installation

1. Either from the website or the USB stick provided with the I/O Module, right click on the 'setup' file and click on 'Run as Administrator'.

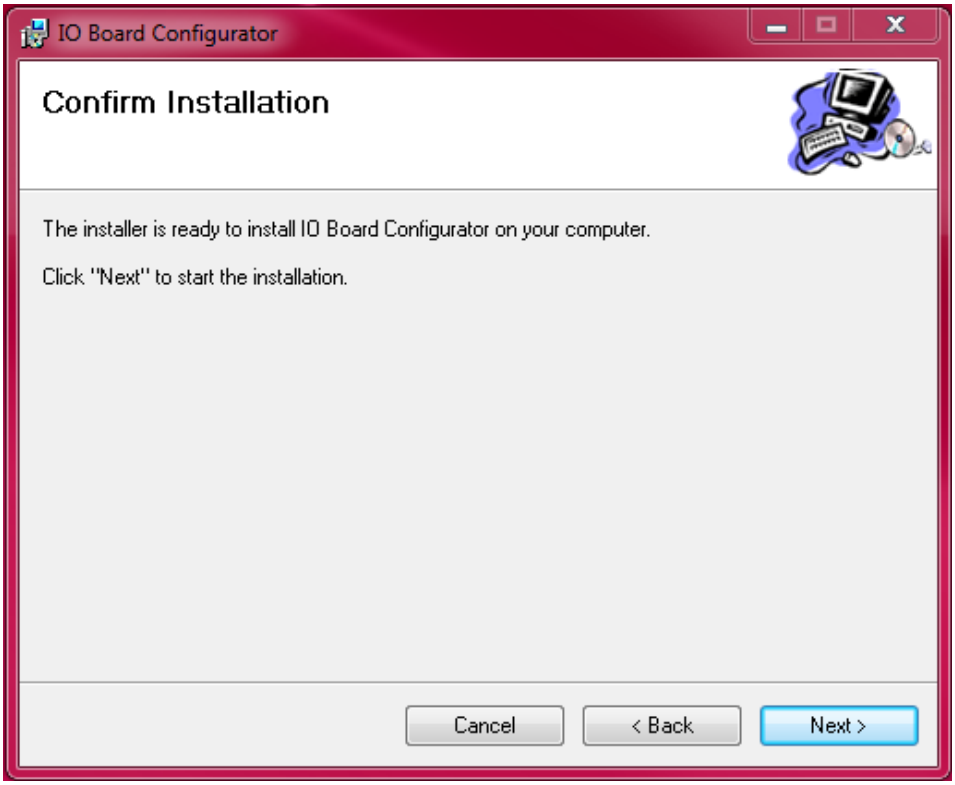


2. The IO Board Configurator Setup Wizard box will appear. Click 'Next' to begin the installation.

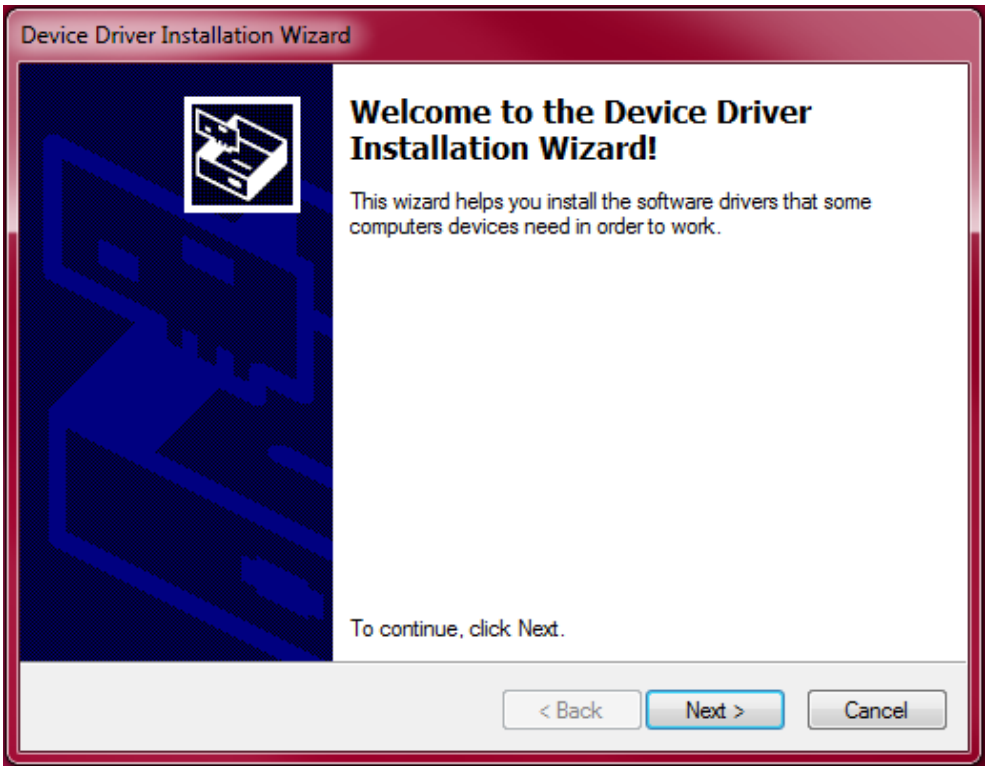
5. Choose a location for the software, such as C:\Program Files (x86)\Autoflame\IO Board Configurator\ and then click 'Next'.



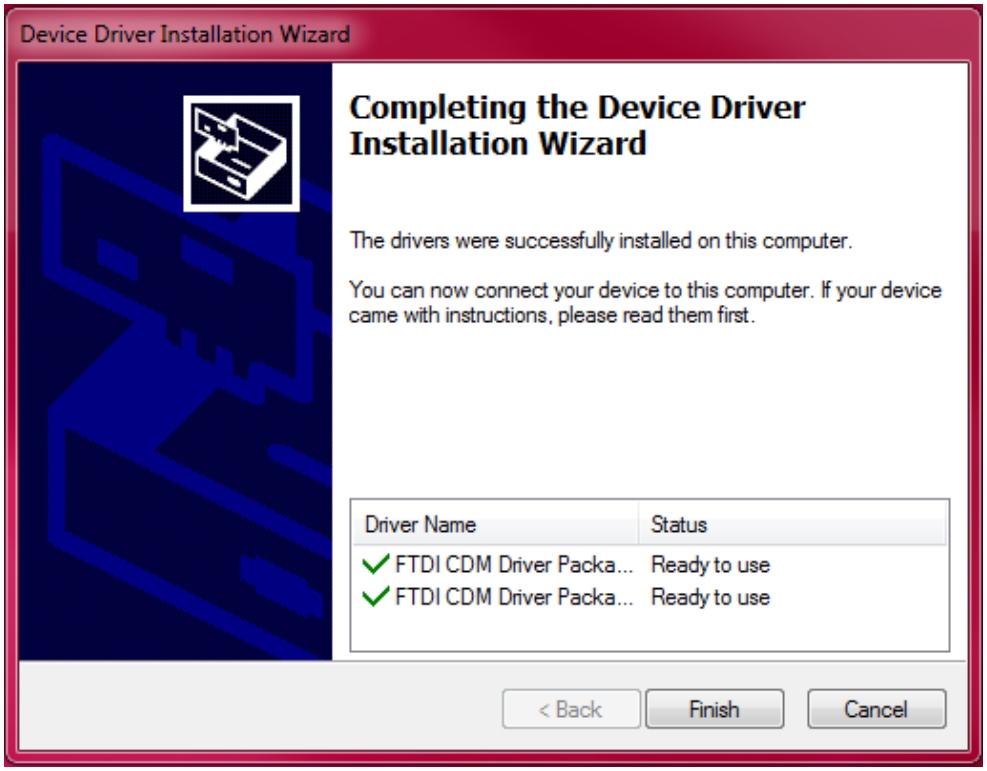
6. Click on 'Next' to begin the installation.



7. The Device Driver Installation Wizard box will appear, click on 'Next' to continue.



8. Click on ‘Finish’ once the drivers have been installed.

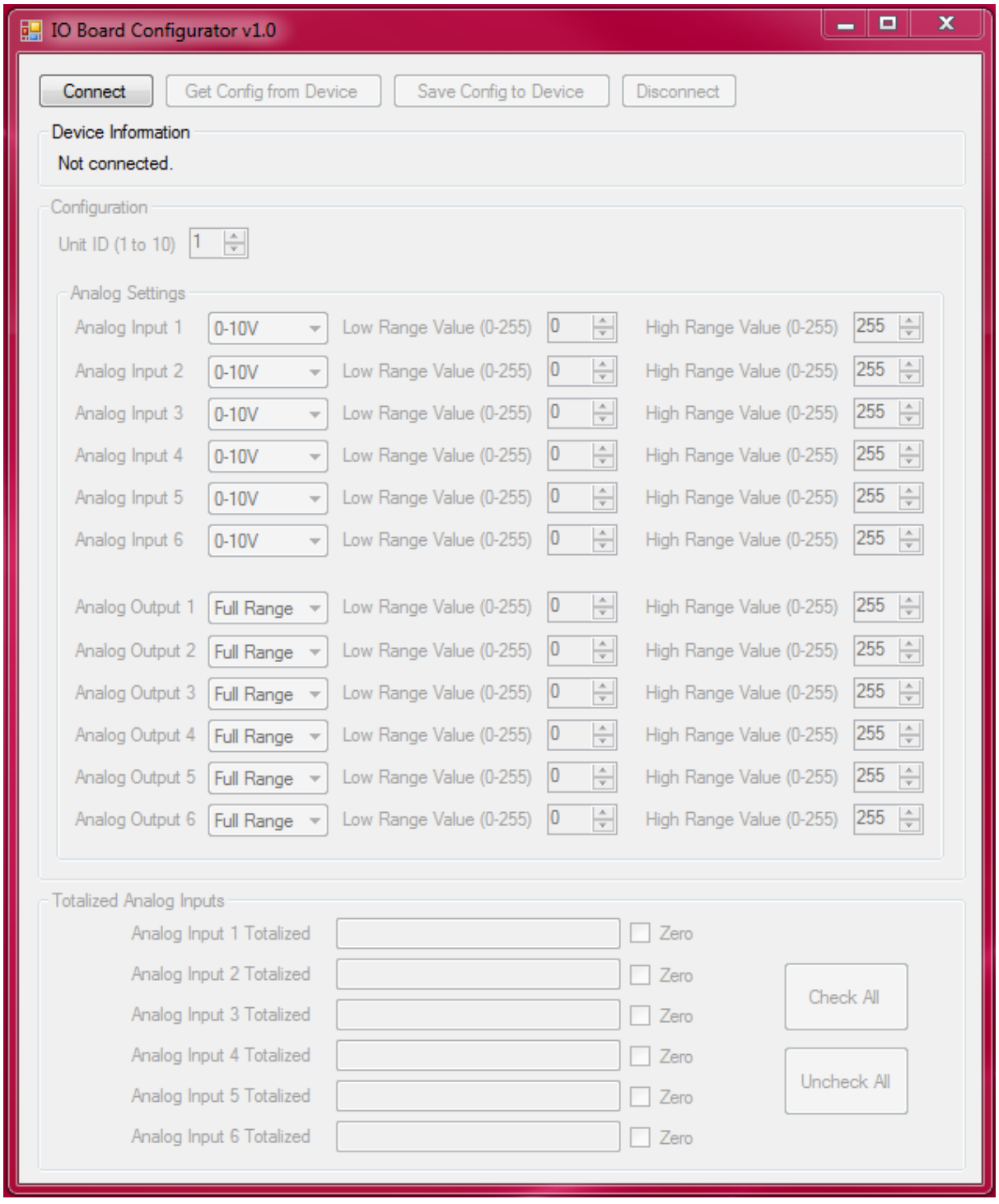


4.2.2 Set-Up

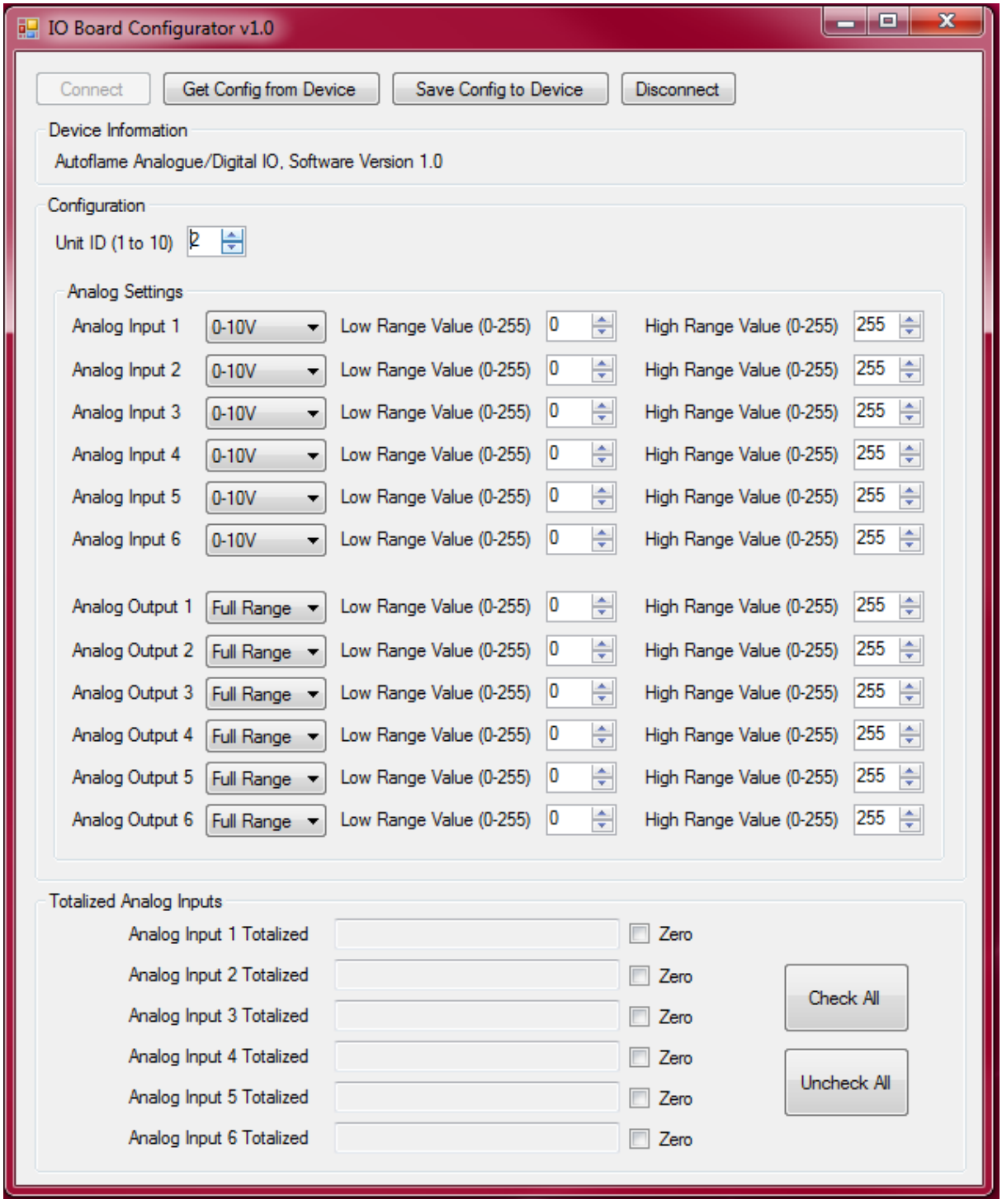
For the analogue configuration of the Mk7 I/O module, use a USB to mini-USB lead (as supplied) for the connection to the PC from the mini-USB port on the I/O board.

The IO board configurator can be used to configure the module's ID number, analogue input and output ranges, and to view/delete the totalised input values on the Mk7 I/O module.

1. Power up I/O module.
2. Open the IO Board Configurator and click on 'Connect' to establish a connection with the I/O module.

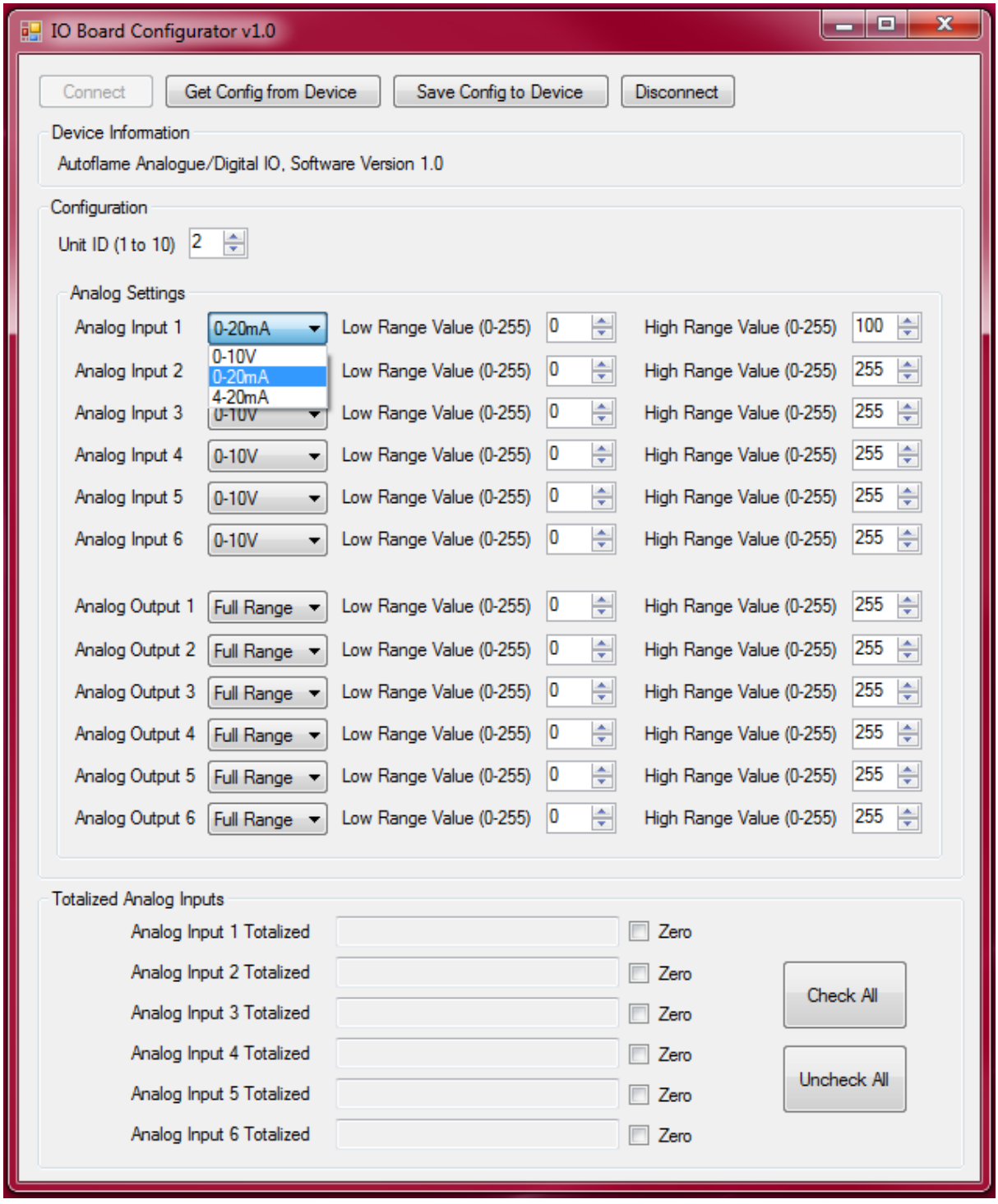


3. Choose a unit ID number from 1 to 10.

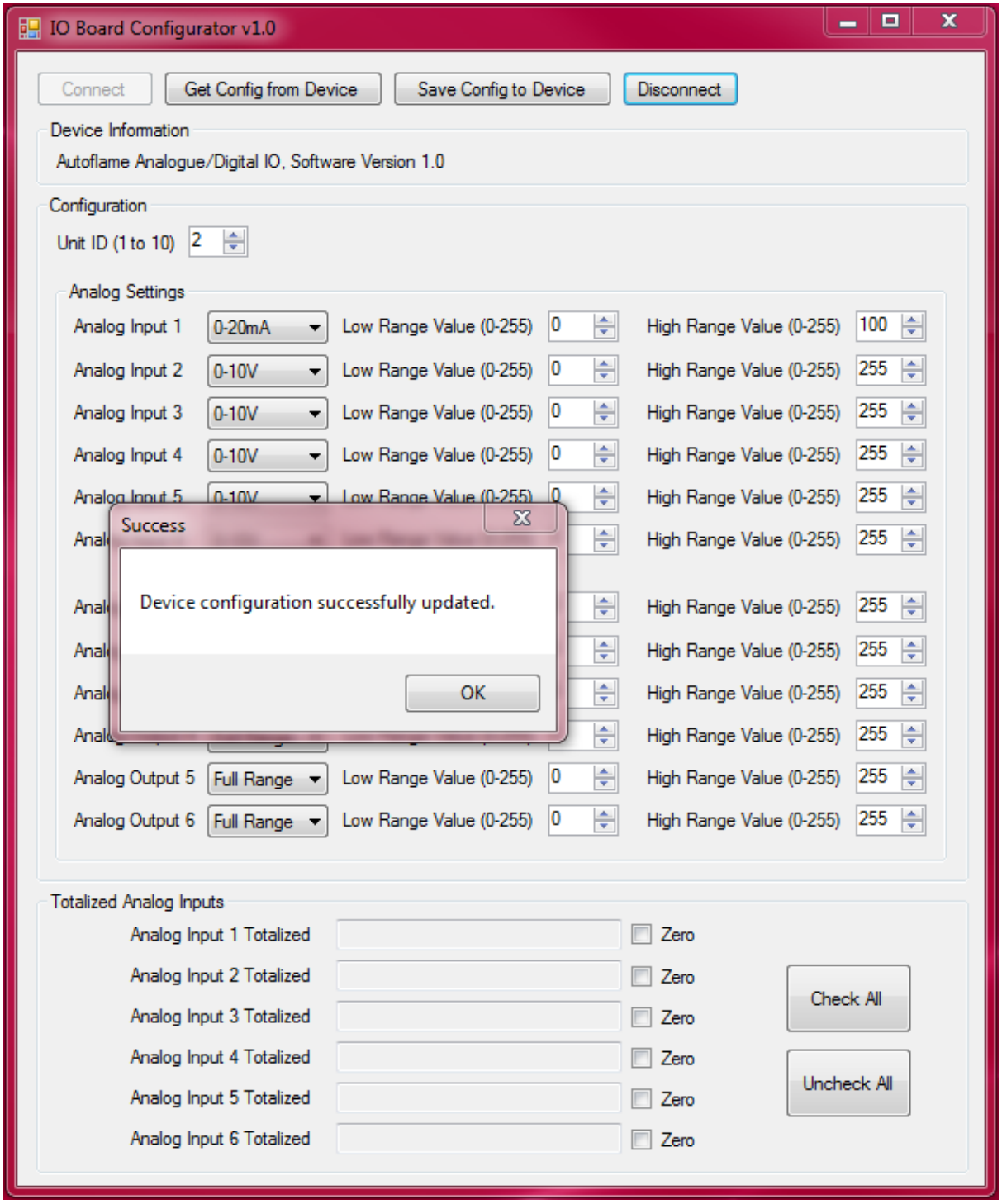


If the device is already configured, then its information will display.

4. Choose the units and range for the analogue inputs and outputs as required, in either 0-10V, 0-20mA, or 4-20mA.



5. Click on 'Save Config to Device' once the analogue inputs and outputs have been configured.



4.2.3 Totalised Values

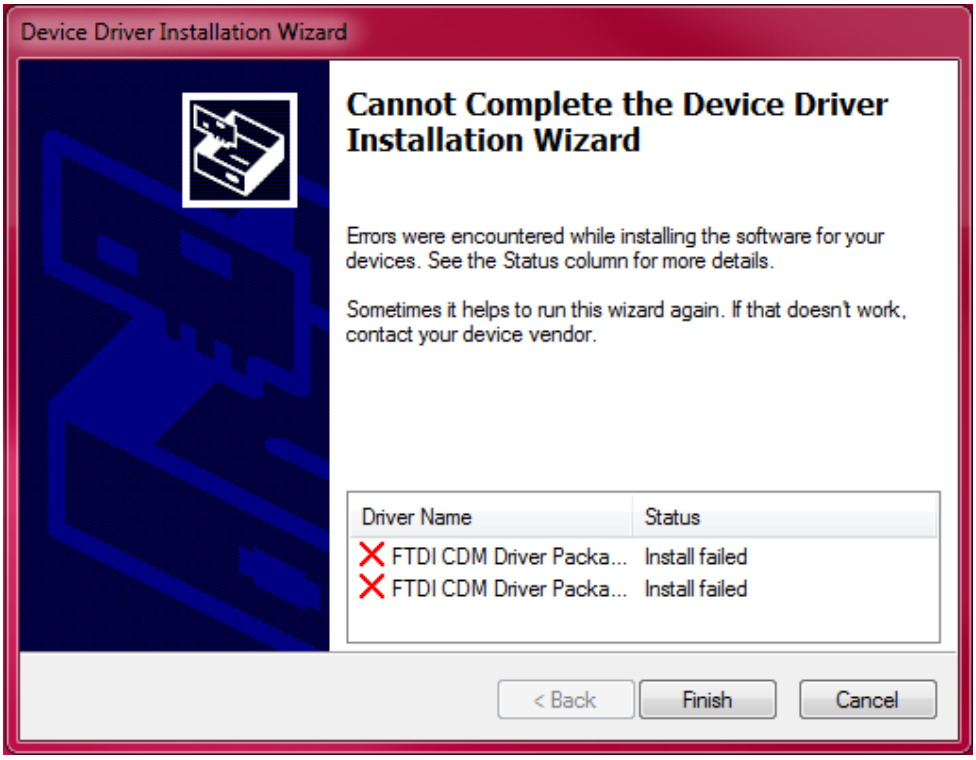
The Mk7 I/O module will totalise the analogue inputs. To zero the totalised values of each analogue input, select the 'Zero' checkbox next to the input (or click 'Check All' to select all the inputs) and then click 'Save Config to Device.' The counter will then return to zero.

To confirm that the value has been zeroed, click on 'Get Config from Device.'

4.3 Troubleshooting

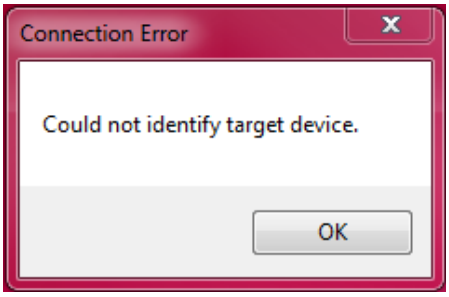
4.3.1 Driver Install Failed

During installing the IO Board Configurator, if the drivers fail to install, please contact Autoflame Technical Support.



4.3.2 Connection Error

When connecting the I/O module to the PC, if the connection error appears, check that the device is powered on and that the unit has been detected by the PC. Please contact Autoflame Technical Support if the error persists.



5 BOTTOM BLOWDOWN BOARD CONFIGURATOR

5.1 Bottom Blowdown Board Configurator Requirements

5.1.1 Introduction

The Bottom Blowdown module can be used either with the Mk7 MM or as standalone. When used with a Mk7 MM, the Bottom Blowdown module must be checked via the Bottom Blowdown Board Configurator prior to connecting to the MM. Before commissioning the module with the MM the battery test and parked position must be tested with the Bottom Blowdown Board Configurator.

For standalone mode, the Bottom Blowdown module must be used in conjunction with an Autoflame 24V DC servomotor controlling the bottom blowdown valve.

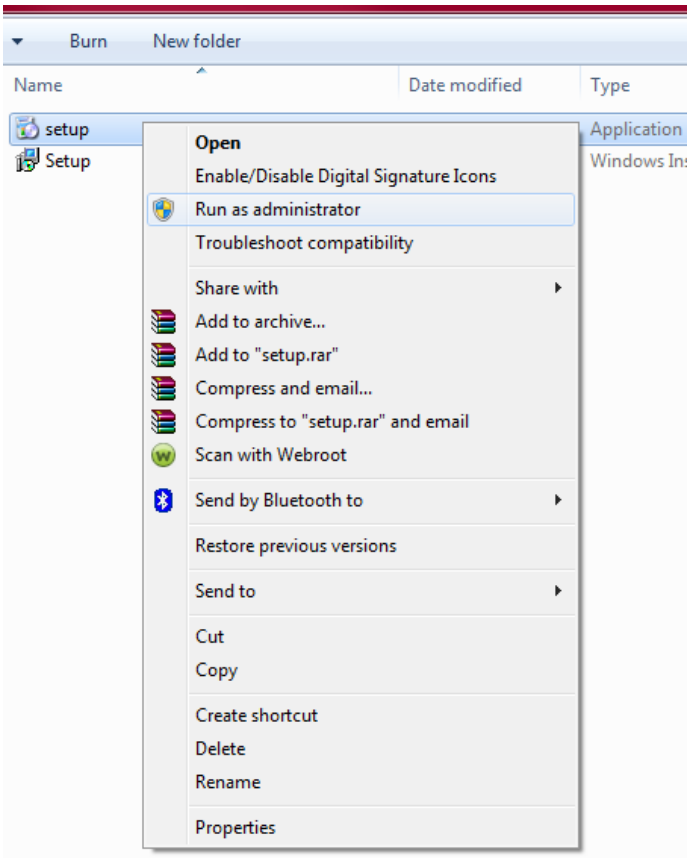
5.1.2 PC Requirements

The Bottom Blowdown Board Configurator is compatible with Windows XP, Windows 7 and Windows 8 for both 32bit and 64bit formats. The software must be installed in Administrator mode.

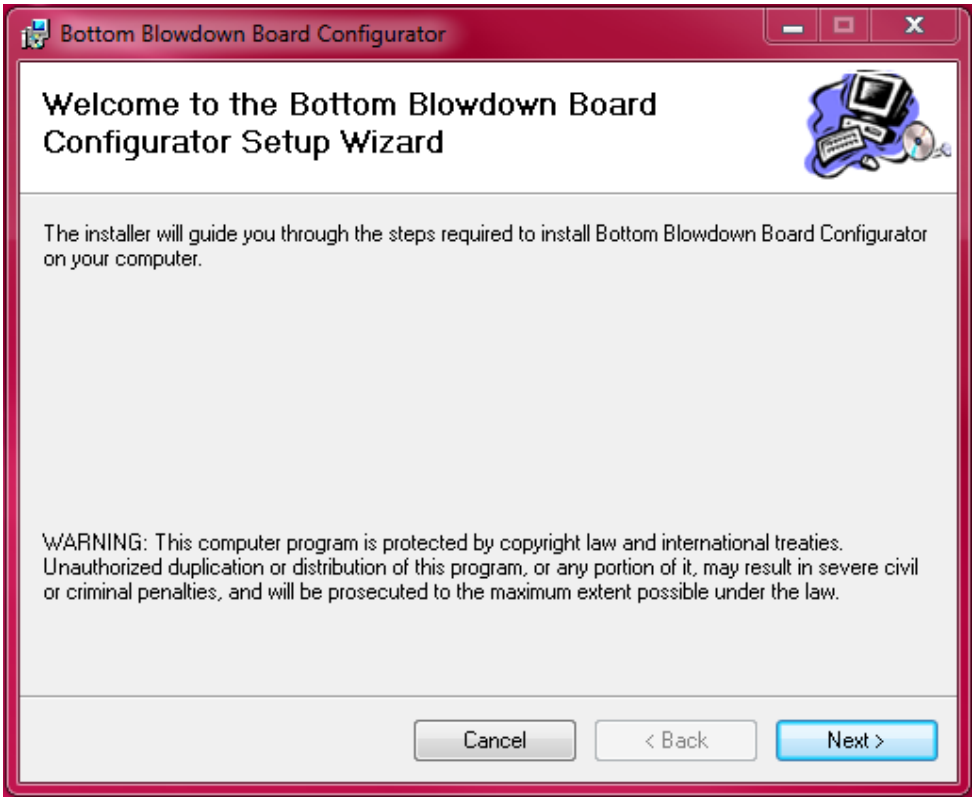
5.2 Installation and Set-Up

5.2.1 Installation

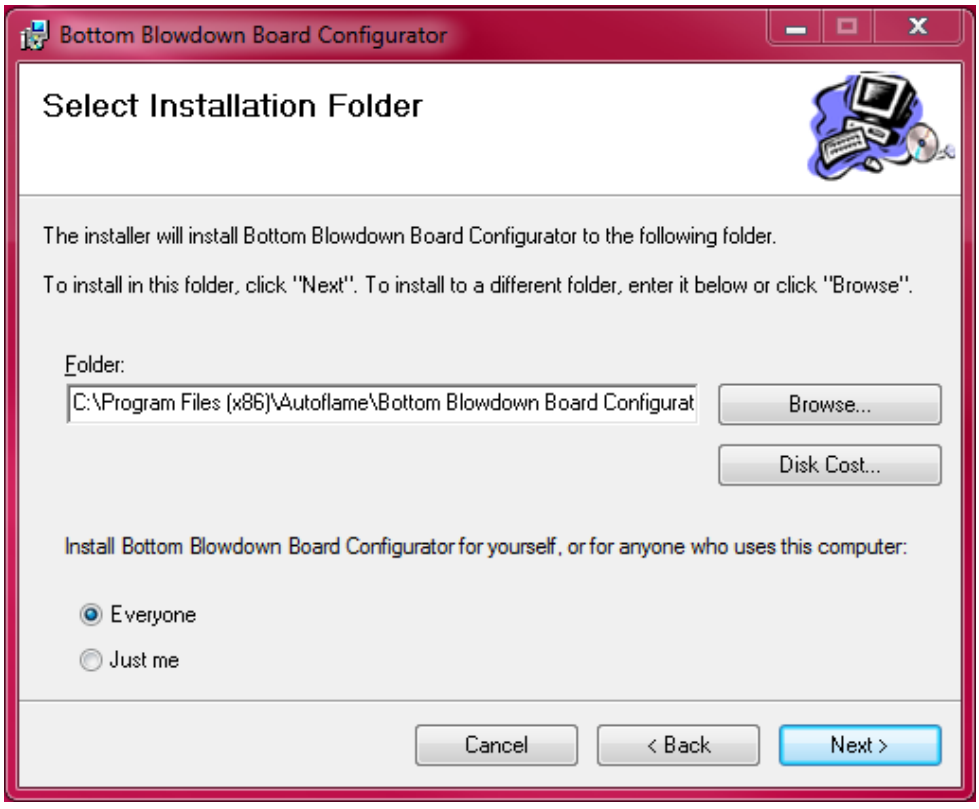
1. From the USB stick provided with the Bottom Blowdown module (or downloaded from the Knowledge Centre on the website), right click on the 'setup' file and click on 'Run as Administrator.'



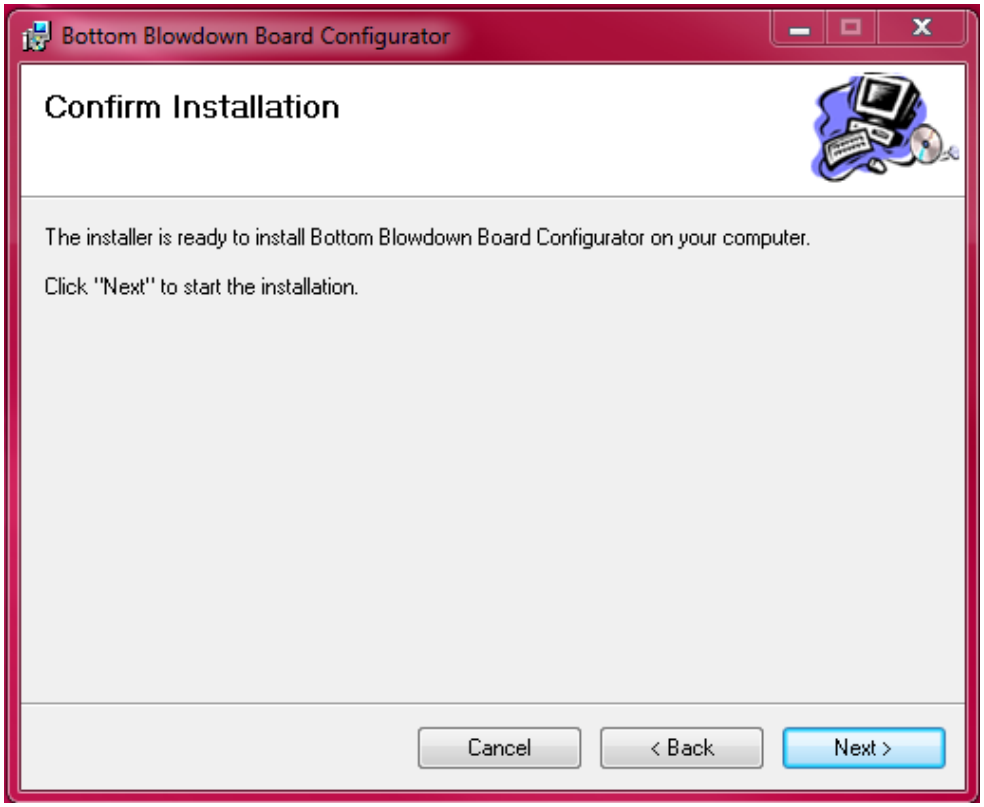
2. The Bottom Blowdown Board Configurator Setup Wizard box will appear. Click 'Next' to begin the software installation.



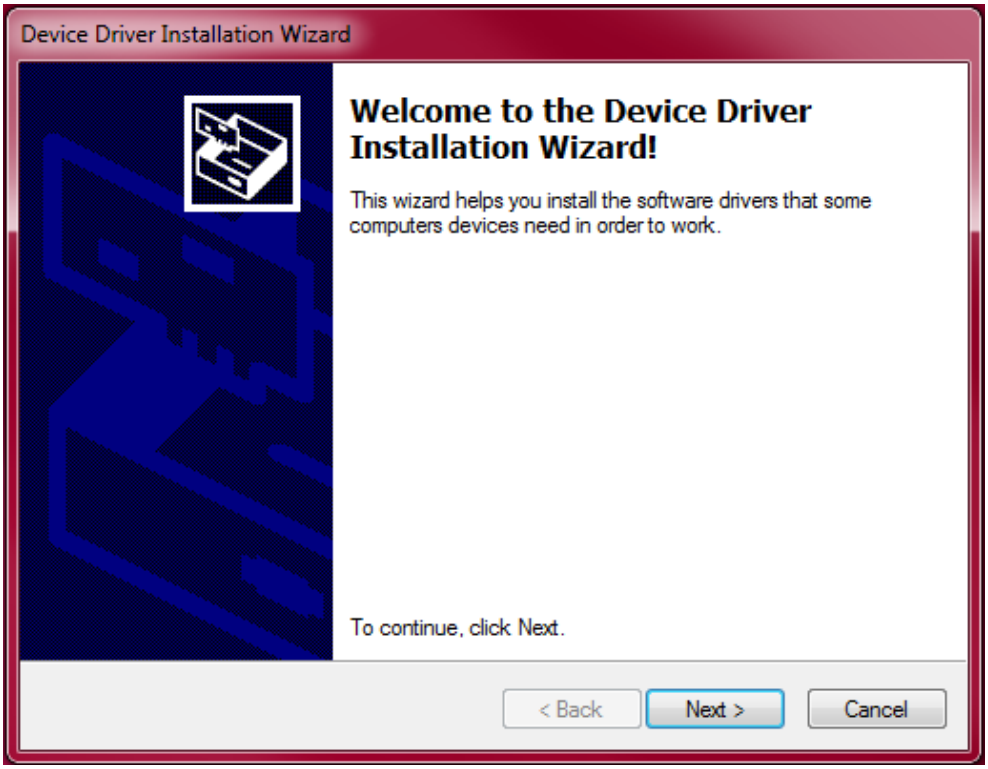
3. Choose the location for the software such as C:\Program Files (x86)\Autoflame\Bottom Blowdown Board Configurator\.



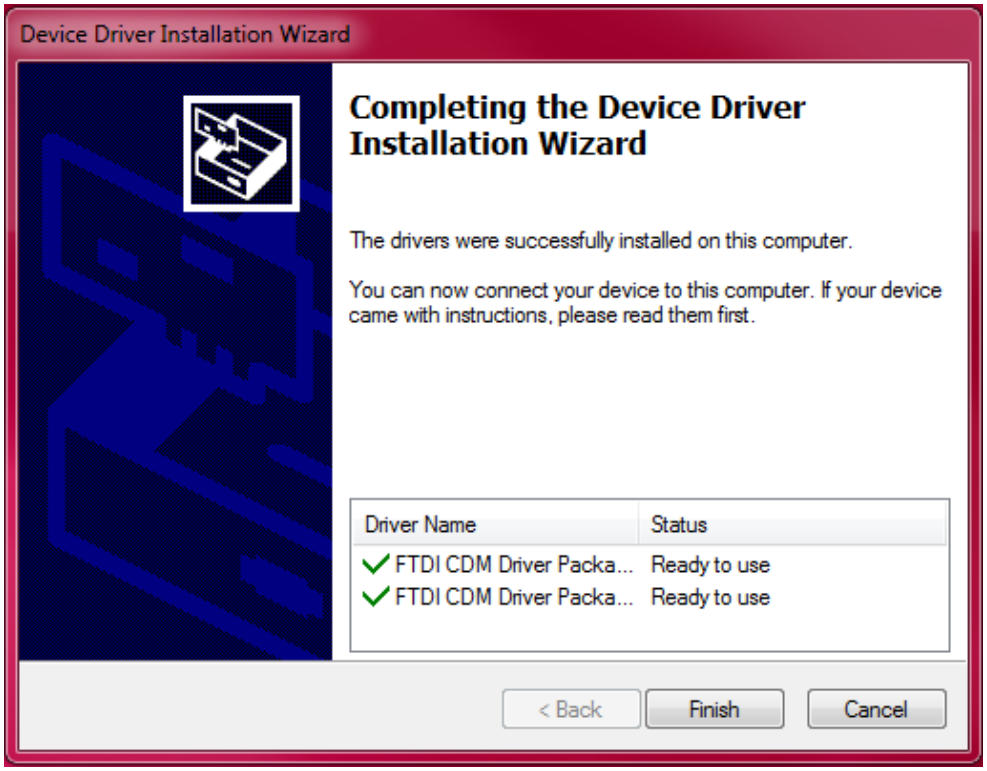
4. Click on 'Next' to begin the installation.



5. The Device Driver Installation Wizard box will appear. Click on 'Next' to continue.

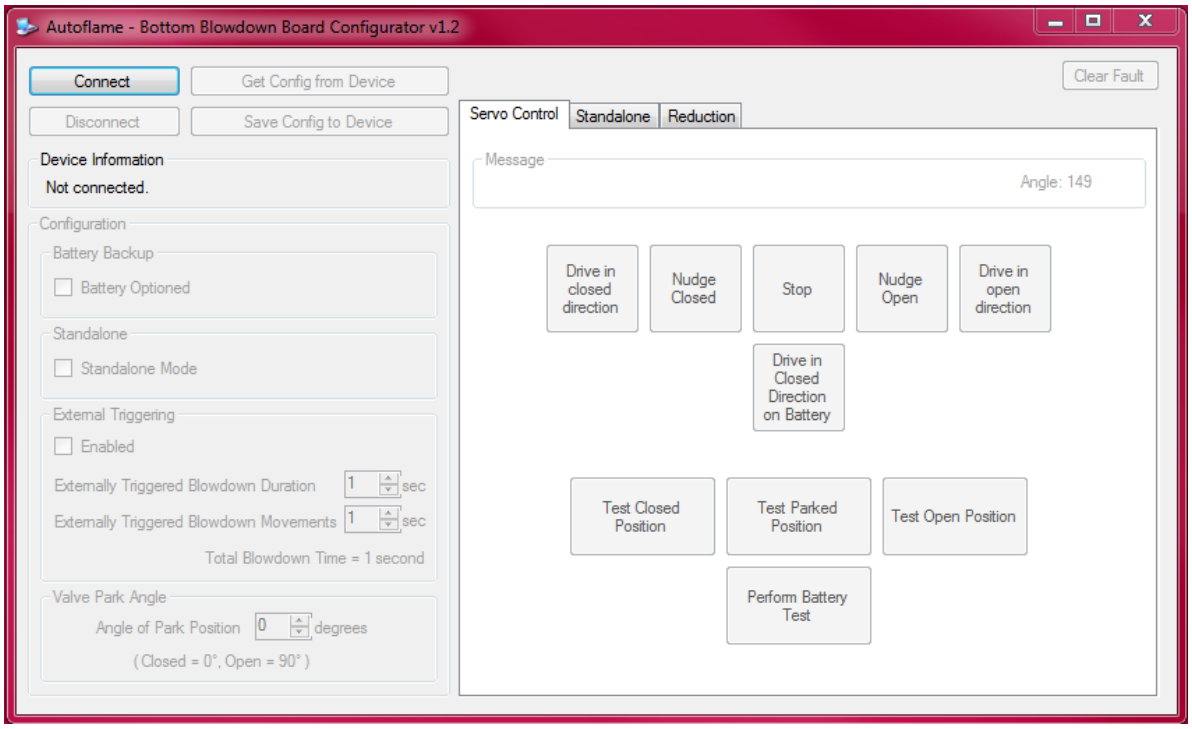


6. Click on 'Finish' once the drivers have been installed.

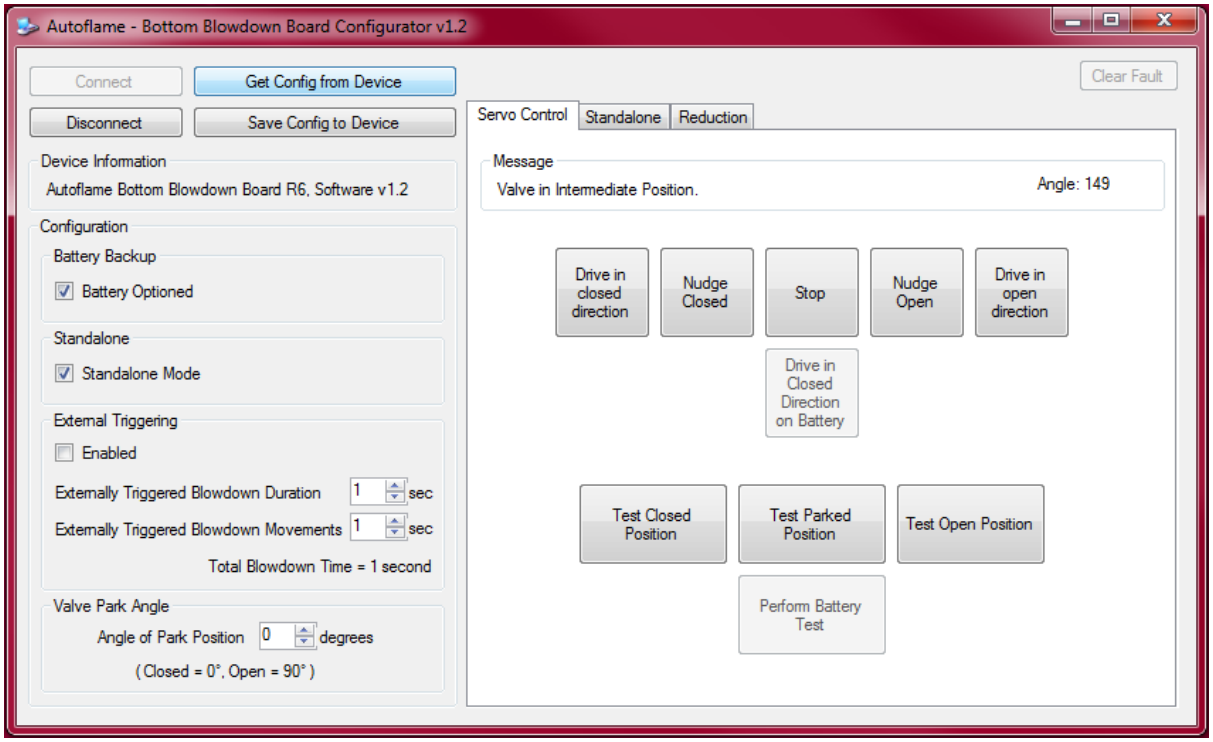


5.2.2 Set-Up

1. Power on the Bottom Blowdown module.
2. Connect the Bottom Blowdown module to the PC via USB to mini-USB cable (as supplied), open the Bottom Blowdown Board Configurator and click 'Connect' to establish connection with the module.



3. Check the tick boxes for 'Battery Backup', 'Standalone' and 'External Triggering' as required. External Triggering is used for when there is an external switch for the timed bottom blowdown trigger (see section 5.3.2). Please set the Valve Park Angle according to the bottom blowdown valve being used. For the Autoflame valves, this should be set at zero degrees.



4. If the valve in use has a closed position between 0° and 90° the valve park angle can be set to reduce the total time between blowdown repeats.

5. The Servo Control tab is used to set the closed and open positions. Similar to the MM commissioning for the Bottom Blowdown module (see Expansion Board Set-Up Guide), the valve can be driven continuously to the closed position or open positions, or nudged in small movements. Click and hold 'Drive in closed direction' and 'Drive in open direction' to drive the valve to the closed and open positions, respectively.

6. Once the open and closed positions have been set, these must be tested individually, by clicking 'Test Open Position', 'Test Closed Position', and 'Test Parked Position.'

7. If the Battery Back-up has been enabled, click on 'Drive in Closed Direction on Battery' to check the battery voltage. The valve is then opened to the parked position using mains power, and then it is driven to the closed position using the battery power to test the battery. If the battery cannot drive the valve to the closed position, a 24V fault will appear. A working battery will have 13V + in the cells, if this falls below 12.4V, there will not be enough voltage in the battery to drive the valve to the closed position should a power failure occur.

8. Click 'Save Config to Device' to store these positions.

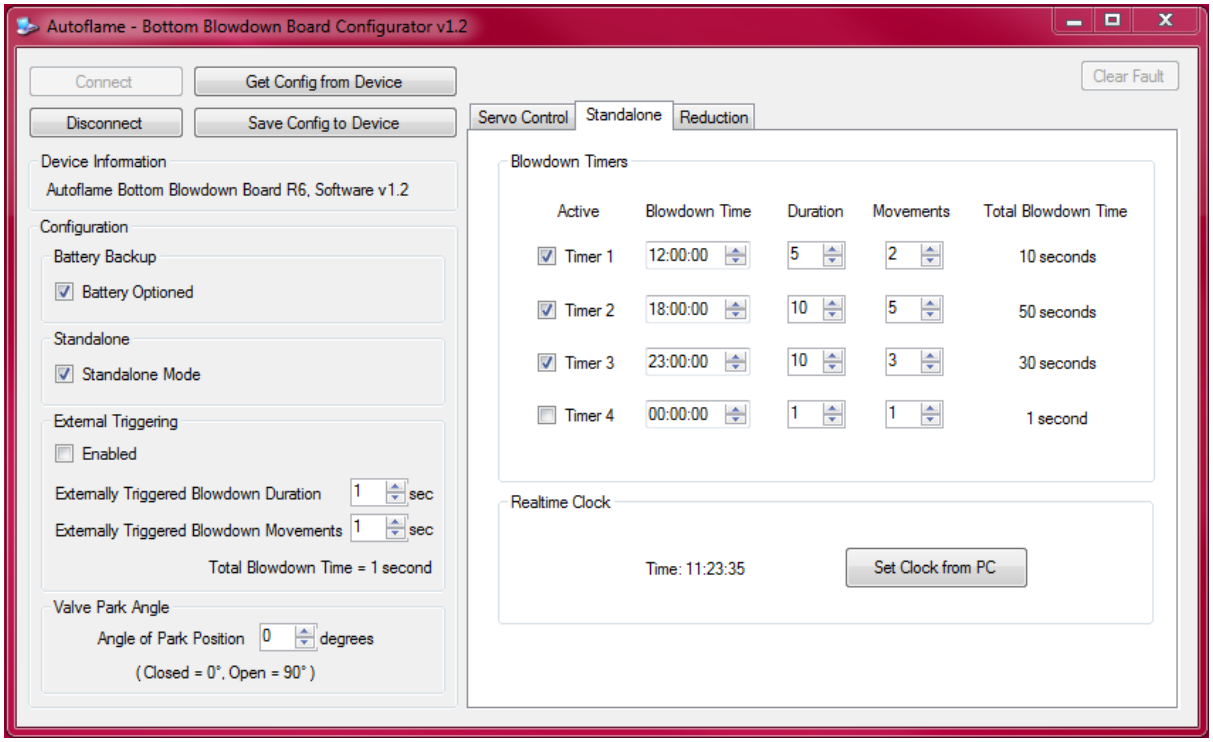
9. For bottom blowdown with an MM, connect to the MM and follow the steps in Expansion Set-Up Guide section 5.2. For standalone operation, go to section 5.3 of this guide.

5.3 Standalone Mode

5.3.1 Standalone Blowdown Timings

1. When using the Bottom Blowdown module for standalone operation, ensure Standalone Mode is ticket in step 3. Click on the Standalone tab. Choose how many timed blowdowns, and their durations and movements are required. There can be a maximum of 4 timed blowdowns, each with maximum duration of 60s, and maximum movements (repeats) of 10.

2. Click 'Set Clock from PC' to the set the time from the PC.



3. Click 'Save Config to Device' to store these timed blowdowns.

5.3.2 External Triggering

1. If External Triggering has been enabled, set the duration and repeats of the externally triggered blowdown.

2. Click 'Save Config to Device' to store the external triggering settings.

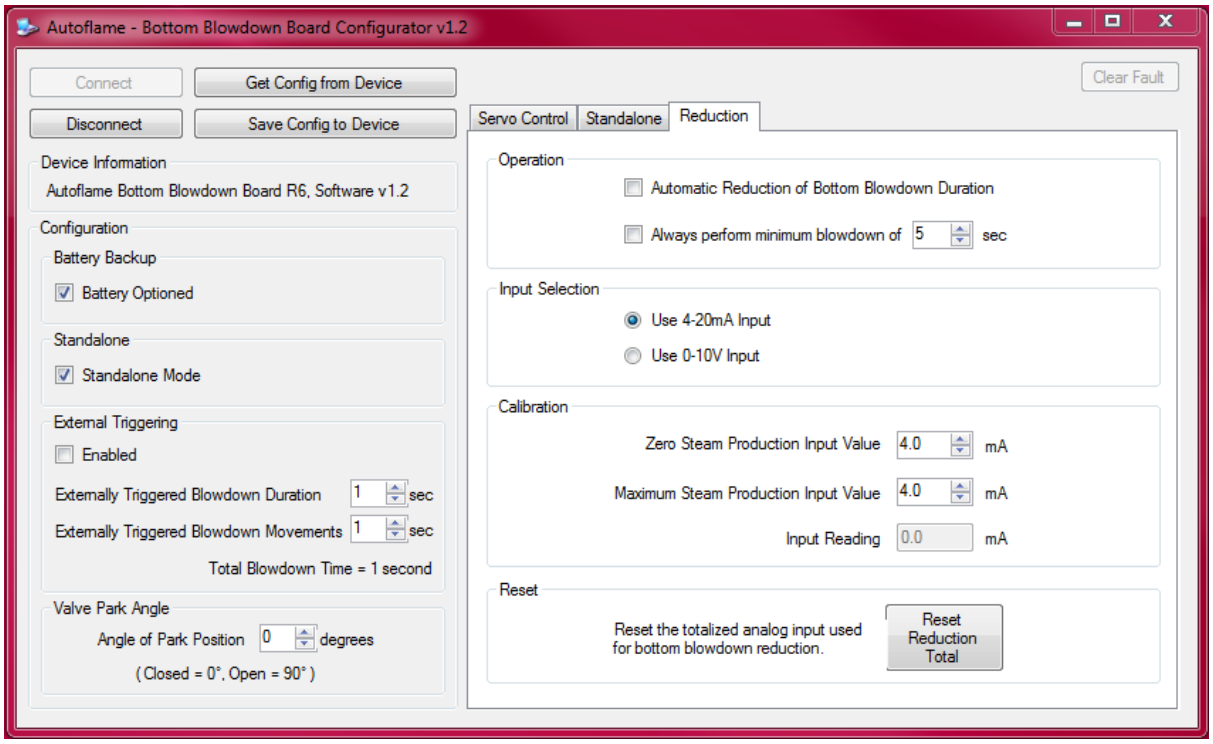
5.3.3 Standalone Automatic Reduction of Bottom Blowdown Duration

1. Go to the Reduction tab to set the time reduced bottom blowdown in standalone operation (see Expansion Board Set-Up Guide for more information on savings from time reduced bottom blowdown). A minimum blowdown time can also be set to that if time reduced bottom blowdown it set, and then the time of the blowdown will never go below this value.

2. Choose how the steam production is fed through to the Bottom Blowdown module, either via a 4-20mA or 0-10V input.

3. Configure the calibration for the zero and maximum steam production input values.

4. Click on 'Reset Reduction Total' to reset the totalised analogue input reading.

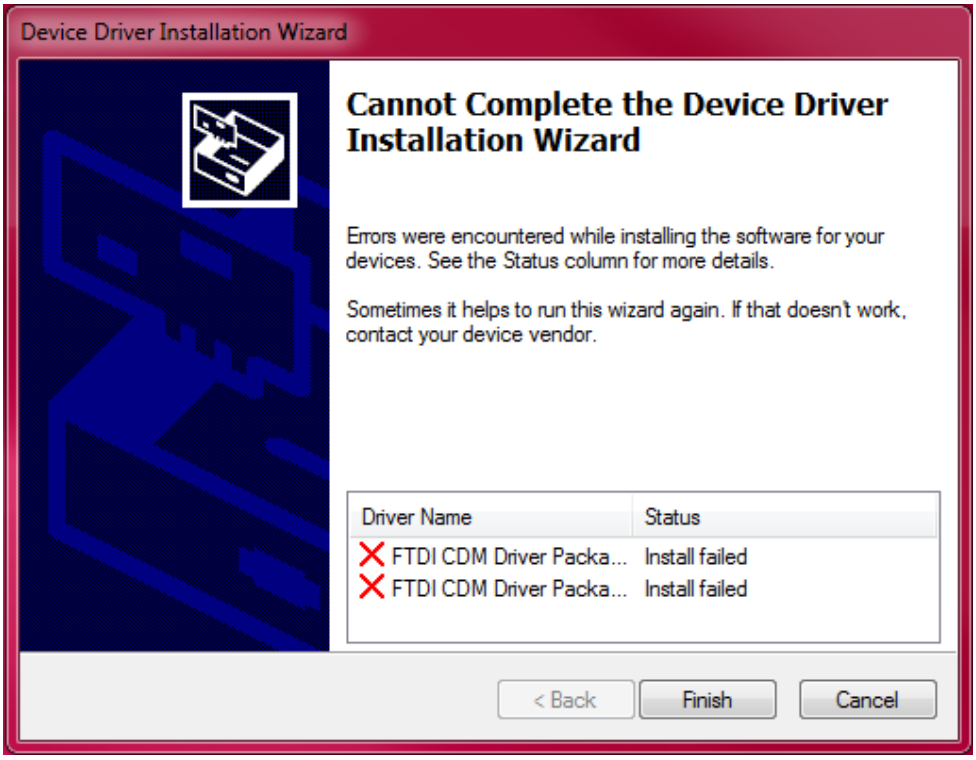


5. Click 'Save Config to Device' to store the time reduced bottom blowdown settings.

5.4 Troubleshooting

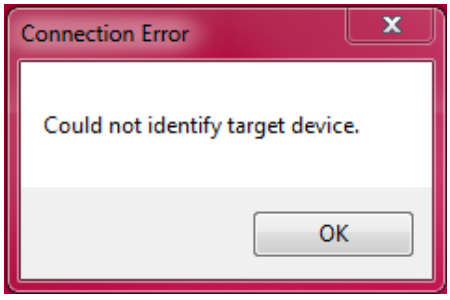
5.4.1 Driver Install Failed

During installing the IO Board Configurator, if the drivers fail to install, please contact Autoflame Technical Support.



5.4.2 Connection Error

When connecting the Bottom Blowdown module to the PC, if the connection error appears, check that the device is powered on and that the unit has been detected by the PC. Please contact Autoflame Technical Support if the error persists.



5.4.3 Movement Fail

If during testing the positions or battery test any error appears such as 'Movement FAIL', or 'Close FAIL', check the wiring to the servomotor and the bottom blowdown valve. Power down the unit and check the valve rotation with the motor hand rotation key provided with the servomotor. Unic 10's only have 110° of movement; ensure that the movement is in the reading range. If not, please contact Autoflame for zeroing steps.

6 EMISSIONS CALCULATOR

6.1 Emissions Calculator Requirements

6.1.1 Introduction

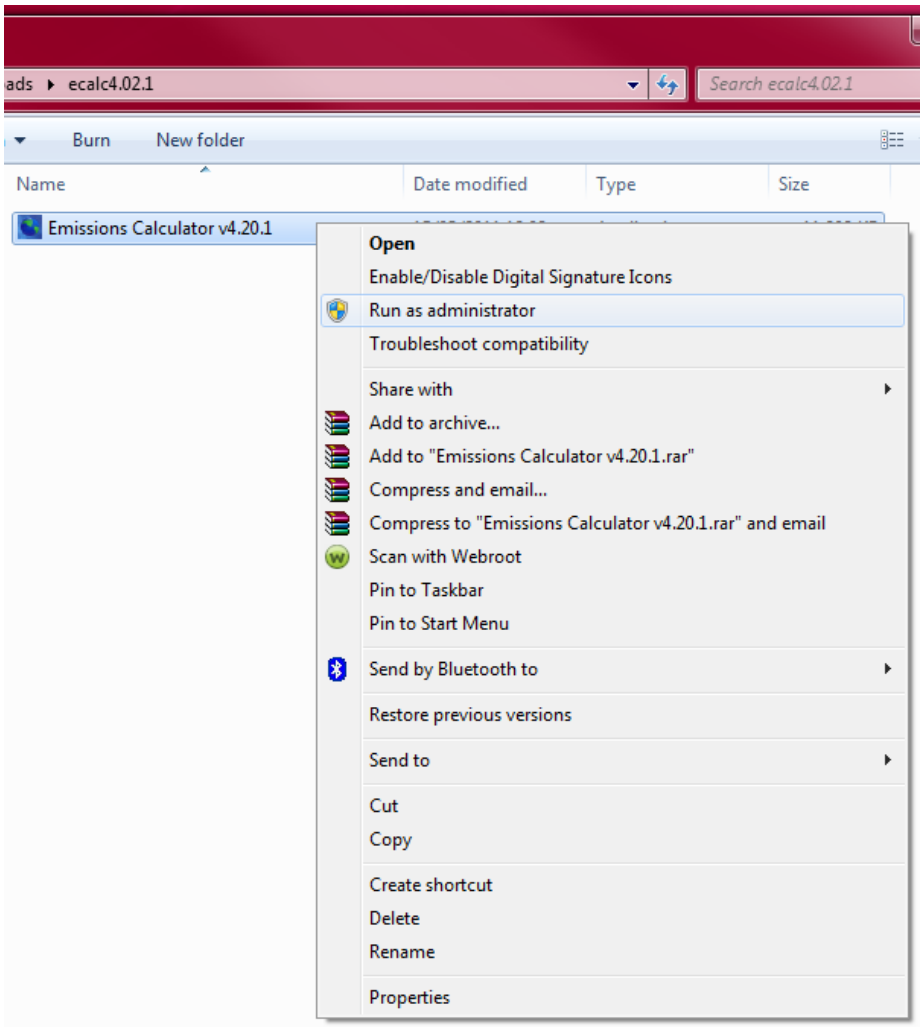
The Emissions Calculator reviews energy reduction savings through improvements in burner performance, and the savings possible via improvements in the control system. By calculating the amount of heat released by the fuel and the temperatures of the exhaust gases leaving the boiler, the amount of heat transfer to the water within the boiler can be deduced.

6.1.2 PC Requirements

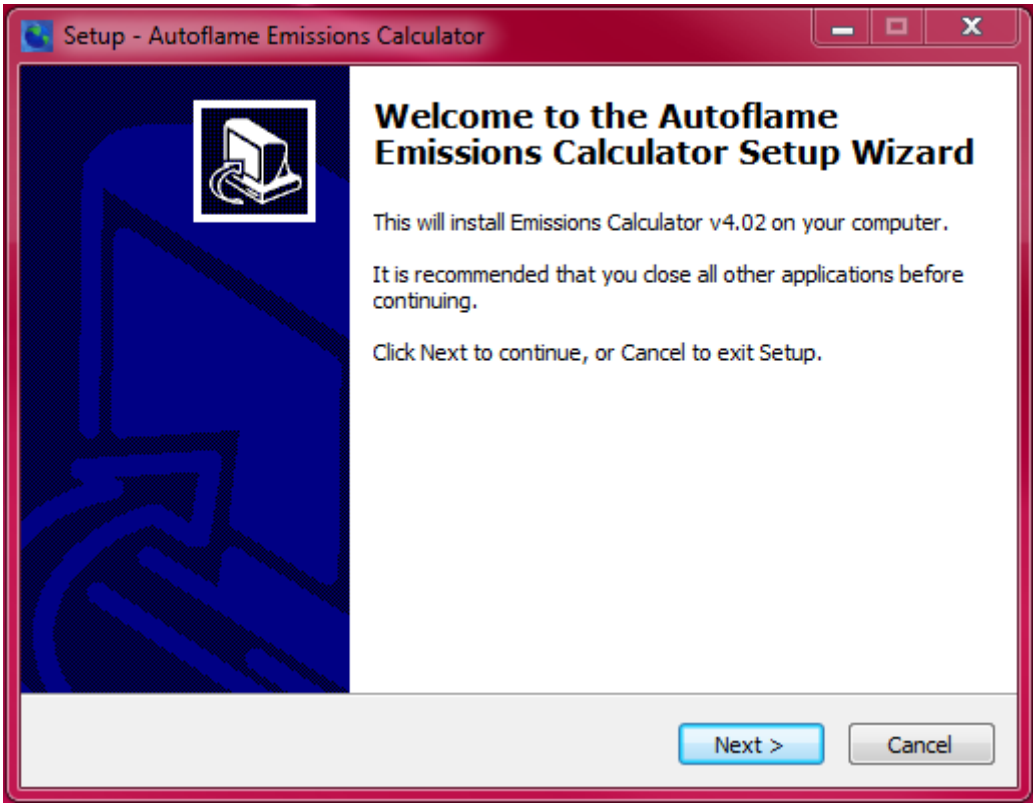
The Emissions Calculator is compatible with Windows Vista, Windows 7 and Windows 8, for both 32bit and 64bit formats.

6.2 Installation

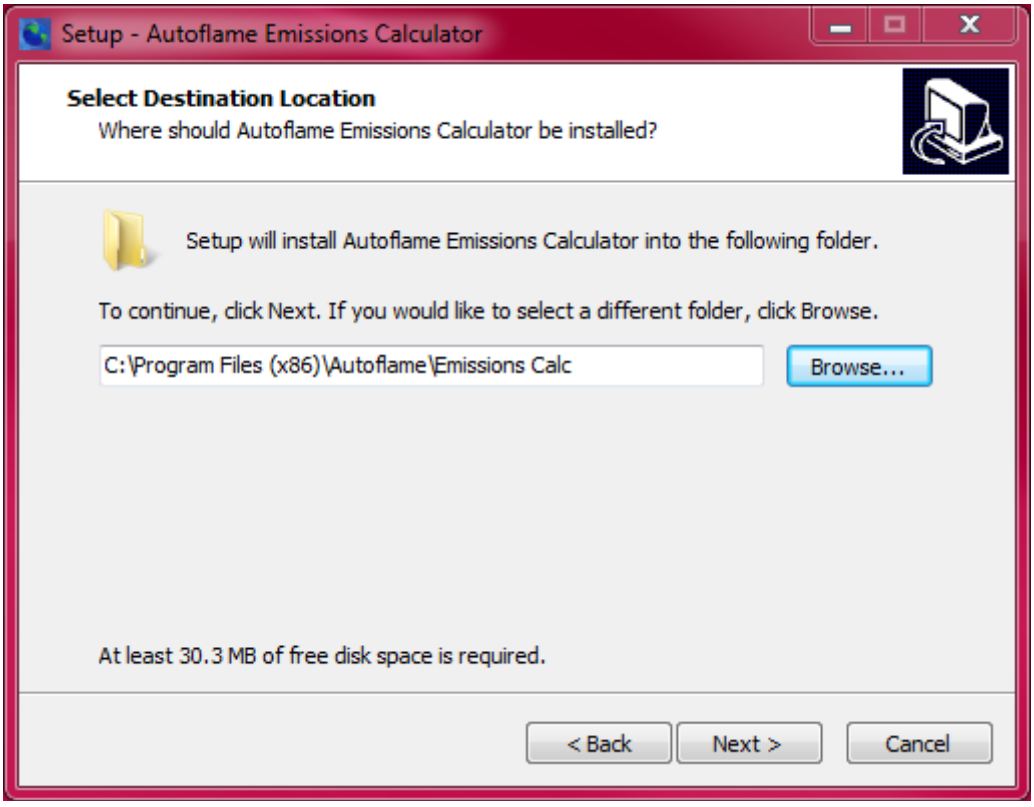
1. Download the Emissions Calculator from the website, right click and click on 'Run as Administrator'.



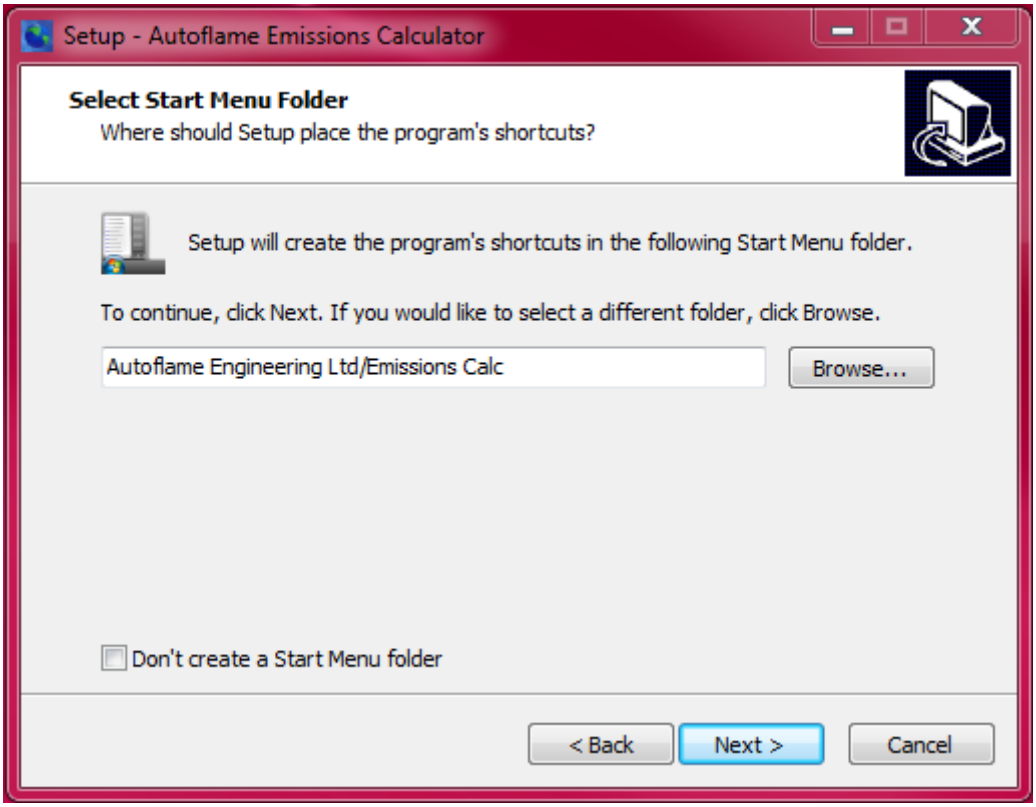
2. The Autoflame Emissions Calculator Setup Wizard box will appear. Click 'Next'.



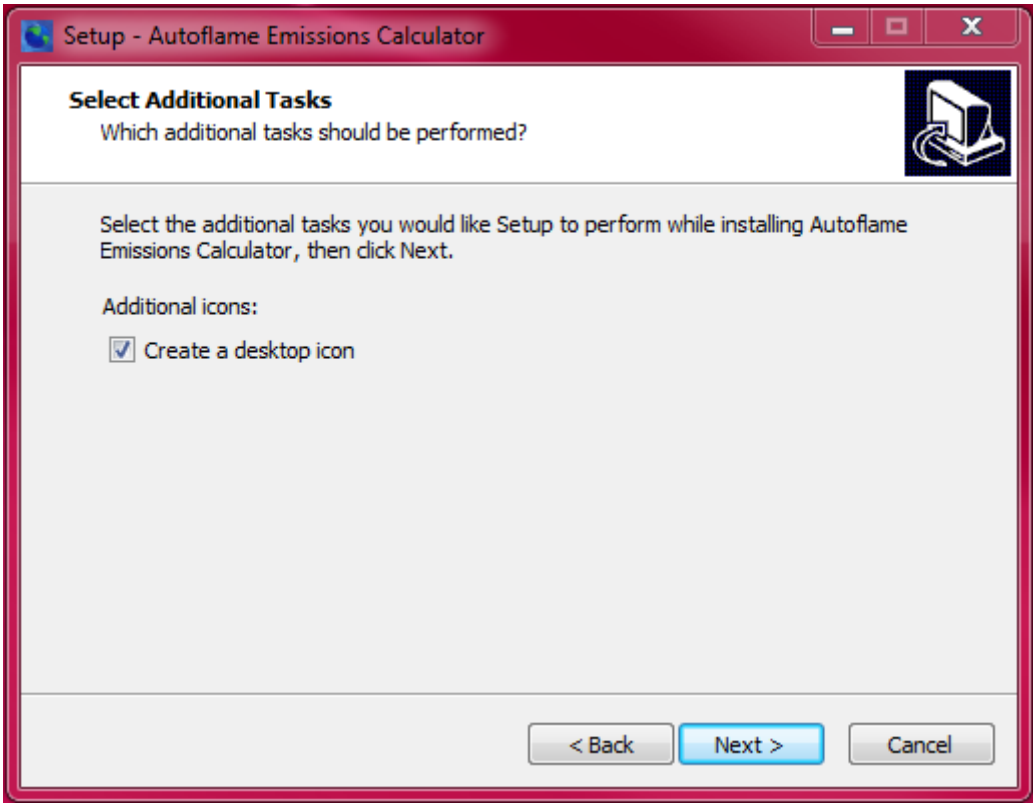
3. Choose a location for the Emissions Calculator software such as C:\Program Files (x86)\Autoflame\Emissions Calc and click 'Next'.



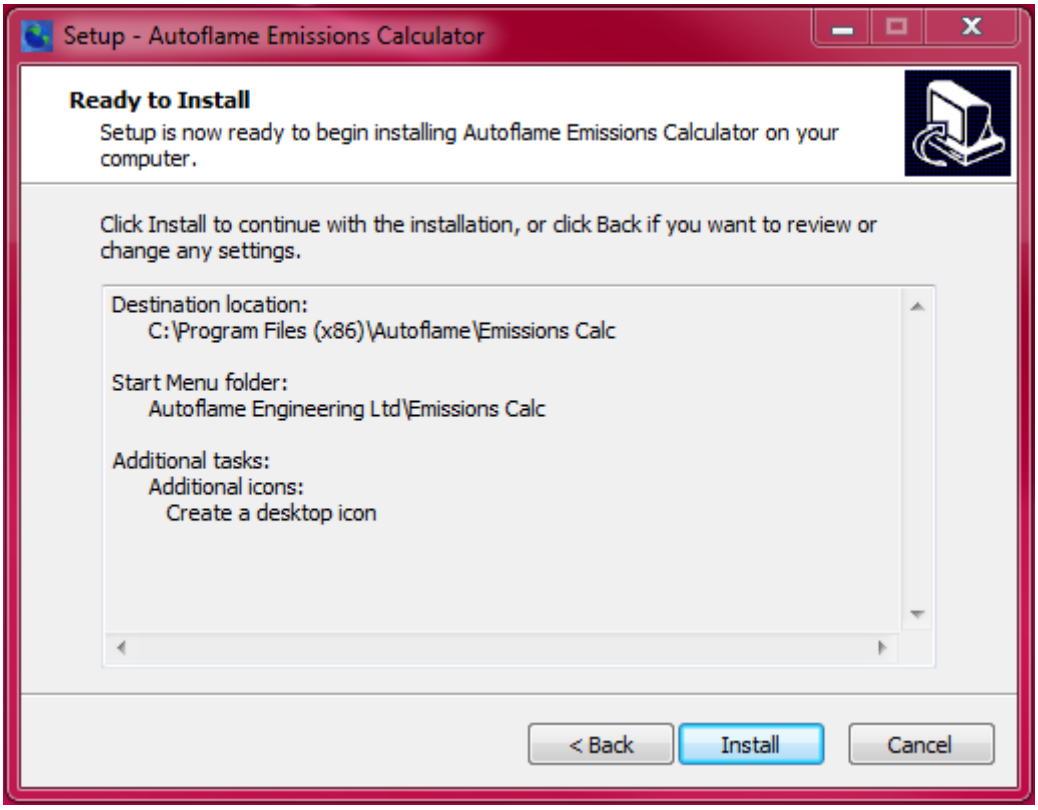
4. Choose if a Start Menu folder is required and click 'Next'.



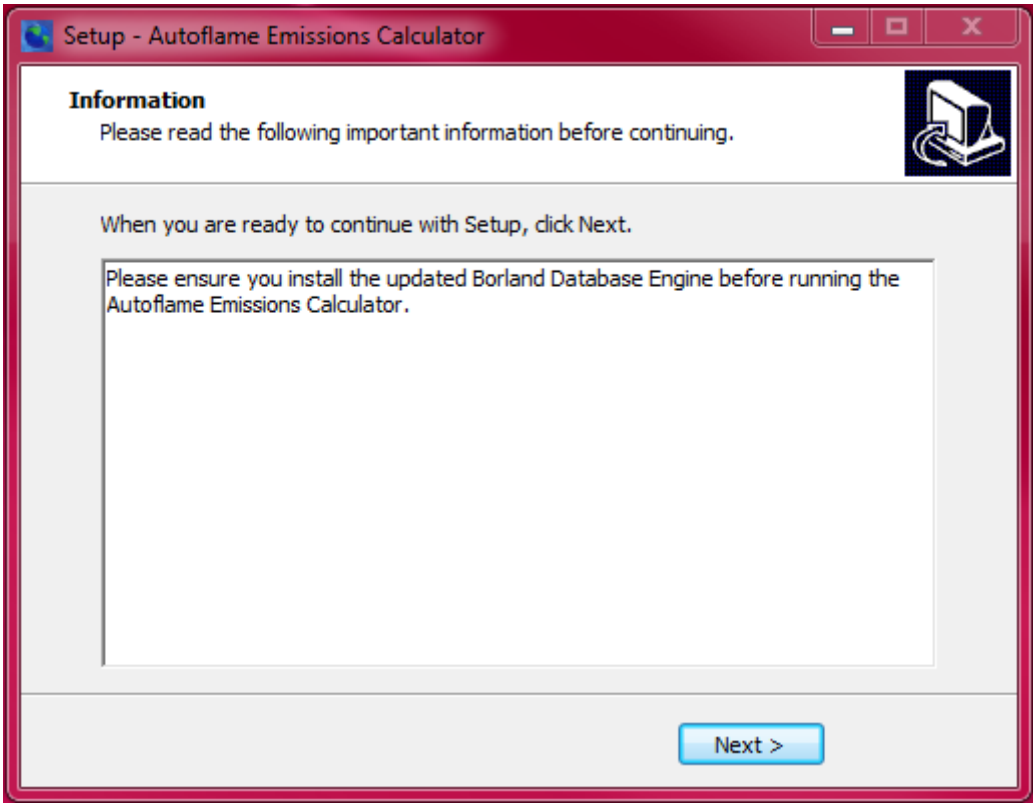
5. Choose if a desktop icon is required and click 'Next'.



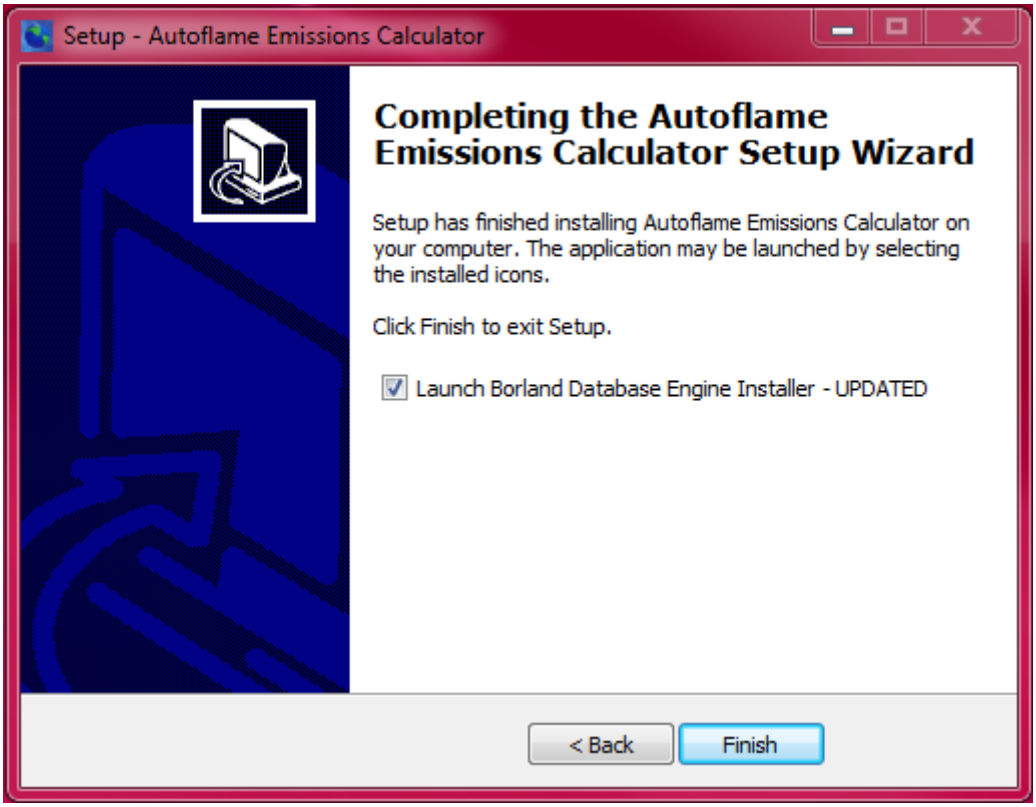
6. Click 'Install' to begin installing the software.



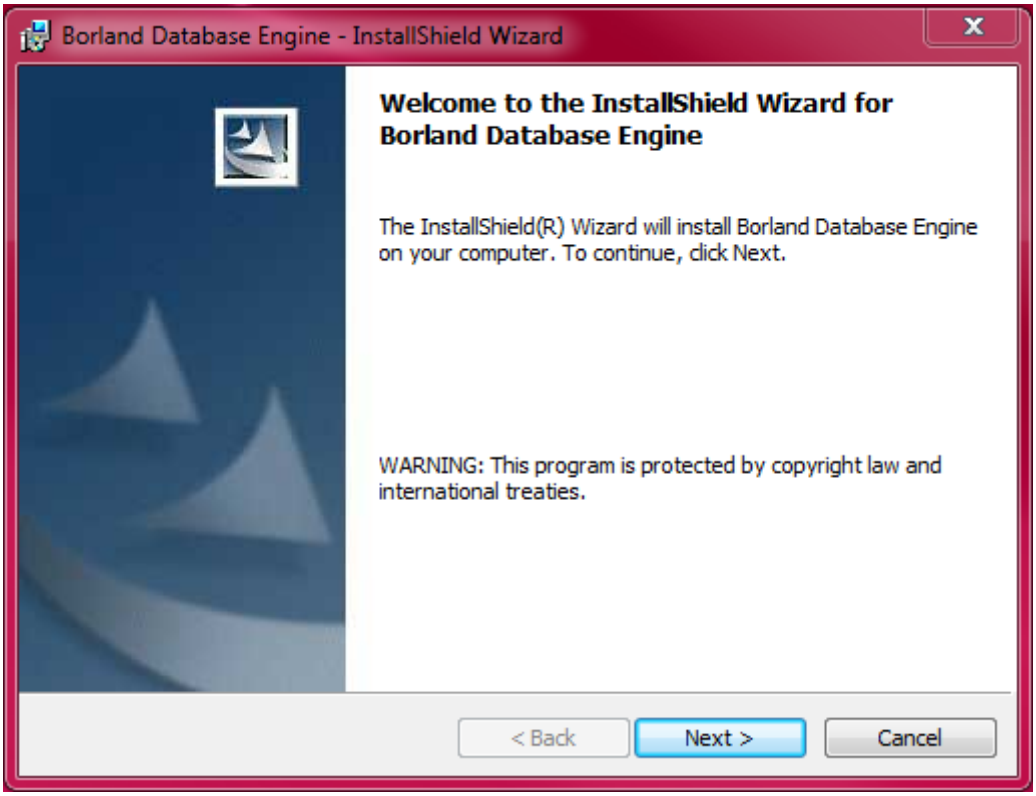
7. Click 'Next' to continue with the installation.



8. Click 'Finish' to complete the installation.

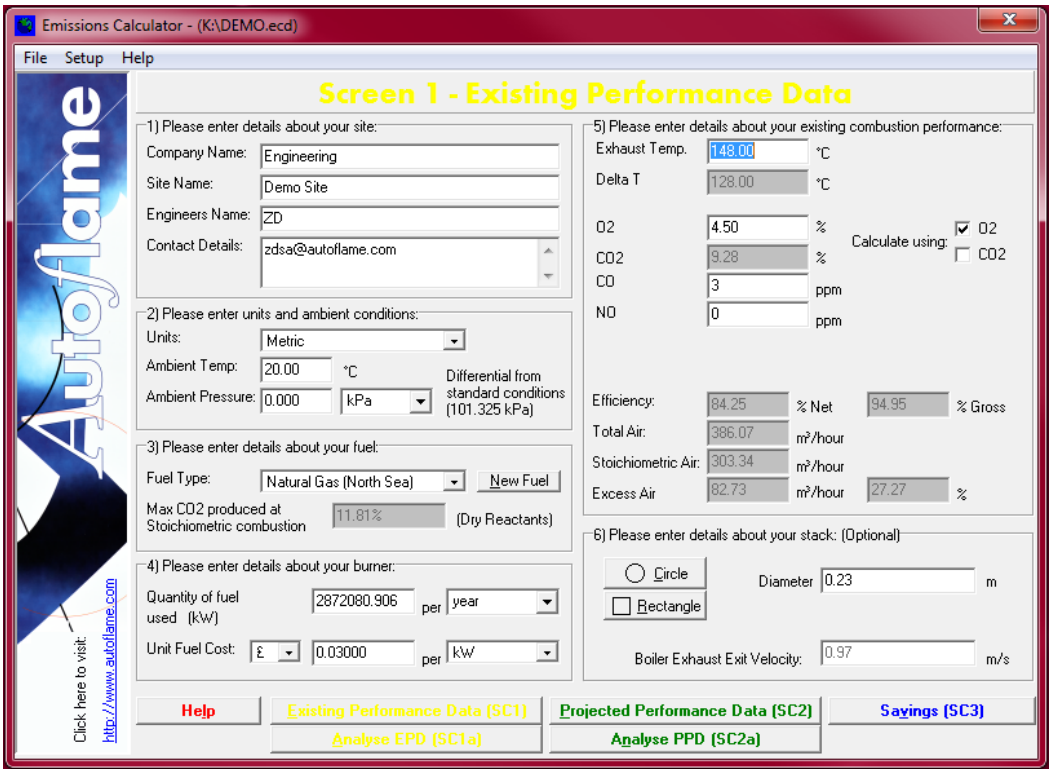


9. If Launch Borland Database Engine Installer was selected, click 'Next' to install the Borland Database Engine, then click 'Finish'.

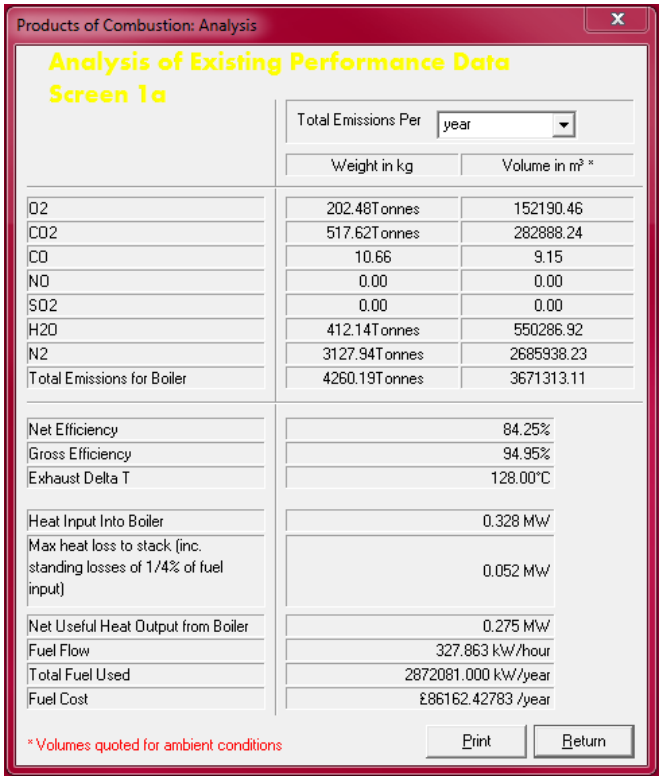


6.3 Emissions Report

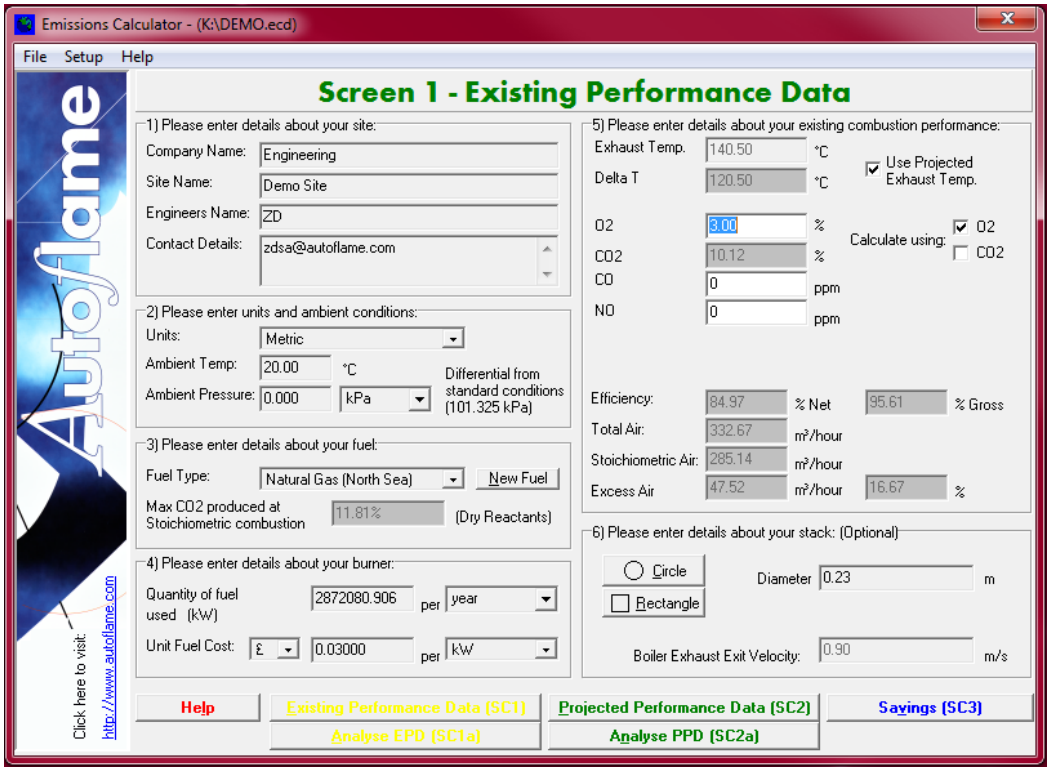
1. Enter the following information: site details, units and ambient conditions, type of fuel burned, fuel usage, existing exhaust gas readings and stack dimensions.



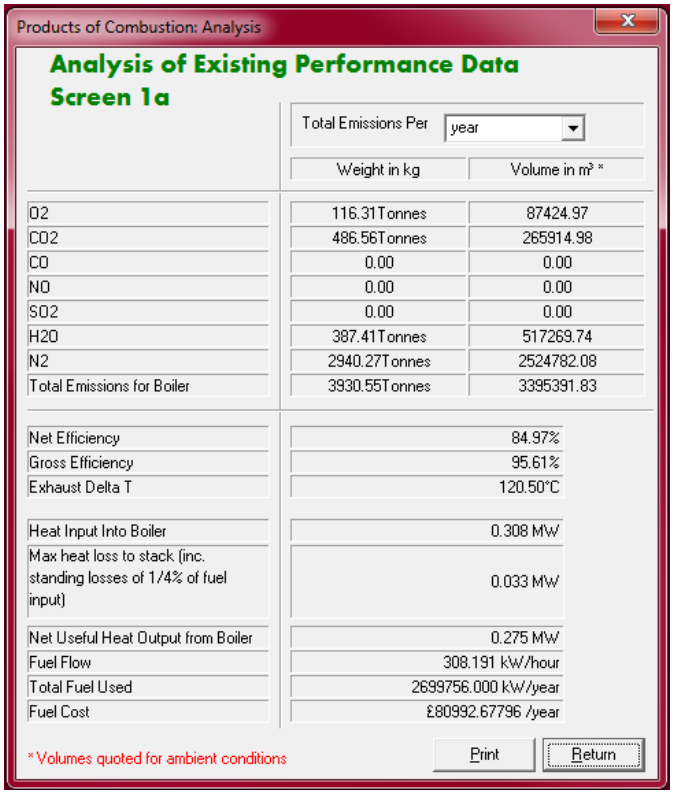
2. Click on 'Analyse PPD (SC1a)' to view the analysis of the existing performance data.



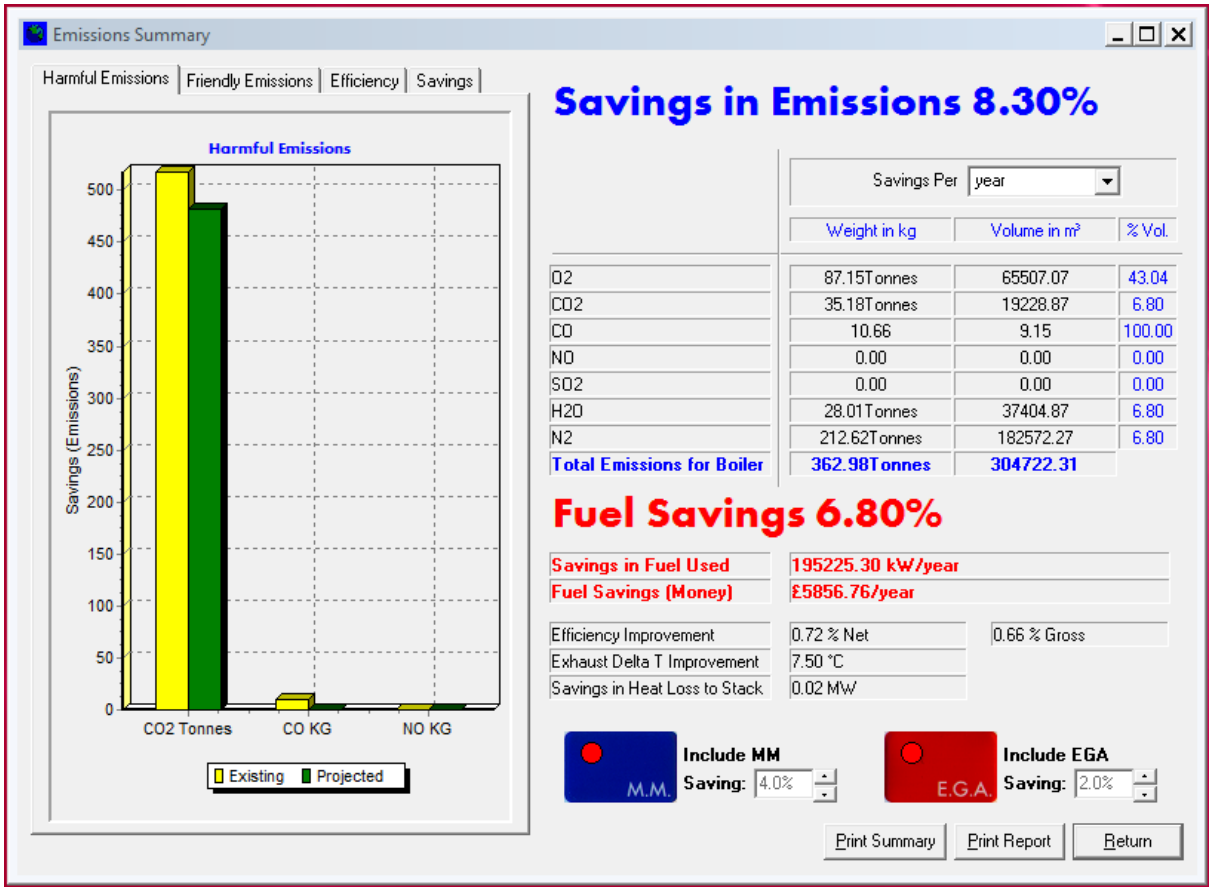
3. Click on 'Projected Performance Data (SC2)'. Choose whether to use the exhaust temperature for the existing performance data, and type in the projected exhaust values.



4. Click on 'Analyse PPD (SC2a) to view the projected fuel consumption and emissions.



5. Click on 'Savings (SC3)' to view the emissions summary. Choose whether an MM and EGA is optioned, and how much savings they contribute by using the up and down arrows.



6. Click on 'Friendly Emissions', 'Efficiency', and 'Savings' tabs to view the different graphs. Click on 'Print Summary' or 'Print Report' to view the emissions reports.

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