



# COMPUTER APPLICATION MANUAL

**Grand Controls Inc.**

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## Revision Log

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1.0	Initial Release	JB	15 Aug 2019
1.20	Update to match Version 1.20 of the software	JB	18 Feb 2021

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## 1. Introduction

This document was created to help an operator or service technician to install and use the computer application created for the HEATVIEW temperature controller.

Please see the website: [heatviewcontrols.com](http://heatviewcontrols.com) for the latest software and products.

### **Quick Guide to this manual:**

If this is the first time you are using this software, then you should start reading this manual from Chapter 2 and follow it through until Chapter 5 as these are done in sequential order to help you step-by-step to install the program and then setup communications with a HEATVIEW controller. You can then jump around between the chapters after that depending on what you would like to accomplish.

## 2. Application installation

An installer is provided for a Windows® 10 platform computer and is only supported for Windows 10 and newer. This software will not work on any Mac® or Linux® machines.

To install the software, simply run the HeatView\_X.X\_Installer.exe file provided for the HEATVIEW controller. (Where “X.X” is the version number of the software.) If you were not supplied with the file, you can download it from [www.heatviewcontrols.com](http://www.heatviewcontrols.com). Once on the website, click on **DOWNLOADS** and scroll down to find the download link, as shown in the image below

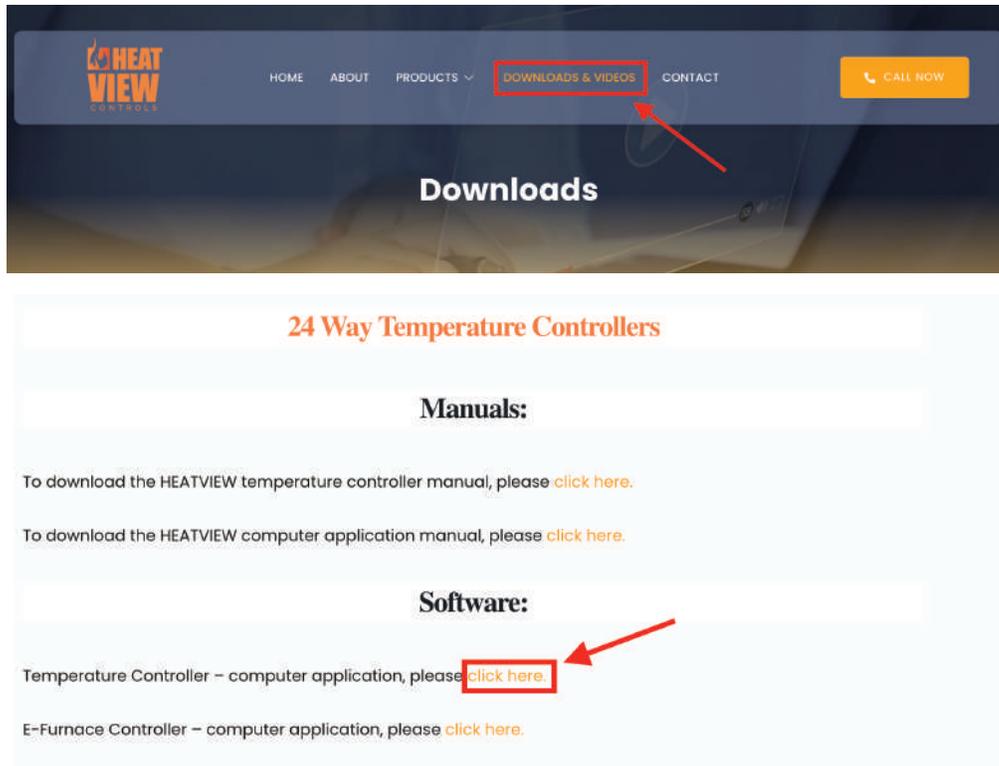


Figure 1: Download link for the software on the website



PLEASE NOTE: Admin privileges are required to install the drivers to communicate with the HEATVIEW device. If you do not have admin privileges, please ask your I.T. department to perform this installation.

### a. Installation steps

Follow these steps to install the software.

1. Copy the installation file to your computer.
2. Close all other running programs (you will need to reboot your machine at the end of this installation.)
3. Double click installation file. The installation file for version 1.0 is shown in the image below

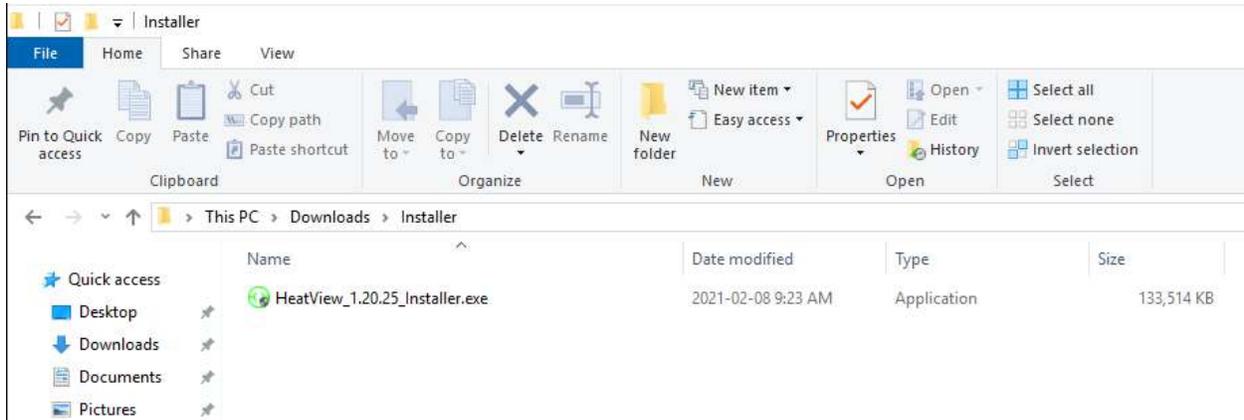


Figure 2: Installation File in Window Explorer

4. This will open an installation window asking you if you for administrative. If you have User Account Controls turned off, you might not see this pop-up. It is shown below. **You NEED TO CLICK 'YES'** to install the software.

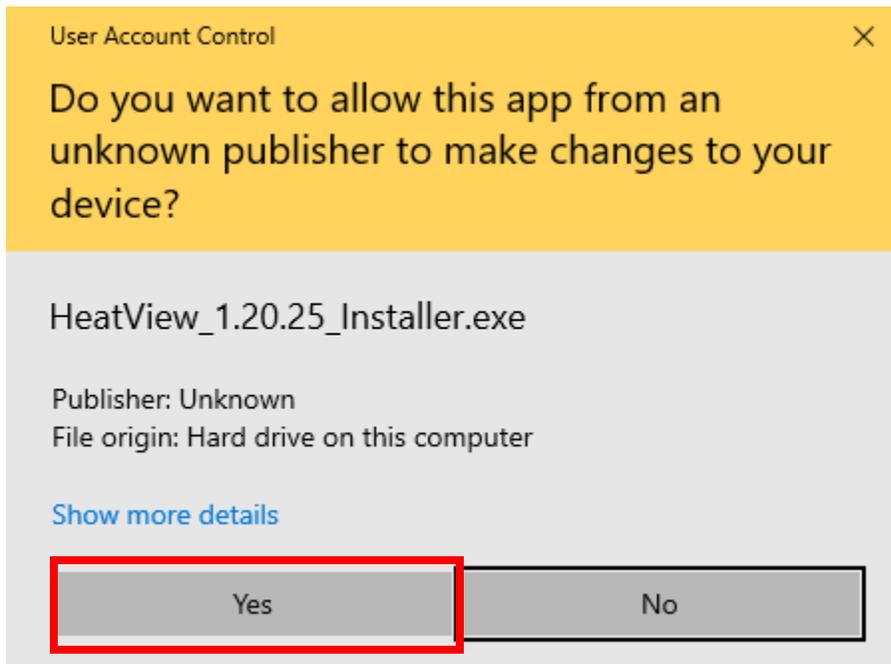


Figure 3: User Access Controls Notification

- Next, you need to click 'NEXT >' at the welcome screen, as shown below.

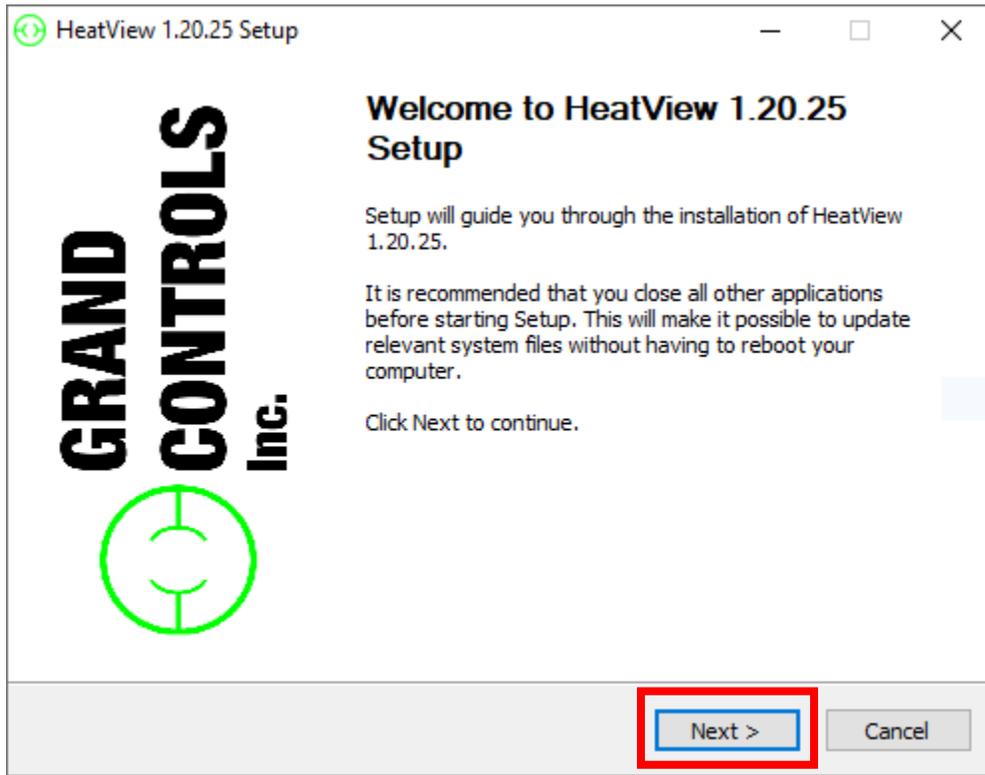


Figure 4: Installation welcome screen

- Next, you need to enter the name of the folder you would like to see the program installed under in your start menu. The default is "HeatView x.x" (where x.x is the version number).

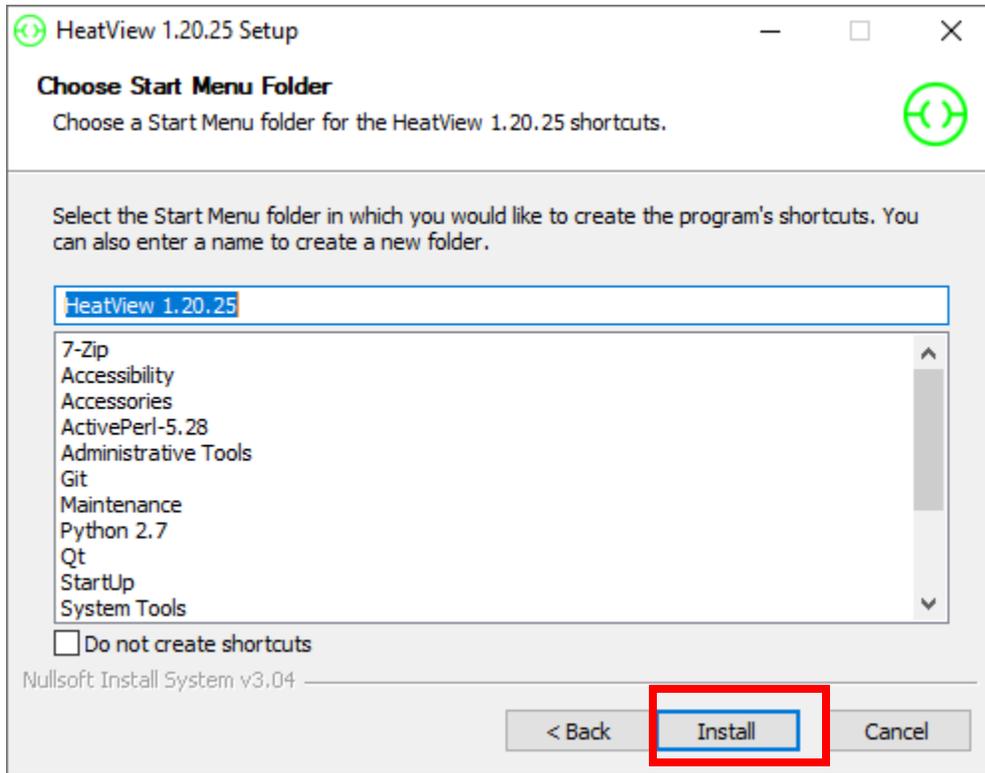


Figure 5: Installation Start Menu folder name

7. Once you have entered your desired folder name, click on the “Install” button.
8. The installer will launch a group of processes to install all the necessary items. Please wait until it requests an input from you. The first should be a request from you to install drivers for the communications with the HEATVIEW controller as shown below. Simply click on the “Install” button to continue.

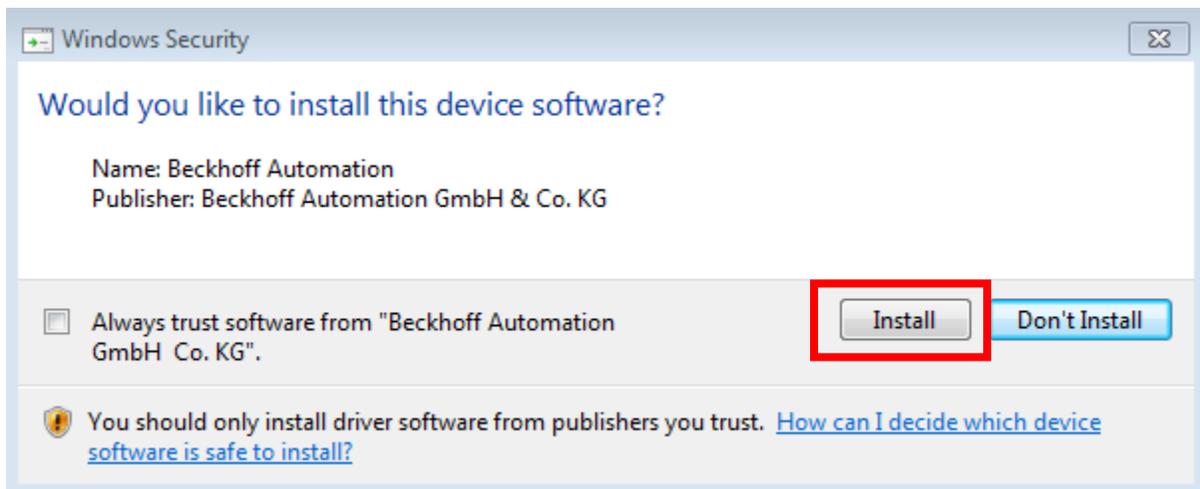


Figure 6: Installation of drivers request

9. The installer will ask your permission with a screen similar Figure 6 two more times. Please click 'Install' every time to continue.
10. Once the system has successfully installed the software, it will ask you to reboot your machine. If you are ready to do so, click 'Yes'. Otherwise, click 'No' and make sure you reboot your machine before trying to run the software.

Once the installation is complete, you can delete the install file from your computer to free up storage space.

### 3. Opening the software

The installer will automatically install a Desktop icon and a shortcut link in your start menu to make it simple to open and use.

You can either double-click the icon on your desktop or the start menu item as shown in the image below.

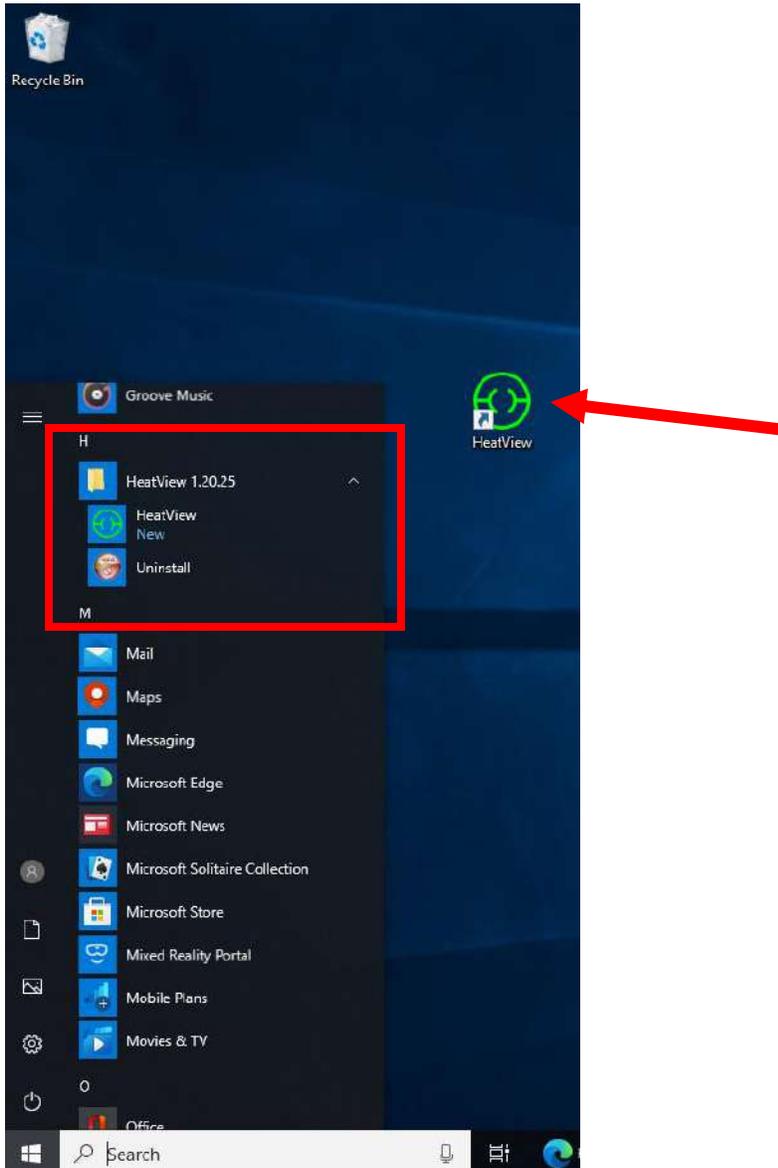


Figure 7: Installed software shortcuts

## 4. Introduction to the MAIN application

This document will explain features of the software in detail and will help you run through setting it up and getting it to communicate with the HEATVIEW temperature controller. This section is just a brief introduction to the MAIN screen of the application. It just shows how to read the data on the main screen while the system is running.

### a. Cycling through the channels

In the figure below you can see a figure of the MAIN screen. It shows the current data of 6 channels at a time.

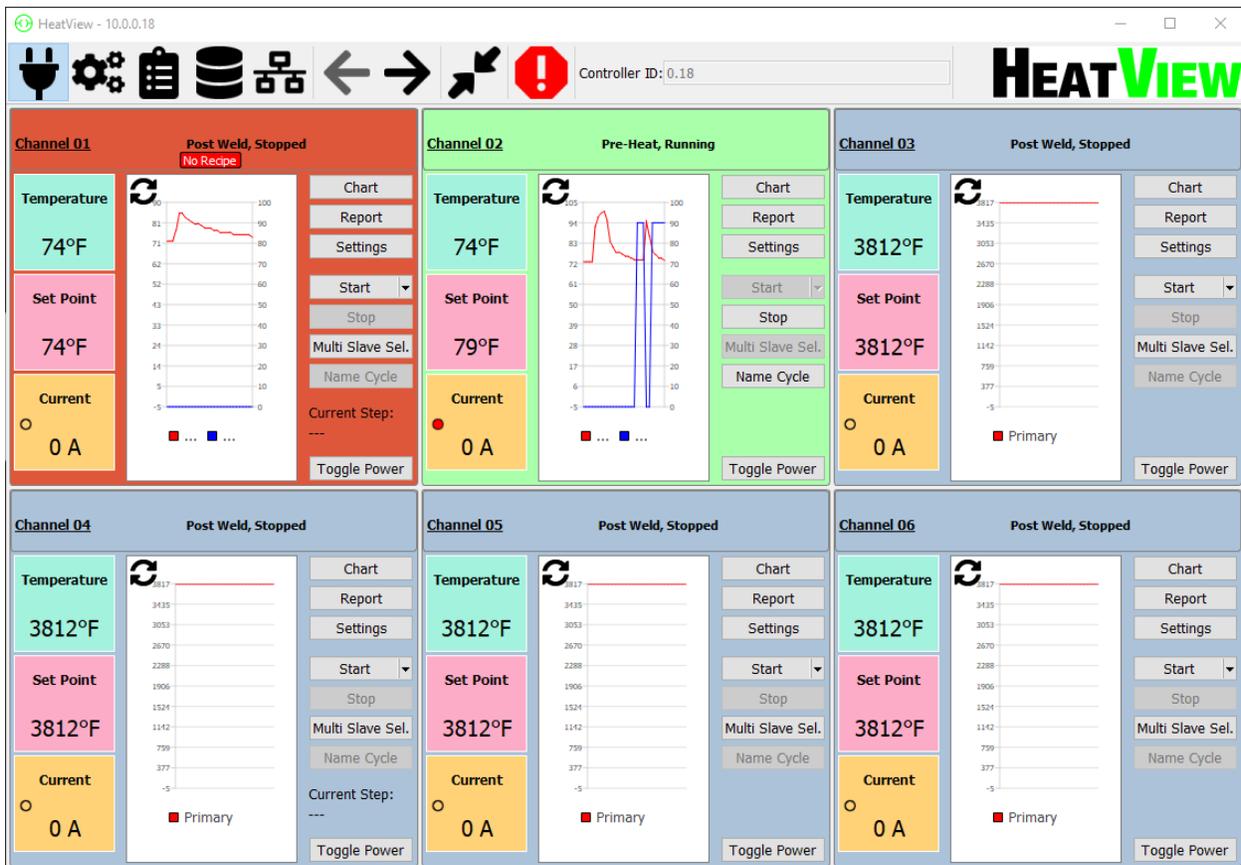


Figure 8: The MAIN screen of the computer application

You can cycle through the channels by clicking on the arrows at the top of the screen as highlighted in the figure below. (If your controller is only setup for 6 channels, then these arrows will be greyed out and unusable).

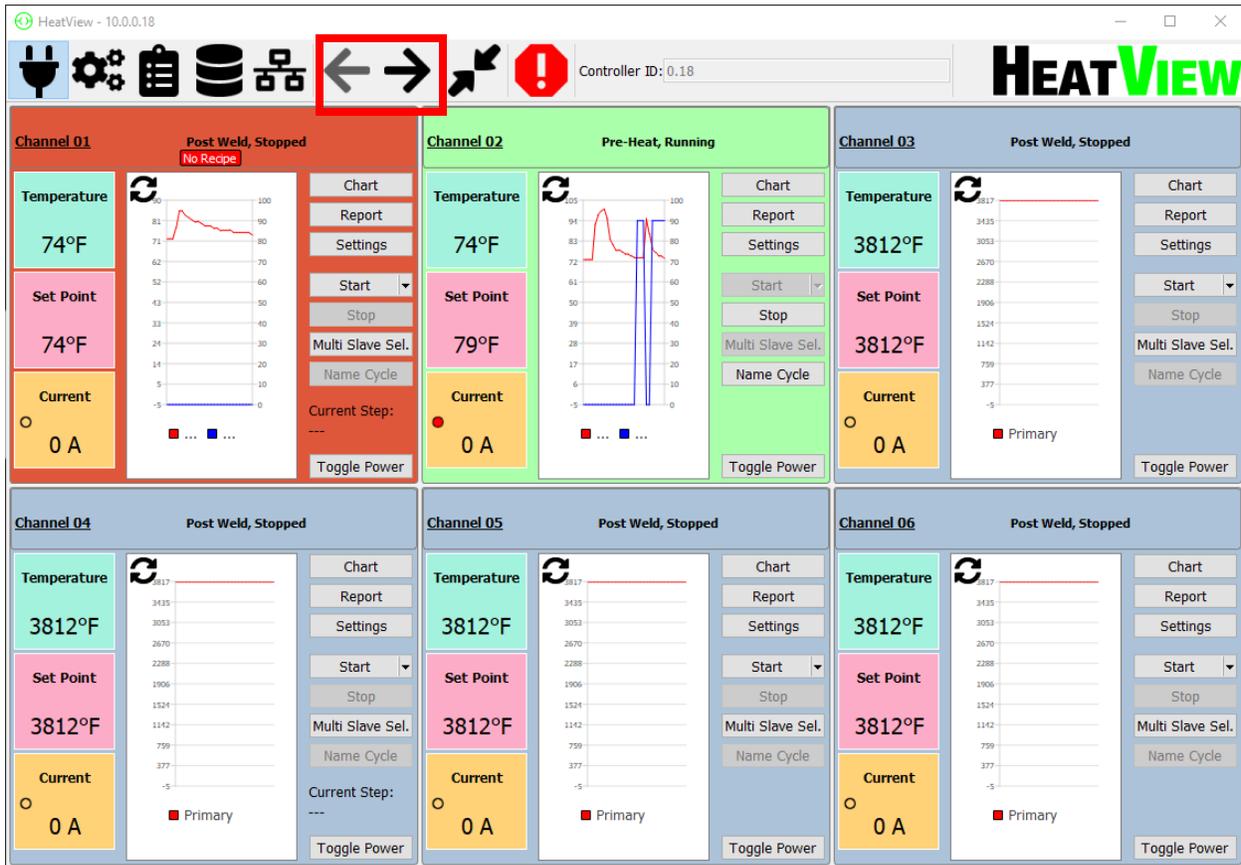


Figure 9: Channel selection buttons on the MAIN screen

### b. Viewing summary of all the channels at the same time

If you would like to see a summary of all the channels at the same time, you can click on the *summary* icon to show this. The *summary* icon is highlighted below. The image below that shows a representation of the summary window. To return to the normal display again, simply click on the *summary* icon again.

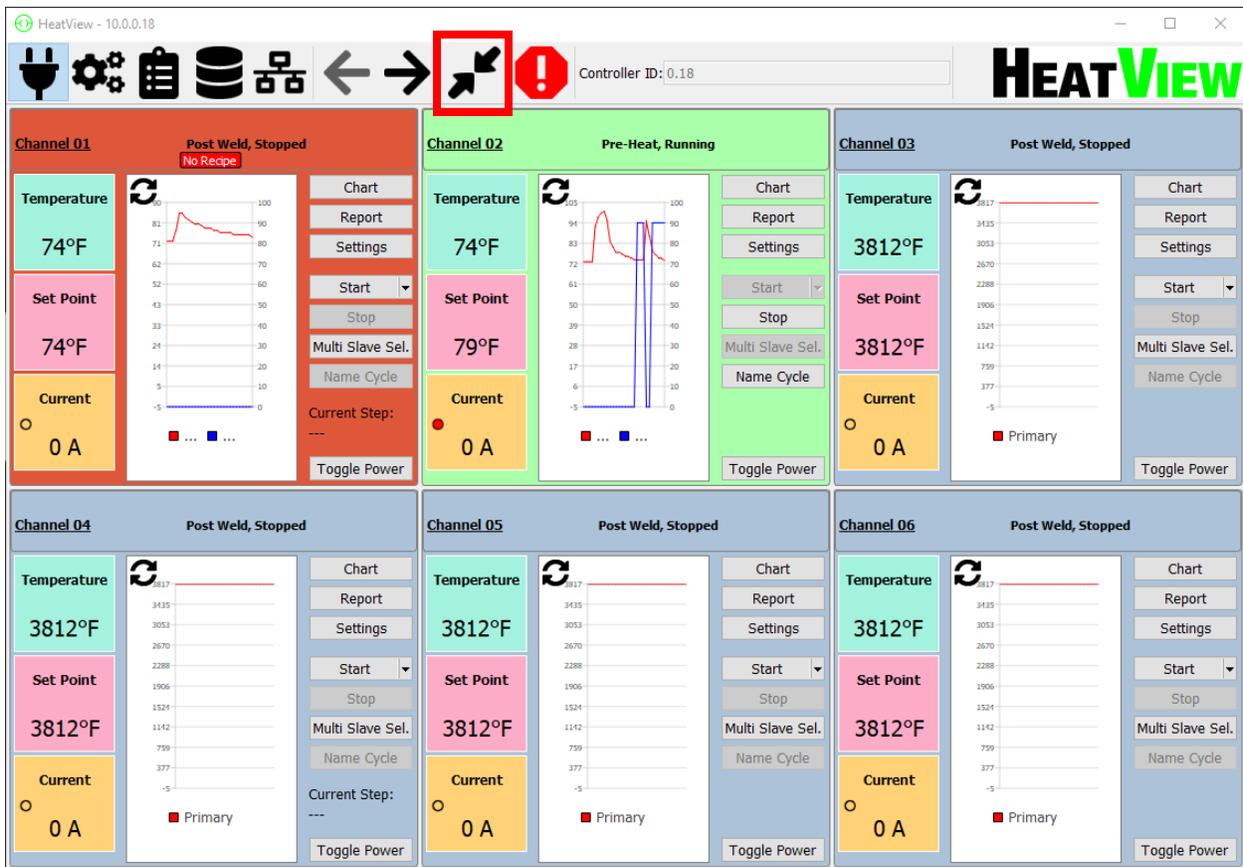


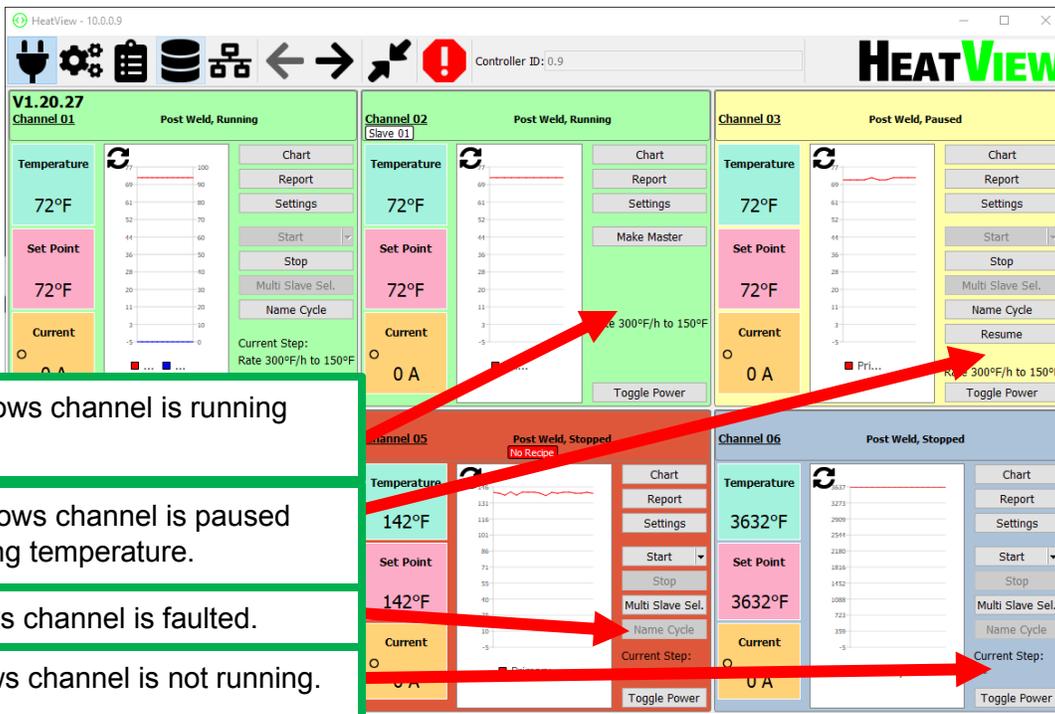
Figure 10: The summary select icon



Figure 11: Screenshot of the main screen showing a summary of each channel.

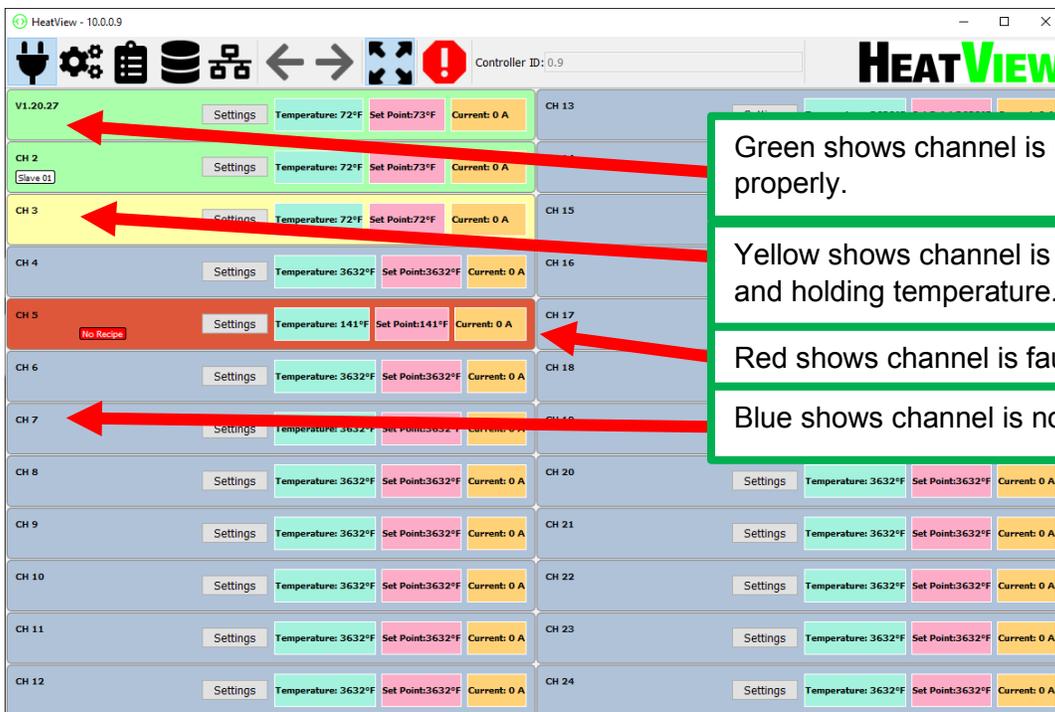
### c. Individual channel information explanation

Each channel shows its current data. Below is a screenshot of the MAIN screen again to highlight the channels colors. If a channel background color changes, it is to indicate the state of the channel. These states are explained in more detail later in this manual.



- Green shows channel is running properly.
- Yellow shows channel is paused and holding temperature.
- Red shows channel is faulted.
- Blue shows channel is not running.

Figure 12: Channel background colors on the MAIN screen



- Green shows channel is running properly.
- Yellow shows channel is paused and holding temperature.
- Red shows channel is faulted.
- Blue shows channel is not running.

Figure 13: Channel colors on the SUMMARY screen

Each individual channel on the MAIN screen shows a summary of the channels running information.

The image below highlights all the information you can see for the channel.

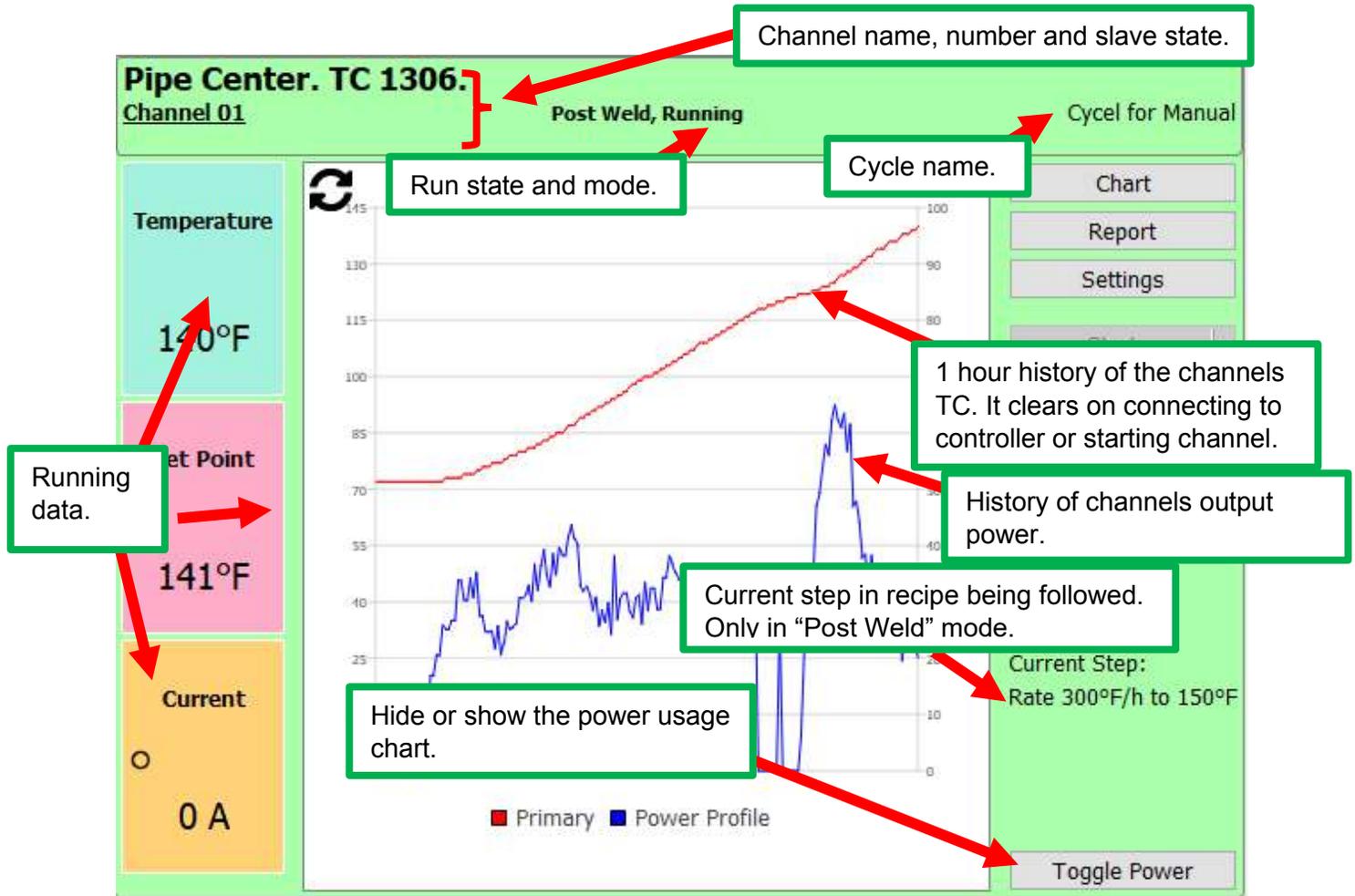


Figure 14: Channel details

#### d. Channel widget buttons

The buttons on the side of the channel widget allow you to perform the following functions:

- **Chart** – This button will change the MAIN screen to show an enlarged chart. This chart is covered in ‘[Heat cycle chart](#)’ on page 20 in this manual.
- **Report** – This button will bring up the report generation screen to allow you to print the heat cycle chart to a PDF document for quality control. This is covered in the section ‘[Creating PDF reports](#)’ on page 54 in this manual.
- **Settings** – This button will bring up the channel’s settings. This is covered in the section ‘[Settings screen](#)’ on page 24 of this manual.

- **Start / stop** – These buttons will start or stop the channel. These buttons are hidden if the channel is slaved to another channel. Only the master channel can start or stop a heat cycle.
- **Multi Slave Sel.** – This button will bring up a small widget with up to 23 check boxes on it. Each checkbox corresponds to a channel on the system. Simply select/deselect all the channels you want to have as slaves to the specified channel.
- **Name Cycle** - This button is enabled once the channel is running. Click on it to bring up a dialog box to allow you to name the heat cycle for simplicity in the report generation screen.
- **Toggle Power** – This button shows or hides the power usage chart on the summary chart on the MAIN screen for this channel.

### e. Heat cycle chart

When a channel starts running, its temperature and set point are read and stored locally in a database. You can view this data by clicking on the channels 'Chart' button. It will bring up a chart showing its heat cycle progress, as shown below. If the channel has slave channel(s), then all the slave channel's temperature profiles will be added to the chart for easy viewing. You can also view the slave channels charts individually by clicking on their 'Chart' button.

The **chart intervals** at the top of the chart show the time between the tick lines on the chart X-axis and the temperature difference between the ticks on the Y-axis. These values are auto generated and they will change as the chart's scale changes as the chart grows.

The **chart notes** show provide a method to record notes for the cycle. These notes will appear on the PDF report generated for quality control. To add a note, simply click on the '+' button above the **Notes List** and then click on the chart you want to add the note to. This will then bring up a dialog box to allow you to enter the information you want on the note.

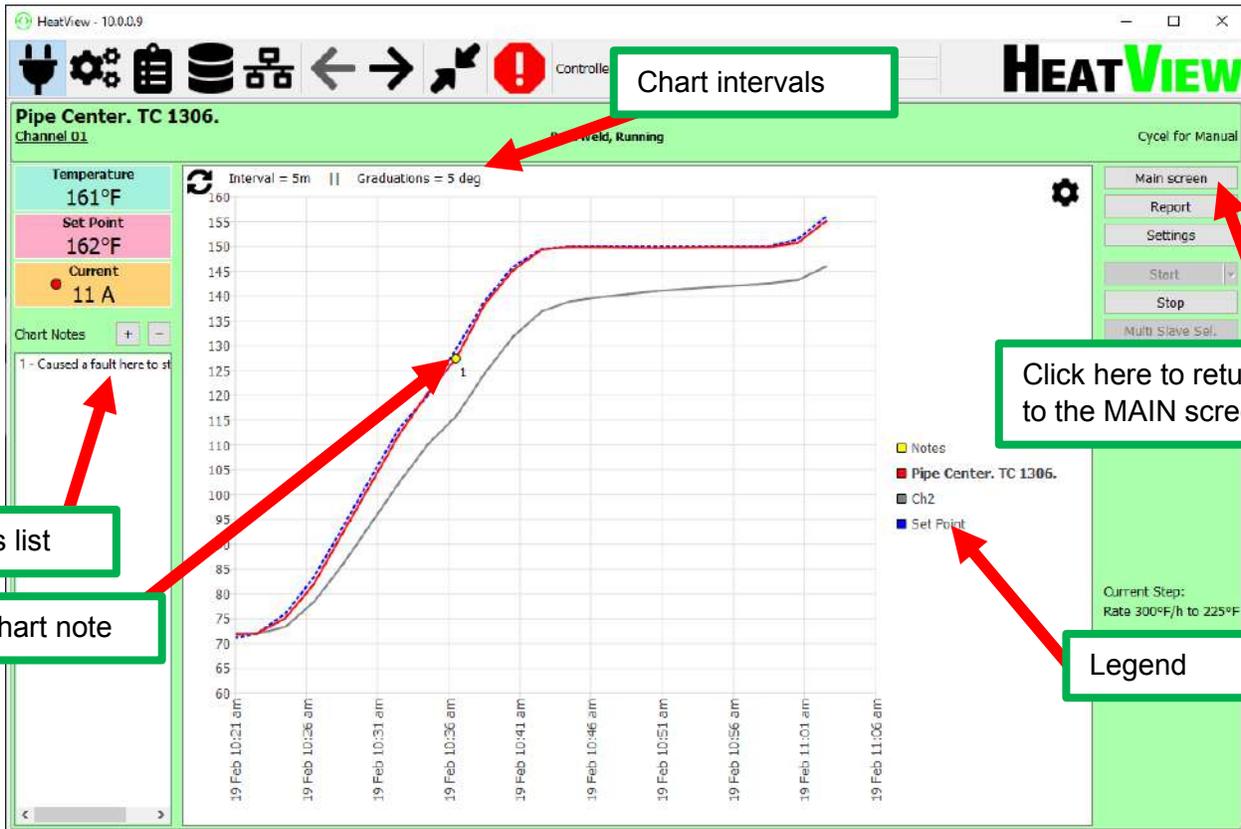


Figure 15: Cycle chart display

### f. Title Bar buttons

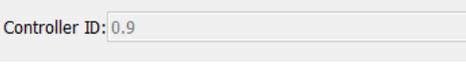


Figure 16: The Title Bar

The figure above is of the title bar found in the computer application. The buttons and information on this bar will help you control everything in the computer application. The table below gives a brief introduction to each button. The sections below it will cover them in more detail.

Item	Name	Description
	Connection Status	This part of the title bar will inform you as to the connection status to a controller. If it gives a set of numbers as shown in Figure 16 above then it is connected to a controller. The controller ID will be the last 2 numbers of the string of numbers.

		<p>If the status says “Connecting to xx.xx.xx.xx” it is trying to make a connection to the temperature controller. If it is taking too long, check the ethernet connection to the unit. If it is the first time you are connecting to a specific controller, make sure you have setup a communication channel as described in section 5 – “Setting up a communication channel with a HEATVIEW Controller”</p>
	Connect/Disconnect button	<p>Clicking on this button will make the software try to connect to your controller. If the button has a blue background, then the system is trying to connect or it is connected.</p> <p>Clicking the button while its background is blue will make the software disconnect from the controller.</p>
	Settings button	<p>Clicking this button will bring up the software applications settings screen. It is covered in more detail in section ‘Settings screen’ on page 24 in this manual.</p>
	Recipe Manager button	<p>Clicking this button will bring up the recipe editor screen. In this screen you can define a temperature profile for a Pre-Weld heat cycle and then save it or download it to the controller.</p> <p>For more information see ‘Creating a recipe’ on page 41 of this document.</p>
	Upload heat cycle data button	<p>If something happened while you were connected to a controller and the software stopped logging the data on a heat cycle, you can upload the data from the controller. The data from the controller is not as detailed as the data from the computer application. More information on this is provided in section ‘Uploading backup data from</p>

		controller' on page 59 in this manual.
	Setup communications channel button	Before you can connect to a controller, you need to setup a communications channel first. You can use this button to do that. See section 5 – “Setting up a communication channel with a HEATVIEW Controller” on page 27 in this manual for more information.
	Channel scroll buttons	If the controller is setup to run more than 6 channels, then you can scroll through each set of 6 channels on the Main screen using these buttons. The buttons become greyed out when they will have no effect.
	Faults button	If the computer application reads a fault on the controller, this button will appear. By clicking on it, you will bring up the faults screen. You can clear or silence faults by clicking on this button.
	Controller ID	<p>This is the address of the controller that the software uses to address the controller. If you press on the <b>Settings &gt; remote connection</b> on the touch screen of the controller. On this screen you can see the 'local controller ID'. As shown in the image below the numbers to use are 0.9</p>  <p>If you IT department requires you to change the IP address of the controller, you can type in the first 4 numbers of the 'Local Machine Net ID' number on this screen. In</p>

		this image, the numbers are 10.0.0.9
	About button	Double-clicking on this button will bring up the 'About' screen. This screen is shown further on in this section. It is important to know about this screen as it contains your systems serial number which you will need to know when contacting your supplier for technical support.

### g. Settings screen

There are a few editable settings for this software. To access them, you can click on the 'Settings button' (as shown in the table above). This will bring up the settings window.

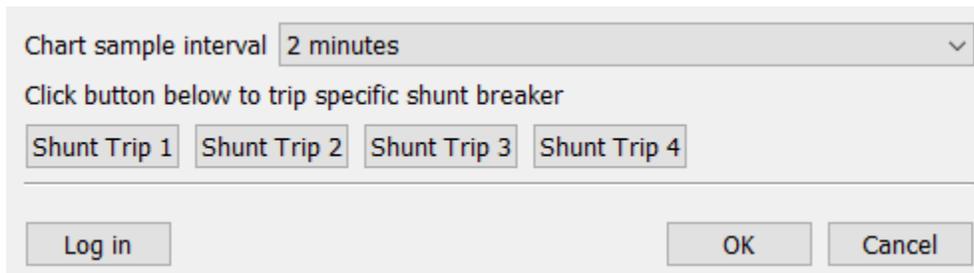


Figure 17: Settings screen

The table below describes all the items in this window.

Item	Description
Chart sample interval	This is the interval at which the computer software will sample the data from the HEATVIEW controller to log into the database and to display on the channels cycle chart.
Shunt Trip 'x'	Pressing on one of these buttons will trip the shunt of the machine it is connected to.
Log in	Clicking on this button will bring up the login screen. Once logged in, and advanced button will appear on the settings screen. The advanced settings screen is shown in section 'Logging in – Advanced settings' on page 39 of this manual.

## h. Faults screen

If the software finds any active faults on the HEATVIEW controller it is currently connected to, the Faults Icon button will appear title bar. You can click on this button to bring up the faults screen to see what faults are present.

There are two types of faults. 1) System faults and 2) Channel faults. The System faults are faults that present on the controller hardware or communication to the controller faults. The channel faults are specific to each channel of the system. System faults are preceded by the text "System faults:". The channel specific faults are preceded by the text "Ch xx:" (where xx is the channel number).

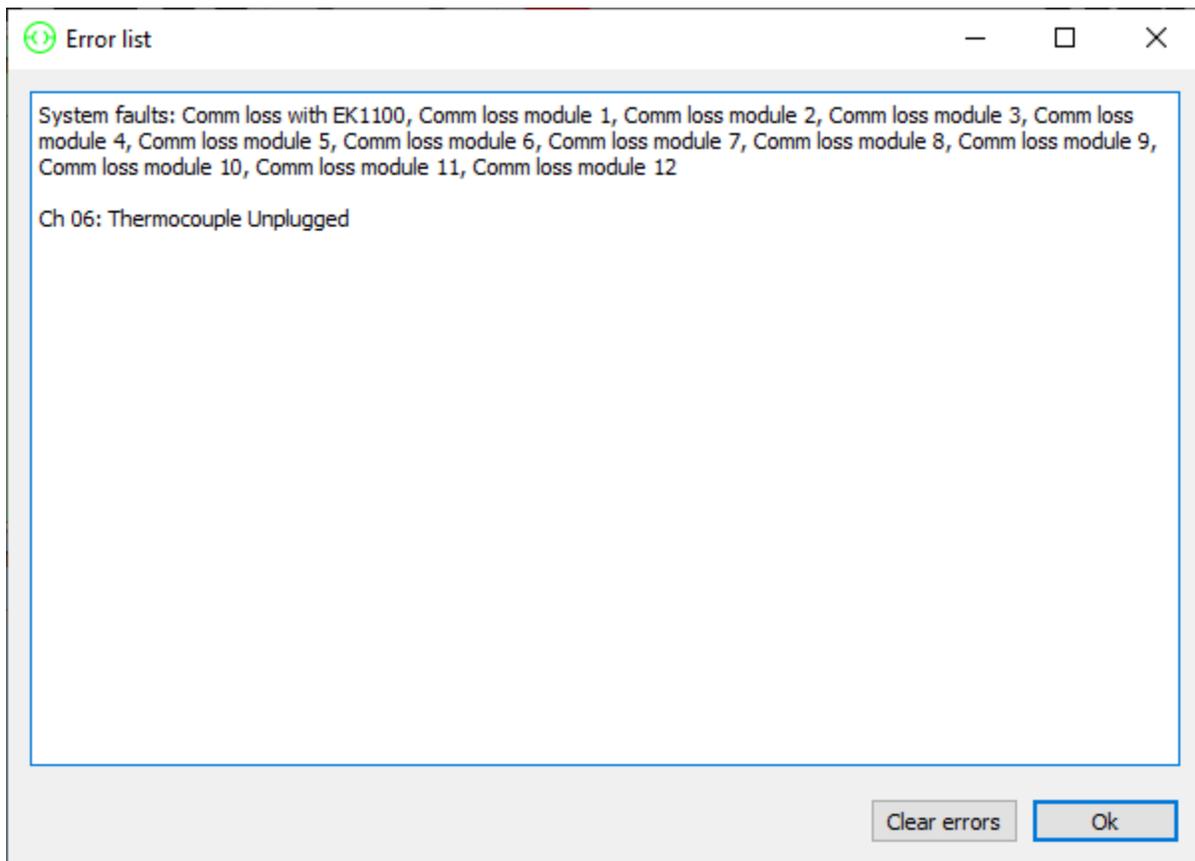


Figure 18: Faults screen

To try and clear the faults, you can click the 'Clear errors' button on the Faults screen. This will try and clear the faults, if possible. If the fault cannot be cleared, the fault will remain on the screen. Pressing the 'Ok' button will hide this screen.

Every time the software sees a new fault it will repeated play a chime sound on your computer. This will repeat until the fault is fixed and cleared or until you bring up the fault screen and click on the 'OK'. Clicking on the 'OK' button will not clear the fault, but will only acknowledge you have looked at the fault and that the system does not have to keep playing the chime.

### i. The about screen

If you double-click the HEATVIEW logo on the title bar, the 'about' screen will appear. An example of the about screen is shown in the figure below.



Figure 19: The about screen

This screen gives the computer software version in the first line.

The next line gives the HEATVIEW controller serial number.

The last line gives the version of the code running on the HEATVIEW controller.

## 5. Setting up a communication channel with a Heat View Controller

If it is the first time you are connecting to a specific HEATVIEW controller or it is the first time you are opening the software, you need to setup a communication channel to the controller. To do this, you need to follow the steps given here in the correct order.

Once you have setup the communications channel, you do not need to repeat this process, unless you are having problems connecting to the controller again.

1. Power on the HEATVIEW controller. Wait for the device to power-up fully before continuing. This can take up to 2 minutes.



**Make sure you do not have a router connected to the controller and that you do not have a STATIC IP address assigned to you networking device on your computer. You also need to make sure the 'Stand alone enable' switch is on. This switch is on the back of the console.**

2. Connect your computer to a HEATVIEW controller using an undamaged Ethernet cable. The Ethernet connector can be found on the side of the controller. If you do not have an Ethernet cable, you can connect to it over Wi-Fi using the Network SSID "HeatView" or "Temperature\_Controller1"



Wireless SSID = "HeatView" or "Temperature\_Controller1"  
Password = GRANDCONTROLS

3. Once you are connected to the device, open the software. (See section 3 on page 13 for more info on this.)
4. You will notice that the software cannot get any data from the controller as shown in the image below.

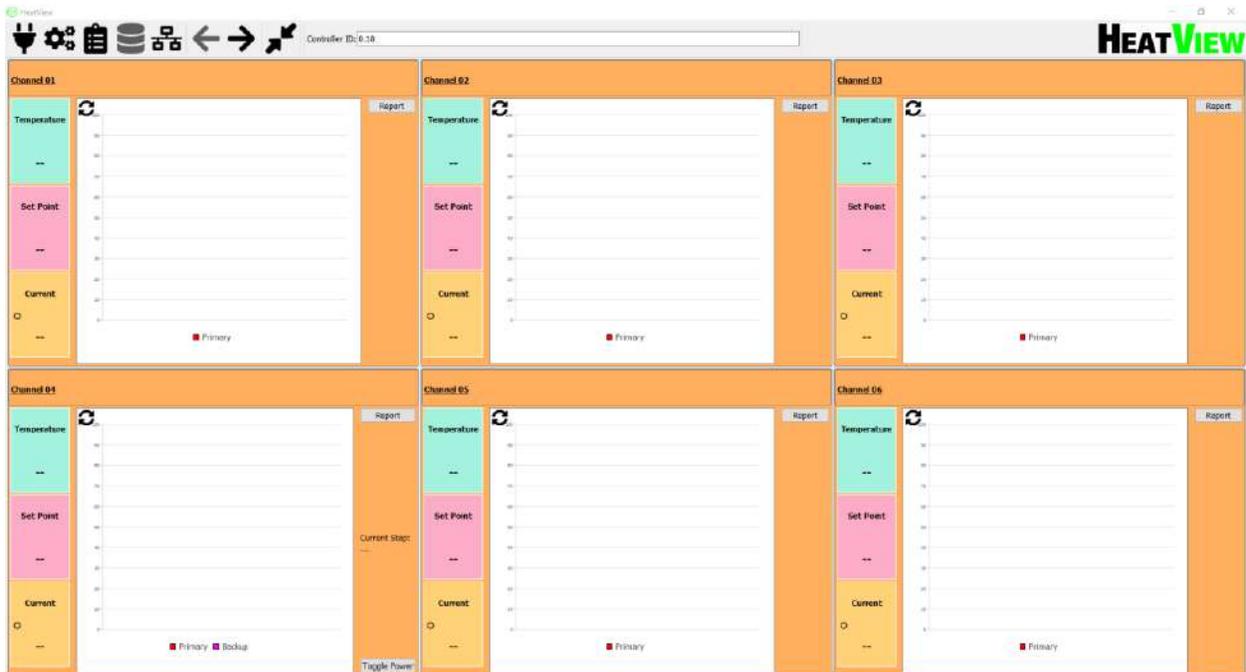


Figure 20: No connection to controller

5. Click on the communication setup button. As shown below.

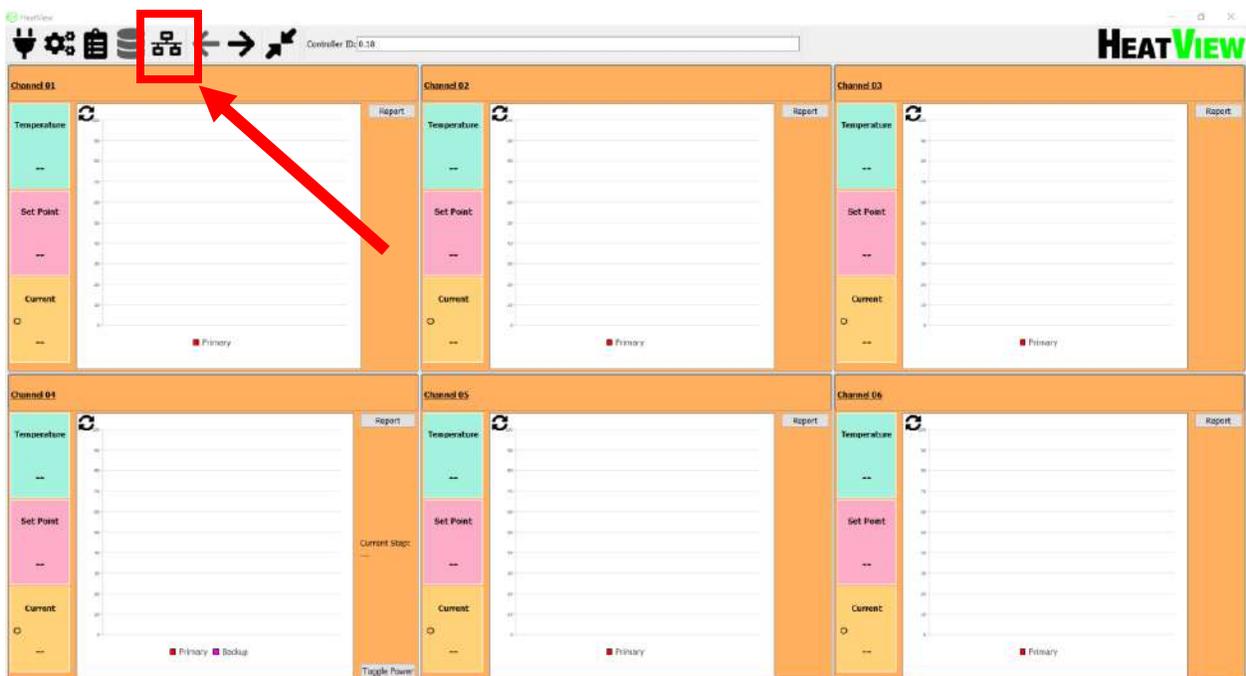


Figure 21: Communication channel button

- This will bring up another window. It might already have some entries, and depends on how many different controllers you have connected to already from this computer. To setup a communications channel, click the 'Add...' button at the bottom of the screen.

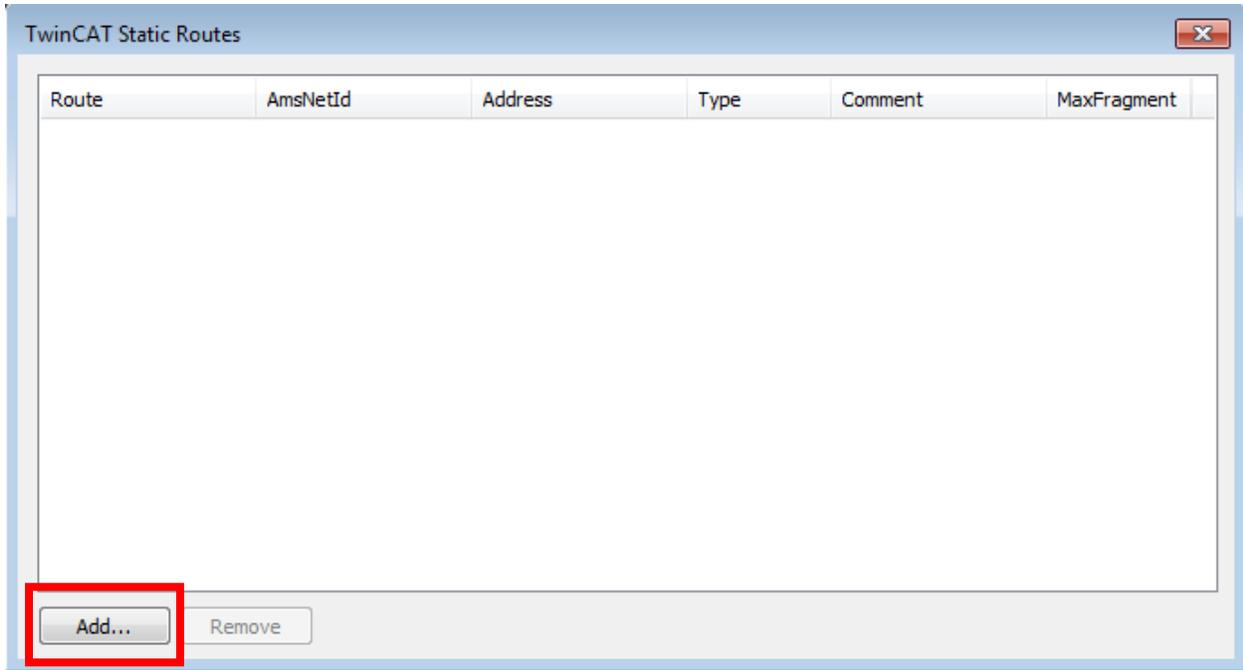


Figure 22: Communications channels screen

- In the new pop-up window, search for your controller by clicking the "Broadcast Search" button and waiting for it to complete its search.

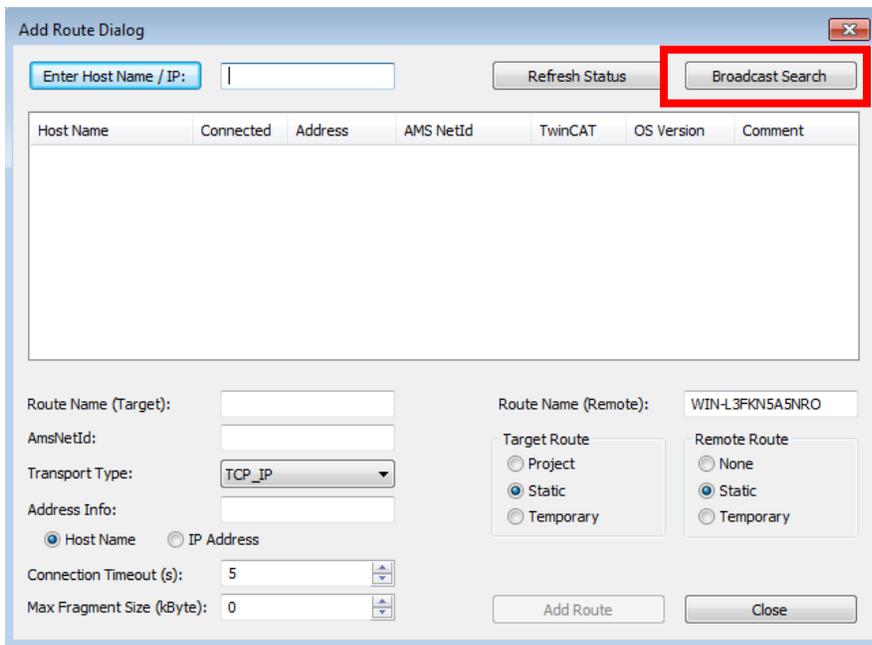


Figure 23: Creating communications channel

8. Once the system finds the controller, it will list it in the window. Please note that it might find more than 1 item. Only those listed as having a “Win CE (7.0)” OS Version will be a controller. Other entries will be your computer plus others on the same network. The image below shows more than one result and highlights the correct entry.

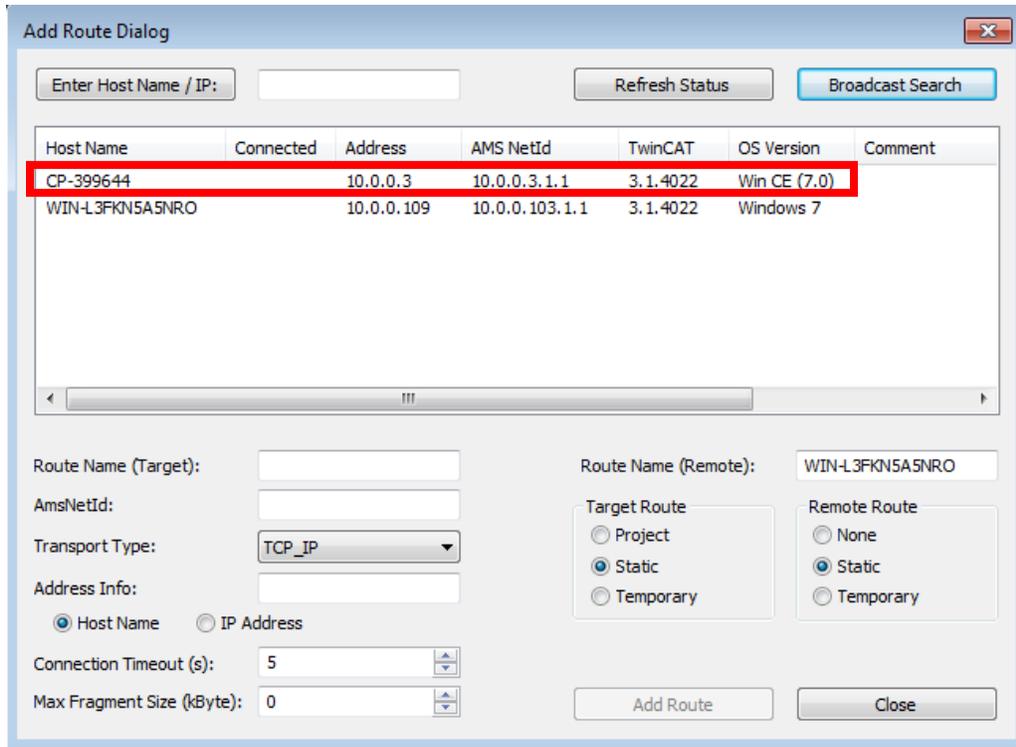


Figure 24: Communication search results

9. Click on the correct entry in the text box. This will fill out info in the entry boxes below for you.

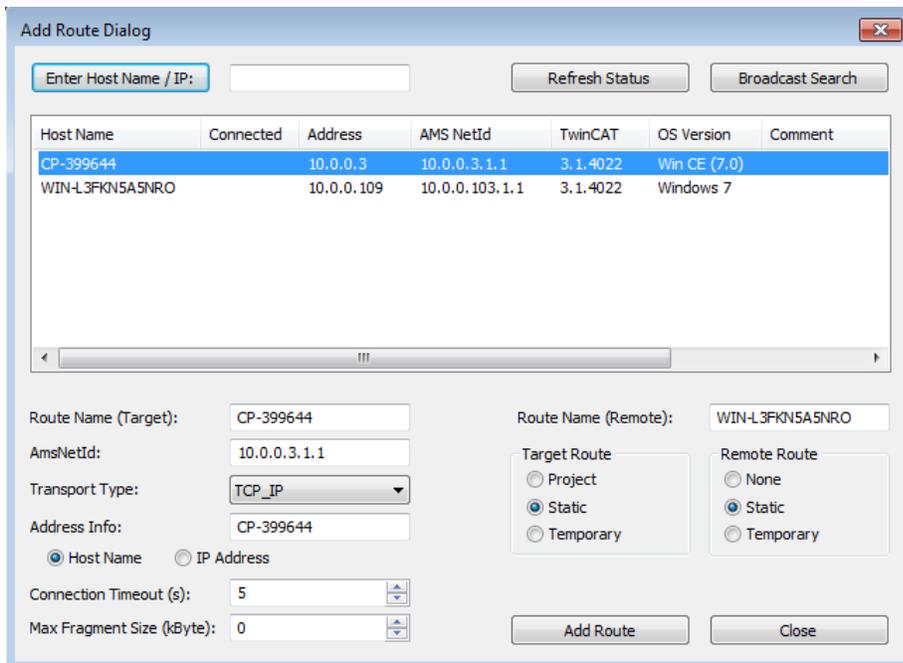


Figure 25: Selecting controller communications info

10. Next, click on the 'IP Address' radio button

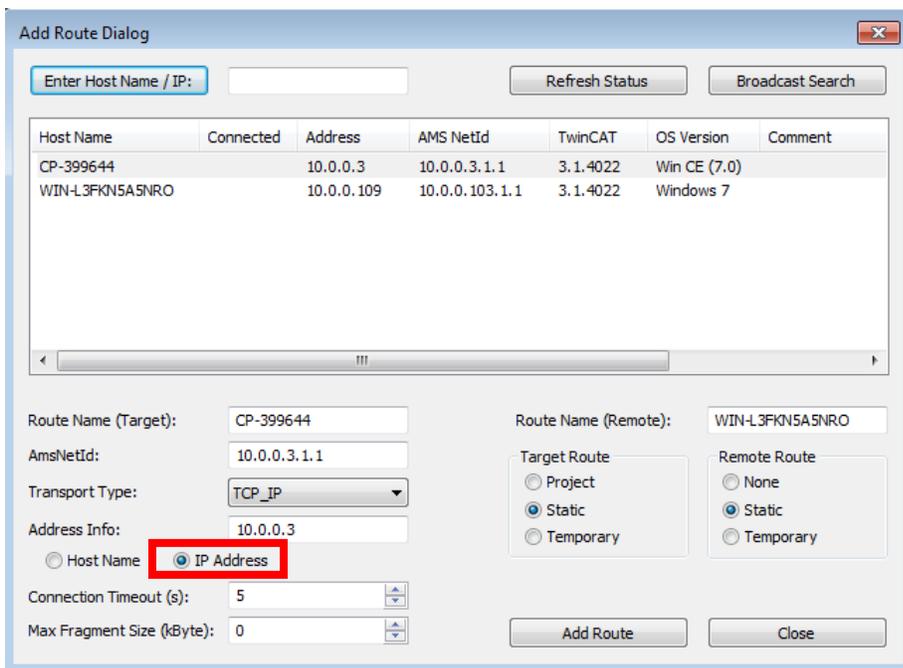


Figure 26: Selecting the type of communication

11. Next, click 'Add Route'

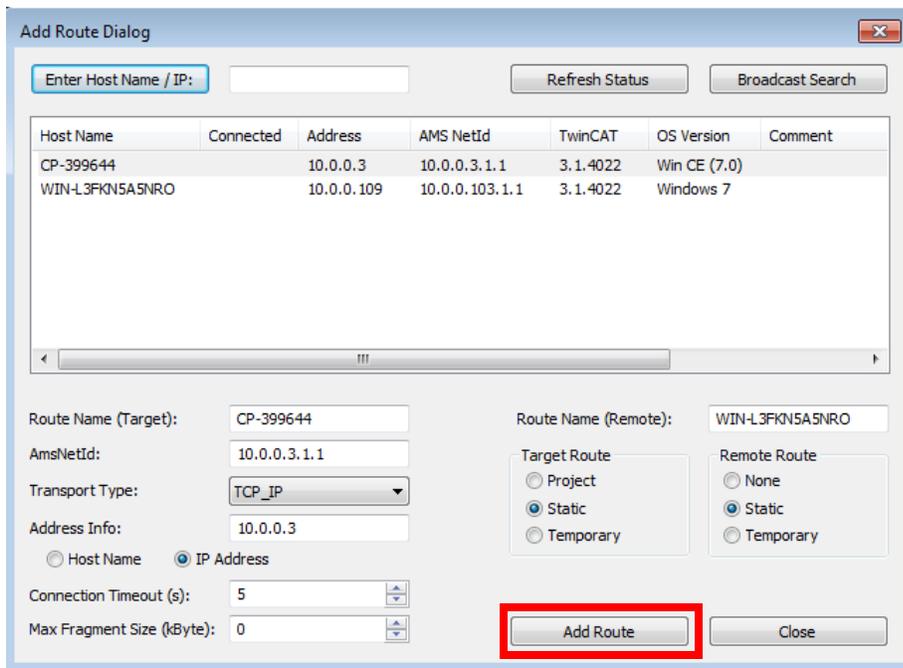


Figure 27: Create communications channel

- In the 'Logon Information' screen that pops-up, make sure the User name does not change (It is always Administrator), the password field is left blank and the 'Encrypt Password' option is checked. Then click 'OK'

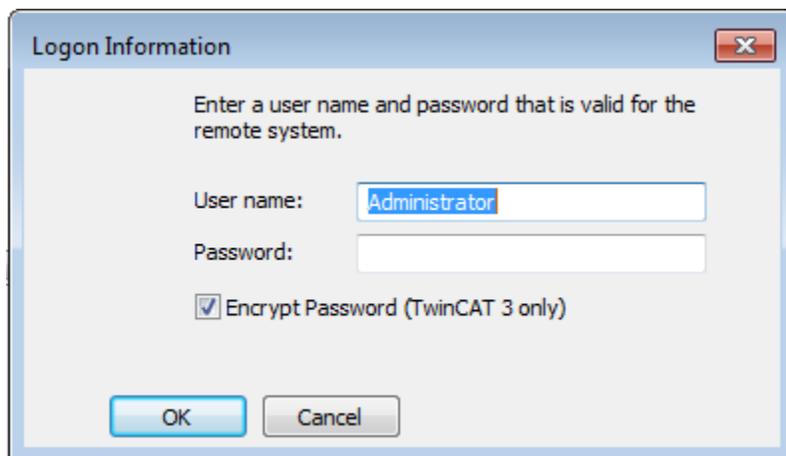


Figure 28: Communication channel logon info

- You should then see a channel has been formed by the placement of an 'X' next to the HEATVIEW controllers network info, as shown in the image below.

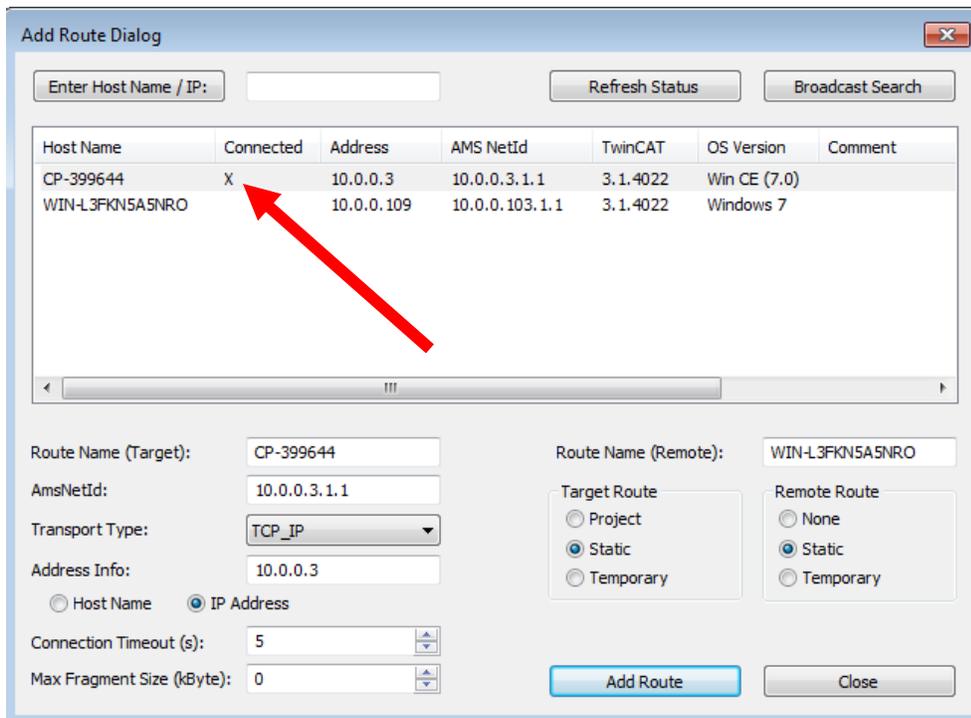


Figure 29: Communications channel successful creation indicator

14. Now you can click on the 'Close' button

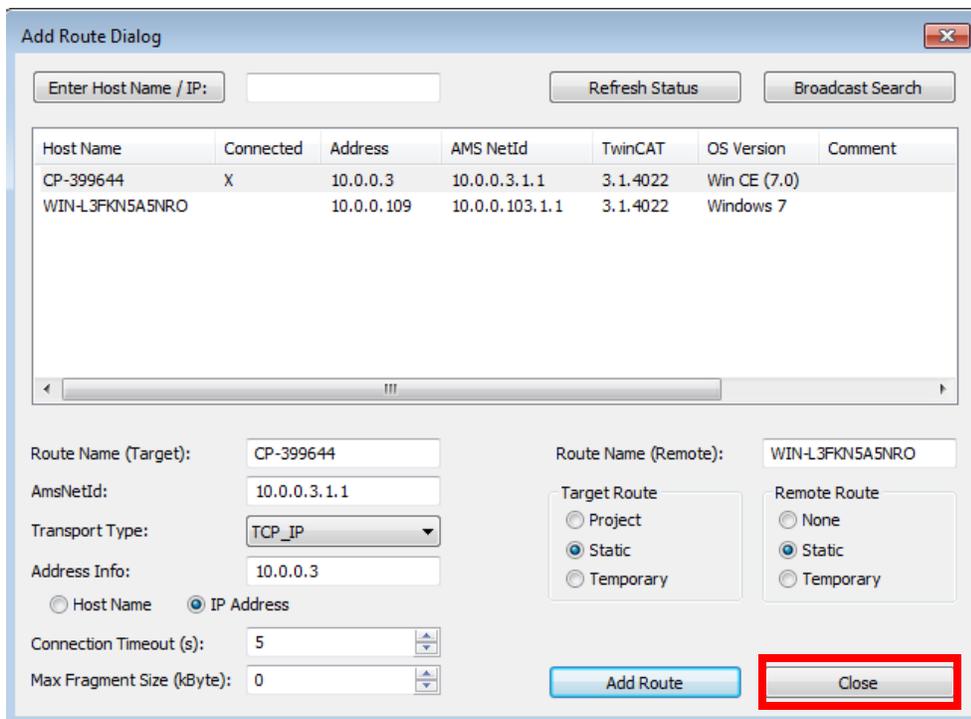


Figure 30: Close communication setup screen

15. Next, you can close the Routes setup screen

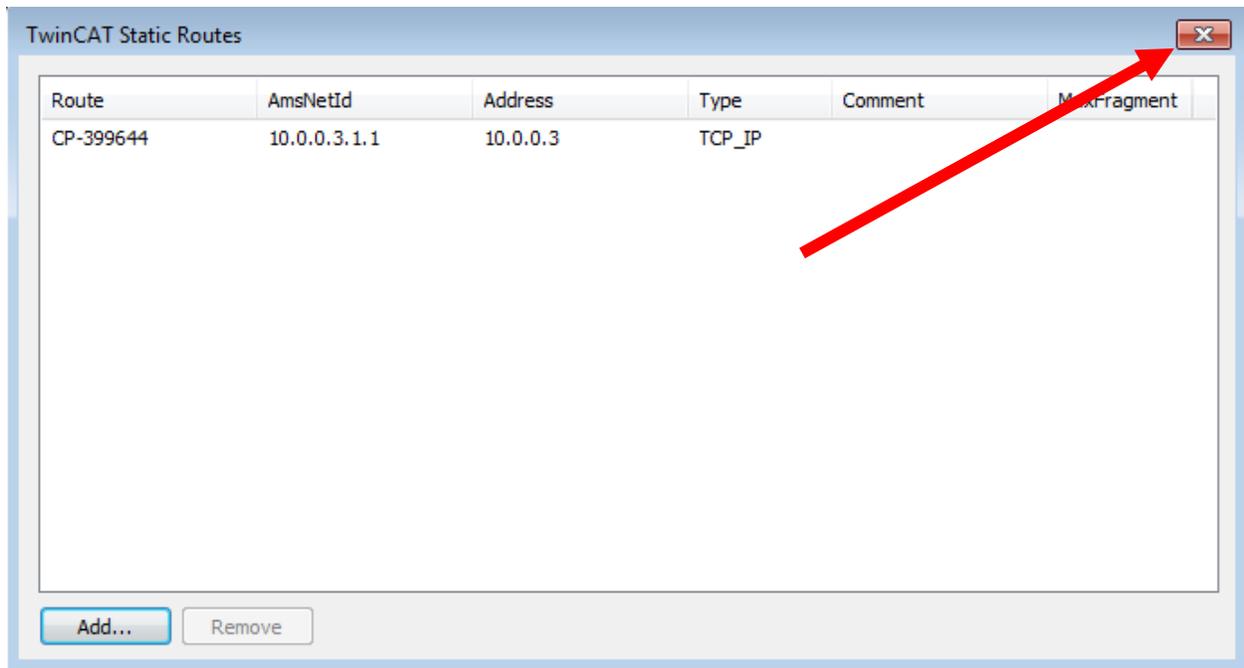


Figure 31: Close the communication channels screen.

Now the communications channel is setup and you can set the specific controller to connect to, and start interfacing with it.

## 6. Connecting to the controller

To connect to a HEATVIEW controller, you need to tell the computer application what controller number to communicate with. If you have more than one controller connected in the same network, you can communicate with any one of them, but you need to tell the software which one you want to interface with.

BEFORE clicking on connection button, you need to enter the controller ID address into the title bar at the top of the software as shown in the image below.



Please note: The system records your last entered value for this, and will automatically try to reconnect to the same controller as before. If you have not changed controllers, you will not need to change this number again.

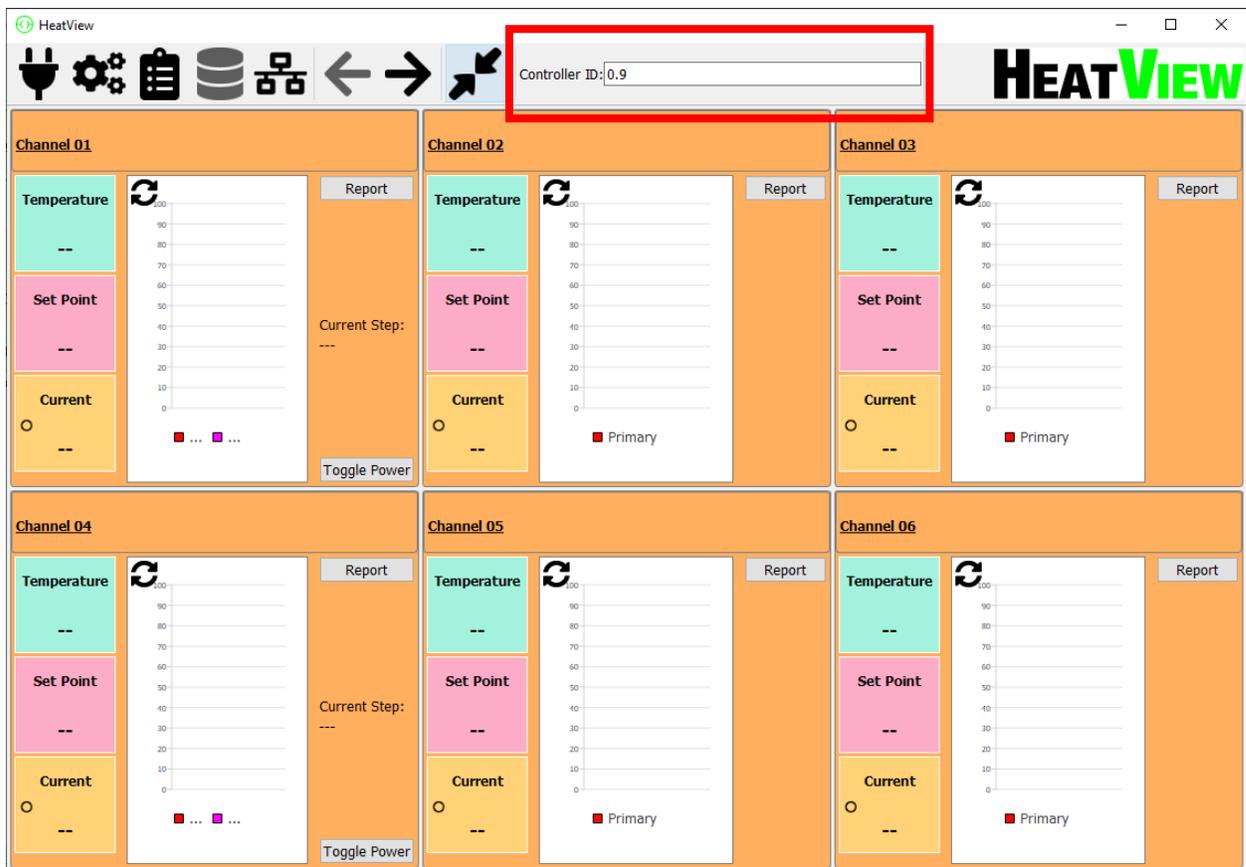


Figure 32: Controller ID address bar

The controller ID address can be found on the touchscreen of the controller itself. Just press the **Settings** button on the top of the touch screen. Then press on the **Remote connection** button in the middle of the settings screen. These steps are shown in the images below.

1. Press on the 'Settings' button on the MAIN display as indicated in the image below:



Figure 33: Selecting settings on the controller interface screen.

2. Press on the 'Remote Connection' button in the settings screen.

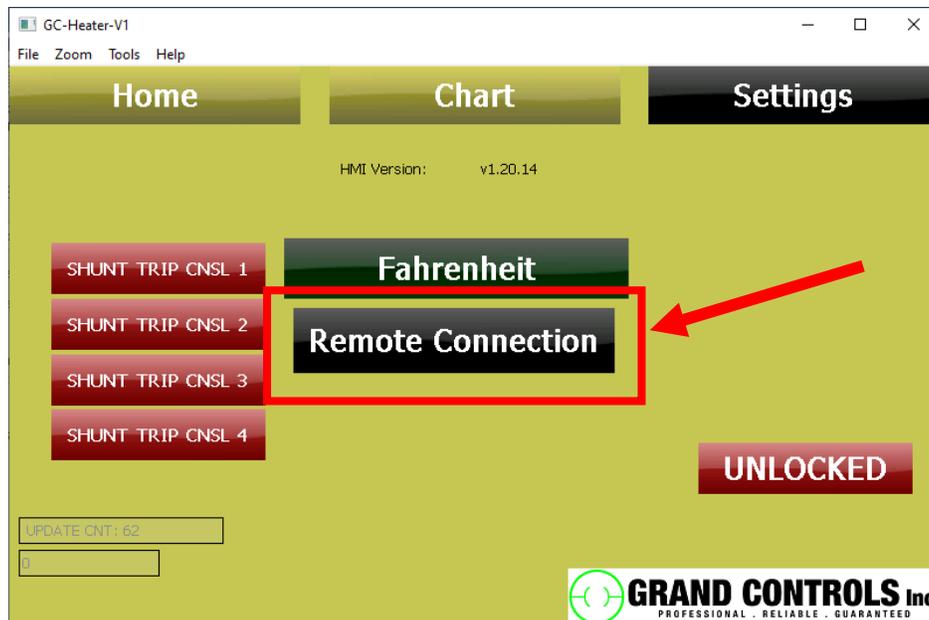


Figure 34: Selecting 'Remote Connection' on the controller interface screen

3. The controller ID is given on the remote connection screen, as highlighted in the image below.

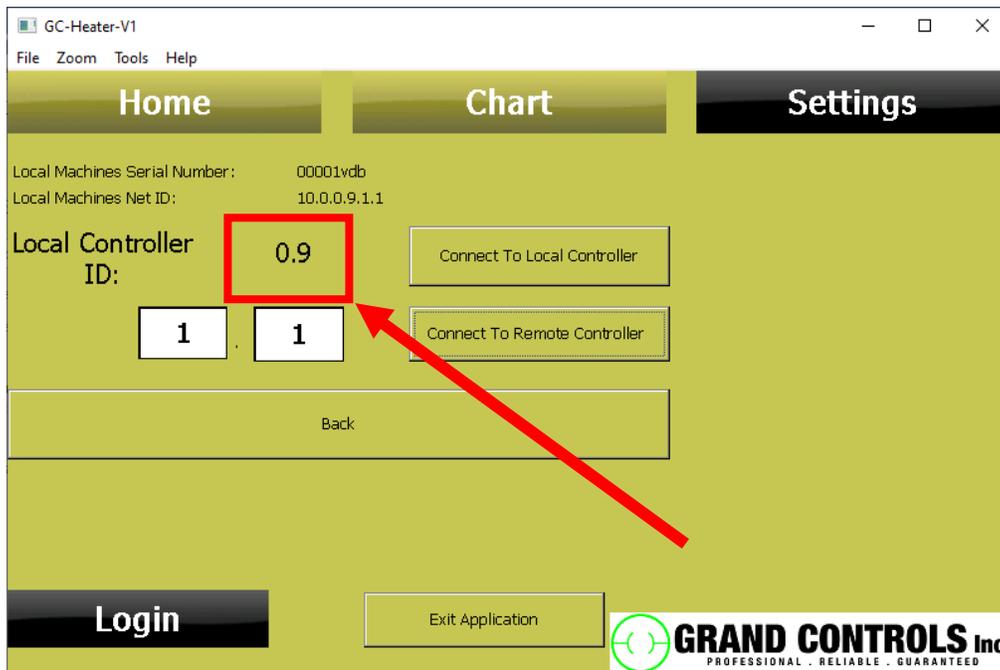


Figure 35: Controller ID identified on the controller interface screen

4. Enter the number exactly as shown on the screen in the settings pop-up window in this application.



Please note: If your IT department has forced your controller to have a different IP address than giving by the factory install, you will need to enter the first 4 values of the '**Local Machines Net ID**'. In the image above the you can get these first 4 values as '10.0.0.9'.

After you have entered the correct controller ID at the top of the software on the main screen you can click on the *connect* button as shown in the image below.

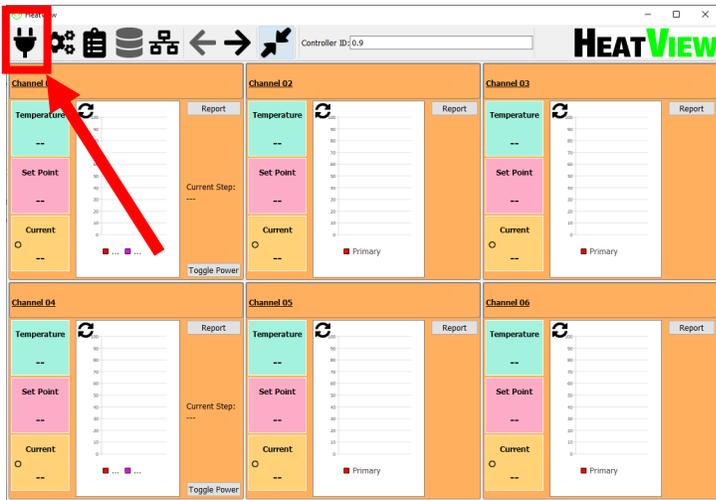


Figure 36: Connect button on the Main screen.

Once the system has successfully connected to the temperature controller, the software will start showing data as indicated in the image below.

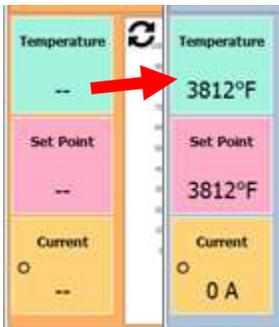


Figure 37: Data being shown once connection made.

You should now be able to start seeing data being read from the controller. If not, make sure you have setup a communication channel as described in section 5 – **"Setting up a communication channel with a HEATVIEW Controller"**

## 7. Logging in - Advanced settings

Some settings in the software can only be accessed once logged in. This section covers all the items protected by logging in. If you click on the settings button at the top of the Main screen, as shown in the image below, you can then click on the login button that appears.

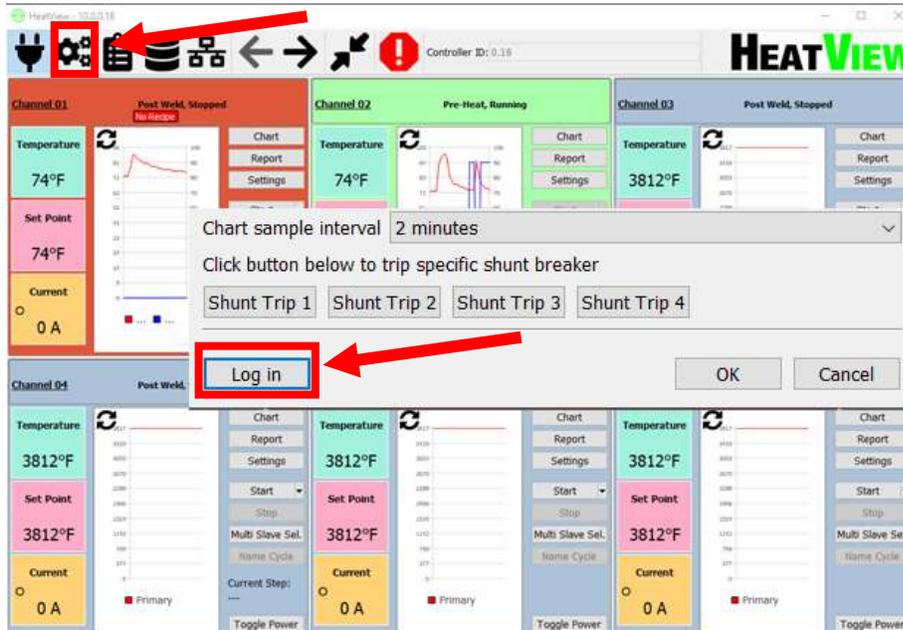


Figure 38: Settings button

You will then be presented with a login screen. You can enter the username and password assigned. The default credentials are given below. It is up to you to change the password:

**Username:** Operator

**Password:**

**(The password is blank).**

Once you have logged in, you will see a new button appear in the settings screen. This is titled *Adv. Settings*. This means you have logged in successfully. If you click on the *Adv. Settings* button will bring up a new screen as shown below (with 2 tabs).

The first tab allows you to turn off notifications for specific alarms. Once the item is checked off, the computer software will not show any fault notification for that fault even if it is present on the controller.

The second tab allows you to add, edit or remove users from the software. There is also the option to delete all the data that has been stored locally on the computer for the given controller.

You can also see/edit the HMI lock code for the 7" touchscreen.

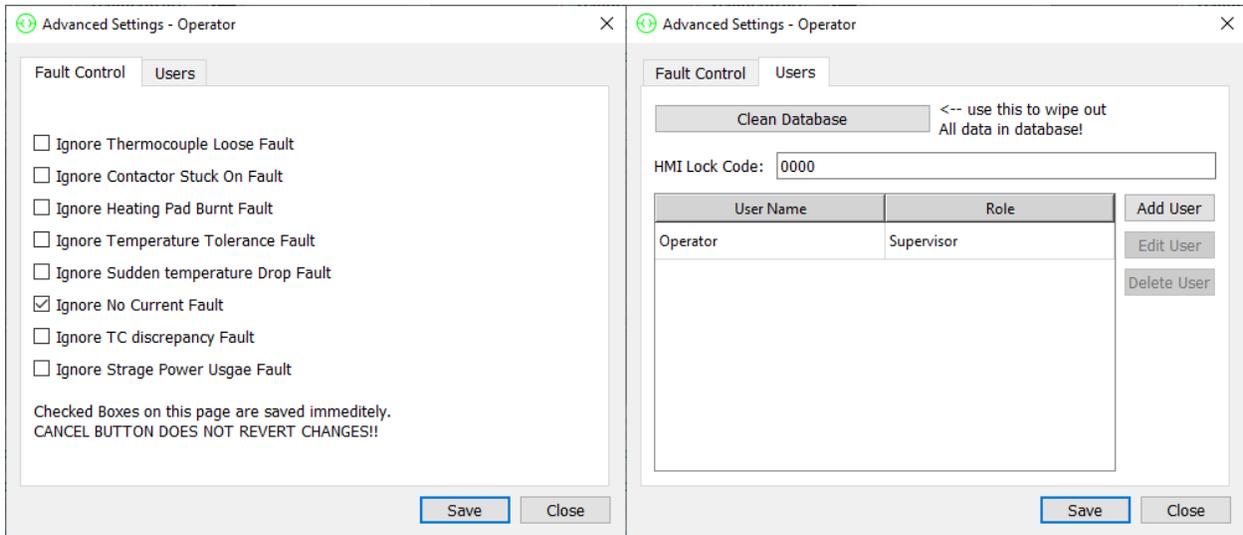


Figure 39: Advanced settings display

You can go back to the Main screen without logging out. This will also give you extra settings on each channel to modify. These settings are shown below.

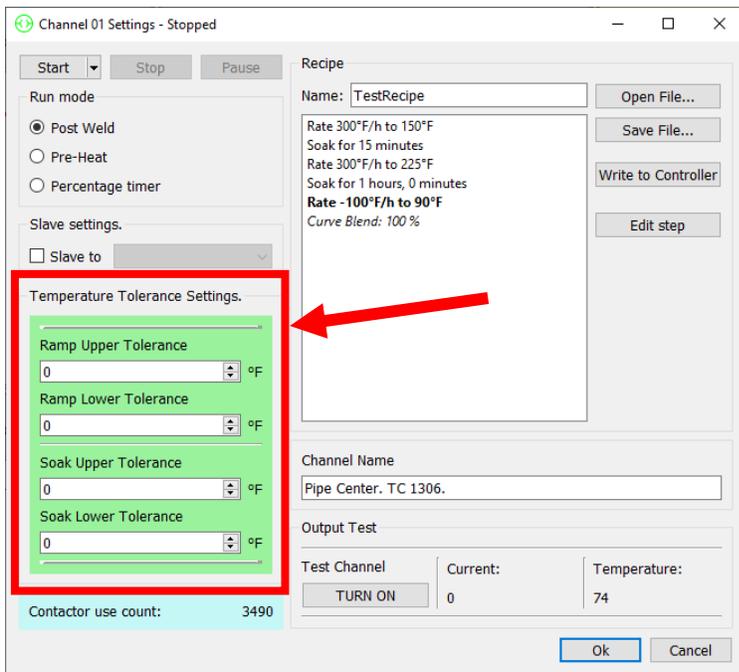


Figure 40: Additional settings for each channel.

These additional settings give you the ability to set the tolerance alarms for each channel individually. If a channel is slaved to another channel, then these values are taken from the master channel.

### 8. Creating a recipe

To create a heating recipe, you simply need to click the 'Recipe' button in the MAIN screen of the application and follow the steps below.



A heating recipe in the HEATVIEW system is a collection of steps the controller needs to follow. Each step is either a 'Rate' step to change the temperature of the workpiece in at a defined rate, or a 'Soak' step to keep the temperature steady for a given period of time.

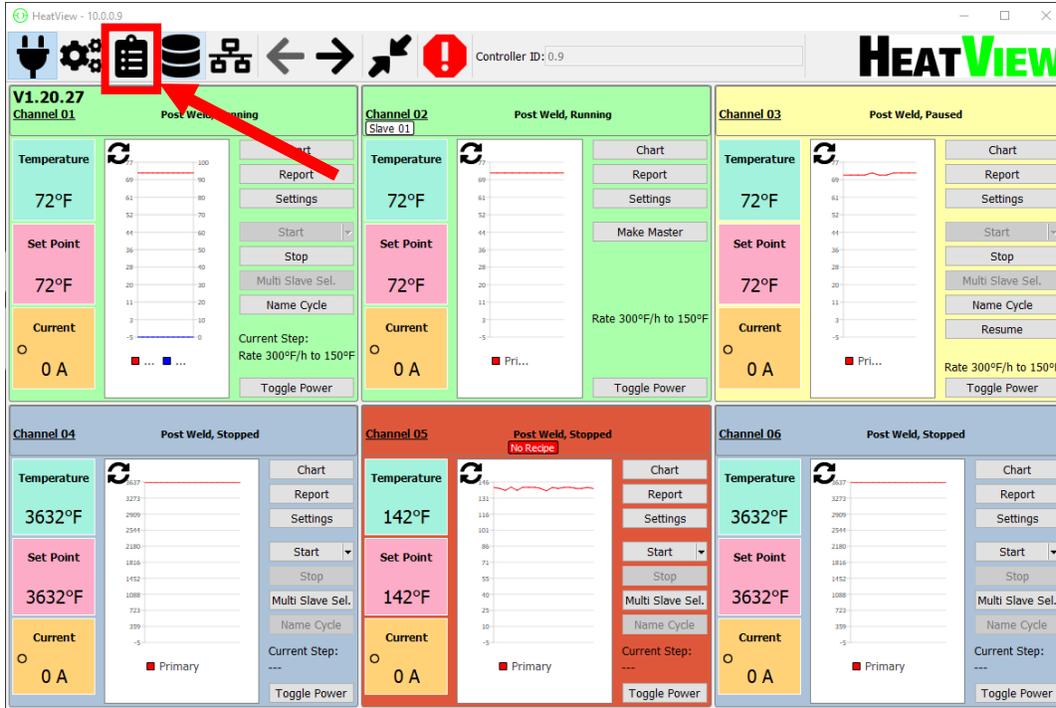


Figure 41: Recipe Button on the MAIN screen

The recipe editor window has several options as detailed here.

### a. All the items on the recipe edit screen

Here is a description of all the items on the recipe edit screen.

1. Recipe Name entry field – This entry field holds the current name of the recipe being edited. To modify it, simply click in it and type the desired text.

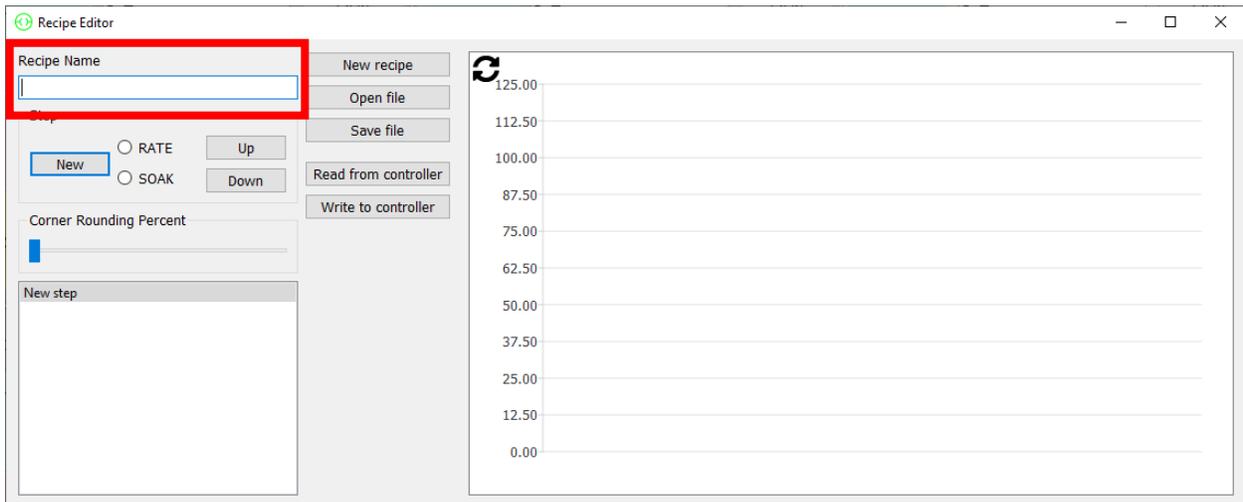


Figure 42: Recipe Edit Screen - Recipe Name

2. New Step button – This button will add a step to the list of steps in the recipe, as pointed out in the figure below

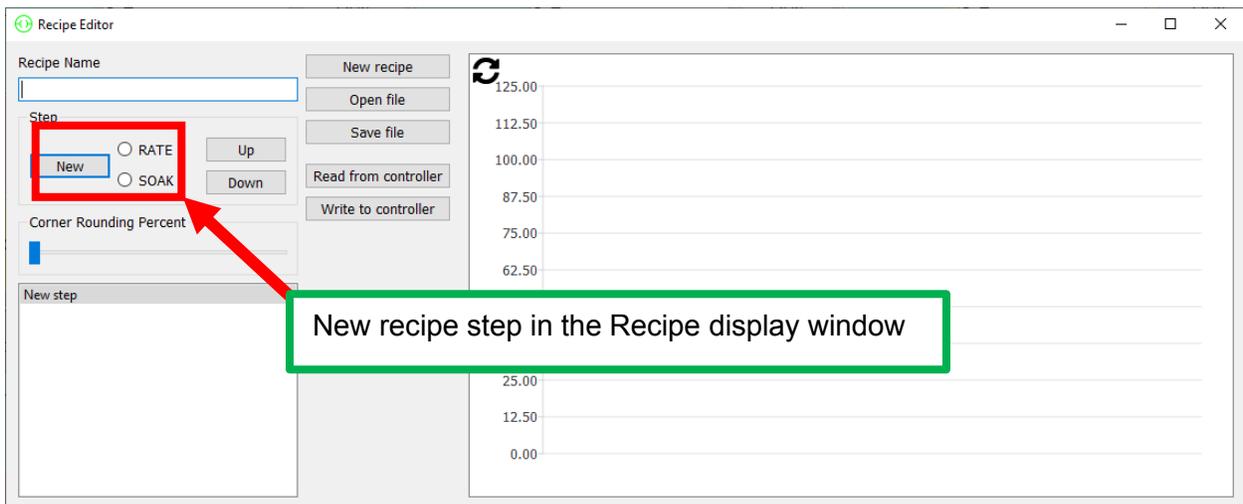


Figure 43: Recipe Edit Screen - New Recipe Step

3. Step editor buttons – The recipe step editor items allow you to define the step that is current selected in the Recipe Editor window. To edit a step, click on it, then modify it with the items highlighted in the figure below. Click on the radio buttons to switch between 'RATE' and 'SOAK' options. As you change the step option, different items will

be display next to it to allow you to set values for the step. IF THE STEP IS A NEW STEP, then you need to select from the two radio buttons (RATE or HOLD) to define the type of step it is. Once you have selected the type of step, the relevant entry values will appear.

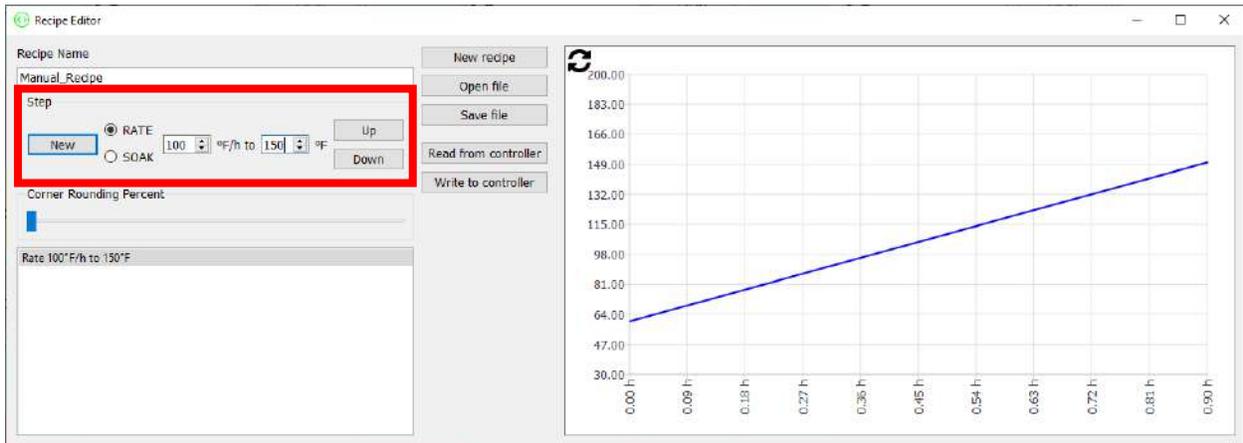


Figure 44: Recipe Edit Screen - Recipe Step Editor items

- Recipe step shift 'Up' and 'Down' buttons – If you have created a recipe and some of the steps are in the wrong order, you can shift them around by selecting the step in the recipe display window and then moving up or down using the 'Up' and 'Down' buttons highlighted in the figure below.

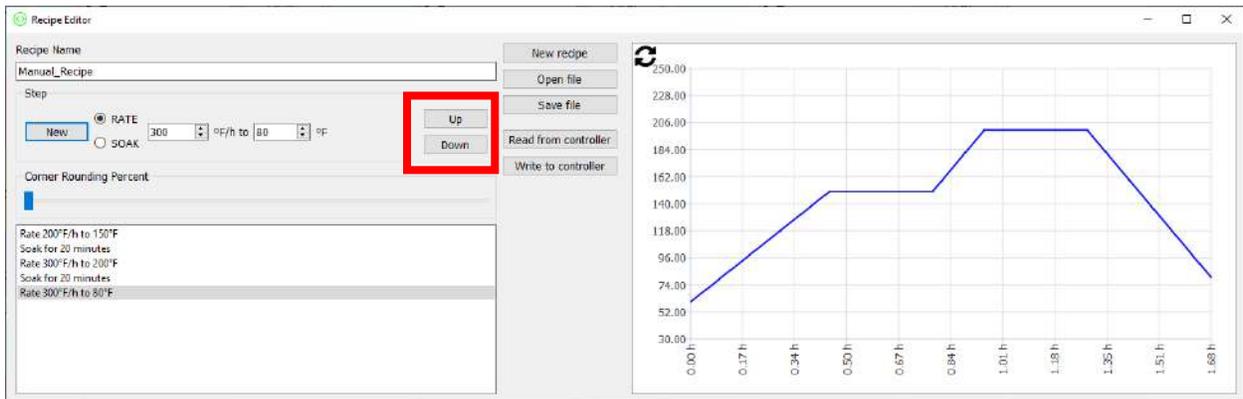


Figure 45: Recipe Edit shift 'Up' and 'Down' buttons

- Recipe editor 'New recipe' button – If at anytime you click the 'New recipe' button, it will clear all the data in the Recipe Editor screen and allow you to start making a new recipe.

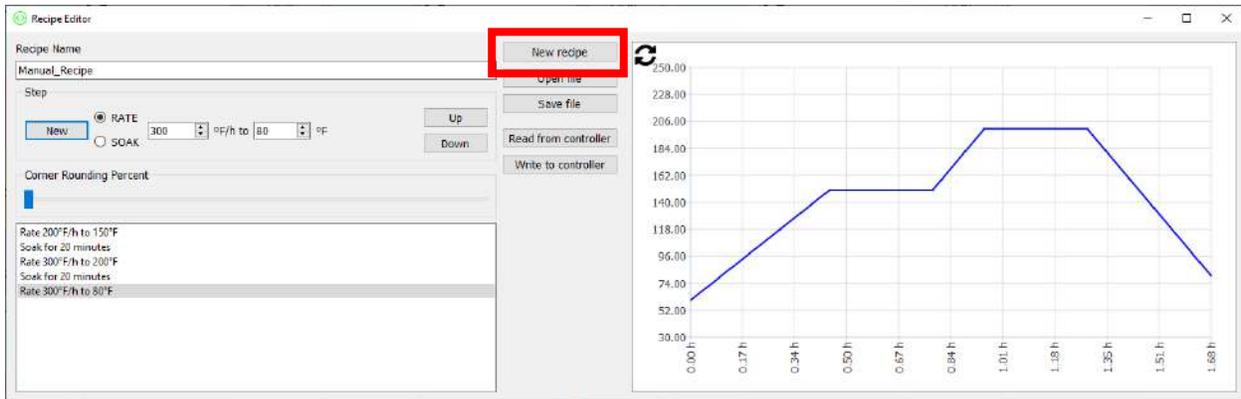


Figure 46: Recipe Edit Screen - New Recipe Button

- Recipe Editor 'Open file' and 'Save file' buttons – You can save recipes on your computer and re-open them later for editing. When you click on the 'Save file' button a dialog box will open to ask you where you would like to save it to. Navigate to the desired location and enter a name for the file. If you click on the 'Open file' button it will bring up a dialog box asking you to select the recipe file you want to open. If you select a valid recipe file, the recipe will be loaded into the Recipe Editor screen for editing.

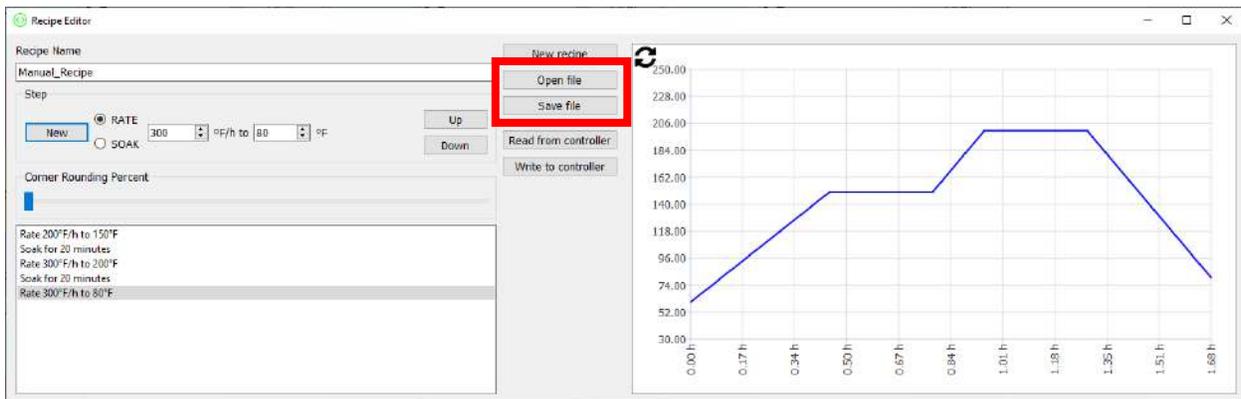


Figure 47: Recipe Edit Screen - Open and Save file buttons

- Recipe Editor Read and Write to and from the HEATVIEW controller – If you are currently connected to a HEATVIEW controller and it is actively updating data from it, you can transfer recipes directly to and from the HEATVIEW controller. If you click either of the buttons you will get another pop-up window allowing you to select which channel you want to interface with. Select the current channel that has the recipe you want to read from the drop-down menu and click 'OK'. The current recipe from the channel will be read and entered into the Recipe Editor window for editing. If you click Write to controller, the recipe in the Recipe Editor will be written to the specified channel.

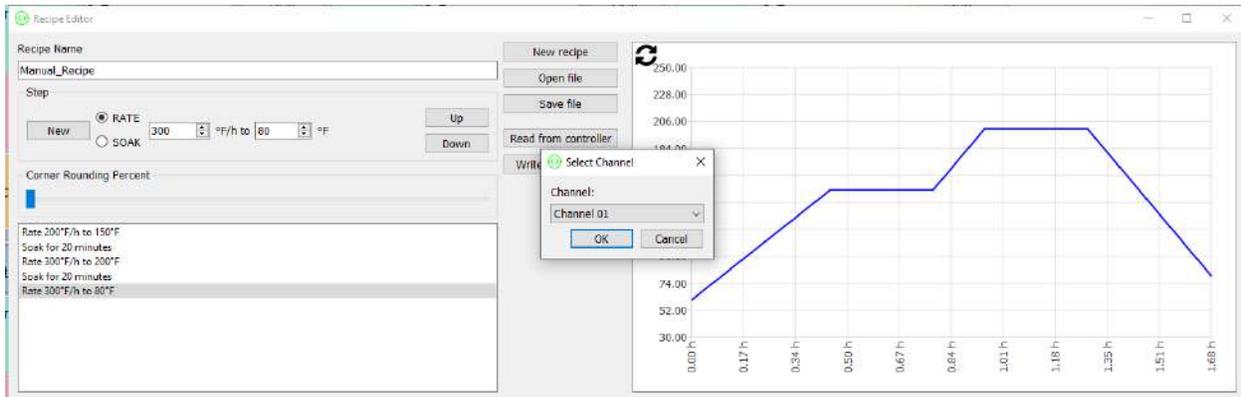


Figure 48: Recipe Edit Screen - Channel selection

### j. DELETING a recipe step

To delete a step in the recipe, click on the step you want to remove in the recipe editor window, and then press the 'Delete' key on your keyboard. This will remove it from the recipe you are currently editing. It does not remove the step from a saved recipe. You will need to re-save the recipe using the 'Save file' button after deleting the step.

### k. Recipe chart

As you edit the recipe steps the chart next to it will change to show the temperature profile the controller runs through this recipe. The time scale at the bottom shows the duration it will take to run through the recipe. The image below shows the recipe will take about 1.68 hours to complete.

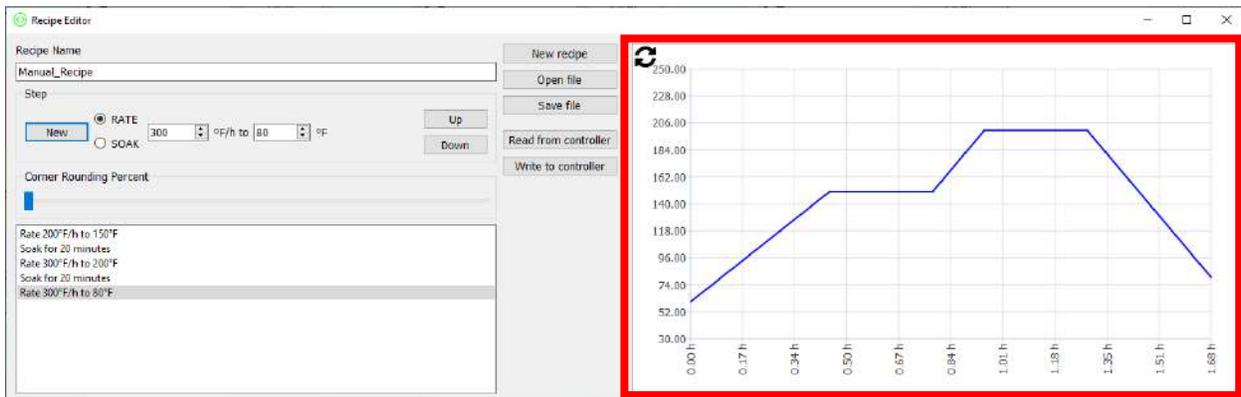


Figure 49: The recipe editor chart

### l. Corner rounding percent

To prevent sudden changes in temperature rate through a recipe, the system can smooth the change from 'RATE' to 'SOAK' step. Essentially the rate of change will change slowly from the assigned rate over time to a zero rate then switch over to the SOAK step. The image below shows the difference between NO corner rounding to MAXIMUM corner rounding.

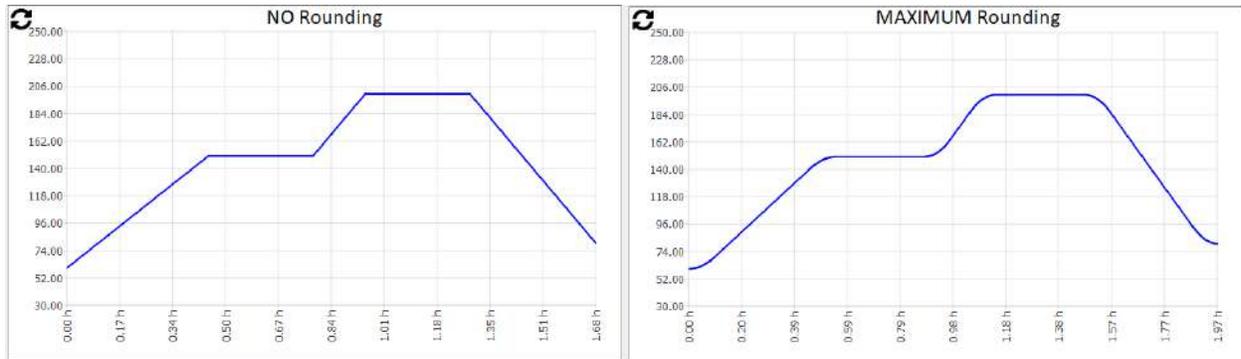


Figure 50: The difference in corner rounding.

## 9. Individual Channel Control

Every channel on the HEATVIEW controller acts as an independent controller. It can be started and stopped individually and they can all run their own heating recipes.

The channels can all run in 3 different modes:

### 1. Post Weld Mode:

In Post Weld mode, the channel will follow the recipe setup for the channel. Once the channel has run through all the steps in the recipe, the channel will stop itself.

### 2. Pre-Heat Mode:

In Pre-Heat mode, the channel will follow a simplified version of a recipe where it will heat the work piece to a defined temperature at a specified rate and then hold it there until the channel is manually stopped. When setting up Pre-Heat mode, you need to set 3 different values. They are:

- a. **RATE:** This is the rate the system will increase the heat at to reach the SOAK temperature.
- b. **FINAL TEMPERATURE:** This is the temperature the system will try to hold the work piece to until it is stopped.
- c. **CURVE PERCENT:** This is covered in section “Corner rounding percent” on page 45 of this document. Essentially it makes the system gradually increase its rate over time (as it starts heating) until it meets the set rate, then gradually decreases the rate as it approaches the final temperature. This reduces the sudden changes in rate and reduces overshoot.

### 3. Percentage Timer:

In this mode, the channel will pulse the output at a specified percentage. For instance, if the channel is set to 25%, the channel will turn power on for the heating pad for 25% of its output pulse time. It will run continuously and will only stop if the channel is manually stopped.

Each channel can also be set as a slave to another channel. If it is assigned as a slave, then it will follow all the settings from its Master channel. If the Master channel is started or stopped, all its slave channels will copy it. The slave channels will follow its recipe or manual values while running, but they will control their outputs individually to ensure the work piece heats correctly.

### a. Setting up a channel

On the MAIN screen you can setup each channel individually, by clicking on the ‘Settings’ button for the specific channel. These buttons are highlighted in Figure 51 below. Once you click one of them, it will bring up the settings screen for the channel shown in Figure 52.

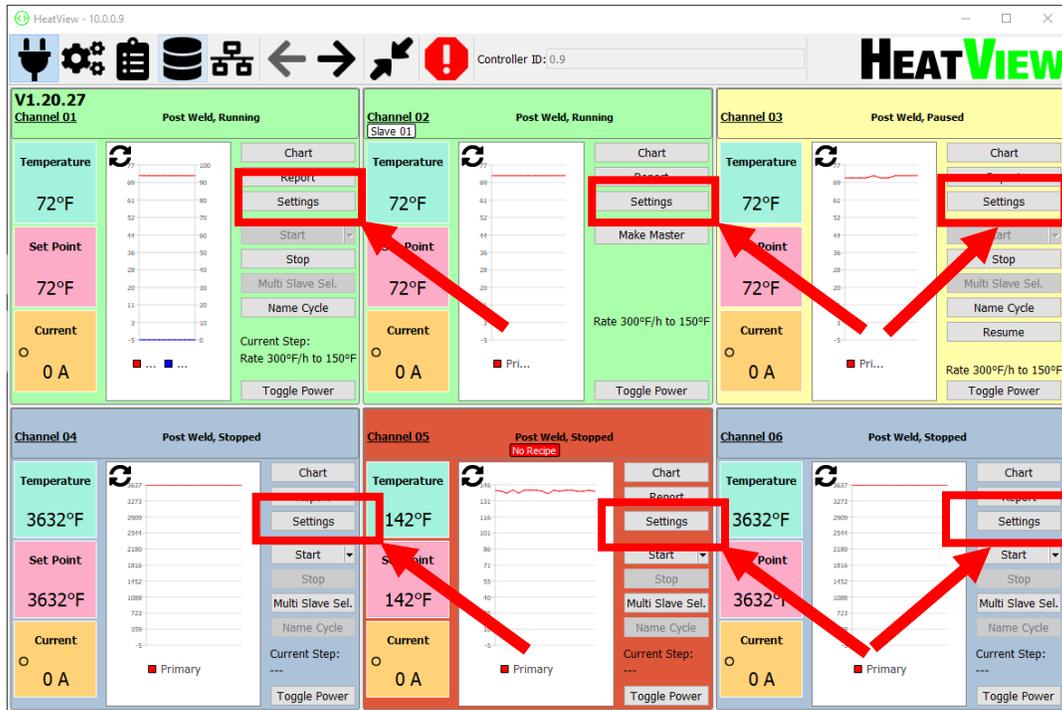


Figure 51: Settings buttons to setup individual channels

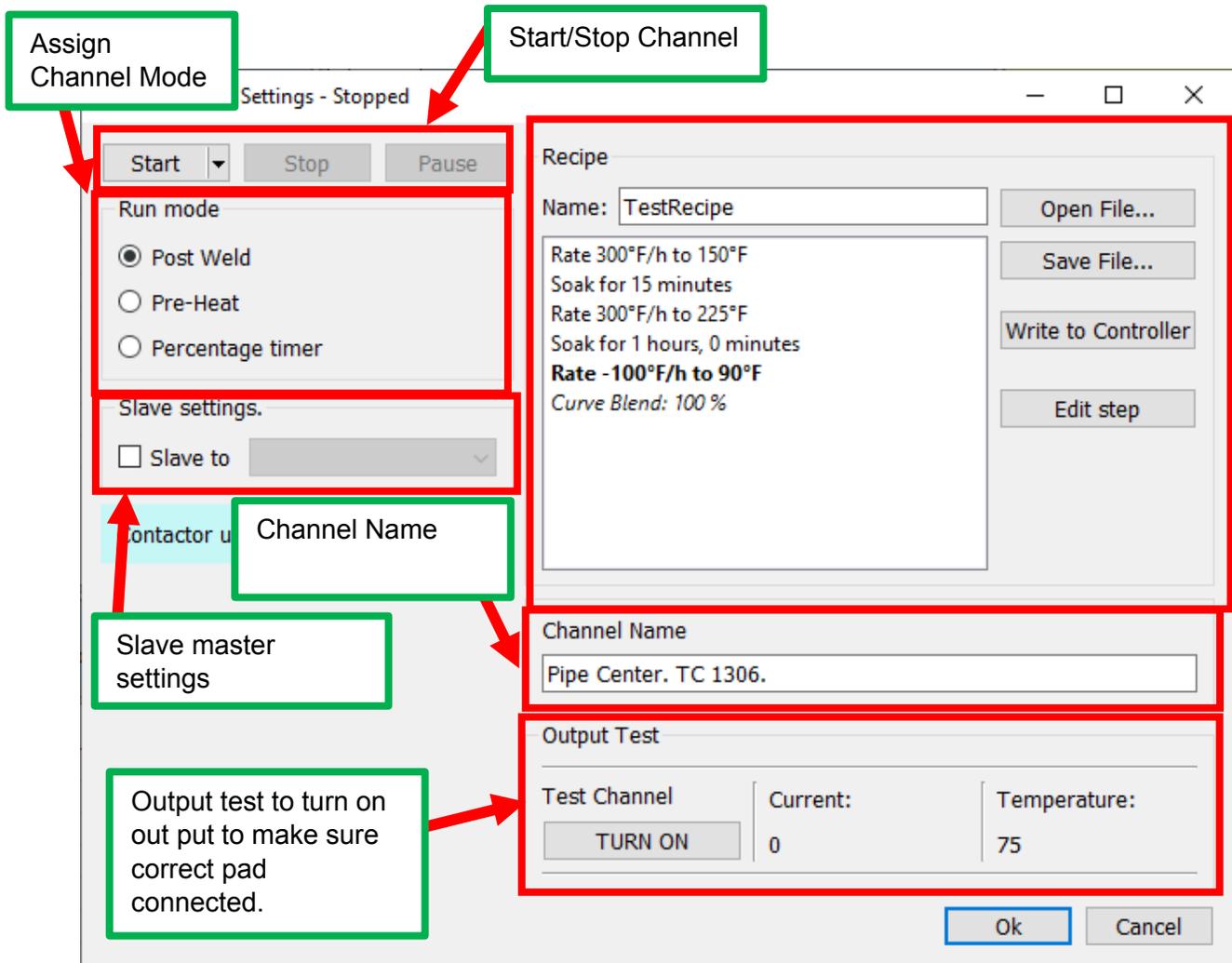


Figure 52: Channel settings screen

In the channel setup screen, you can define the channels running settings. You can start/stop the channels from the 'Start' and 'Stop' buttons from the top of the window. There is also a 'Pause' button. This will pause the channel at its current temperature. It will hold it there until the 'Resume' button is clicked. The 'Resume' button will appear once the channel has been paused.

If the channel is NOT running you can change the 'Run mode' by clicking on one of the radio buttons for the specific mode. As you select the different modes, the options in the 'Run mode setup window' will change to match the settings for the specific mode.

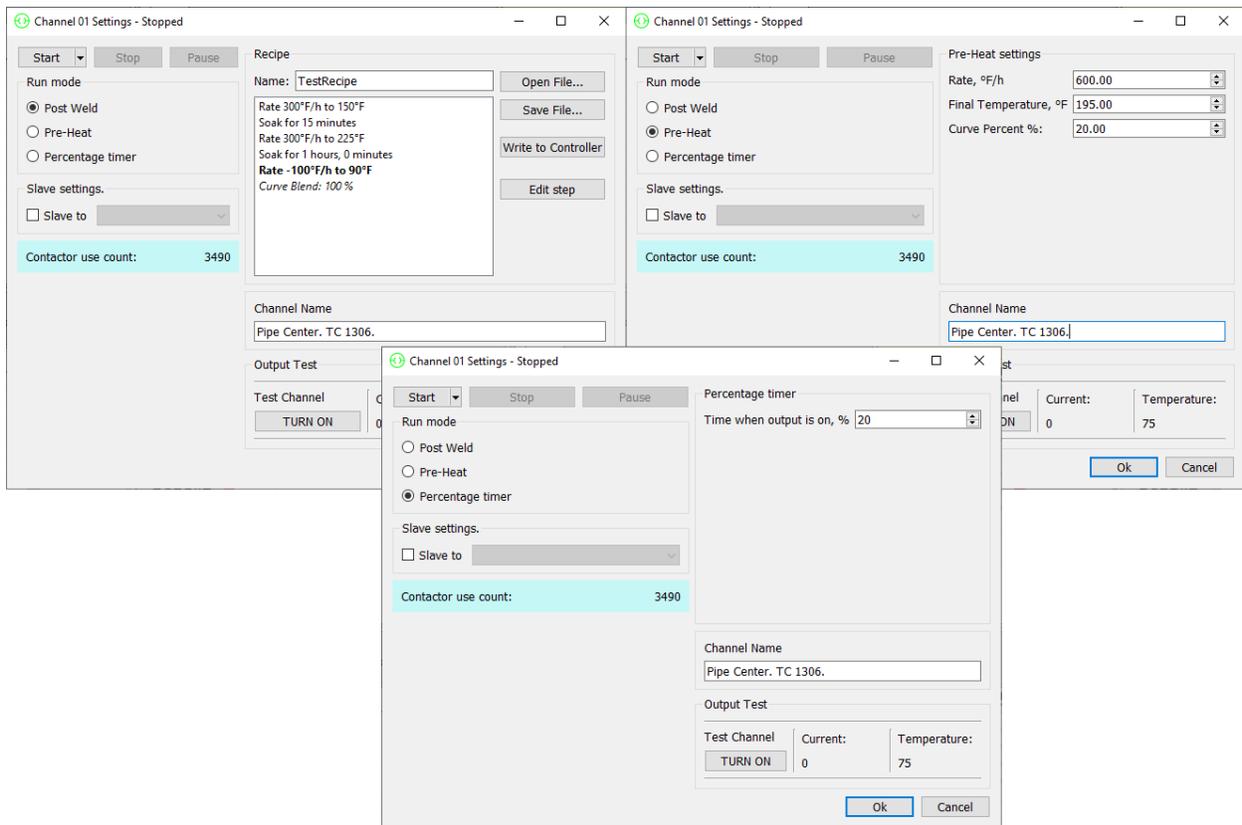


Figure 53: The different 'Run mode setup' windows in the channel settings screen

Once you have selected the desired 'Run mode' and the 'Run mode setup' screen has changed, you can enter the desired values for run mode for the channel.

In Pre-Heat mode, you can load a new recipe into the channel by opening a saved recipe and then writing it to the controller using the 'Write to controller' button on the right-hand side of the screen. The channel will keep its recipe from the previous time it ran, so if you are running the same recipe as the previous heat cycle, you do not need to reload it. If the recipe on the controller is one that you want to store on your computer, you can click the 'Read from controller' button to read the current recipe in the channel. Then you can save the recipe to your computer by clicking on the 'Save file...' button.

You can set the channel up to be a slave to another channel by selecting the check box next to the words 'Slave to'. Then in the drop-down menu, you can select which channel it should be a slave to. Once set as a slave, you cannot change any settings for the channel.

### b. Skipping steps in the recipe

While a channel is running in Pre-Heat mode, you can skip steps in the auto sequence. To skip steps, you can click on the 'Previous step' and 'Next step' buttons on the channel settings screen. These buttons are hidden if the channel is not running. The buttons are shown in the image below.

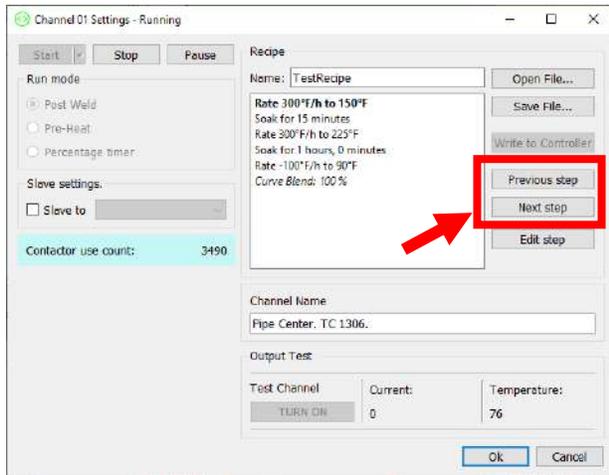


Figure 54: Skipping through steps button in recipe

### c. Naming a channel

You can give channels names that would make it easier to identify in future. To do this, simply enter a name for the channel and click the Ok button. This name will then appear in the Main screen and will also be present in the legend on the chart on the PDF report for quality control.

### d. Output Test

Once you have connected everything to the channel (heating pads and thermocouple) you can click on the output test. Just click on the 'TURN ON' button and the channels output contactor will be closed. You can then see if the correct amount of current goes through the pads and if it is on for long enough you should see the temperature change. To open the contactor again click on the same button again. If this is left on for too long the system will open the contactor itself after 1 minute to prevent damage.

## 10. Master Slave Features

One of the major benefits of this system is that all the output channels are controlled by the same system, so that their output controls and setpoints can be coupled to ensure smooth heating across multiple channels. To do this you can group the channels together as Master and Slave channels.

There can be multiple Master channels at a time with multiple Slaves. But once a channel is slaved to another it cannot be slaved to another. Also, once a channel is a master channel it cannot be slaved to another channel.

Any Master channel can have as many slaves as there are channels in the system.

### a. Channel settings

Once a channel is a Master channel and it has Slave channels, then all the channel settings are copied from the Master channel to all the slave channels. So, you only need to setup the master channel and then slave all the channels with the exact same run settings and they will have all the same settings pushed to them from the Master channel.

### b. Critical faults handling

Once a group of channels have been setup as Master and slaves the critical faults from each channel will affect all the other channels in the group. If a fault occurs on any channel that stops its output, the rest of the channels will go into Pause mode and hold their temperatures until the issue is fixed, reset and the group is restarted.

### c. Temperature Coupling

Every time a group of Master Slaves channels is started or restarted from a pause state, the system will ramp up from the lowest channel temperatures. The other channels will hold their temperatures until the Set Point ramps above their current temperature. Only then will the channel follow the set point. An example of this is described below.

An example: if a channels thermocouple opens its output is stopped and this will invariably cause the channels temperature to drop. When this happens all the other channels in the group will go into a 'pause' state and hold their temperatures. Once the issue is fixed the group can be restarted. All of the channels are re-evaluated. The Set Point is then set to the lowest channel's temperature in the group. The Set Point will then climb back to where it should be using the channels ramp rate or the last recipe rate step value. If a specific channel in the group is then hotter than the current setpoint, it will keep its temperature until the Set Point is the same temperature as its temperature. The channel will no longer hold its temperature but will have the same Set Point as all the channels in the group.

This is shown in the image below. Channel 4 was the coolest when the group was restarted. So, you can see the Set Point increased from its temperature. Then as the Set Point passed Channel 6, it started following the Set Point too. Similarly, Channel 5 held its temperature the longest, then joined the group.

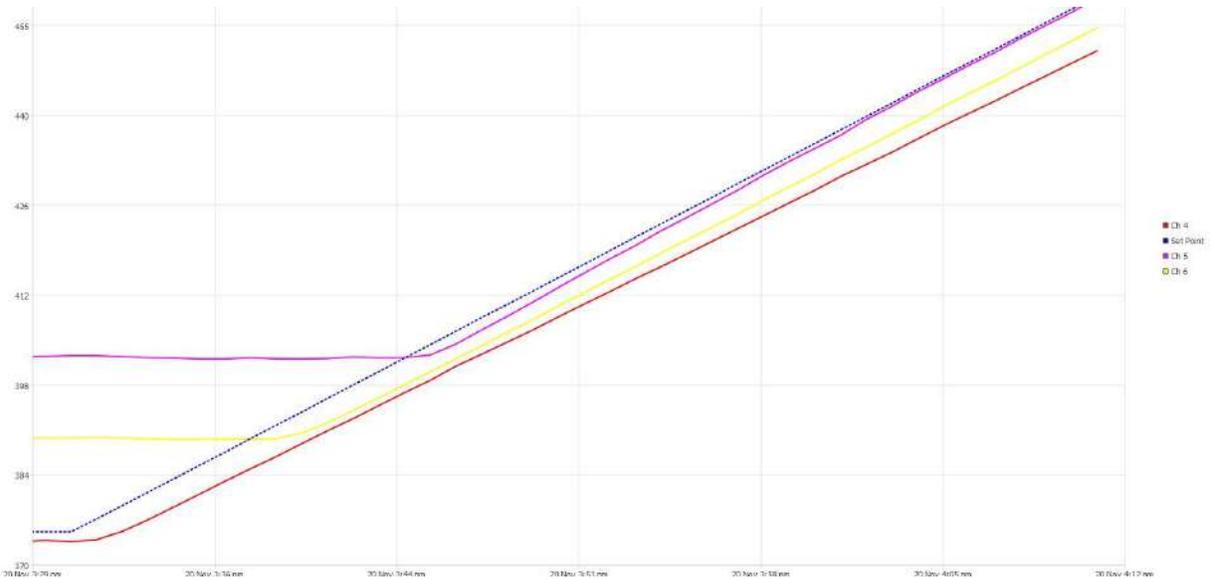


Figure 55: Master Slave temperature coupling

#### d. Automatic channel grouping

Once a group of channels have been setup as a Master Slave group then bringing up the enlarged chart of the Master channel will show a chart with it and all the slave channels. When this happens, the first channel in the legend is the Master channel and then the rest are the slave channels.



Figure 56: Master slave channels on enlarged chart.

## 11. Creating PDF reports

Whenever the computer application is connected to a HEATVIEW controller and it sees a specific channel is running, it will read the temperature data from the controller at a regular interval (the interval is set in the settings screen of the application). This data is then stored locally in a database. The software can then create a PDF report based on this data. Once a PDF report has been generated you can save it to your computer and print it out as necessary.

To generate a PDF report, follow these steps.



PLEASE NOTE: if you want to generate a report for data stored on the controller, you will need to follow the steps in the section 12 – “Uploading backup data from controller”.

1. Open the computer application.
2. Navigate to the channel you want to generate the report on the Main screen.
3. Click on the ‘Report’ button for that channel. (This button is highlighted in the figure below)

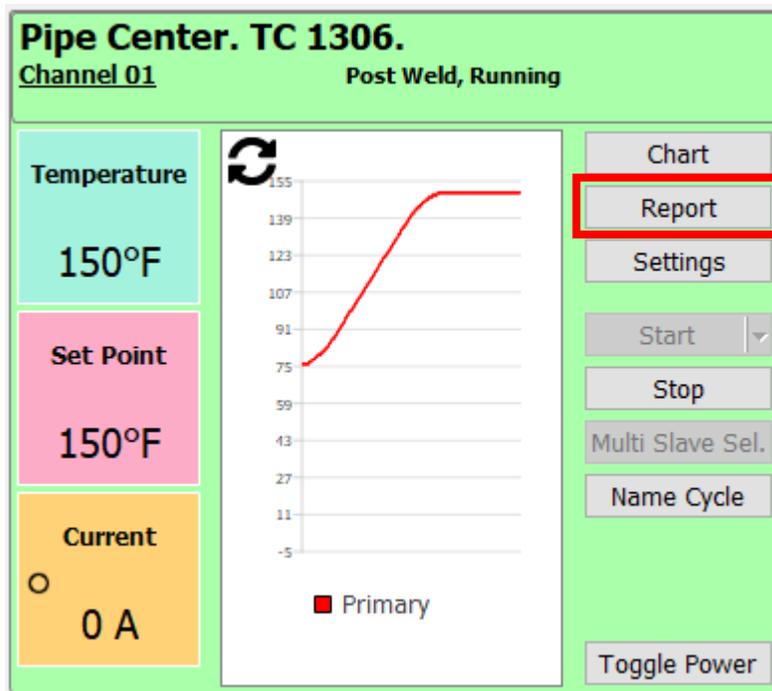


Figure 57: Report generation button

4. Once you have clicked on the button the report generation screen will be shown. You will then need to select the heat cycle you want to create the PDF report for. The report generation screen is shown in the figure below. The figure below the report generation screen is the heat cycle setup box. The items in the heat cycle setup box are all described here:

- a. "Controller:" – If you have ever connected to more than one HEATVIEW controller you will have more than one database on your computer. You will need to select the controller ID that was used to run the heat cycle.
- b. "Channel:" – This is the channel number that was used to run the heat cycle. If this is for a Master/Slave group, you can select the Master channel and it will automatically add all the slaves.
- c. "One cycle" – If the controller was not stopped during a heat cycle, or communication with the controller was not lost, then you can load a single cycle and find the one you want from the drop-down menu right below the "One cycle" text. If the cycle was named, the cycle name will show up in the drop-down menu, otherwise the cycles name will be the start and end dates.
- d. "Multiple cycles" – If the heat cycle was interrupted in anyway, you can combine multiple stored heat cycles. Here you can select the start and end times for your heat cycle and the software will combine them into a single chart.
- e. "Num points to ignore chart" start/end – If there was noise at the start or end of the channel due to setting up. You can ignore the first few or last few points by adding a value to these fields.
- f. "Setpoint Line" – You can show or hide the Set Point line from the chart from this group box.

Once you have entered all the information correctly, you can click the 'Apply' button for the software to read all the data in the database and show the chart on the chart window. (this is shown in the window below).

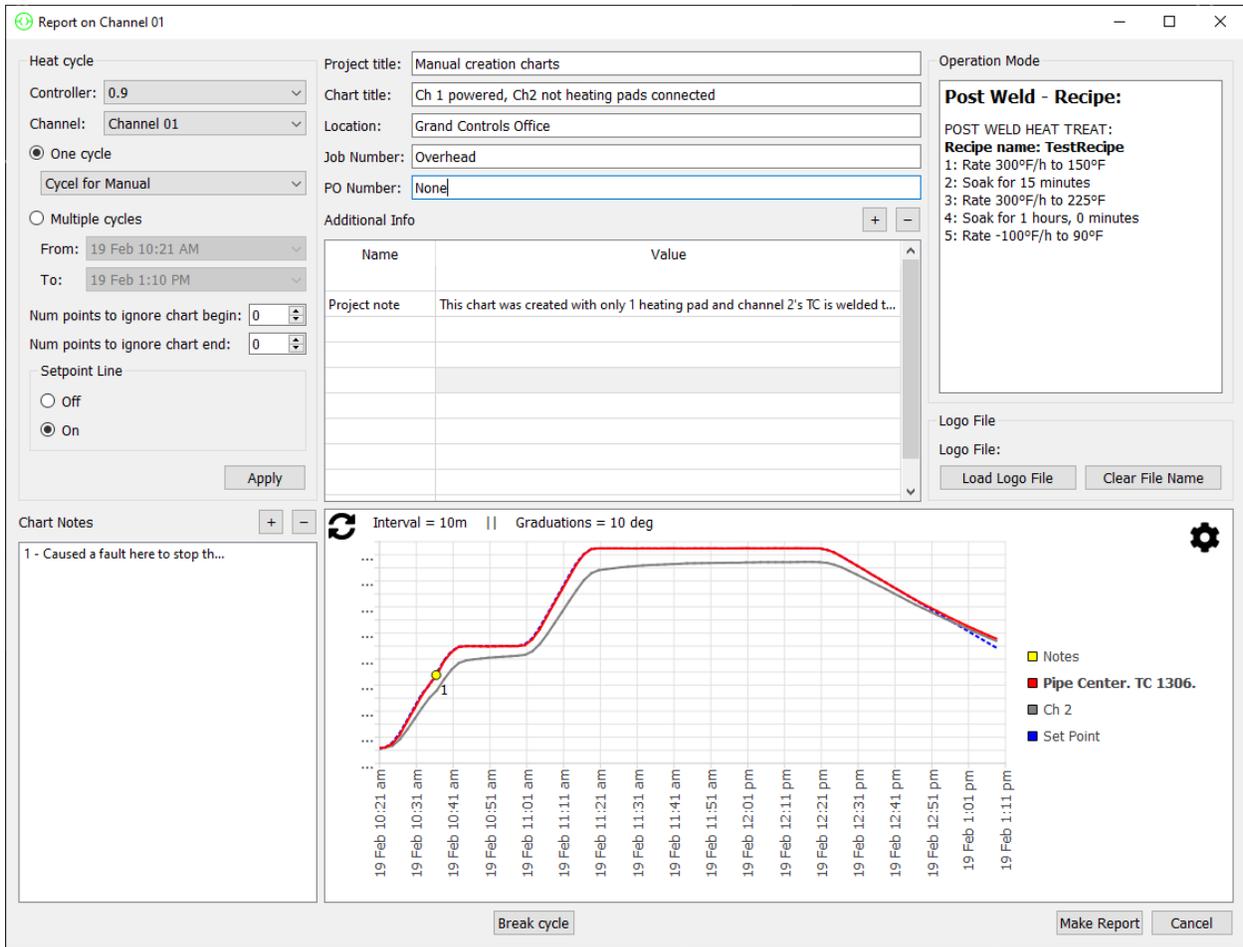


Figure 58: Report generation screen

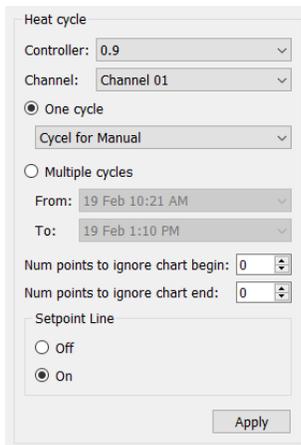


Figure 59: Heat cycle selection section of the report generation screen

- Once the heat cycle has been read in from the database and shown correctly on the chart, you can then setup the report. First you can add or remove notes from the chart. To add a note to the chart, click on the '+' button 'chart notes' box in the report

generation screen. (This box is shown in the figure below). Once you have clicked on the '+' button you can click on the chart where you want to add the note (you need to click on a chart line to add the note). This will bring up a small window for you to type in the note. If you want to delete a note, select the note in the 'chart notes' box and click the '-' button to delete it.

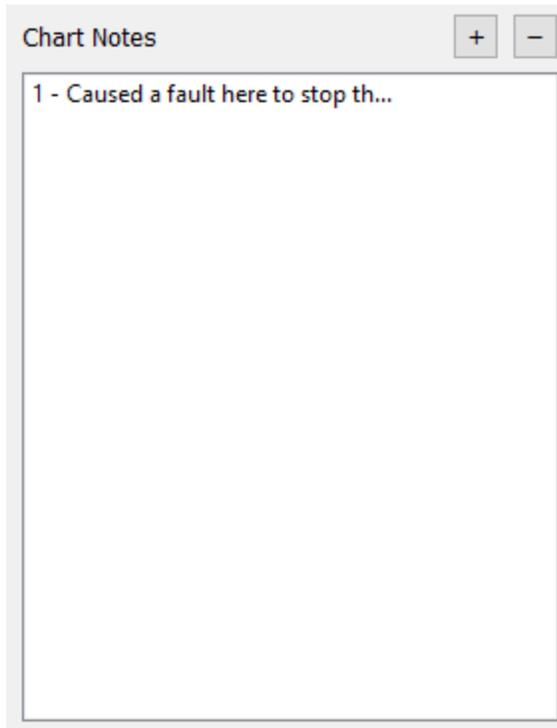


Figure 60: Chart note box on report generation screen

6. Type the project information into the report generation window.
  - a. Fill out all the heat cycle info, such as the *Project title*, *chart title*, *location*, *PO number* and *Job number*.
  - b. 'Additional information' – You can add any information to the report you would like to in the additional information box. Simply click in the boxes and add the text you would like to see in the report. If you look at the figure below, you can see the data entered into the report generation screen and on the RHS you can see how that data is shown on the PDF report.

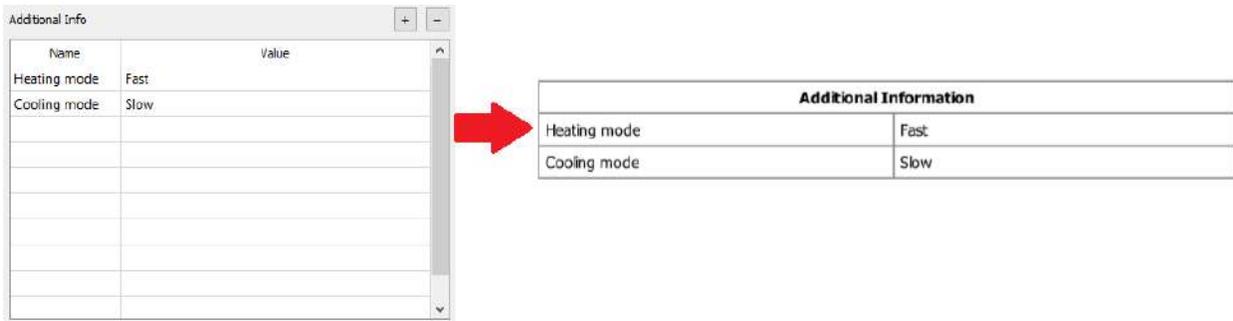


Figure 61: Additional information box in the report generation screen

- Once all the data has been entered correctly, click on the 'Make Report' button. This will open a file save dialog box.
- Select a location on your drive to save the report to, enter a name for the file and click the 'Save' button.

Below is a in image of a report generated from the settings in "Figure 58: Report generation screen" on page 56 above.



Figure 62: Example report

## 12. Uploading backup data from controller

In the event the computer application did not record a heat cycle correctly, you can upload the heat cycle temperature data from the controller. To do this, you can follow these steps.



PLEASE NOTE: The data backed-up on the controller is not as detailed as the data logged through this computer software. It should only be used if something happens to the computer connection to the controller and the software fails to record the heat cycle.

- Open the computer application.
- Connect to the HEATVIEW controller that has the backed-up data.
- Click on the upload button on the title bar of the software. The button looks like this:



- If the temperature controller has any channels that are currently running, this will bring up the screen similar to the one in the figure below. If this message appears, stop all the running channels. Wait for at least 30 seconds and then click the upload button again.

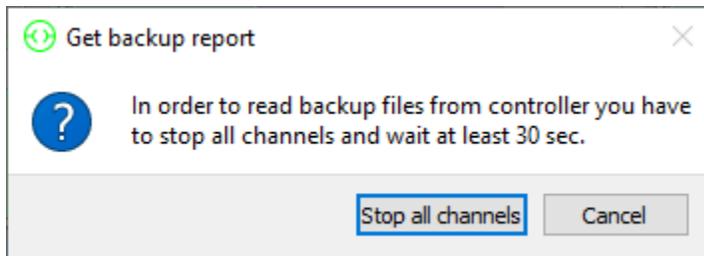


Figure 63: Upload backed-up data wait for all channels to stop message

- If you click on the upload button once all the channels have been stopped for at least 30 seconds, you will see a channel select screen as shown in the image below.

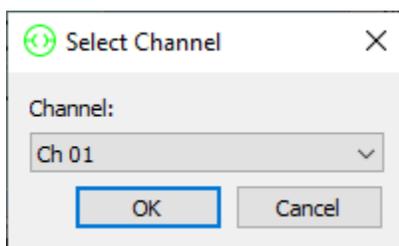


Figure 64: Channel select screen for uploading backed-up data

- Select the channel you want to upload data for in the drop-down box and then click the 'OK' button.
- This will bring up a report generation screen as shown in the figure below.

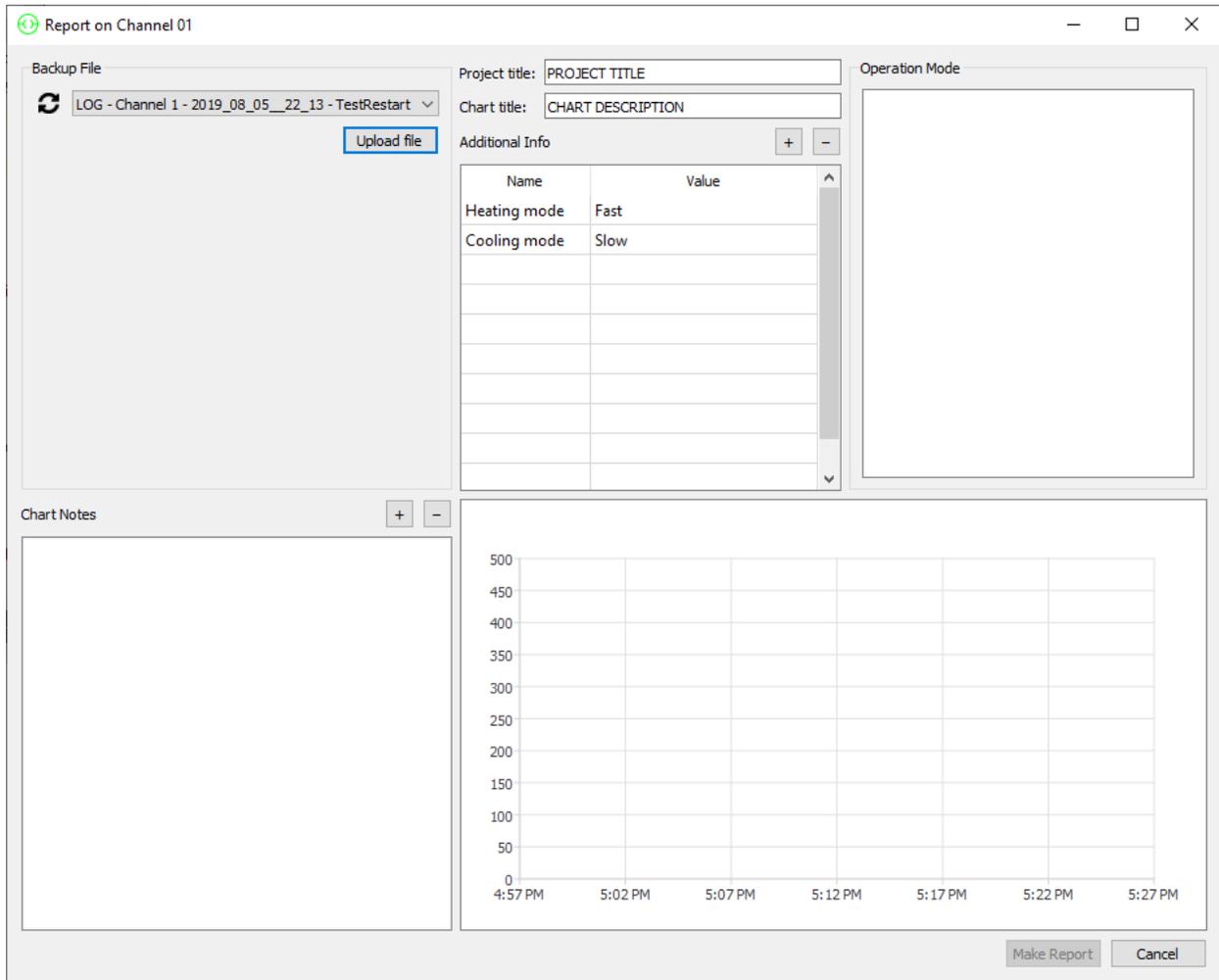


Figure 65: Uploading data report generation screen

- In the top left of the screen there is a drop-down menu in the section labeled 'Backup file'. This section of the window is shown in the figure below. Go through the file names that are backed up on the controller and select the one you want to upload. The filenames will be as follows:
  - LOG – Channel xx – Date\_Time – Run data
    - xx is the channel number
    - Date will be in the format YYYY\_MM\_DD
    - Time will be in the format HH\_MM
    - Run data will either be the recipe name if it was in auto, Manual if in manual mode or PT if in percentage timer mode.



Figure 66: Upload data cycle selection section

- Once you have selected the file you want to upload, click the 'Upload file' button.
- Wait for the system to fully read all the data. This may take a quite a few minutes, depending on the length of the heat cycle.
- Once the data has been fully uploaded you will see the report generation screen has been data added to it. An example of this is shown in the image below. Simply fill out all the fields in the report generation screen and click on the 'Make report' button to generate a PDF report of the data.

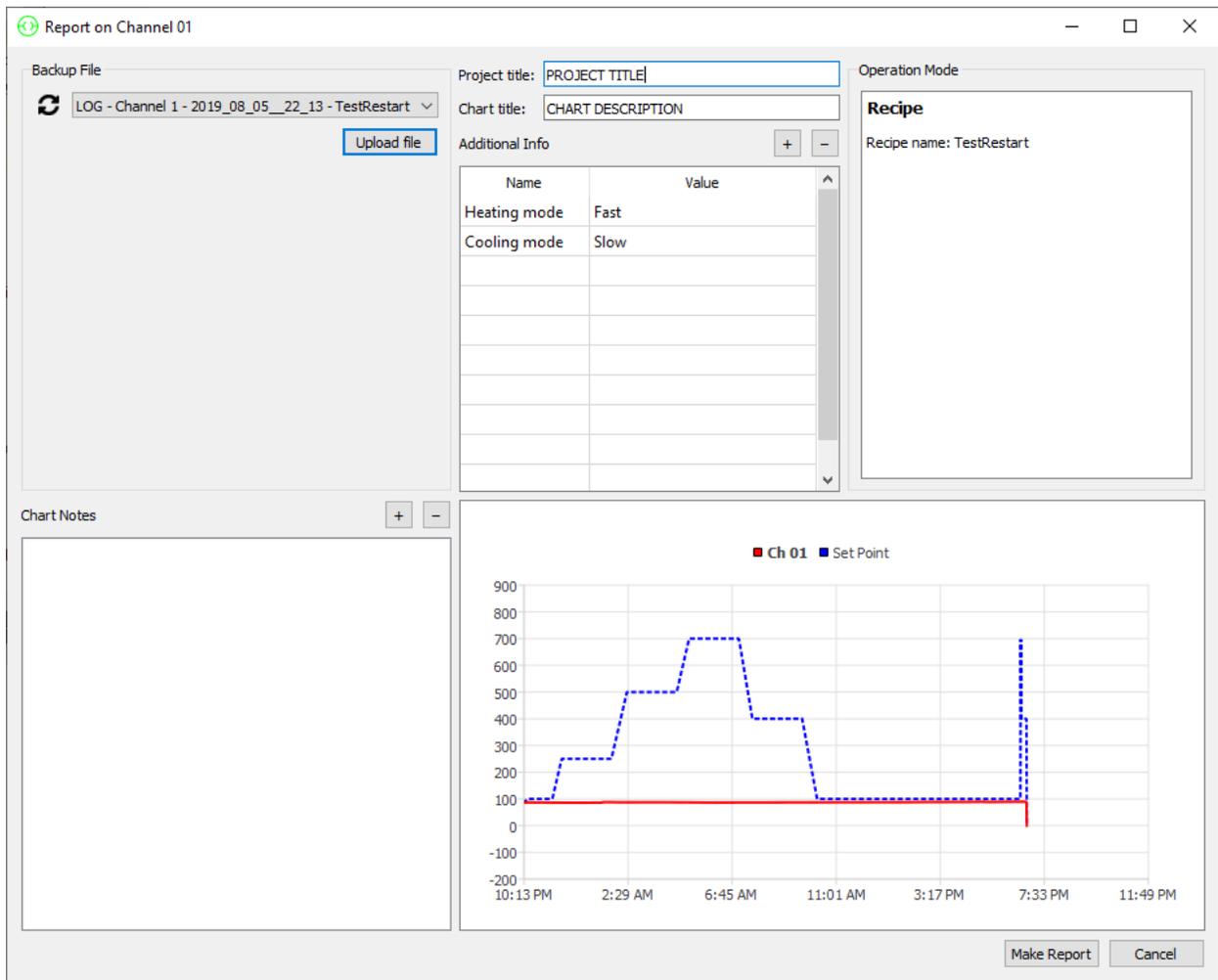


Figure 67: Upload data complete and ready for PDF generation