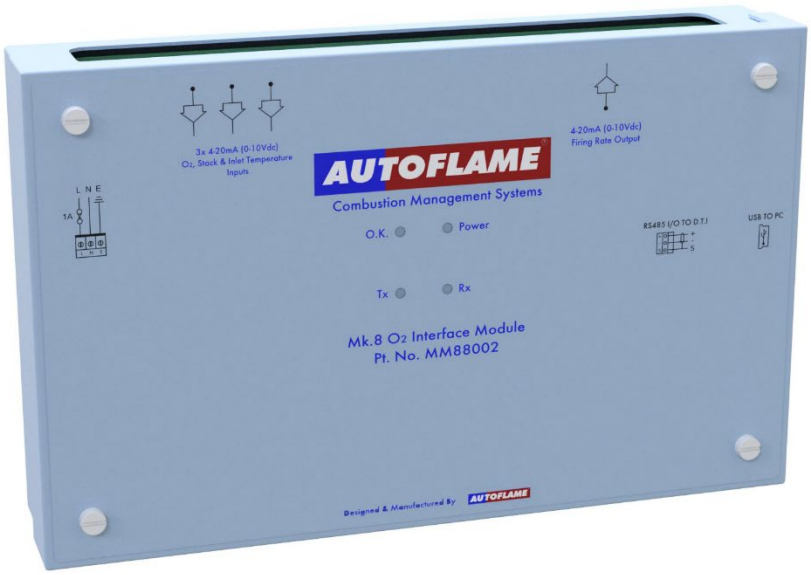
AUTOFLAME®

Combustion Management Systems



AUTOFLAME MODULES GUIDE

- Analogue-Digital I/O Module
- O_2 Interface Module
- Bottom Blowdown Module

22.01.2021

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AUTOFLAME
MODULES GUIDE

22.01.2021

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Autoflame Engineering Ltd's policy is one of continuous improvement in both design and manufacture. We therefore reserve the right to amend specifications and/or data without prior notice. All details contained in this manual are correct at the time of going to print.

Important Notes

A knowledge of combustion related procedures and commissioning is essential before embarking work on any of the MM/EGA systems. This is for safety reasons and effective use of the MM/EGA system. Hands on training is required. For details on schedules and fees relating to group training courses and individual instruction, please contact the Autoflame Engineering Ltd. offices at the address listed on the front.

Short Form - General Terms and Conditions

A full statement of our business terms and conditions are printed on the reverse of all invoices. A copy of these can be issued upon application, if requested in writing.

The System equipment and control concepts referred to in this Manual MUST be installed, commissioned and applied by personnel skilled in the various technical disciplines that are inherent to the Autoflame product range, i.e. combustion, electrical and control.

The sale of Autoflame's systems and equipment referred to in this Manual assume that the dealer, purchaser and installer have the necessary skills at their disposal. i.e. A high degree of combustion engineering experience, and a thorough understanding of the local electrical codes of practice concerning boilers, burners and their ancillary systems and equipment.

Autoflame's warranty from point of sale

- Two years on all electronic and electro-mechanical equipment, assemblies and components.
- One year on all EGA systems and UV & IR scanners, including parts, components, cells and sensors.

The warranty assumes that all equipment supplied will be used for the purpose that it was intended and in strict compliance with our technical recommendations.

Autoflame's warranty and guarantee is limited strictly to product build quality, and design. Excluded absolutely are any claims arising from misapplication, incorrect installation and/or incorrect commissioning.

IMPORTANT SAFETY NOTES

Autoflame equipment must only be installed, wired, commissioned and adjusted by an Autoflame trained and certified technician.

Any person installing, wiring, commissioning or adjusting the equipment without undergoing proper Autoflame training and without full understanding of the Micro Modulation (MM) system may put themselves and others in a seriously dangerous situation that can result in serious injury or even death, and may cause permanent equipment failure and substantial property damage.

Some of the wiring connections are live, make sure to safely isolate the mains power before undergoing any work related to the Autoflame systems. Failure to do so can result in fatal injury.

This guide must be read in conjunction with the relevant MM system manual.

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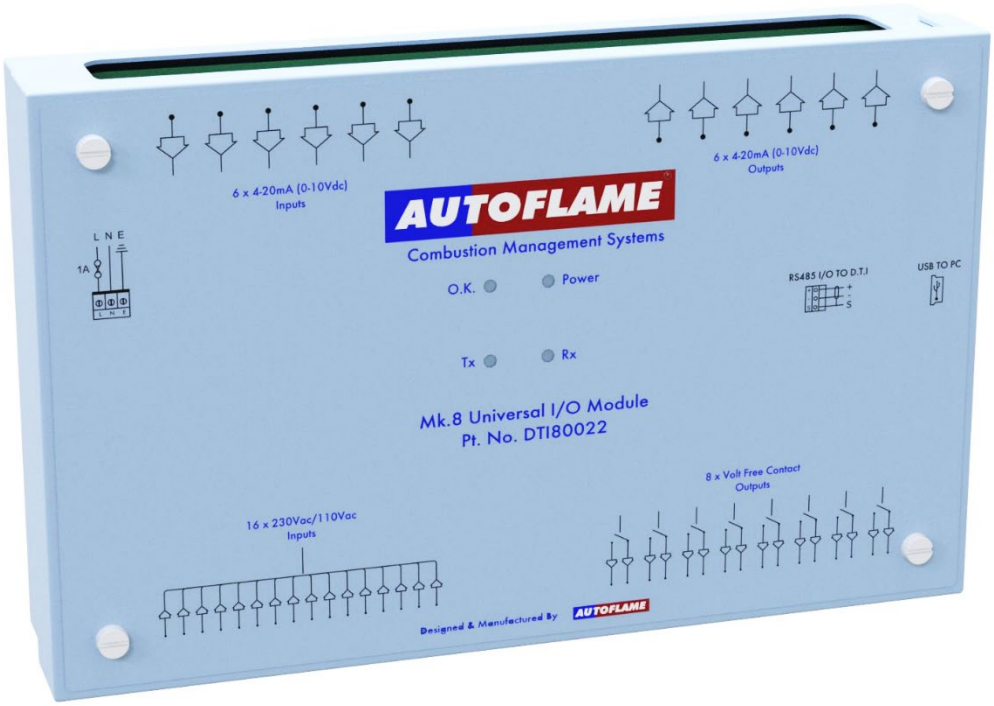
1. MK8 UNIVERSAL INPUT / OUTPUT MODULE – DTI80022

1.1. Overview & Compatibility

The Mk8 Universal Input / Output Module enables the connection of 3rd party equipment in the boiler plant to the MK8 DTI for the purpose of monitoring and data logging. It also enables the use of analogue servomotors to with the Mk8 MM. This module also allows the connection of third party analogue sensors to the Mk8 MM for heat flow metering purpose.



Each MK8 I/O module has the following terminals:

- 16 digital line inputs
- 8 volt-free contacts
- 6 analogue inputs
- 6 analogue outputs

Specifications	
Supply Voltage	120V / 230V AC
Communication	RS485
IP Rating	IP20
NEMA Rating	1
Max. Operating Temperature	60°C (140°F)
Min. Operating Temperature	0°C (23°F)
Warranty	2 years limited warranty

The Mk8 IO Module is compatible with the Mk8 DTI and the Mk8 MM only.

1.2. Applications

1.2.1. Using Analogue Servomotors with the Mk8 MM

Third party analogue servomotors (4-20mA, 0-20mA, 0-10V) can be used with the Mk8 MM in conjunction with an Autoflame universal Mk8 IO Module. The IO module acts as an interface between the MM and the analogue servomotors. The MM will send an analogue signal out from the IO module for the position of the servomotor for it to move according to the commissioned fuel-air curve and receives an analogue signal back to the IO module to indicate where the servomotor position is currently.
Please refer to the Mk8 MM Manual for full details.

1.2.2. Using Analogue Temperature Sensors with the Mk8 MM

The Mk8 IO module enables the connection of third party analogue temperate sensors (4-20mA, 0-20mA, 0-10V) to the Mk8 MM for the purpose of heat flow metering (steam flow metering / hot water flow metering). Please refer to the Mk8 MM Manual for full details.

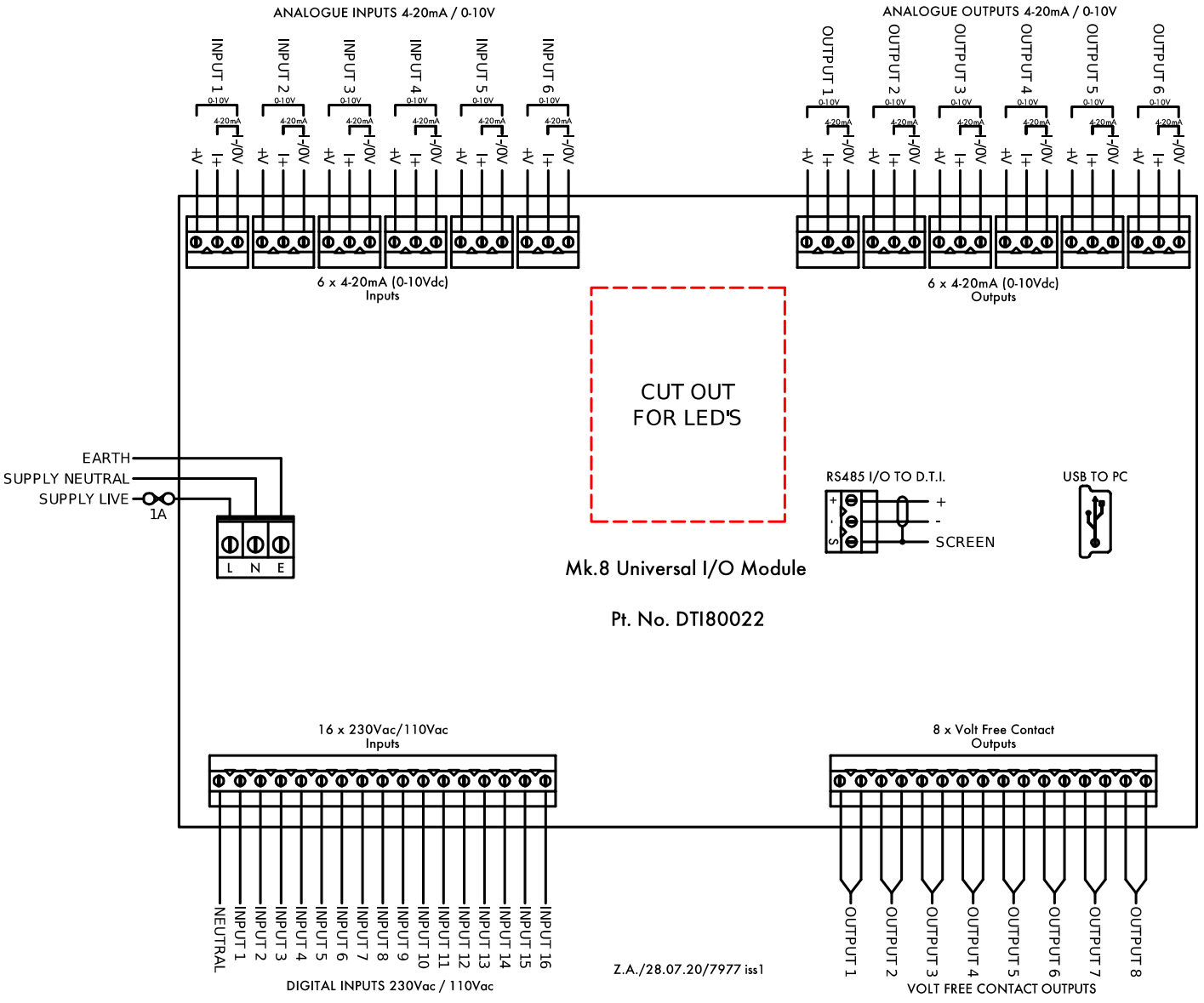
1.2.3. Use with the Mk8 DTI

The Mk8 Universal Input / Output Module enables the connection of 3rd party equipment in the boiler plant to the MK8 DTI for the purpose of monitoring and data logging.

The Mk8 I/O module is capable of totalising the input data internally, allowing the unit to run as a standalone unit. Coupled together with the Mk8 DTI, the Mk8 Universal I/O module gives detailed logging of the inputs and outputs. The Mk8 DTI can control the analogue and digital outputs, for a maximum of 10 Mk8 I/O modules. The data gathered by the Autoflame Mk8 DTI for the Mk8 I/O modules is logged for 3 years.

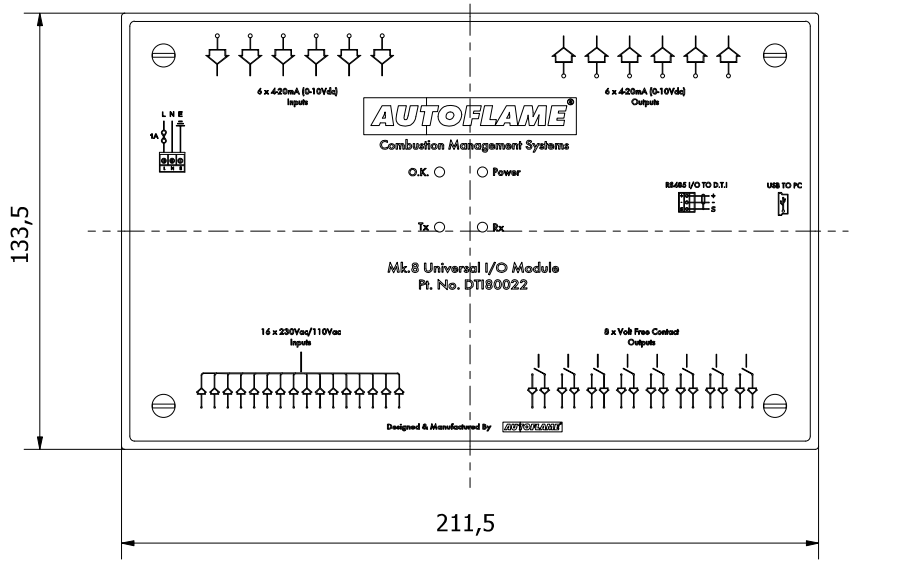
It is also possible to set rules using the DTI Rules System for an IO module output to react in a desired way in response to a certain event triggered by an input or by an MM event. Please refer to the Mk8 DTI manual for full details

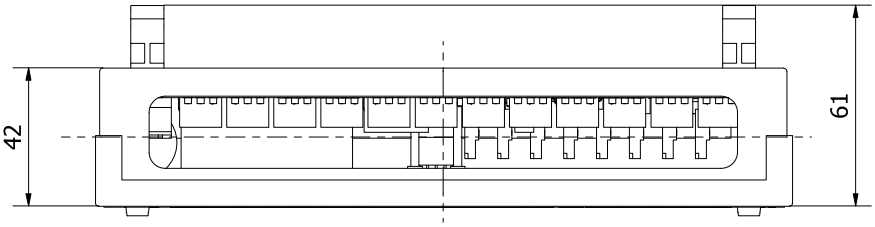
1.3. Wiring

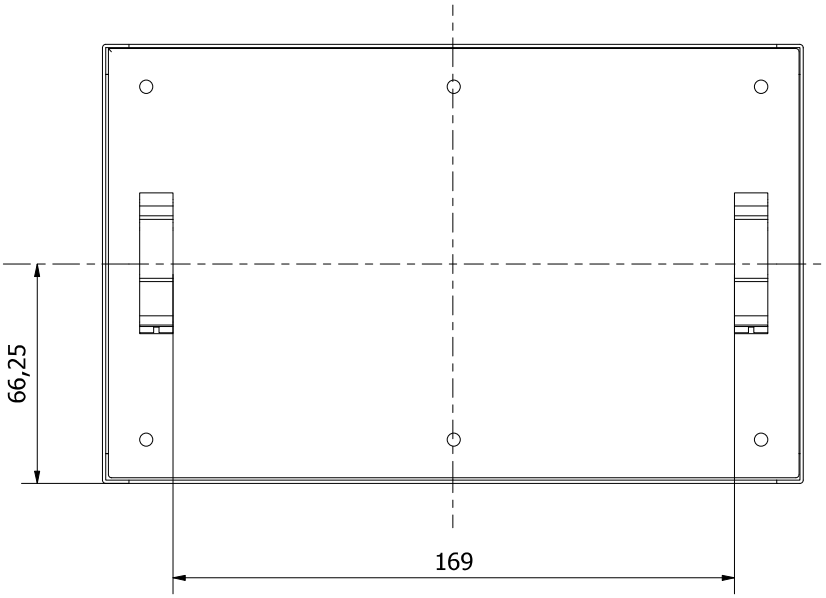

ANALOGUE INPUTS 4-20mA / 0-10V
INPUT 1
INPUT 2
INPUT 3
INPUT 4
INPUT 5
INPUT 6
0-10V
4-20mA
+V
I+
-/0V
6 x 4-20mA (0-10Vdc)
Inputs
ANALOGUE OUTPUTS 4-20mA / 0-10V
OUTPUT 1
OUTPUT 2
OUTPUT 3
OUTPUT 4
OUTPUT 5
OUTPUT 6
6 x 4-20mA (0-10Vdc)
Outputs
CUT OUT
FOR LED'S
EARTH
SUPPLY NEUTRAL
SUPPLY LIVE
1A
L N E
RS485 I/O TO D.T.I.
+
-
SCREEN
USB TO PC
Mk.8 Universal I/O Module
Pt. No. DTI80022
16 x 230Vac/110Vac
Inputs
NEUTRAL
INPUT 1
INPUT 2
INPUT 3
INPUT 4
INPUT 5
INPUT 6
INPUT 7
INPUT 8
INPUT 9
INPUT 10
INPUT 11
INPUT 12
INPUT 13
INPUT 14
INPUT 15
INPUT 16
DIGITAL INPUTS 230Vac / 110Vac
Z.A./28.07.20/7977 iss1
8 x Volt Free Contact
Outputs
OUTPUT 1
OUTPUT 2
OUTPUT 3
OUTPUT 4
OUTPUT 5
OUTPUT 6
OUTPUT 7
OUTPUT 8
VOLT FREE CONTACT OUTPUTS

1.4. Dimensions & Fixing

The IO Module has 2x DIN mounting clips and can be mounted directly to a standard DIN rail.







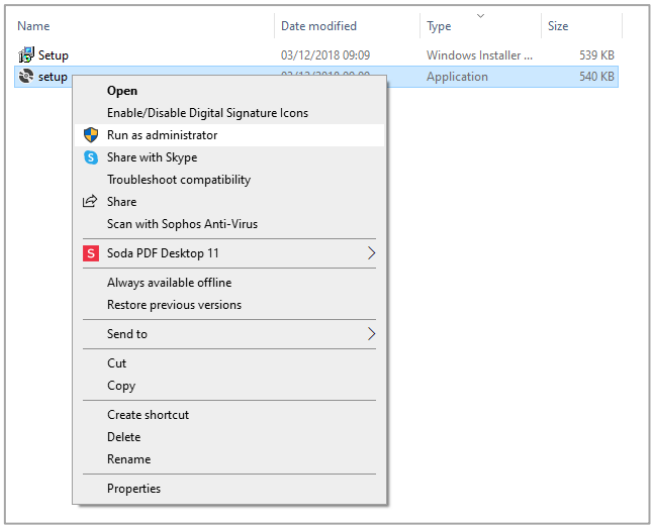
1.5. IO Board Configurator Software

The IO Module must be configured using the IO Configurator software before it can be used. The IO Board Configurator is compatible with any PC running Windows 7, 8 or 10, both 32 and 64 bit OS versions are supported.

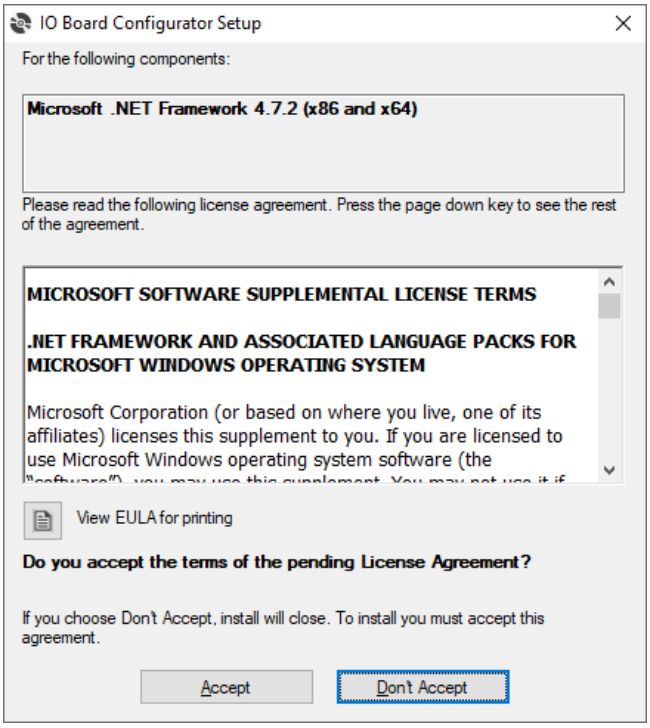
The configurator software is included on the USB stick that is provided with the purchase of the IO module. The software can also be downloaded from our tech site tech.autoflame.org/software/

Software Installation

Right click on the 'setup' file and click 'Run as Administrator' to launch the installation process.

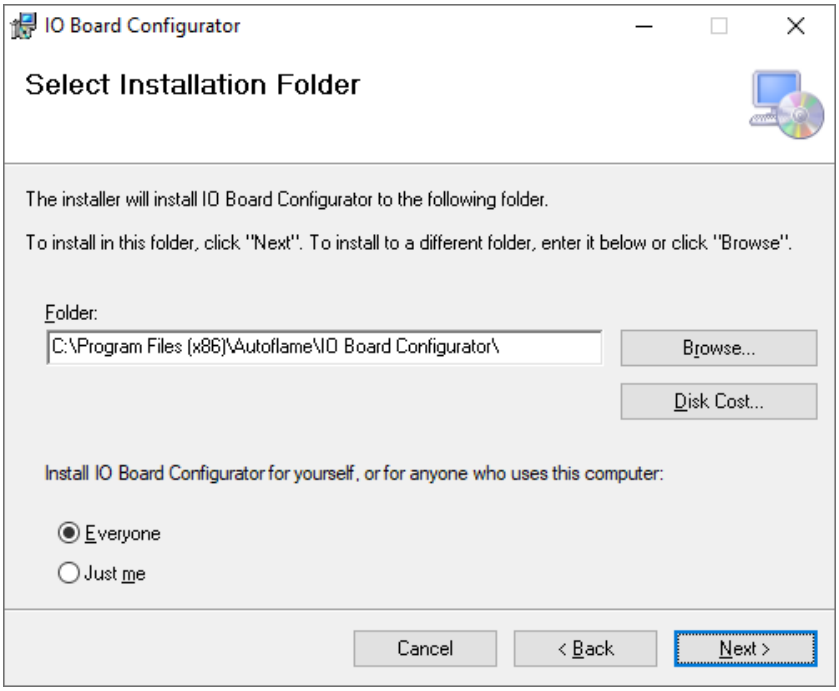


Review the license terms, if happy with the terms click 'Accept' to install the software.

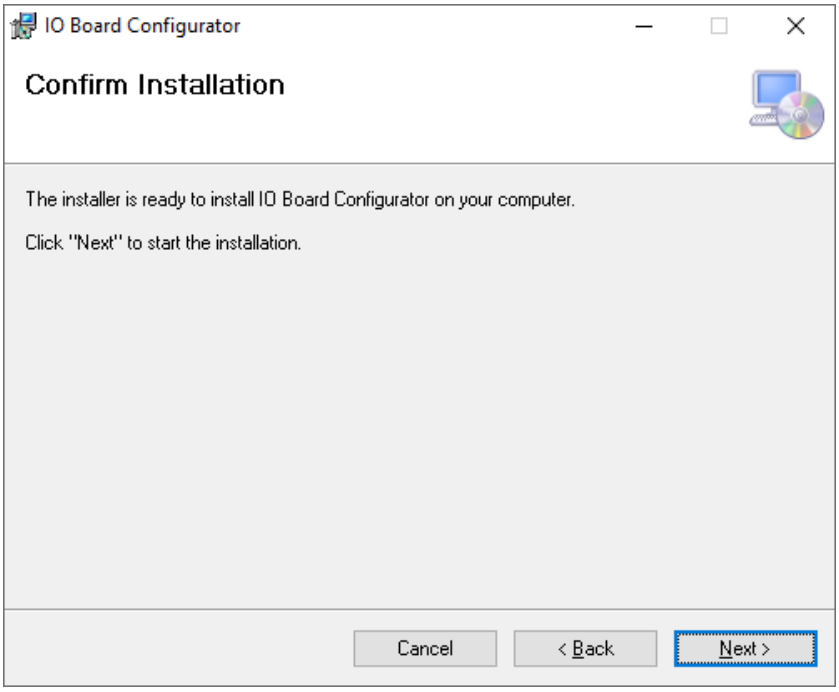


The IO Board Configurator setup wizard box will appear. Click ‘Next’ to begin the installation.

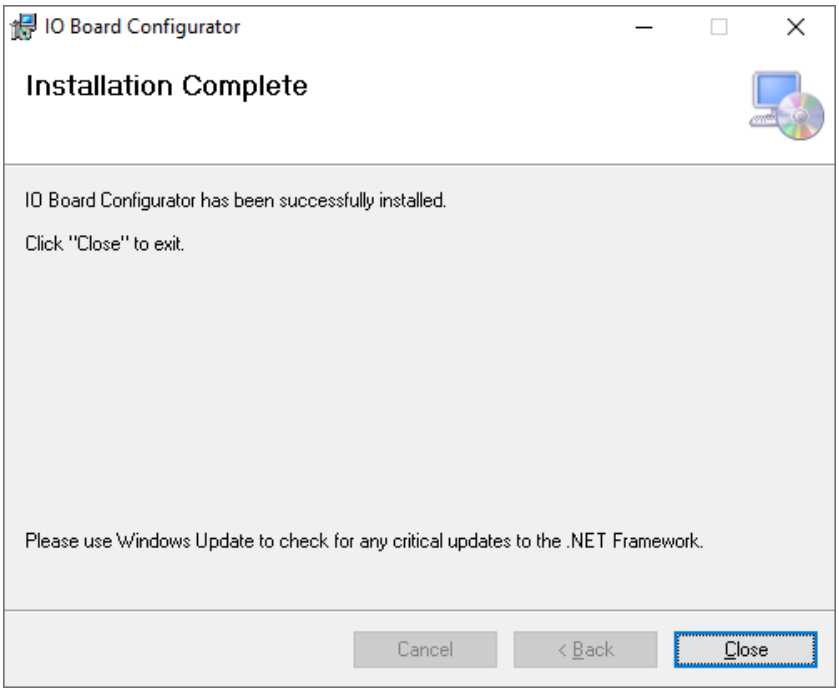
The default installation location is: C:\Program Files (x86)\Autoflame\IO Board Configurator\
Click ‘Browse’ if you wish to change this location.
Click ‘Next’ to start the installation.



Now the installer is ready to install the software, click ‘Next’ to confirm.



Now the software installation has been completed. Click ‘Close’ to exit the installer.



1.6. Configuring the IO Module

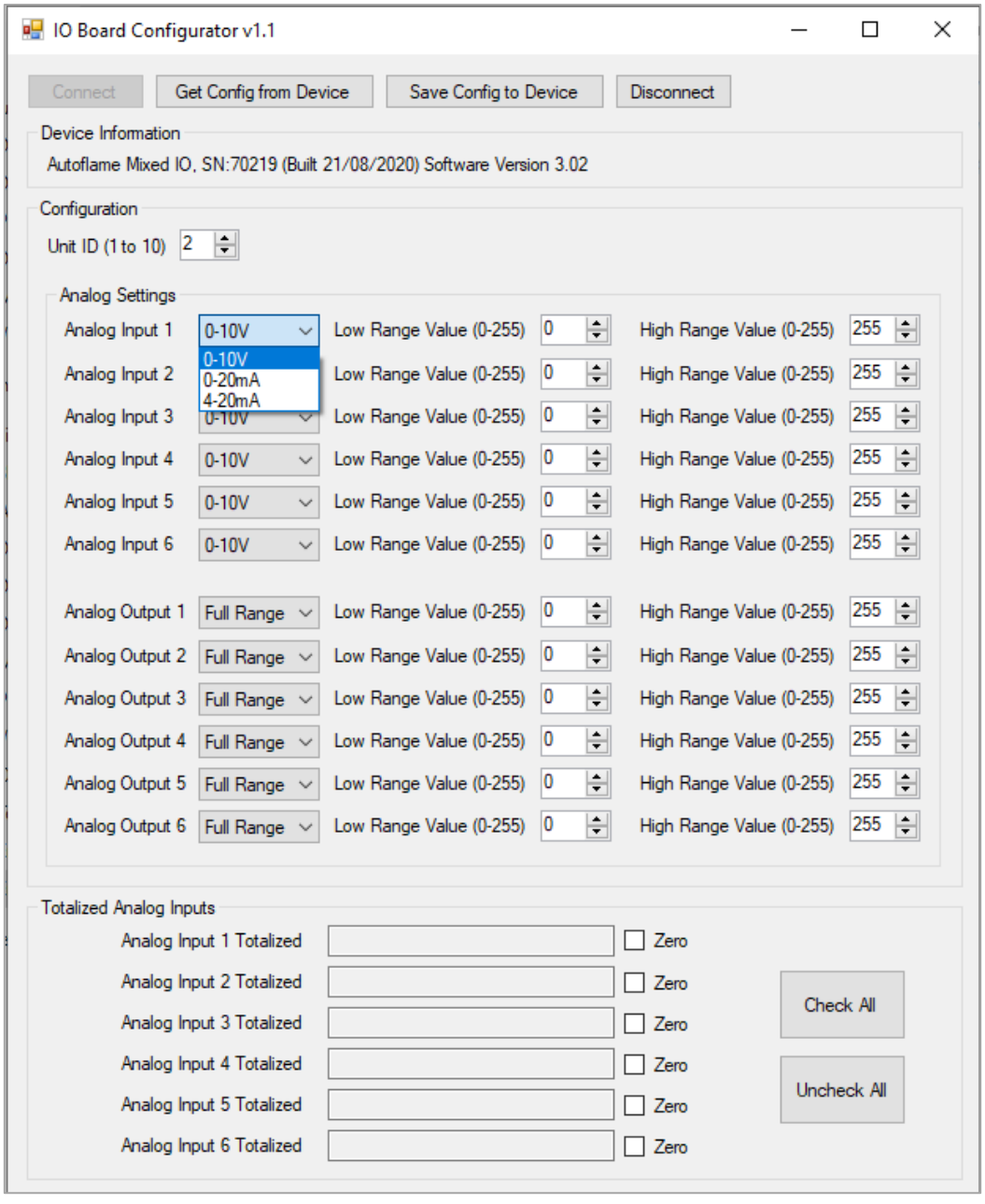
The IO module must be connected to the PC, to do so follow these steps:

1. Power off the IO Module.
2. Connect the IO module to the PC using the supplied USB to mini-USB lead.
3. Power on the IO module.
4. Open the IO Board Configurator and click ‘Connect’ to establish connection with the I/O module.

The IO board configurator can be used to setup the following on the IO module:

- Module’s ID number (from 1 to 10)
- Analogue input type (0-10V, 0-20mA, or 4-20mA)
- Analogue input/output ranges.
- View and reset totalised input values.

If the board has been previously configured, click ‘Get Config from Device’ to view and change the setup that is already stored on the IO module.



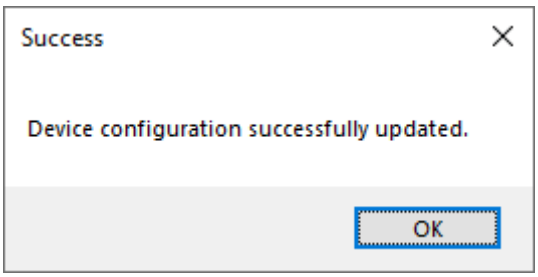
Totalised Values

The Mk8 IO Module can totalise the analogue inputs over time. The totalised values stored on-board the IO Module can be viewed by clicking ‘Get Config from Device’.

To zero the totalised values of each analogue input, make sure the relevant ‘Zero’ checkbox is ticked or click ‘Check All’ to reset all the inputs, click ‘Save Config to Device.’ The counter be zeroed.

To confirm that the value has been zeroed, click on ‘Get Config from Device’, the field should display zero value.

Once the IO module has been configured, click on ‘Save Config to Device’ to save the setup to the module.



Click ‘Disconnect’ to disconnect the IO module from the PC.

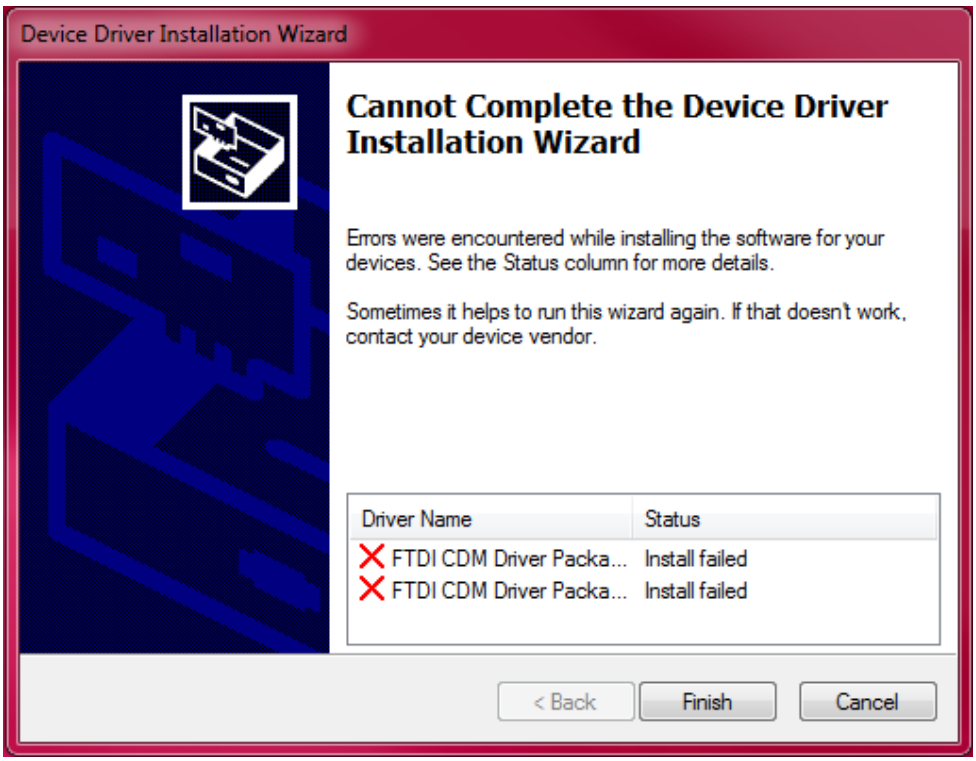
1.7. Troubleshooting

1.7.1. Driver Install Failed

The driver software that connects the IO Module to the PC should automatically install during the configurator software installation process. However if the driver fail to install, try the following:

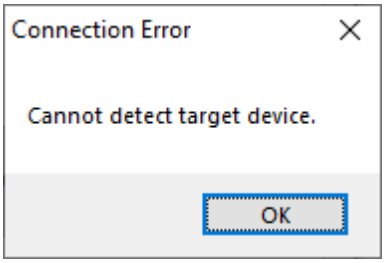
- Restart your PC.
- Power down the IO Module and power it back up.
- Unplug the USB connection and plug it back in to the PC, this will re-initiate the driver installation process.

If the issue persists, please contact Autoflame technical support to request a copy of the driver for manual installation.



1.7.2. Connection Error

When connecting the IO module to the PC, if a Connection Error appears, check that the device is powered on and that the unit has been detected by the PC. Also try to reboot the IO module and PC. If the error persists please contact Autoflame Technical Support for further troubleshooting advice.

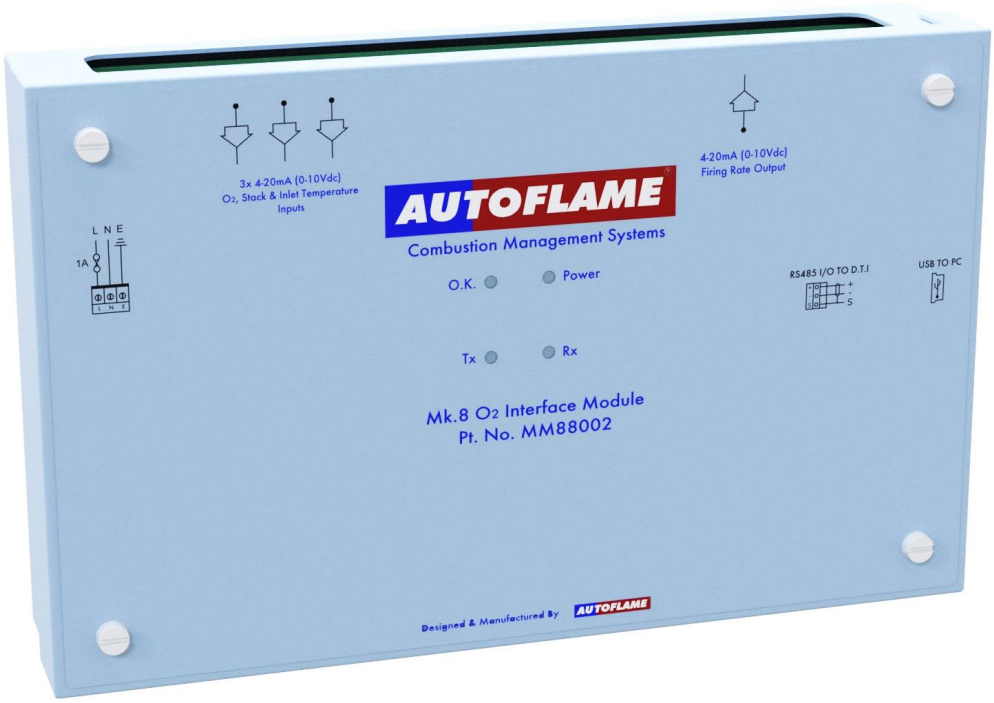


2. MK8 O2 INTERFACE MODULE – MM88002

2.1. Overview

The Mk8 O_2 Interface Module is intended for use with the Mk8 MM and Mini MK8 MM. This module allows the use of an analogue O_2 sensor and in-situ probe in conjunction with the MM for the purpose of:

- Combustion trim (on O_2 only).
- Setting up combustion limits.
- Exhaust gas temperature monitoring.
- Boiler efficiency.

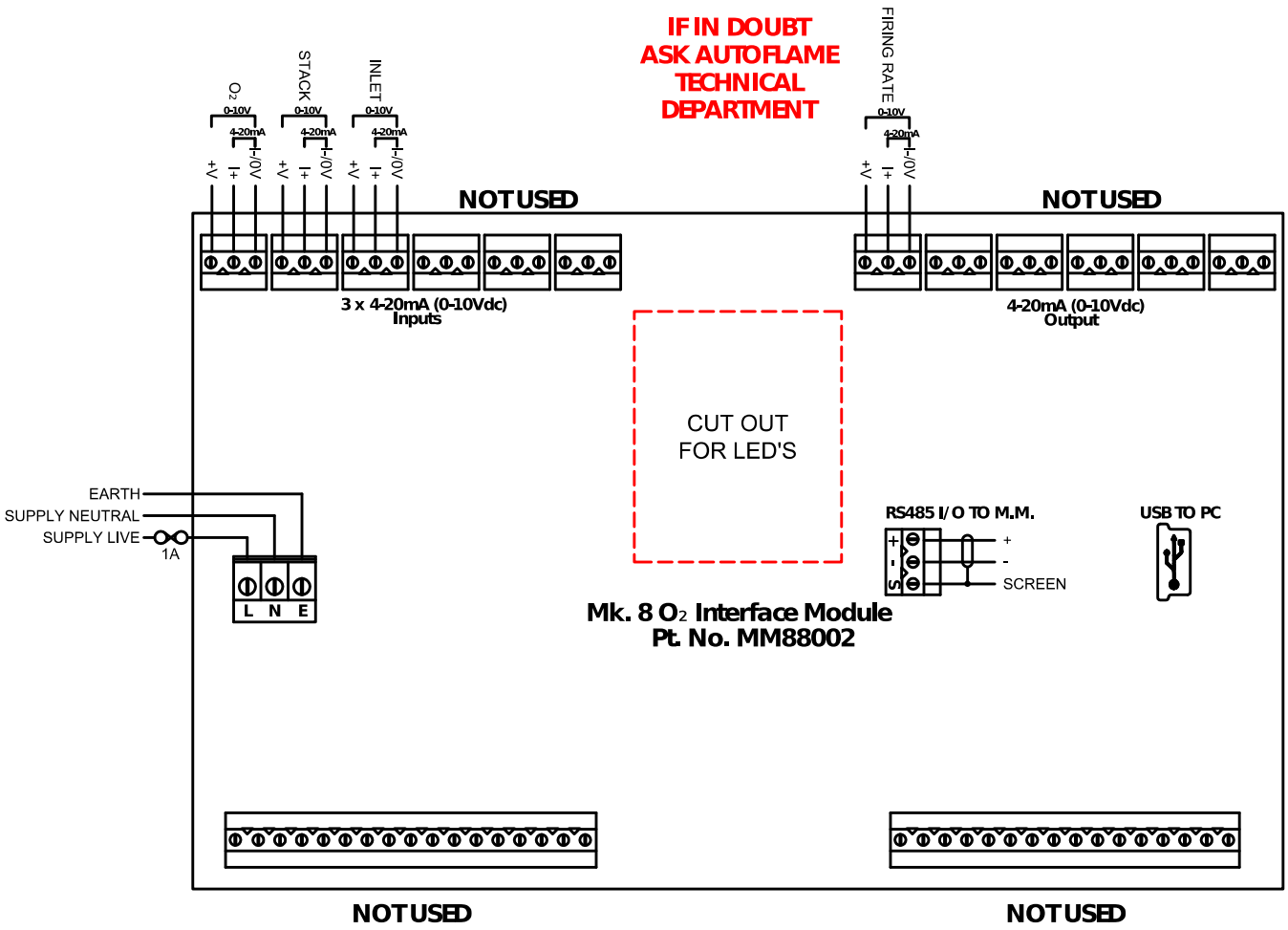


The O_2 Interface Module can only measure the O_2 reading from the stack, the module is also capable of extrapolating CO_2 value from the O_2 sensor reading.

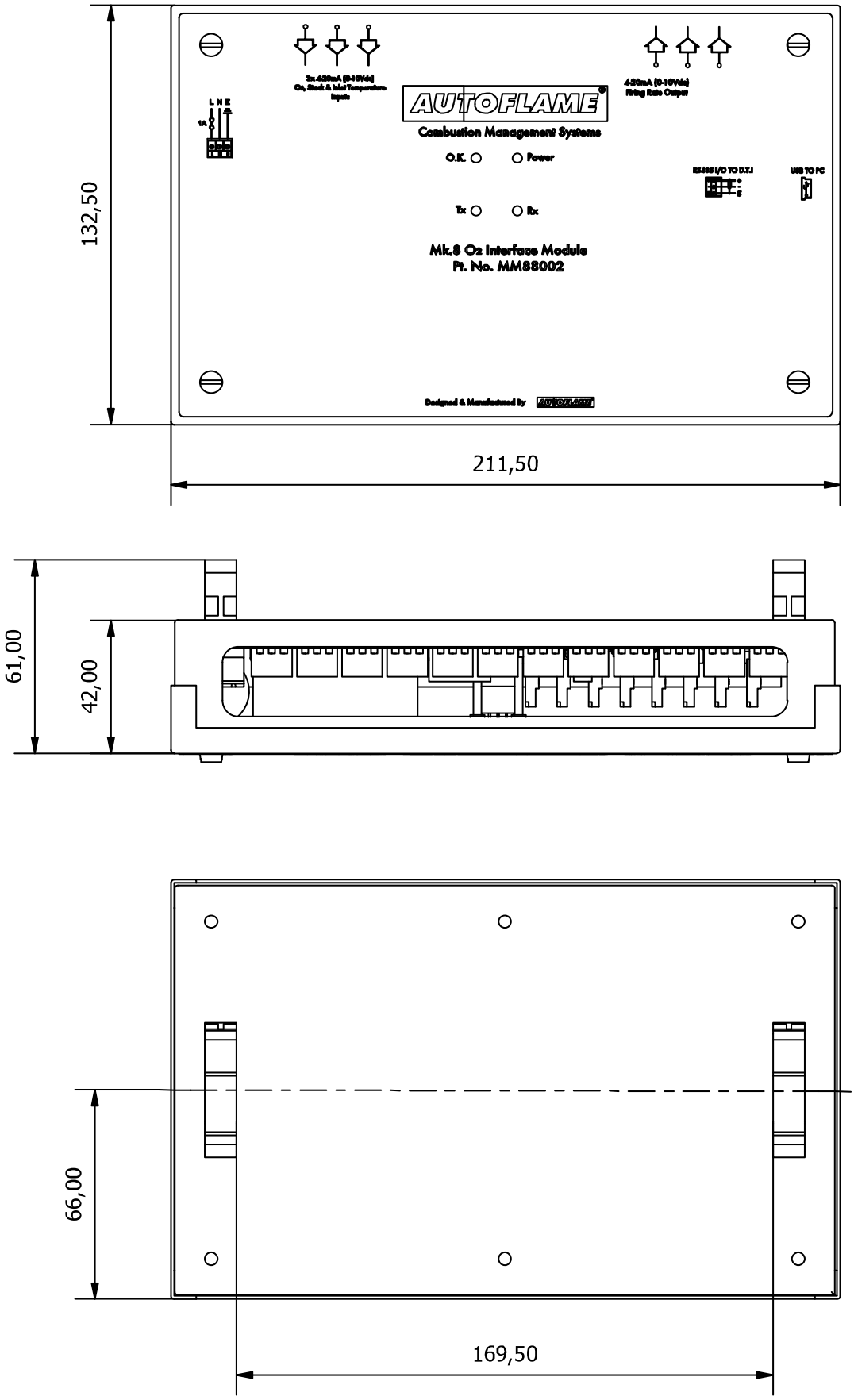
The Mk8 O_2 Interface Module is not compatible with the Mk8 DTI so the emission data cannot be logged using the DTI. The O_2 interface module provides basic functionality, for advanced exhaust gas monitoring and trim solution it is recommended to use Autoflame Mk8 EGA Evo.

Specifications	
Supply Voltage	120V/ 230V AC
Communication	RS485
IP Rating	IP20
NEMA Rating	1
Max. Operating Temperature	60°C (140°F)
Min. Operating Temperature	0°C (23°F)
Warranty	2 years limited warranty

2.2. Wiring


IF IN DOUBT
ASK AUTOFLAME
TECHNICAL
DEPARTMENT
O2
STACK
INLET
FIRING RATE
0-10V
4-20mA
+V
I+
I-/0V
NOT USED
NOT USED
3 x 4-20mA (0-10Vdc)
Inputs
4-20mA (0-10Vdc)
Output
CUT OUT
FOR LED'S
EARTH
SUPPLY NEUTRAL
SUPPLY LIVE
1A
L N E
RS485 I/O TO M.M.
+
-
SCREEN
USB TO PC
Mk. 8 O2 Interface Module
Pt. No. MM88002
NOT USED
NOT USED

2.3. Dimensions and Fixing



2.4. O_2 Interface Module Inputs & Outputs

2.4.1. Analogue Input 1 – O_2 Signal Input

Analogue input 1 is dedicated to reading the O_2 input signal. The input can be configured for 4-20mA current input or 0-10V voltage input. This is configured via a PC and O2 interface software. As shown below.
The maximum signal that is generated will be shown as 20.9% O_2, with the lowest input value showing 0% O_2.
The default configuration is 4-20mA input for Analogue Input 1.

2.4.2. Analogue Input 2 – Stack Temperature Input

Analogue input 2 is dedicated to the stack temperature input signal. The channel may be configured for 4-20mA current input or 0-10V voltage input via the USB interface. The temperatures represented by the high and low value input can be configured using the PC software.
Alternatively a fixed temperature value can be configured when a temperature signal is not available. The units of temperature can be changed on the PC program, °C or °F.
The default configuration is to use a 4-20mA input for Analogue Input 2, with 4mA representing a temperature of 50°C, and 20mA represents 400°C.

2.4.3. Analogue Input 3 – Inlet Temperature Input

Analogue input 2 is dedicated to the inlet temperature to the burner. The channel may be configured for 4-20mA current input or 0-10V voltage. The temperatures represented by the high and low value input values may also be configured via the PC. The units of temperature can be changed on the PC program, °C or °F.
Alternatively a fixed temperature value can be configured when a temperature signal is not available. The default temperature value is set to 20°C.

2.4.4. Analogue Output 1 – Firing Rate output

Analogue output 1 provides a signal that represents the firing rate of the connected MM. The channel may be configured for 4-20mA current output or 0-10V voltage output via the USB interface.
When configured for 4-20mA operation the unit outputs 4mA for 0% firing rate and 20mA for 100% firing rate.

When configured for 0-10V operation the unit outputs 0V for 0% firing rate and 10V for 100% firing rate.
The default configuration provides a 4-20mA output.

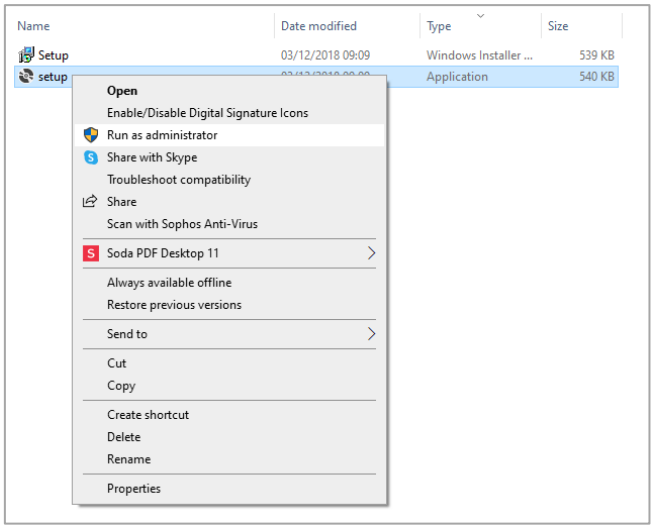
2.5. O_2 Interface Configurator Software

The O_2 Interface Module must be configured using the O_2 Interface Configurator software before it can be used. The O_2 Interface Configurator software is compatible with any PC running Windows 7, 8 or 10. Both 32 and 64 bit OS versions are supported.

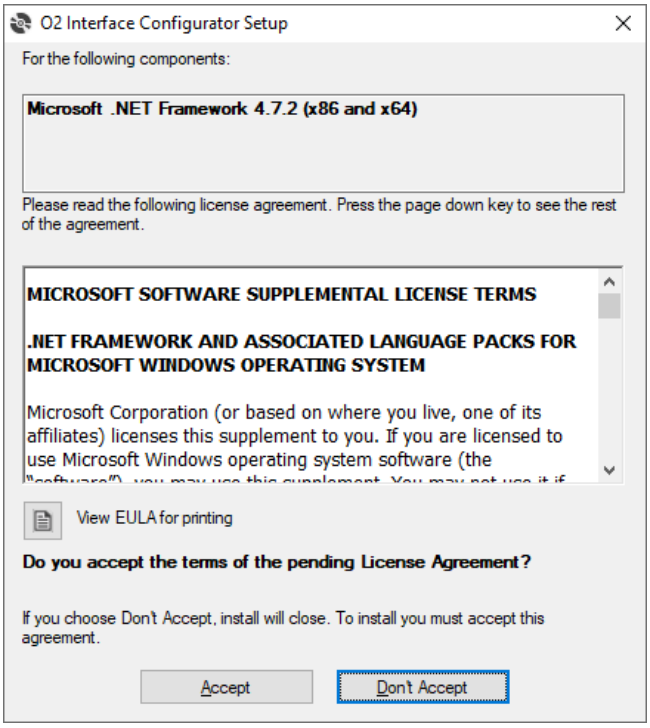
The configurator software is included on the USB stick that is provided with the purchase of the O_2 Interface Module. The software can also be downloaded from Autoflame Tech Site: tech.autoflame.org/software/

O_2 Interface Configurator Software Installation

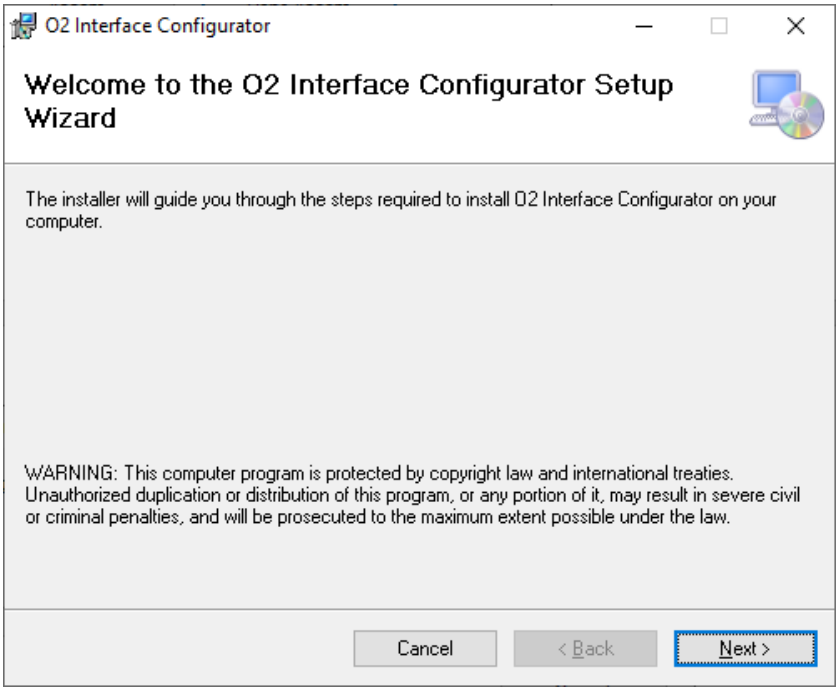
Right click on the 'setup' file and click 'Run as Administrator' to launch the installation process.



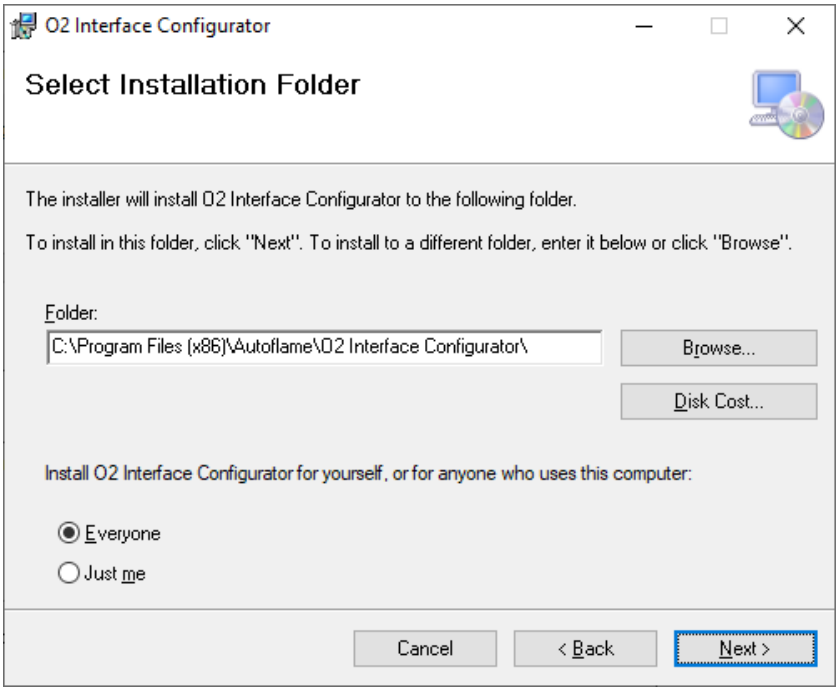
Review the license terms, if happy with the terms click 'Accept'



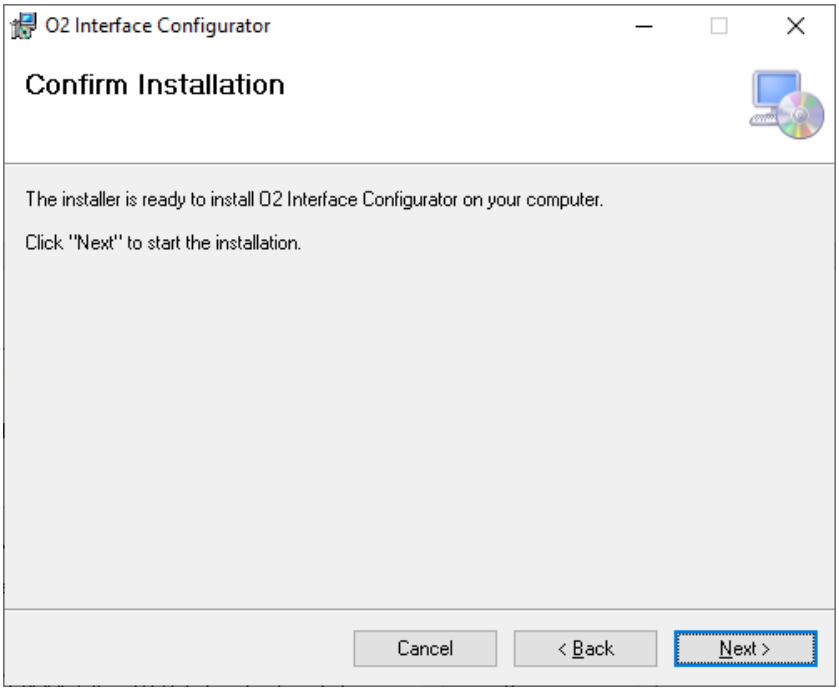
The O_2 Interface Configurator software setup wizard box will appear. Click ‘Next’ to begin the installation.



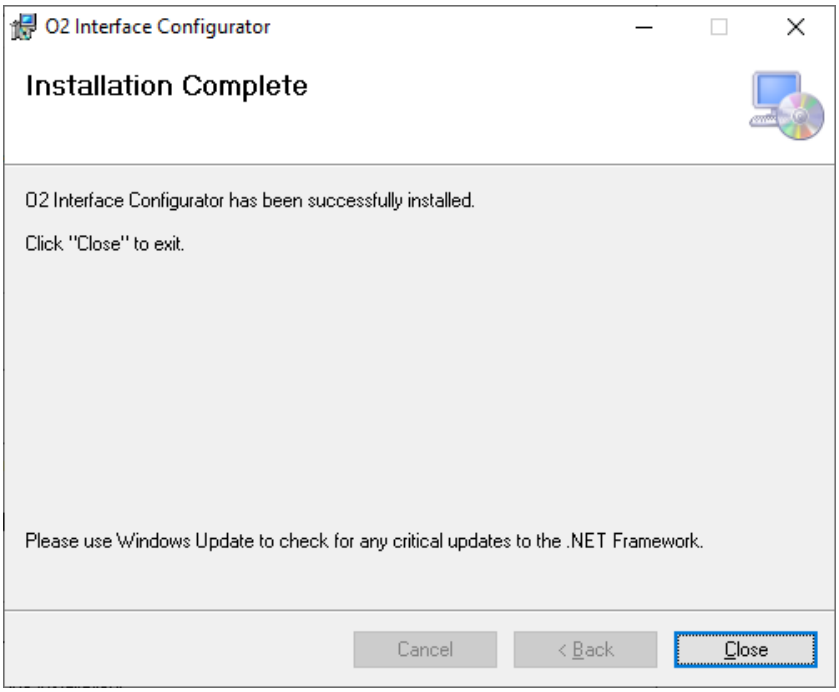
The default installation location is: C:\Program Files (x86)\Autoflame\O2 Interface Configurator\
Click ‘Browse’ if you wish to change this location.
Click ‘Next’ to start the installation.



Now the installer is ready to install the software, click ‘Next’ to confirm.



Now the software installation has been completed. Click ‘Close’ to exit the installer.

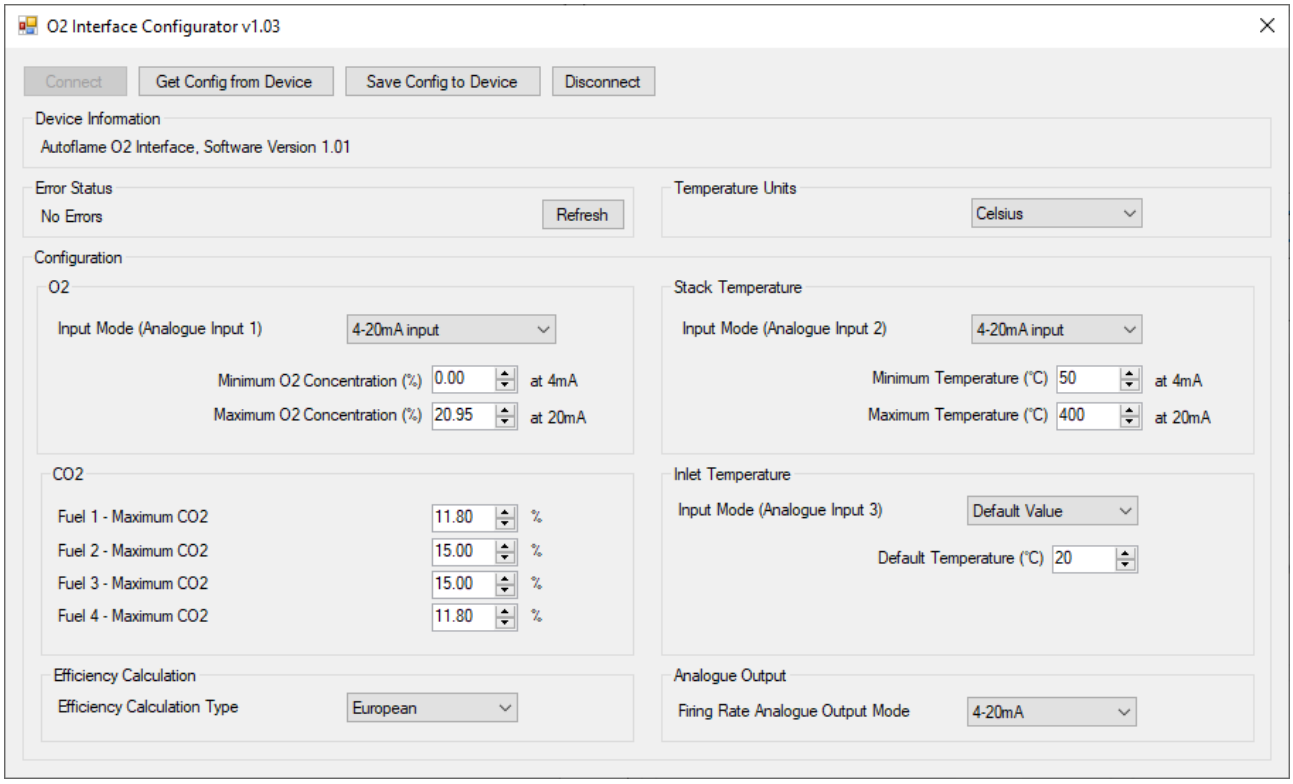


2.6. Configuring the O_2 Interface Module

The O_2 interface module must be configured using the O_2 Interface Configurator. For this the module must be connected to the PC, to do so follow these steps:

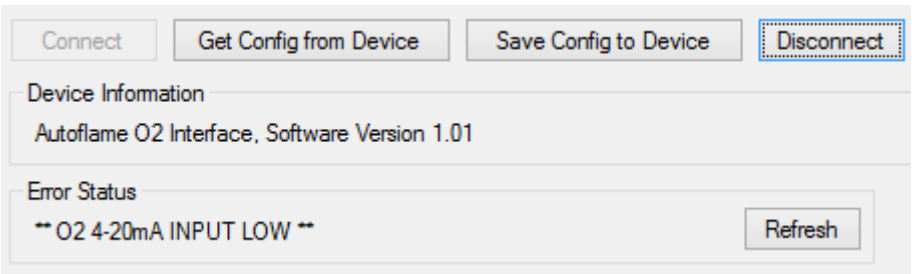
1. Power off the O_2 Interface Module.
2. Connect the O_2 Interface Module to the PC using the supplied USB to mini-USB lead.
3. Power on the O_2 Interface Module.
4. Start the O_2 Interface Configurator software and click 'Connect' to establish connection with the module.

If the board has been previously configured, click 'Get Config from Device' to view and change the setup that is already stored on the O_2 Interface Module.



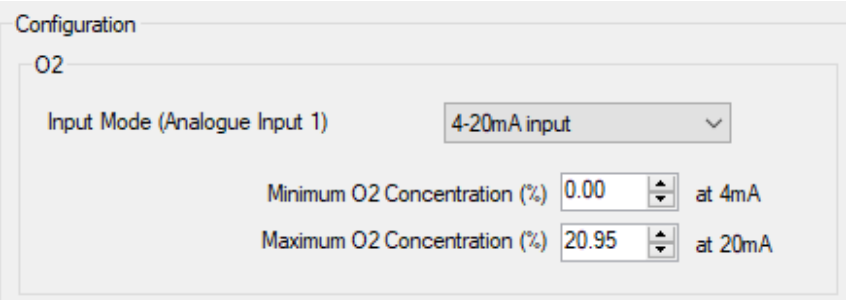
2.6.1. Error Status

The module will display any error conditions found in the Error Status box. This will include a warning about the analogue input channels having low signal if they are configured as 4-20mA inputs but no connection is currently made. Note that if an error condition exists the Error Status box will not be updated until the Refresh button is clicked.



2.6.2. O_2 Configuration

The O_2 box selects the O_2 input configuration (analogue input 1). The valid selections are to configure the input as 4-20mA or 0-10V. The minimum and maximum O_2 concentrations that these limits represent can also be configured.

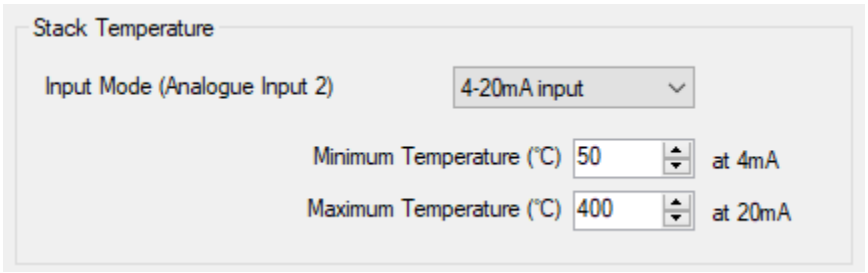


2.6.3. CO_2 Configuration

The CO_2 box describes the percentage of CO_2 reported by the O_2 interface when the O_2 reading is 0%. This is scaled linearly such that 0% CO_2 is reported at 20.9% O_2.

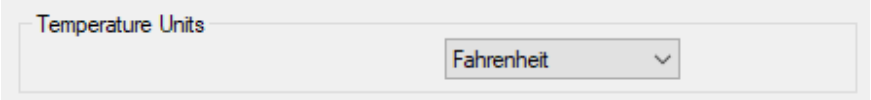
2.6.4. Stack Temperature

The Stack Temperature box configures Analog Input 2 as a stack (exhaust) temperature input, or allows a default stack temperature to be defined by selecting “Default Value” and entering the desired value. The minimum and maximum temperature can also be configured.



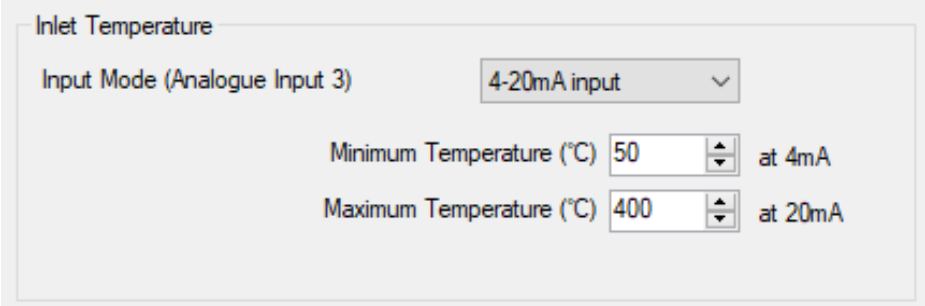
2.6.5. Temperature Units

The temperature unit can be configured to Celsius or Fahrenheit



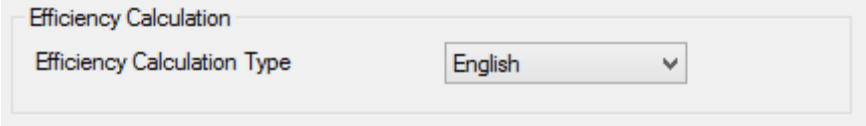
2.6.6. Inlet Temperature

The Inlet Temperature box configures Analog Input 3 as an inlet temperature input, or allows a default inlet temperature to be defined by selecting “Default Value” and entering the desired value.



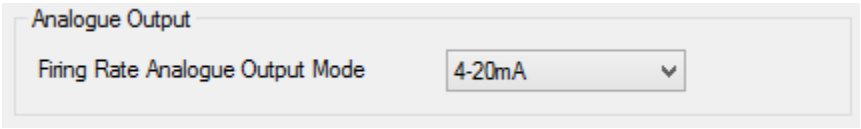
2.6.7. Efficiency Calculation

The Efficiency Calculation box allows selection of the method used to calculate burner efficiency. The “English” option includes moisture less in the calculation, while the “European” calculation does not.

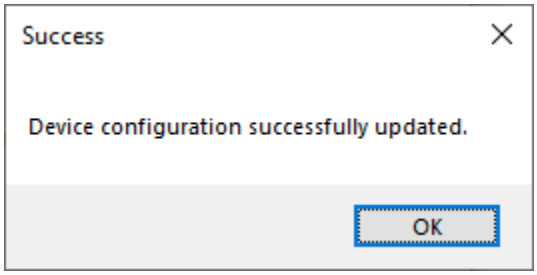


2.6.8. Firing Rate % Output

The Analogue Output box configures the analogue output of firing rate as a 4-20mA or 0-10V signal. Note that the hardware will output both current and voltage signals at all times, but that this option controls the value at the low end of the signal. i.e. in 4-20mA mode the output will be 4mA or 2V at 0% firing rate, while in 0-10V mode the output will be 0V or 0mA at 0% firing rate.



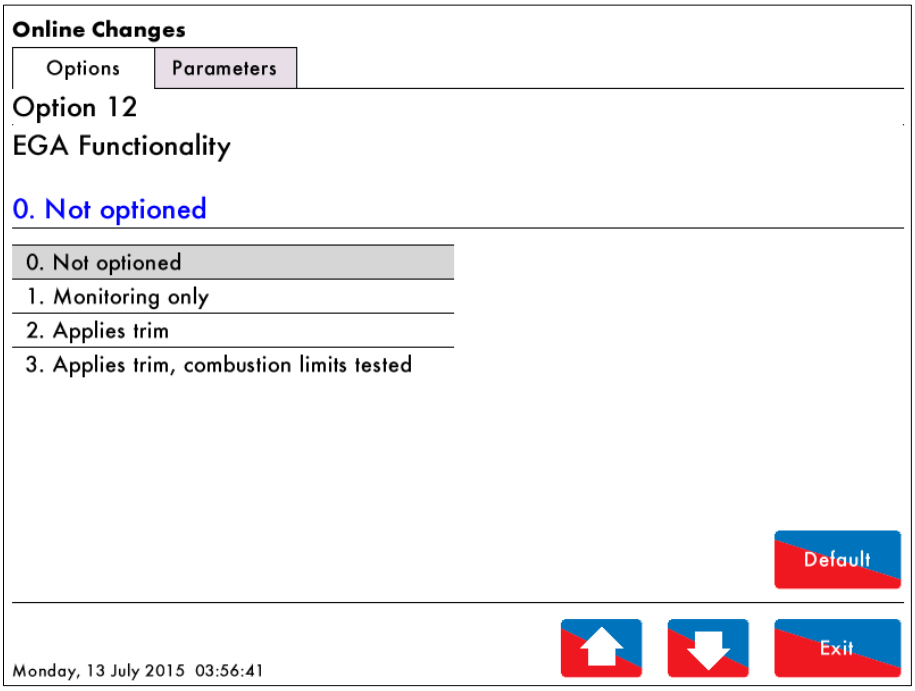
Finally, once configuration options have been entered the user should click the “Save Config to Device” button to store the new configuration in the O_2 Interface Module. If this is not performed then any changes made will be lost. The application should then show a message box declaring success. The ‘Disconnect’ button should then be used, and the configuration process is complete.

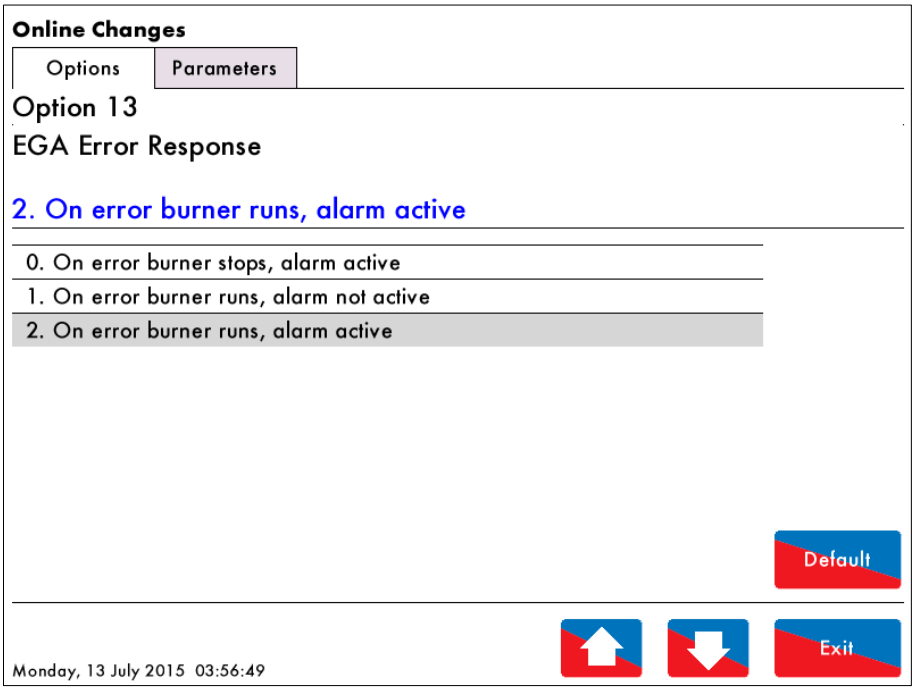


2.7. MM Setup

The Mk8 O_2 Interface uses the same configuration setup as though a Mk8 EGA is optioned.

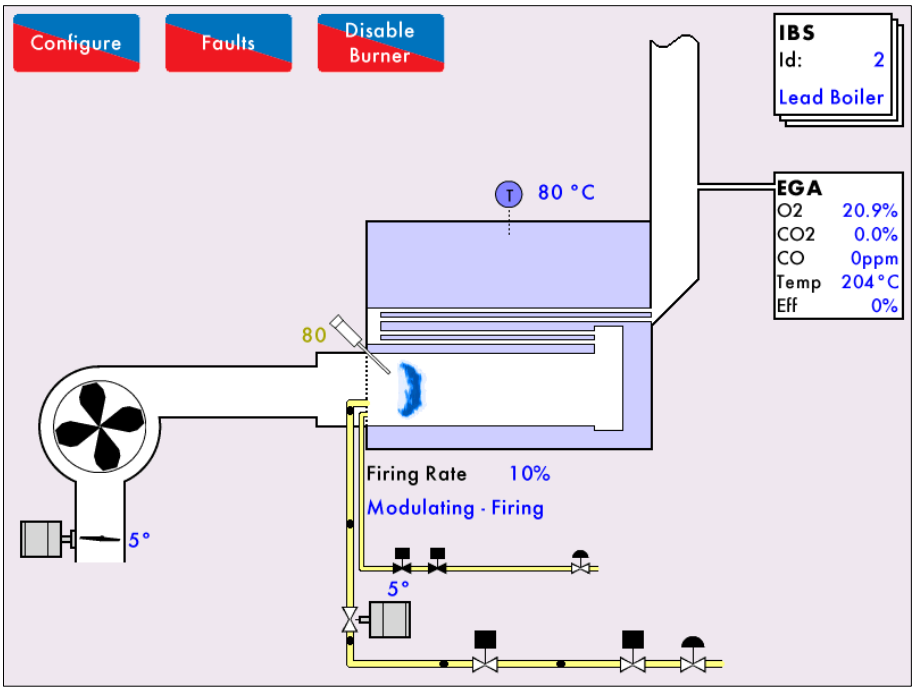
- Parameter 10 to 2 (Mk8 Protocol RS485)
- Option 12 setup for how the O_2 Interface is to be used; monitoring, trim or trim with limits.
- Option 13 is set for when the alarms are active and if the burner runs on the EGA error.



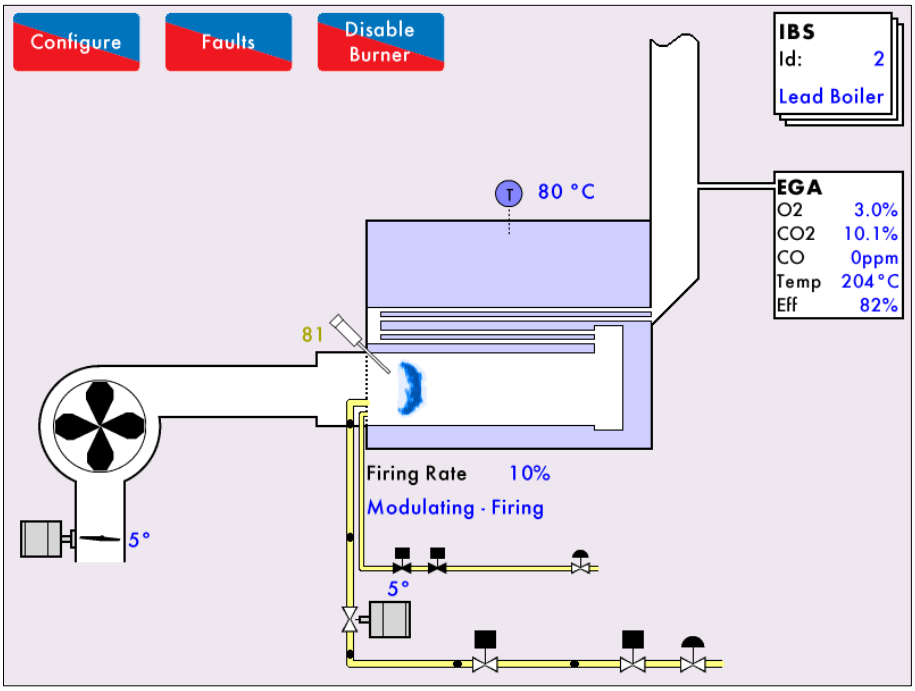


If Option 12 is set to 3 (combustion limits tested), options 19-26 must be set accordingly.
Note: Option 21 is not used with an O_2 interface.

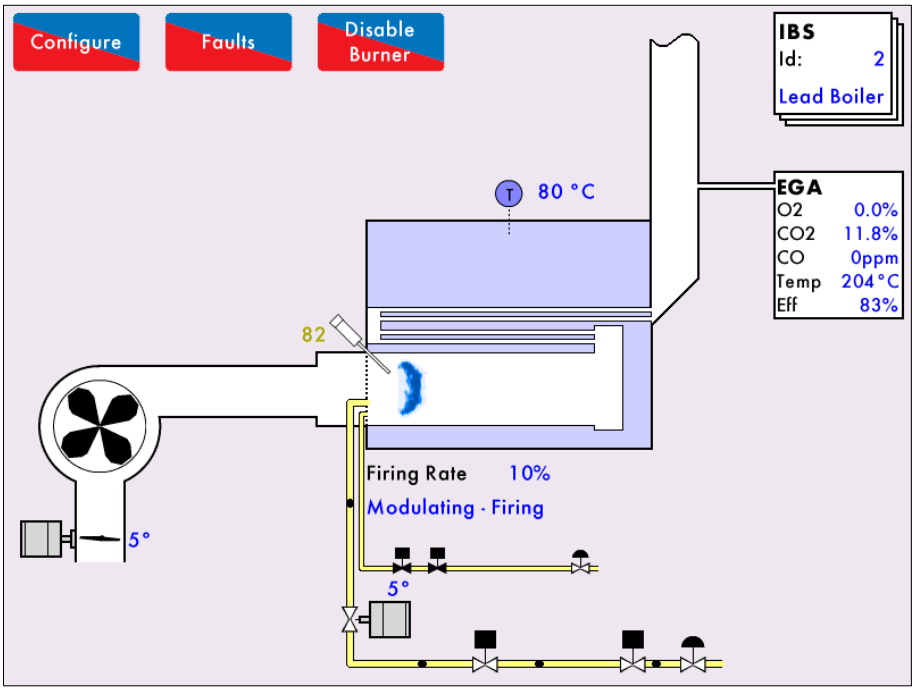
2.8. Mk8 O_2 Interface Screens



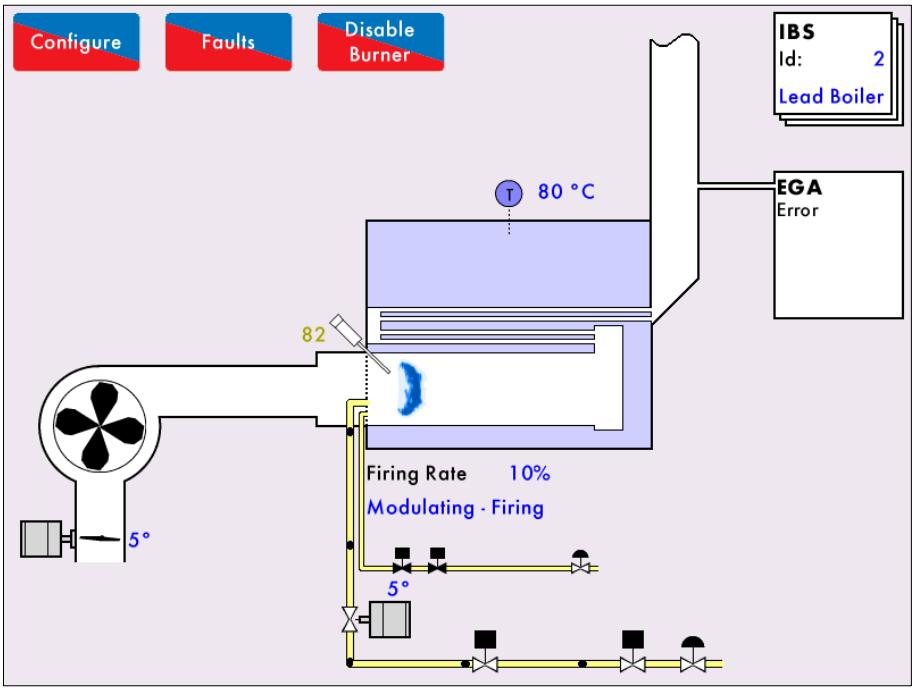
O_2 reading shows 20.9% when the 4-20mA or 0-10v signal is maximum (20mA or 10v). The efficiency reading will remain 0% until the O_2 reading is below 19%.
Note: CO reading is shown on the home screen as 0ppm; the reading is not calculated or measured.



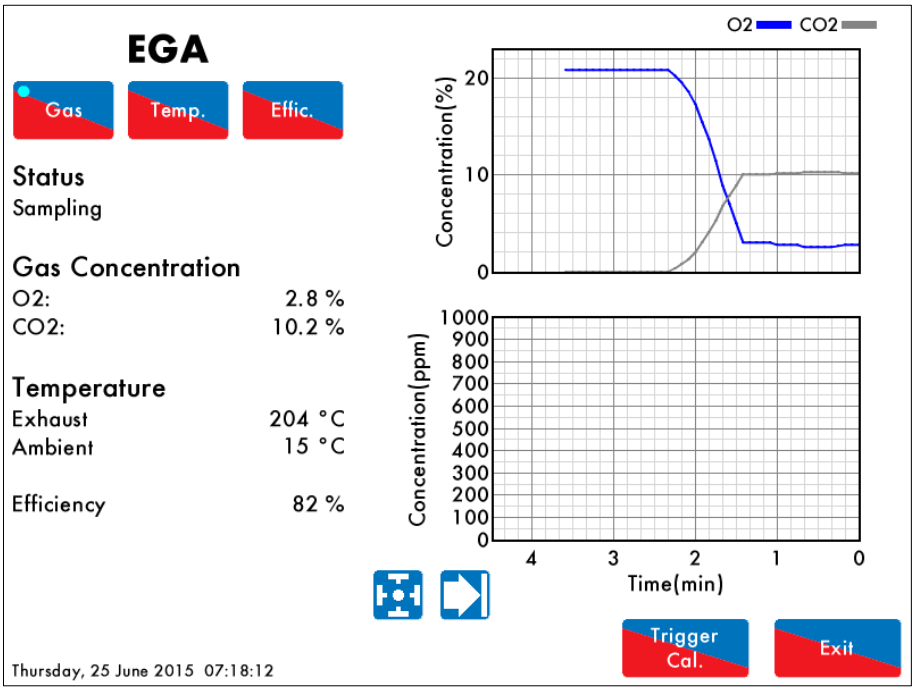
When burning natural gas, the CO_2 value is calculated to be approximately 10% when the O_2 is 3%.



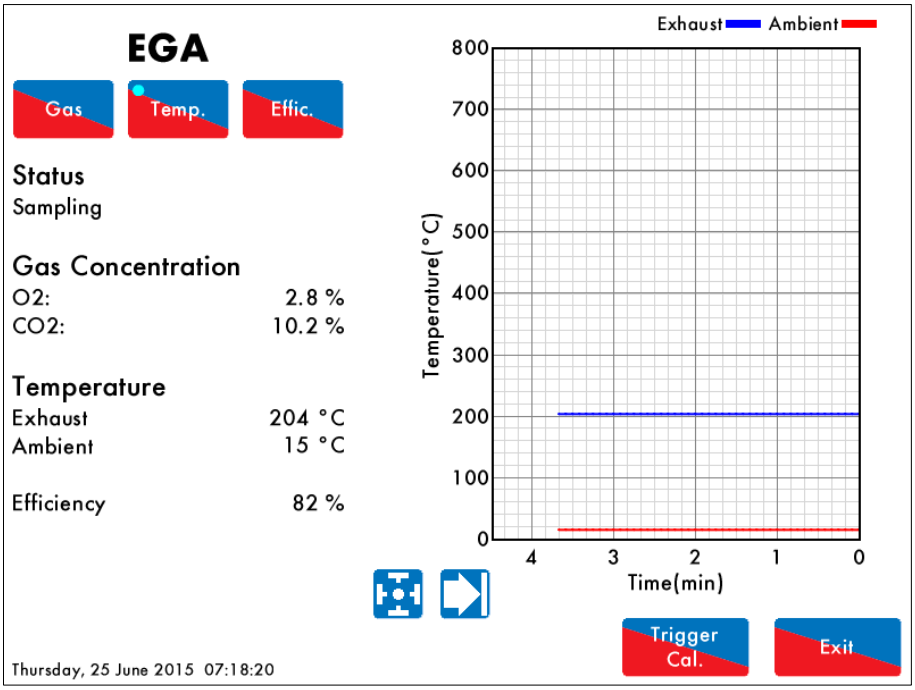
At the minimum reading (4mA or 0v) the maximum CO_2 value will be shown (for 0% O_2). This is the value that is set using the PC program as shown in the previous pages.



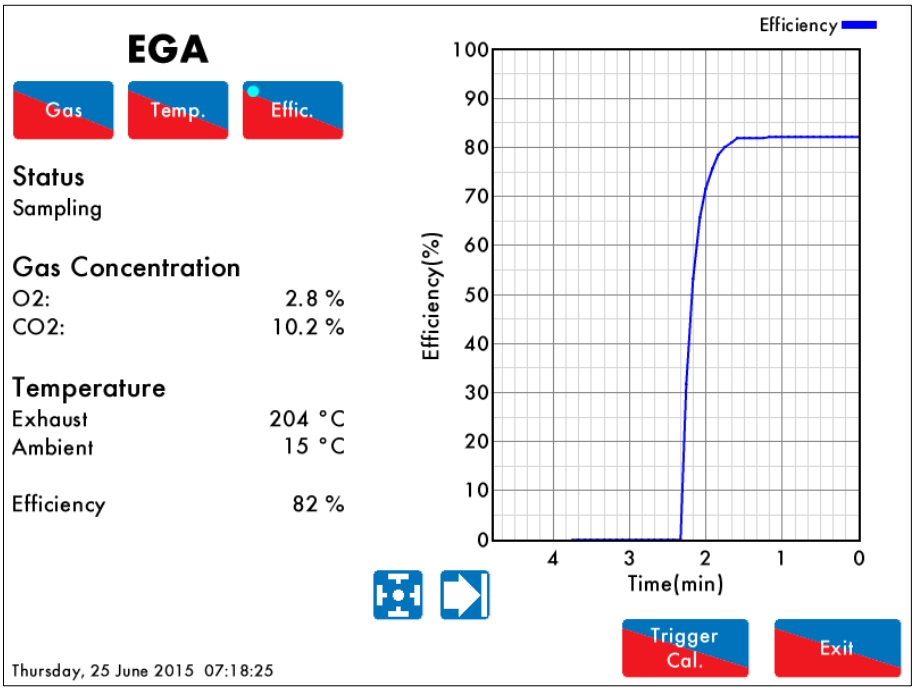
If the input range drops below 4mA or 0V an error will be displayed on the EGA screen.



Only the O_2 and CO_2 will be shown and recorded on the Gas history graph. CO is not measured.



The exhaust gas temperature is related to input 2 on the interface, using a 4-20mA or 0-10V signal. The ambient temperature is taken from input 3 or the default value that is entered when setting up the interface on the PC.



The efficiency can be changed between European and English calculation using the O_2 Interface Configurator software as explained previously.

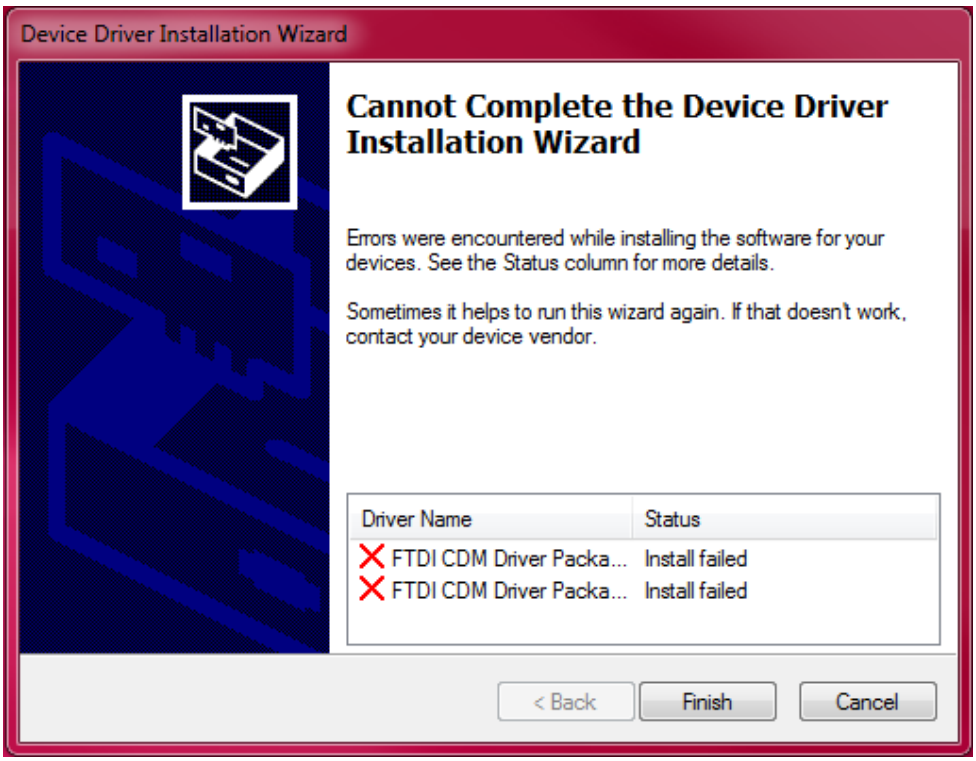
2.9. Troubleshooting

2.9.1. Driver Install Failed

The driver software that connects the O_2 Interface Module to the PC should automatically install during the configurator software installation process. However if the driver fails to install, please try the following:

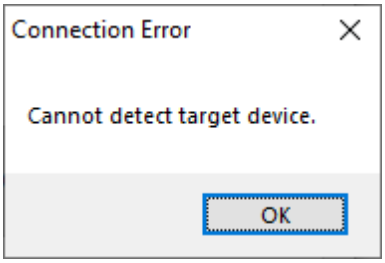
- Restart your PC.
- Power down the O_2 Interface Module and power it back up.
- Unplug the USB connection and plug it back in to the PC, this will re-initiate the driver installation process.

If the issue persists, please contact Autoflame technical support to request a copy of the driver for manual installation.



2.9.2. Connection Error

When connecting the O_2 Interface Module to the PC, if a Connection Error appears, check that the device is powered on and that the unit has been detected by the PC. Also try to reboot the IO module and PC. If the error persists please contact Autoflame Technical Support for further troubleshooting advice.



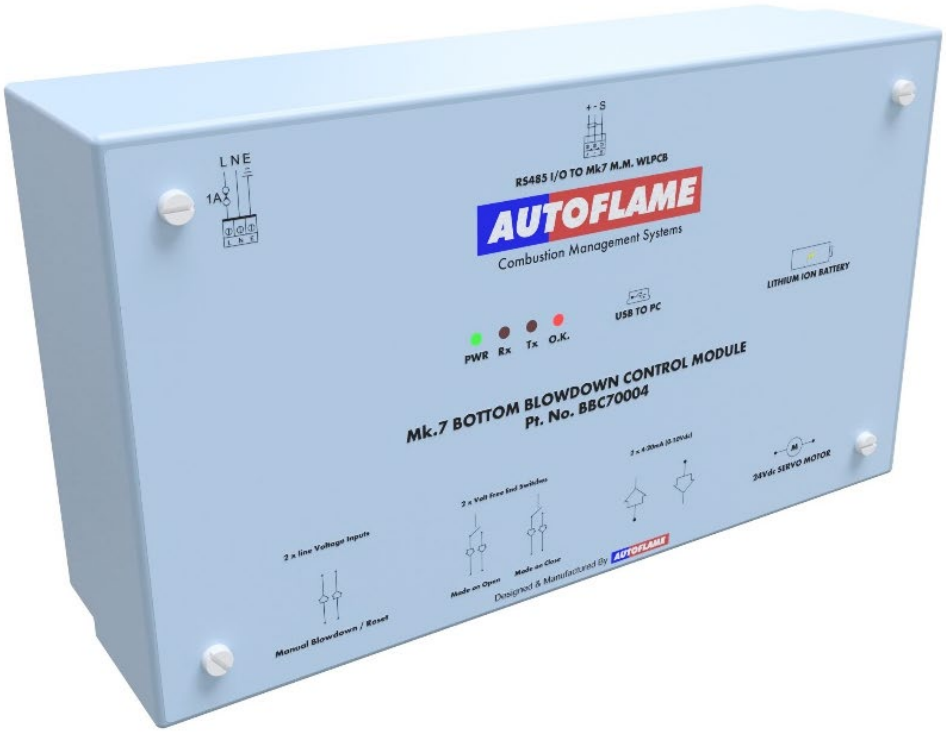
3. BOTTOM BLOWDOWN MODULE – BBC70004

3.1. Overview

The Bottom Blowdown Module can be used with the Mk8 MM for the purpose of controlling the boiler's bottom blowdown process. Although the blowdown can be done sing solenoid, using the Bottom Blowdown Module offers many benefits, including:

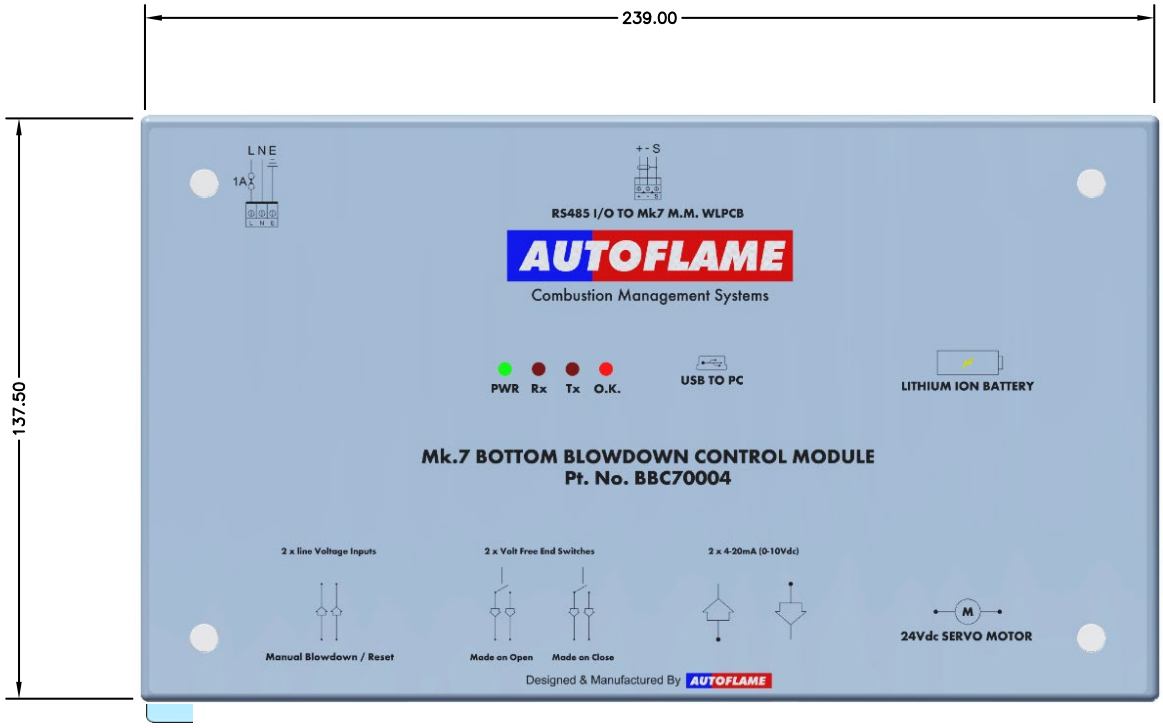
- Fully modulating / automated blowdown process
- 24V DC Autoflame industrial type servomotors for control and repeatability
- Electronic proof of open/close end switches
- Lithium-Ion battery technology ensures guaranteed closure on power failure
- Total electronic operation – no compressed air supply required
- Timed blowdown with manual/automatic operation
- Bottom blowdown sequence logging
- Up to 10 timed blowdowns over a 24-hour period are possible
- Repeatable up to 10 times from 1 to 60 seconds for each blowdown cycle
- 'Parked' position to reduce valve opening time
- Quick servomotor disconnect facility for manual actuation

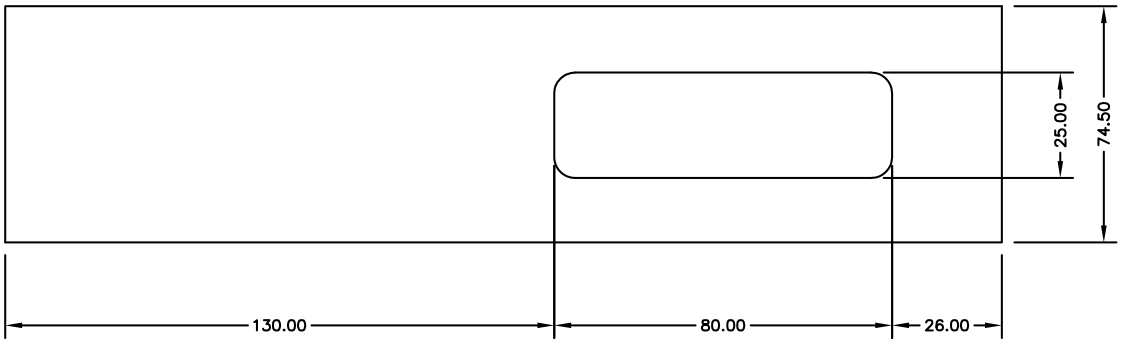
please check the Mk8 MM Manual for full details about Bottom Blowdown configuration.



Specifications	
Supply Voltage	120V/ 230V AC
Communication	RS485
IP Rating	IP20
NEMA Rating	1
Max. Operating Temperature	60°C (140°F)
Min. Operating Temperature	0°C (23°F)
Warranty	2 years limited warranty

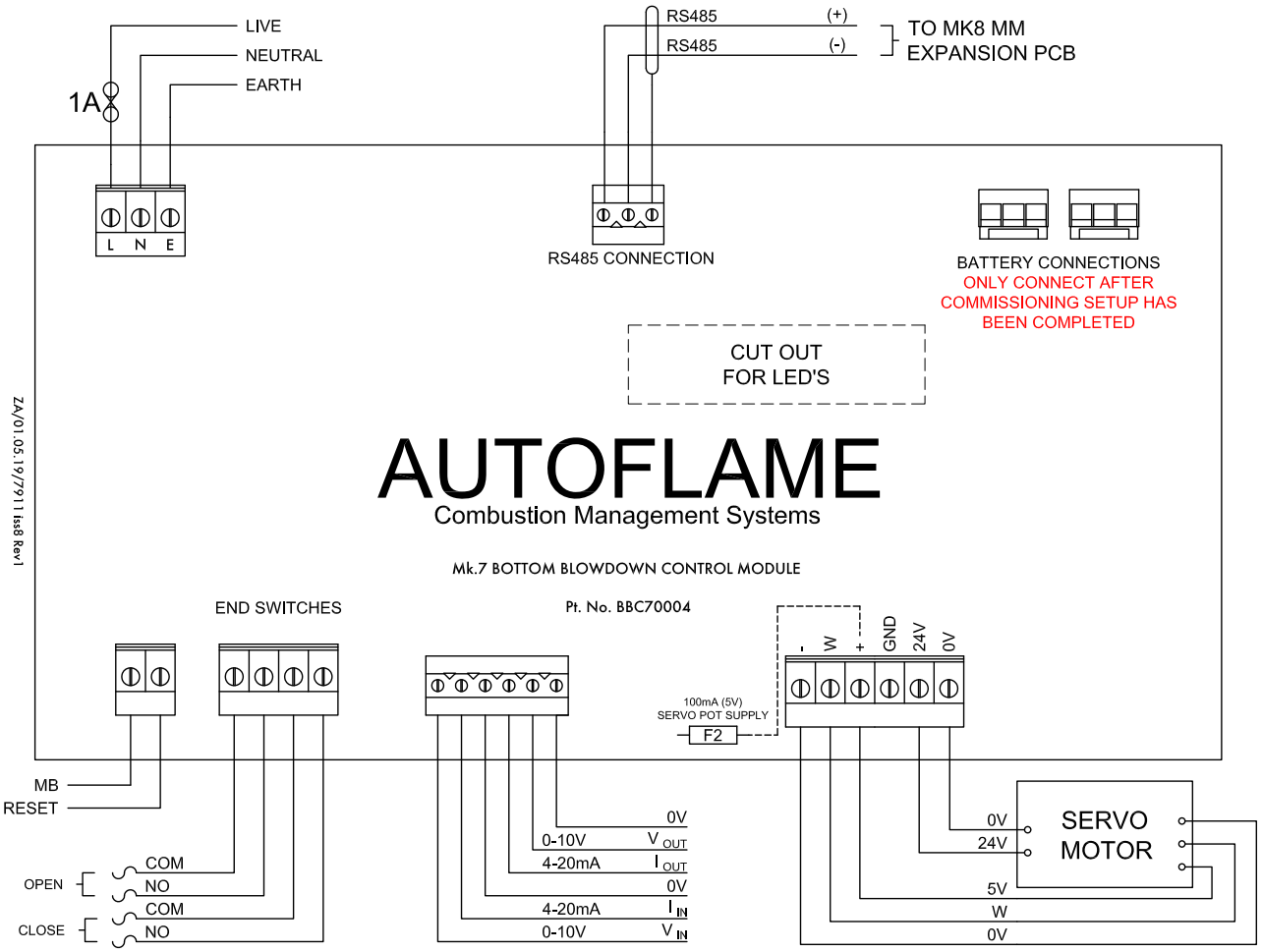
3.2. Dimensions and Fixing





The module features DIN rail clips so it can be mounted to any standard DIN rail without any need for fixings.

3.3. Wiring



Terminal	Description
L	Live
N	Neutral
E	Earth
RS485 +	Connection MM terminal 5T+
RS485 -	Connection MM terminal 5T-
S	Screen at module
MB	Manual Blowdown
RESET	Reset bottom blowdown module error
OPEN COM/NO	Volt-free connection for open position
CLOSE COM/NO	Volt-free connection for closed position
V_{IN}	Voltage 0-10V input for steam production rating (standalone use)
I_{IN}	Current 4-20mA input for steam production rating (standalone use)
0V	Common for terminals V_{IN} or I_{IN}
V_{OUT}	Voltage 0-10V output for bottom blowdown valve position
0V	Common for terminals V_{OUT} or I_{OUT}
-	0V supply to servomotor from MM
W	Signal from servomotor indicating position
+	+5V supply to servomotor from MM
GND	Ground/Earth
24	+24V supply to servomotor from battery
0	+0V supply to servomotor from battery

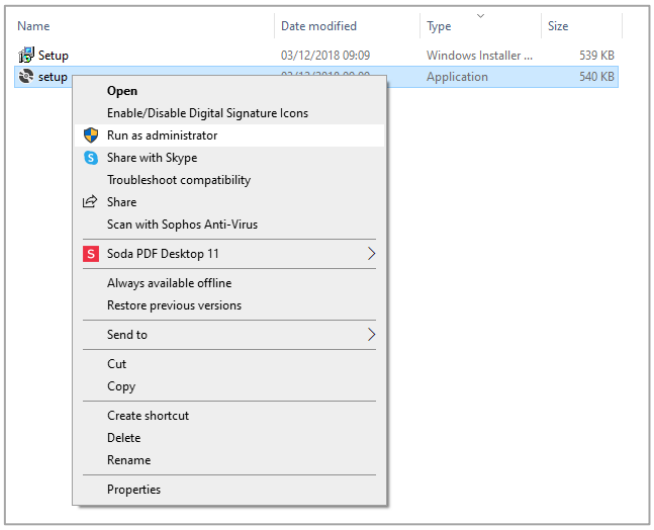
3.4. Bottom Blowdown Board Configurator Software

The Bottom Blowdown Module must be configured using the Bottom Blowdown Board Configurator Software. This software is compatible with any PC running Windows 7, 8 or 10. Both 32 and 64 bit OS versions are supported.

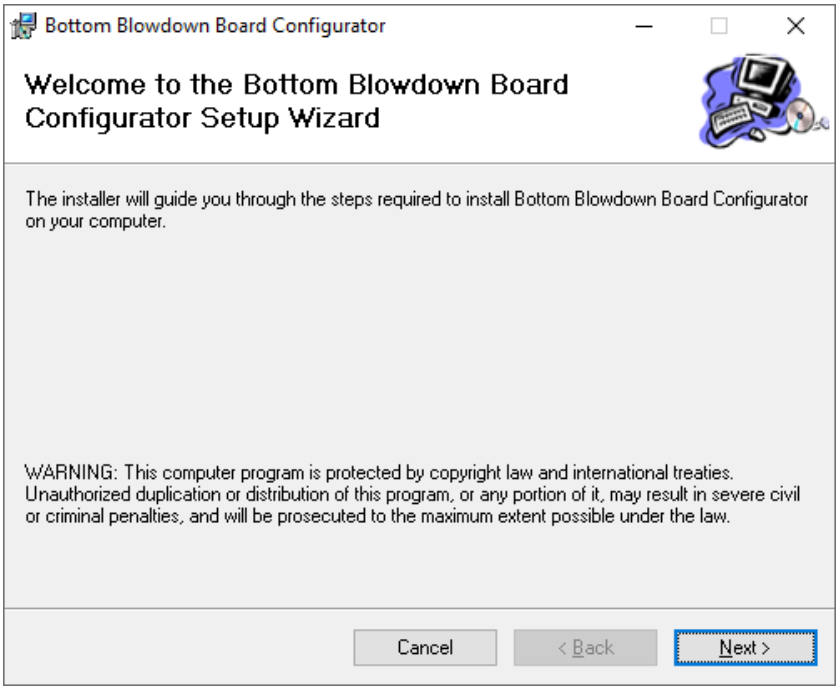
The configurator software is included on the USB stick that is provided with the purchase of the Bottom Blowdown module. The software can also be downloaded from Autoflame Tech Site: tech.autoflame.org/software/

Software Installation

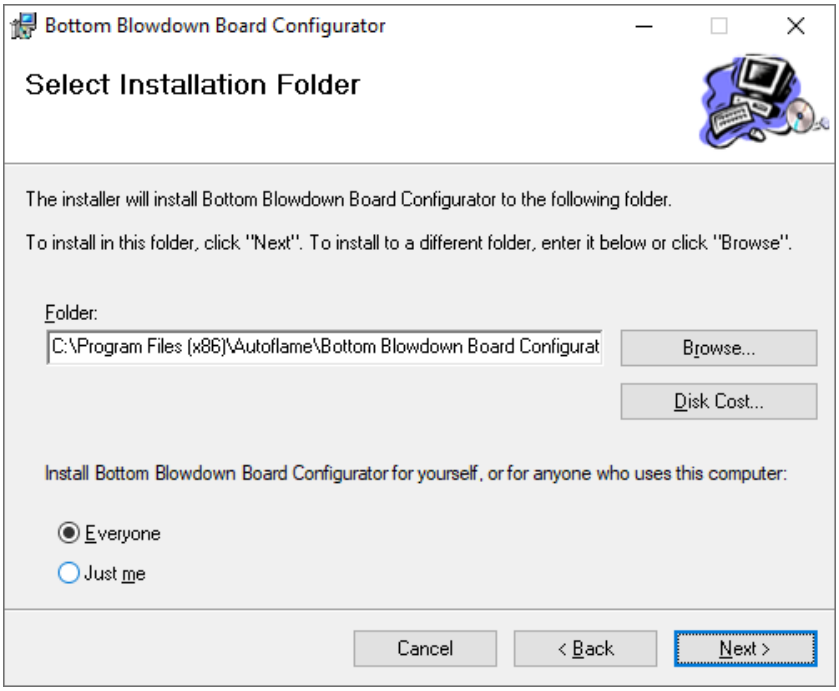
Right click on the 'setup' file and click 'Run as Administrator' to launch the installation process.



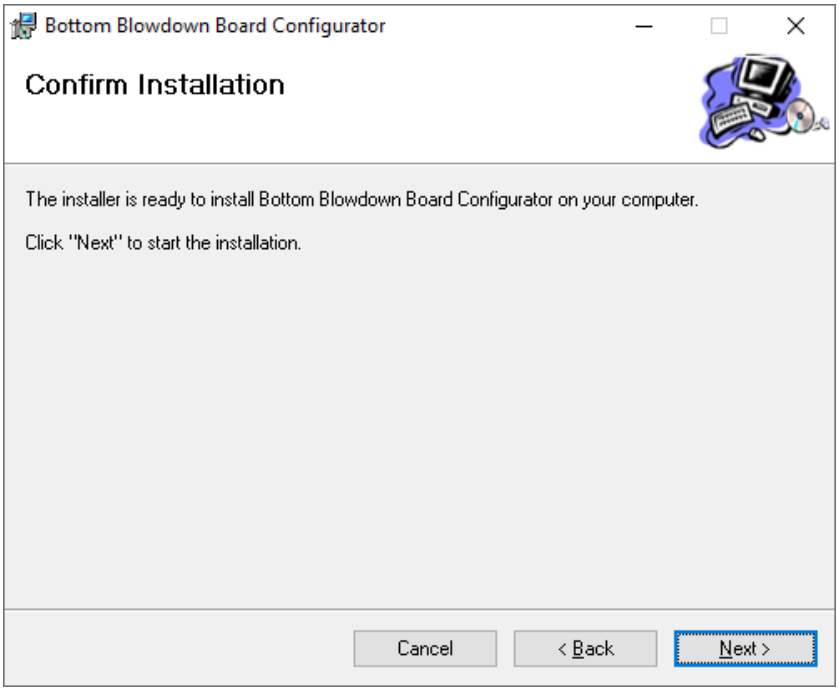
The Bottom Blowdown Board Configurator setup wizard box will appear. Click 'Next' to begin the installation.



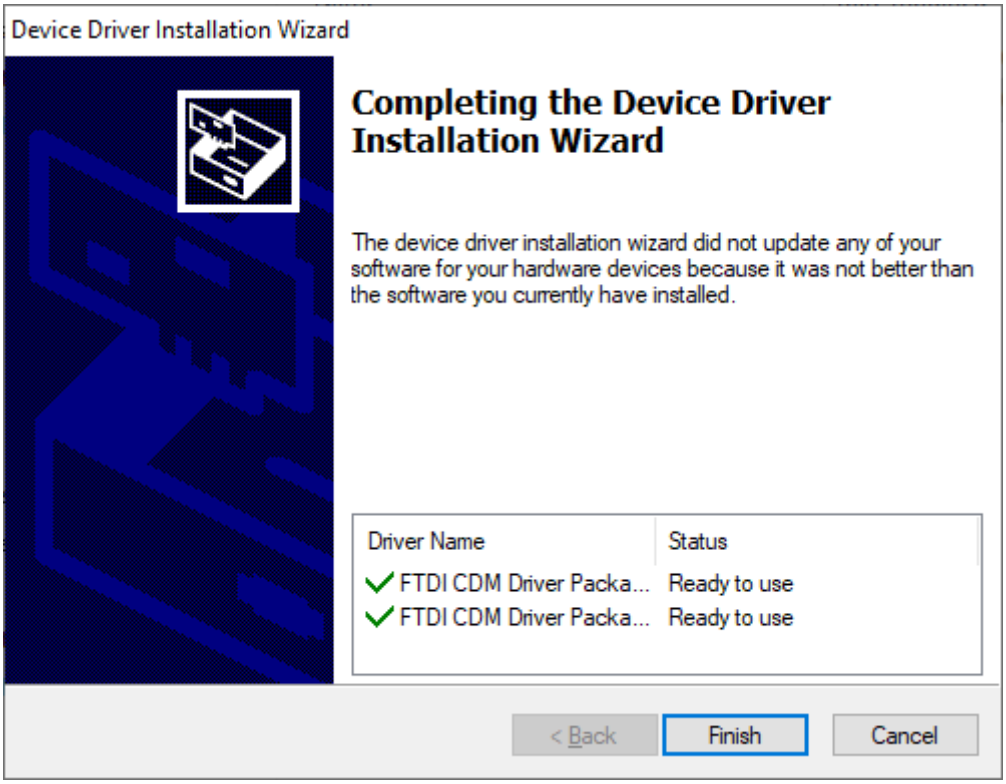
The default installation location is: C:\Program Files (x86)\Autoflame\ Bottom Blowdown Board Configurator \
Click ‘Browse’ if you wish to change this location.
Click ‘Next’ to start the installation.



Now the installer is ready to install the software, click ‘Next’ to confirm.



Once the installer completes the driver installation, click ‘Close’ to exit the installer.



3.5. Configuring the Bottom Blowdown Module

The Bottom Blowdown module can be used either with the Mk8 MM or as standalone. When used with a Mk8 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.

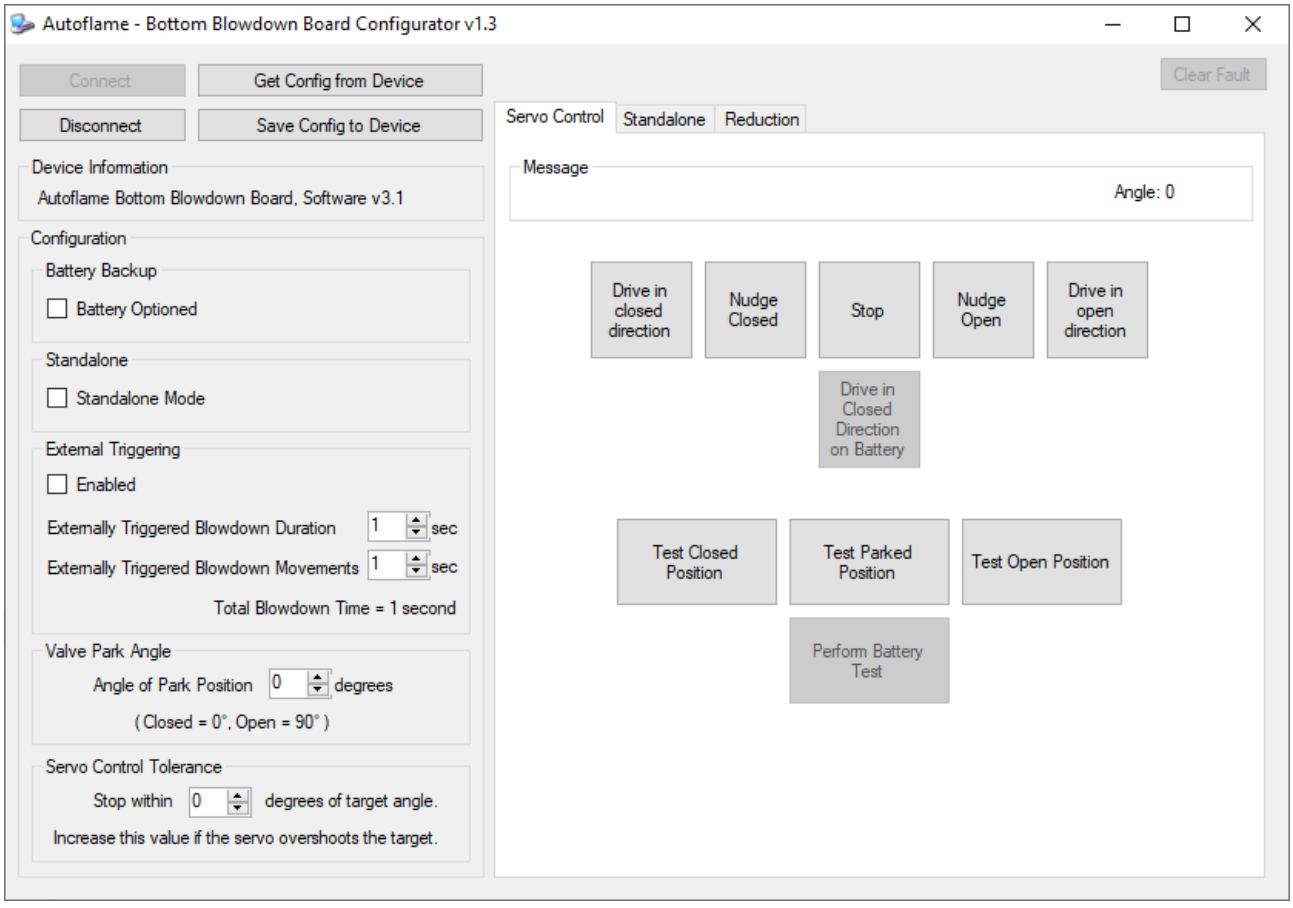
For standalone mode, the Bottom Blowdown module must be used in conjunction with an Autoflame 24V DC servomotor controlling the bottom blowdown valve.

Please check the Mk8 MM Manual for full details about setting up bottom blowdown.

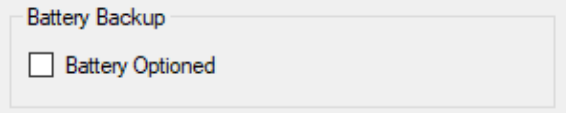
The Bottom Blowdown Module must be configured using the Bottom Blowdown Board Configurator software. For this the module must be connected to the PC, to do so follow these steps:

1. Power off the Bottom Blowdown Module.
2. Connect the Bottom Blowdown Module to the PC using the supplied USB to mini-USB lead.
3. Make sure the Bottom Blowdown Module is disconnected from the Mk8 MM.
4. Power on the Bottom Blowdown Module.
5. Start the Bottom Blowdown Board Configurator software and click ‘Connect’ to establish connection with the module.

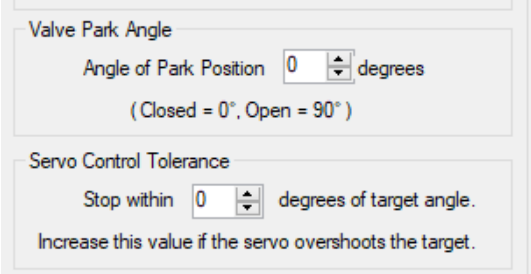
If the board has been previously configured, click ‘Get Config from Device’ to view and change the setup that is already stored on the Bottom Blowdown Module.



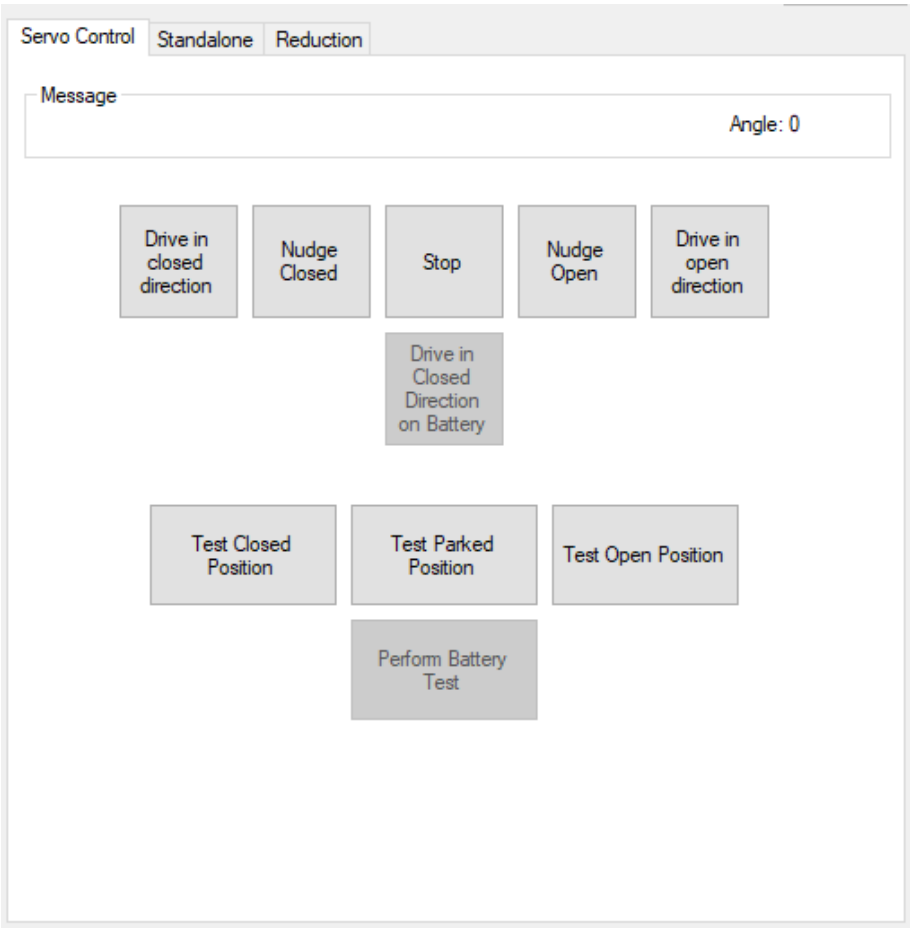
Check the tick boxes for ‘Battery Backup’, ‘Standalone’ and ‘External Triggering’ as required. External Triggering is used for when there is an external switch for the timed bottom blowdown trigger (see section 5.3.2). Please set the Valve Park Angle according to the bottom blowdown valve being used.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



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.



The Servo Control tab is used to set the closed and open positions. 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.
Please check the Mk8 MM manual for further details.



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.’

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.

Click ‘Save Config to Device’ to store these positions.

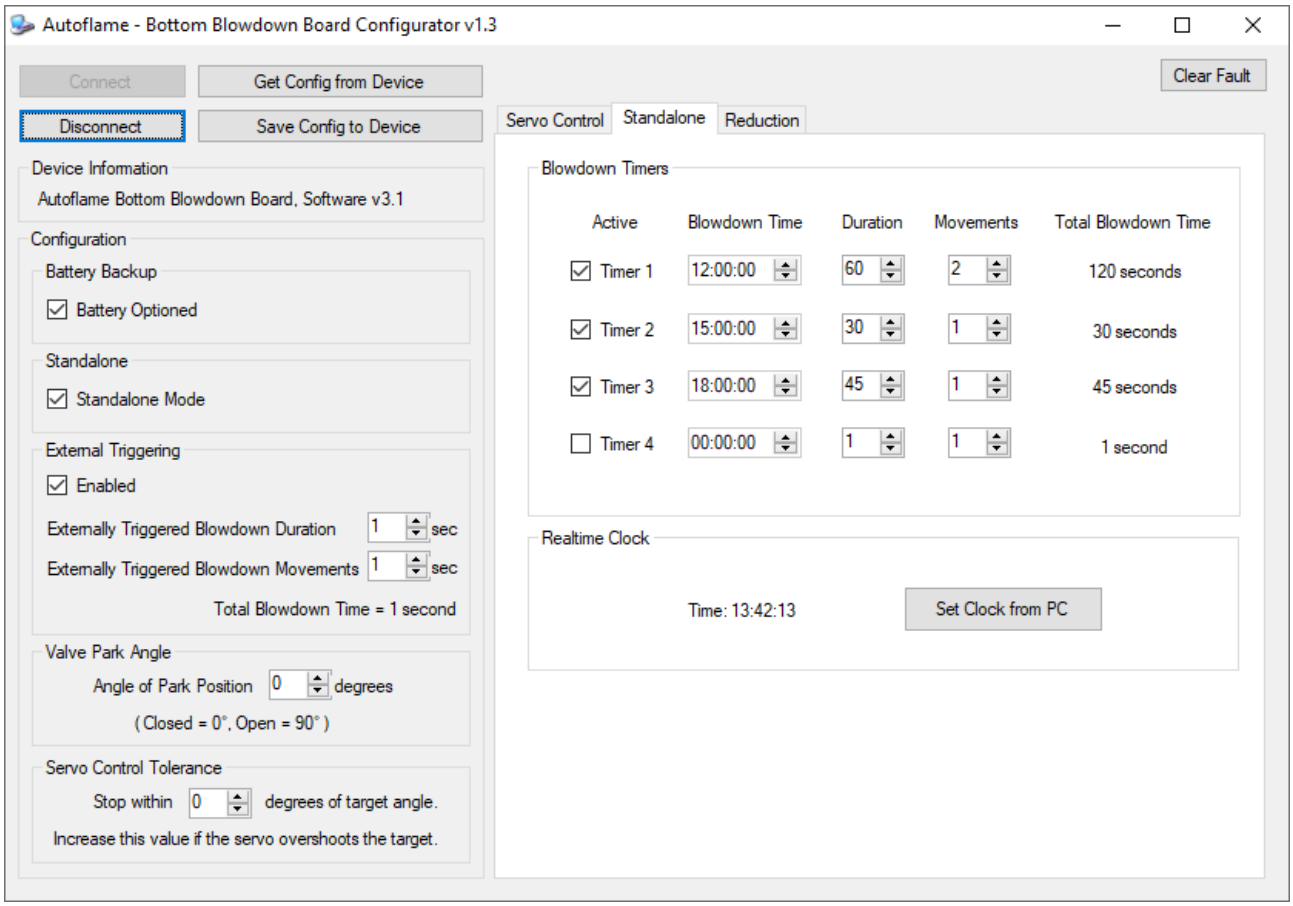
For bottom blowdown with an MM, connect to the MM and follow the steps found in the Mk8 MM Manual.

3.6. Standalone Mode

3.6.1. Standalone Blowdown Timings

When using the Bottom Blowdown module for standalone operation, ensure Standalone Mode is ticked. 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.

Click ‘Set Clock from PC’, the module will update its clock from the PC.



Click ‘Save Config to Device’ to store these timed blowdowns.

3.6.2. 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.

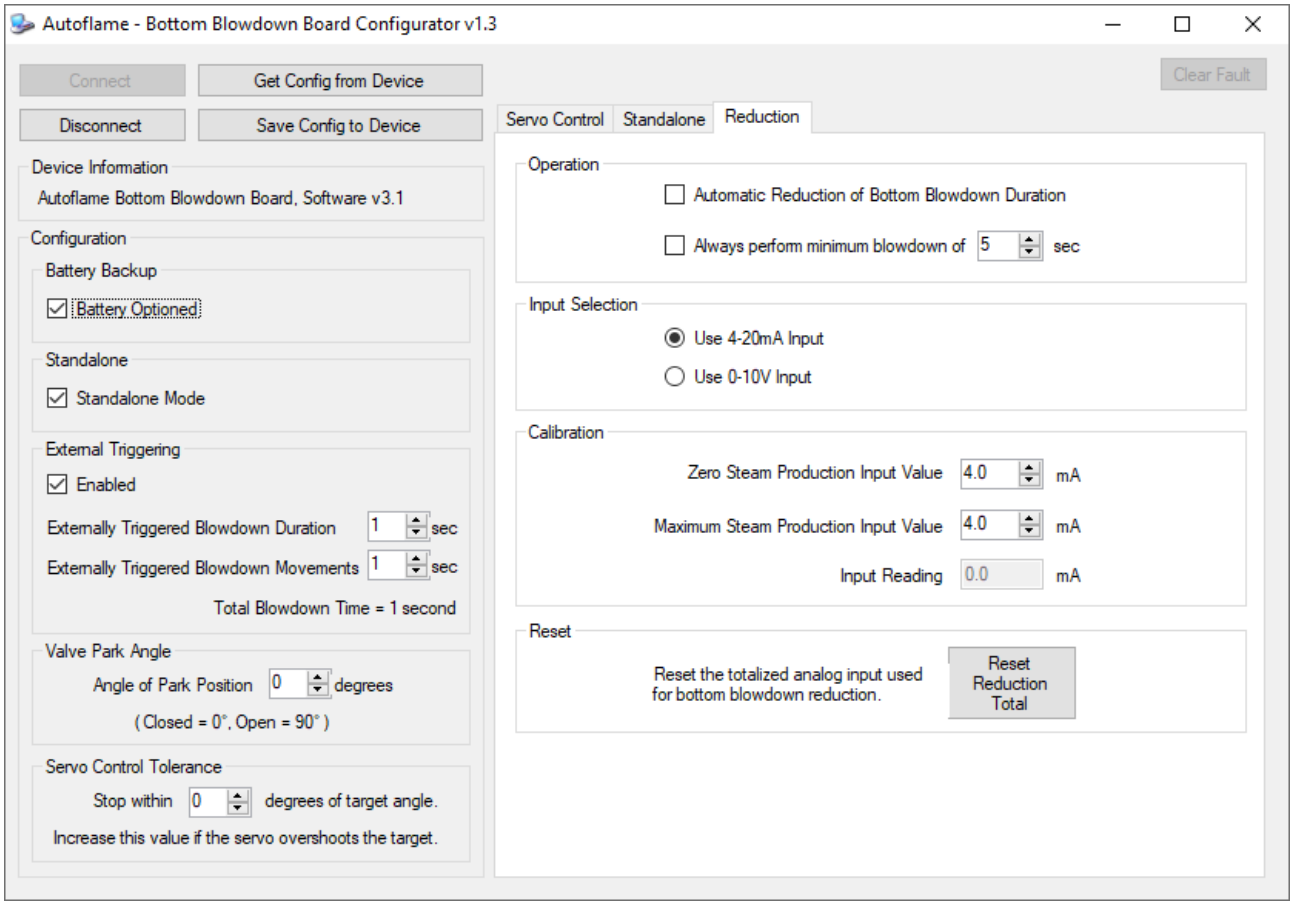
3.6.3. Standalone Automatic Reduction of Bottom Blowdown Duration

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.

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

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

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



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

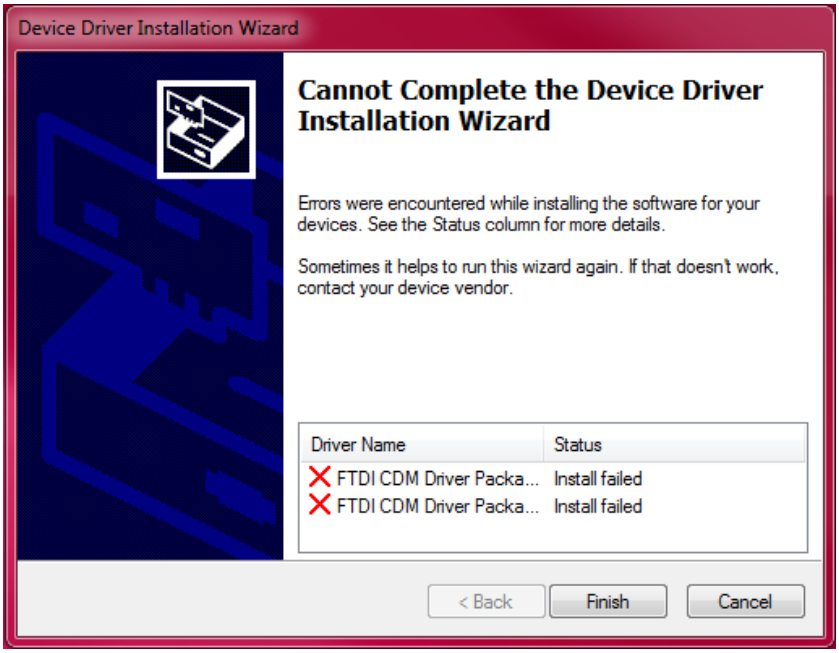
3.7. Troubleshooting

3.7.1. Driver Install Failed

The driver software that connects the Bottom Blowdown Module to the PC should automatically install during the configurator software installation process. However if the driver fails to install, please try the following:

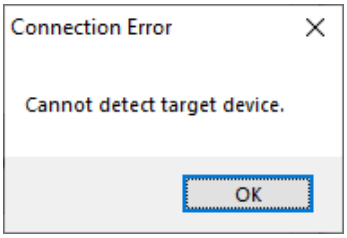
- Restart your PC.
- Power down the IO Module and power it back up.
- Unplug the USB connection and plug it back in to the PC, this will re-initiate the driver installation process.

If the issue persists, please contact Autoflame technical support to request a copy of the driver for manual installation.



3.7.2. 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. Also make sure that the Bottom Blowdown Module is not connected to the MM at the same time.
Please contact Autoflame Technical Support if the error persists.



3.7.3. 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. UNIC10’s only have 110° of movement; ensure that the movement is in the reading range. If not, please check the servomotor zeroing steps found in Autoflame Servomotors Guide.

Autoflame Modules Guide
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