Red-D-Arc™

Welding Equipment & Expertise
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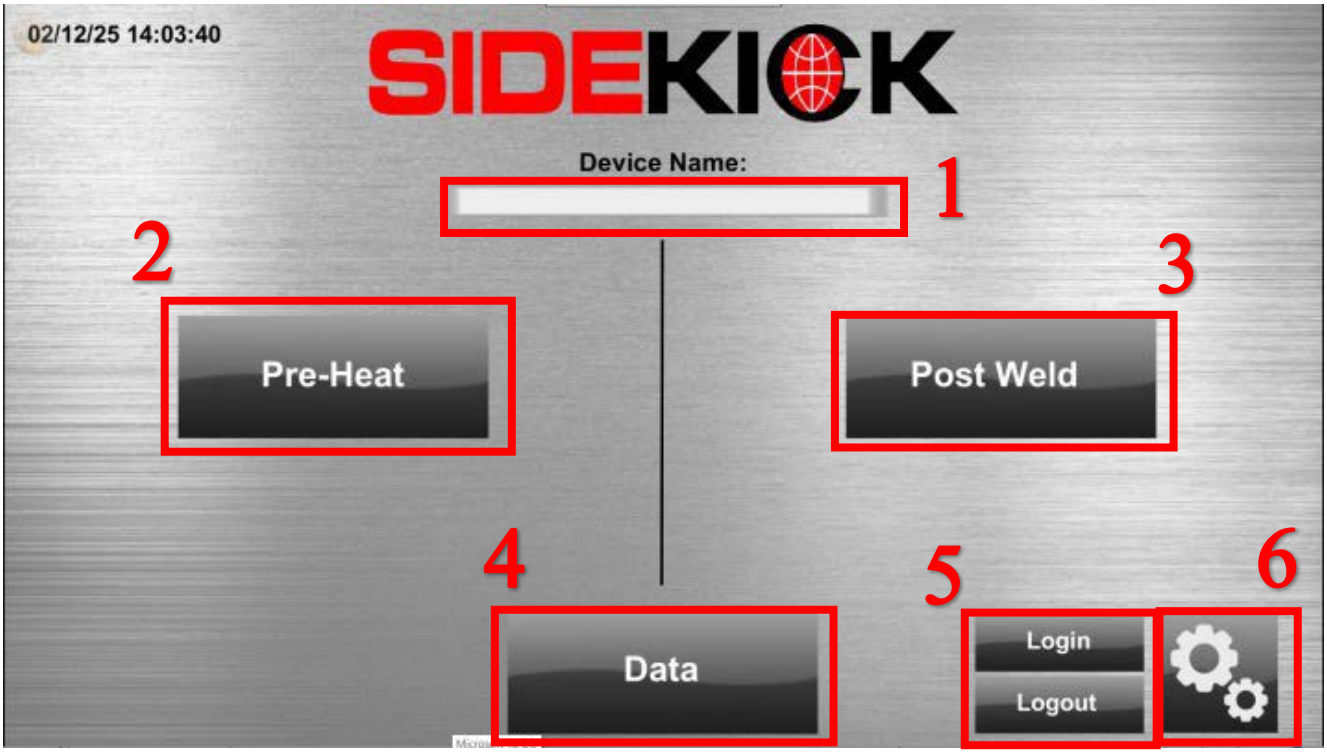
SIDEKICK®

USER MANUAL

Splash Screen

When the unit first powers up it will go to this splash screen. Simply touch anywhere on the screen to go to the home screen and to start heat cycles.

Home Screen



1: **Device Name -** This box allows you to enter a device name which will be displayed across the other screens as well. This will help you individually name each controller to keep better organization.

2: **Pre-Heat –** This opens a screen to allow you to heat up material to a specific temperature and hold it there.

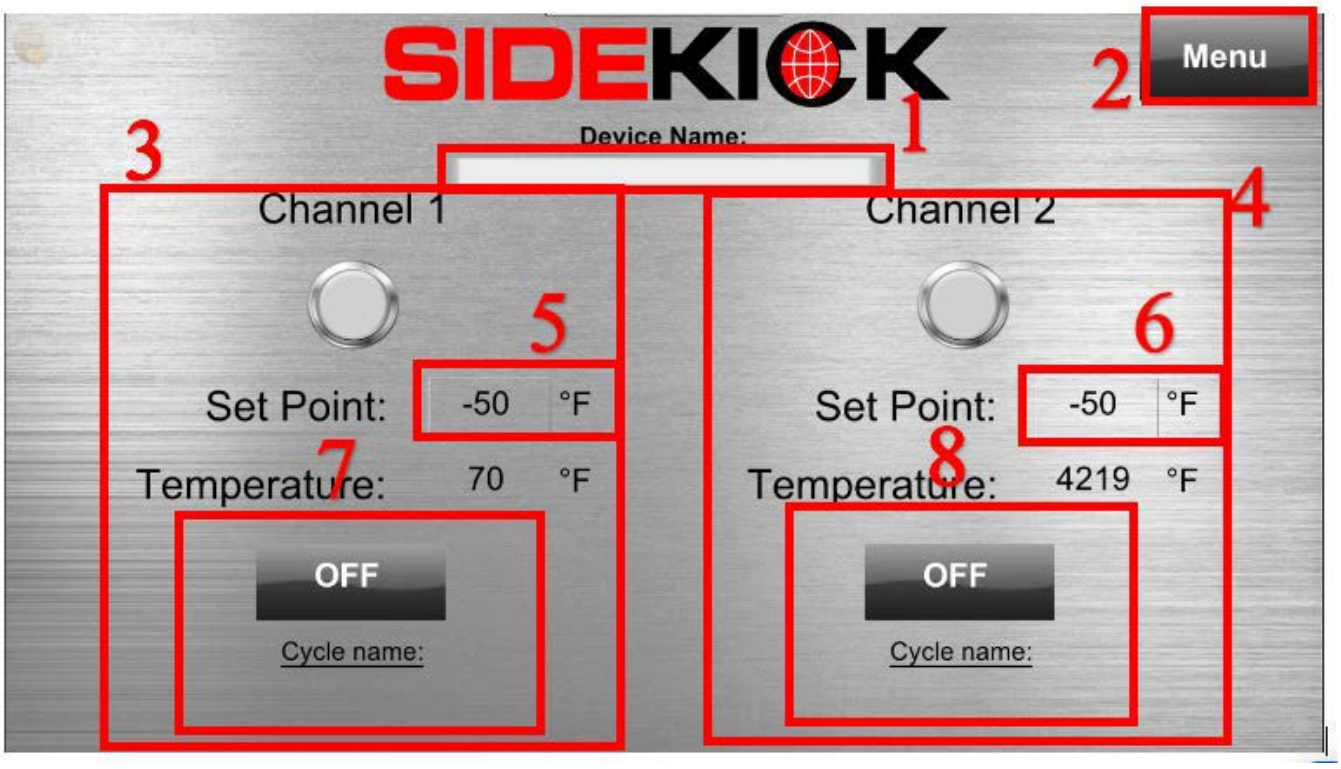
3: **Post Weld** – This opens a screen to where you can post weld heat treat material according to a given recipe.

4: **Data –** This will open a screen where you can export your weld cycle data to a flash drive plugged into the unit. This data can then be used by the computer software to generate a report of your heat cycles.

5: **Login/Logout –** Hit the "Login" button on the bottom right to open the Login window. Here you can choose which mode to log into, "Operator" and "Engineer". In the pop-up screen it is important to select the level you are logging into, then touch the box for the password (this will bring up the keyboard.) Enter the password AND then press the enter key on the keyboard to close the keyboard. Then press the login button to login. Pressing the logout button at any time will log you out.
The default passwords are:
Operator – 1234
Engineer – 5678

6: **Settings –** This will launch the settings screen to with different options, based on the login level you selected.

Pre-Heat Controls



1: **Device Name** – This box allows you to enter a device name which will be displayed across the other screens as well. This will help you individually name each controller to keep better organization.

2: **Menu –** This button will open the menu. There are 3 menu options:
I) Home Screen (this will return you to the home screen)
II) Trend (This will show you a chart of the temperature data)
III) Data (This will bring you to the screen to download chart data to a USB drive.)

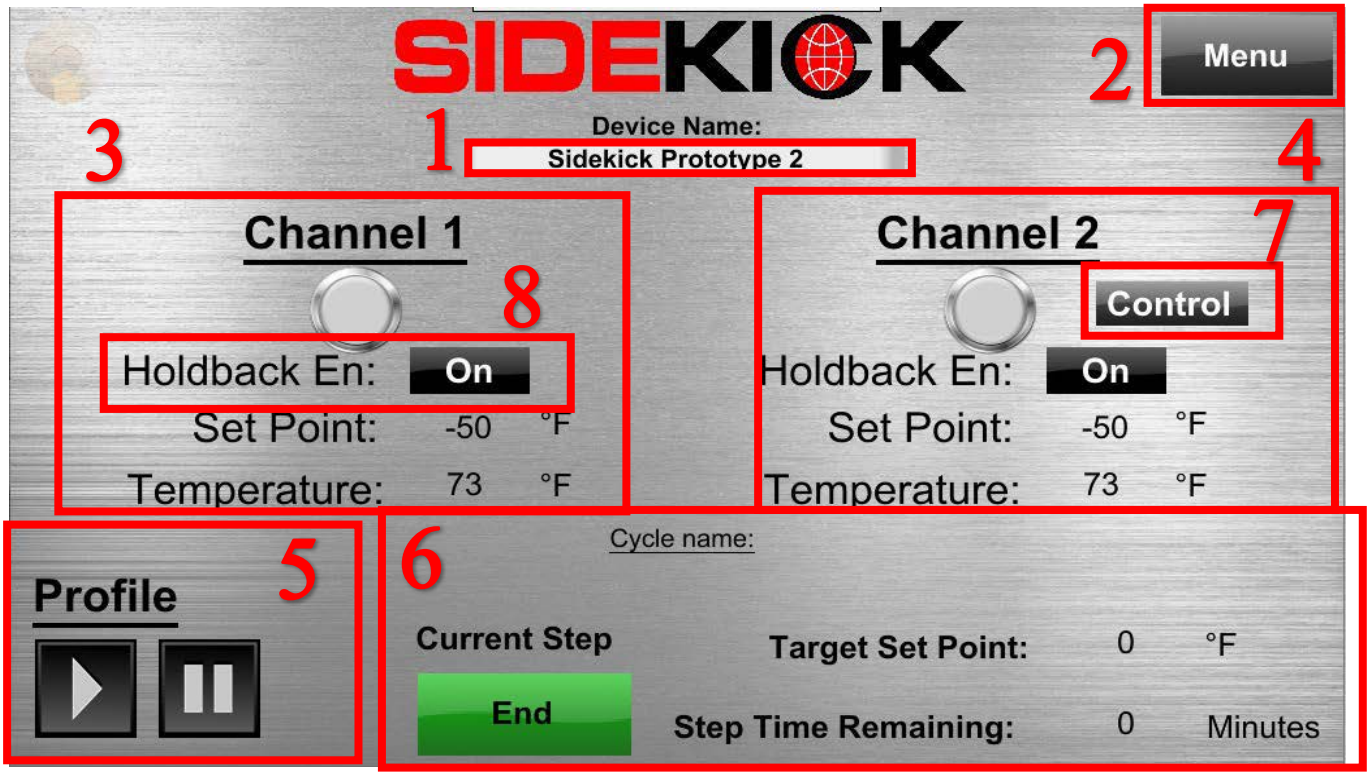
3&4: **Colour Indicator Boxes –** These boxes will change colours for the channel (1 or 2) to blue if the channel is cooler than the lower holdback tolerance or red if it is hotter than the upper hold back tolerance.

5: **Set Point Channel 1 –** This is the temperature the unit will heat the material to and hold it there until you stop it. Just press on this rectangle and type in your desired number.

6: **Set Point Channel 2 –** This is the temperature the unit will heat the material to and hold it there until you stop it. Just press on this rectangle and type in your desired number.

7&8: **Channel start/stop –** Tap the "OFF" button to start the output on the channel. Once you press it, it will ask you to give a name to the heat cycle which you can reference when you are generating a report for it. This name will appear underneath the heading "Cycle name:". To stop the channel, press the button again to set it too "OFF".

Post-Weld Screen



1: **Device Name –** This box allows you to enter a device name which will be displayed across the other screens as well. This will help you individually name each controller to keep better organization.

2: **Menu –** This button will open the post-weld menu. There are 5 menu options:

I) Home Screen (this will return you to the home screen)
II) Trend
III) Data
IV) Simple Recipe
V) Multi-Step Recipe

3&4: Channels 1 & 2– This is where the 2 channels will be shown. It shows the channels temperature and it's set point. Channel 1 is the main channel so it is the master channel and is always used. If you are only running 1 channel, you will need to use Channel 1.

Channel 2 has the ability to be removed from the post weld so that it does not stop the post weld if not used. To remove it from the post weld, press on the "Control" button to change the text to "Manual". This puts it in pre-heat mode and allows you to use this channel as pre-heat even though channel 1 is running post weld. To make it join the Post weld again, simply press the button again to change the text to "Control".

5: **Start stop and pause buttons –** To start your post-weld, press the play button. This will ask you for a cycle name. Once entered, the cycle will start. Once running you can pause the cycle. (Pausing the cycle will only stop the setpoint from changing or the soak timer will pause. IT DOES NOT STOP THE OUTPUT.) Finally, you can wait for the post weld recipe to end or you can stop the cycle at any time by pressing the stop button.

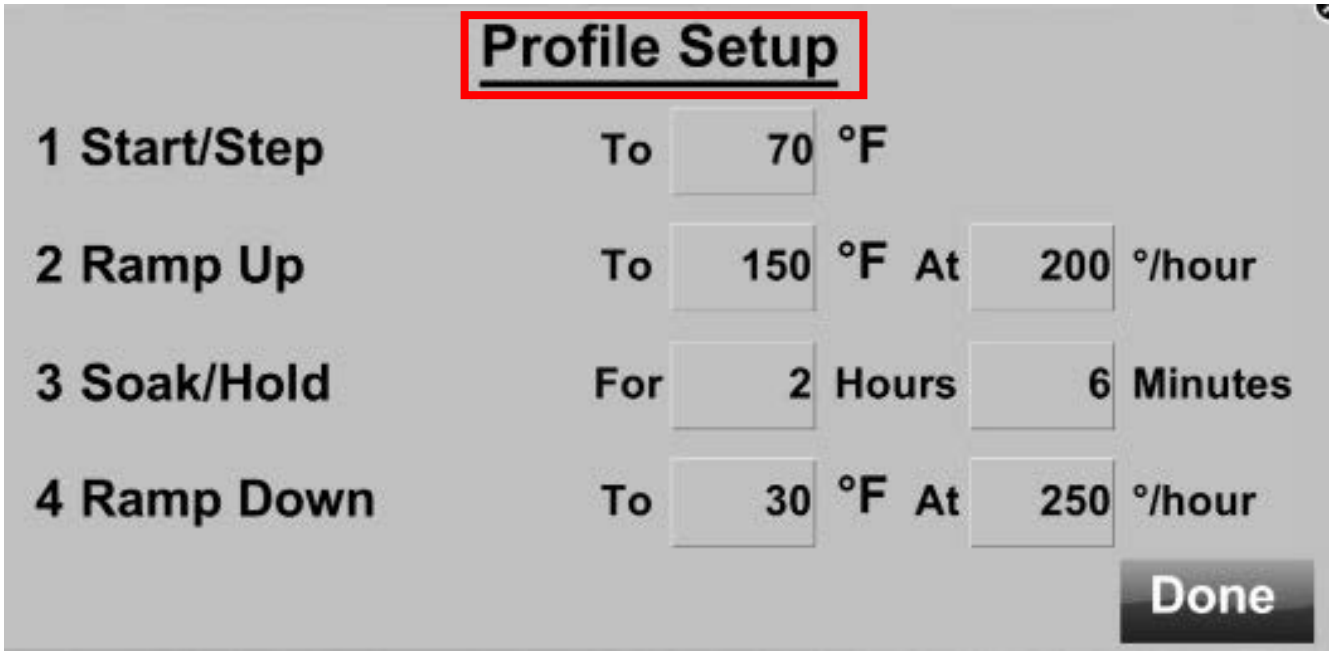
6: **Post Weld recipe status –** This block of information shows you what the current post weld recipe is doing. It will show you the step type, the target setpoint and the time remaining before the step ends.

7: **Channel 2 removal from post weld cycle –** If you are only running one channel in the post weld recipe, press this button to change it to “Manual” text. This puts it in pre-heat mode, where you can set the set point and allow the channel to heat the material to this temperature.

8: **Holdback enable –** The system will pause a cycle if either one of the channels is above or below the given set point (the amount above or below is set on the settings screen). If you have a channel that is out of tolerance (Holdback), but you want the cycle to continue, simply change the holdback on the channel to off. **If you are running only 1 channel, make sure to turn the holdback for channel 2 to off.**

Easy Recipe

This opens a pop-up window which allows you to set a simple recipe for the post weld mode.



Tap on any of the boxes to adjust the values for your desired recipe and then hit the “Done” button at the bottom when you’re finished.

1 – Start/Step – This is the start step of the program. The profile will start off with trying to get all the channel temperatures to this temperature as fast as possible before going to the next step. If you start a cycle and your temperatures are far below this temperature, the cycle will show it is paused until the temperatures with the bounds set by the hold back values shown in the settings below.

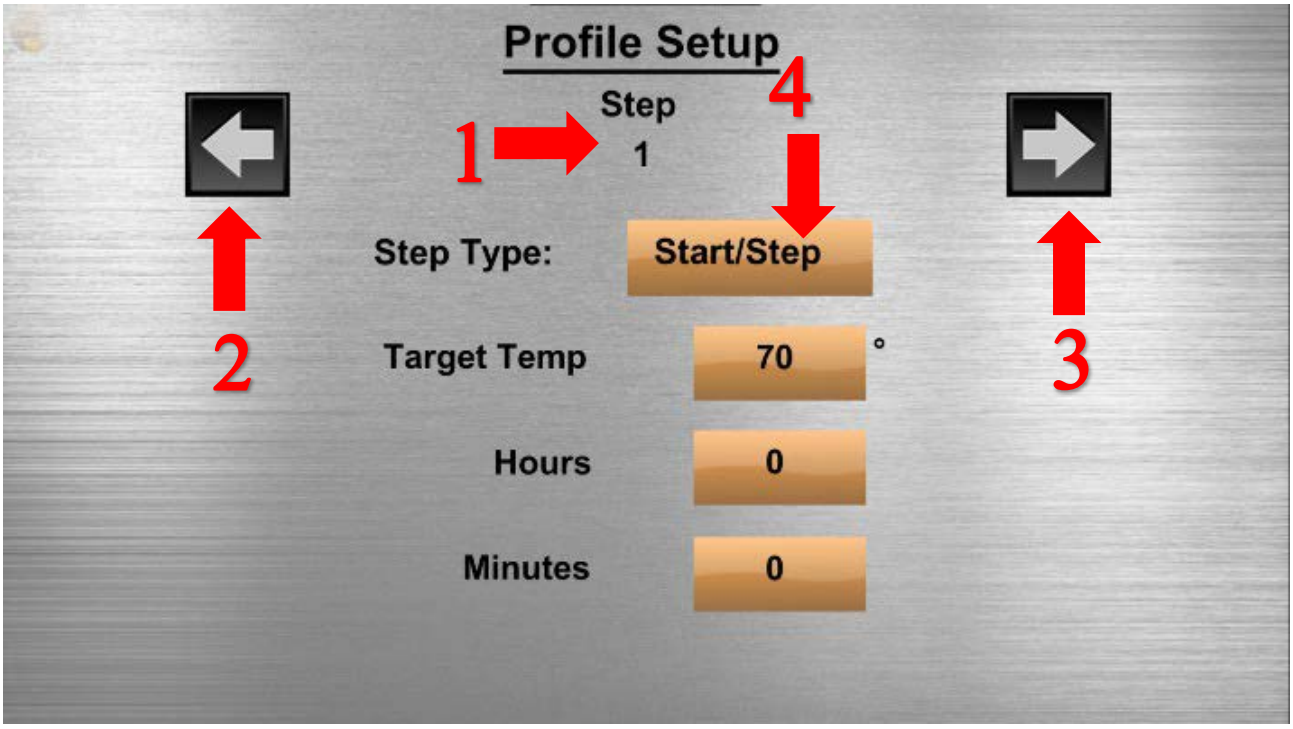
2 – Ramp up – this step will ramp up to a given temperature at the rate set.

3 – Soak/Hold – will hold the temperature set in the ramp up step before, for the duration given here.

4 – Ramp Down – this step will allow the material to cool to the specified temperature at the rate given.

Multi-Step Recipe

This screen allows you to set up a multi-step recipe.



1: **Step Number –** This shows you which step number you are on.

2&3: **Step Number Change Arrows –** You can switch between steps by using the arrows.

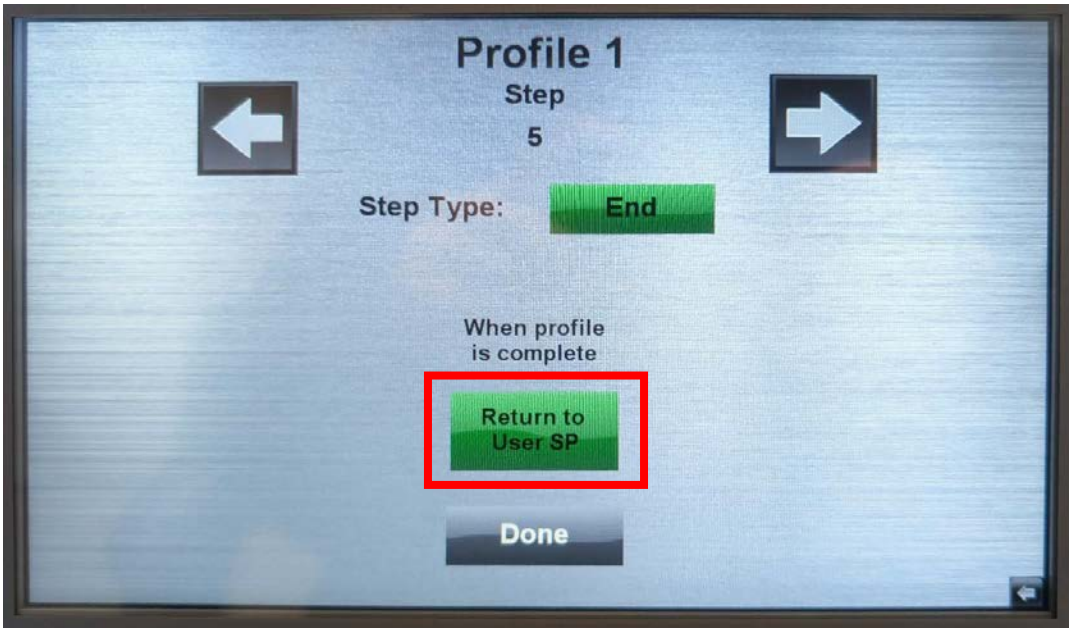
4: **Step Type –** This button will open a window where you can select which step type you want performed for that step number. There are 5 options for step types.

"**Start/Step**" is the same as for the simple recipe. This is the start step of the program. The profile will start off with trying to get all the channel temperatures to this temperature as fast as possible before going to the next step. If you start a cycle and your temperatures are far below this temperature, the cycle will show it is paused until the temperatures with the bounds set by the hold back values shown in the settings below.

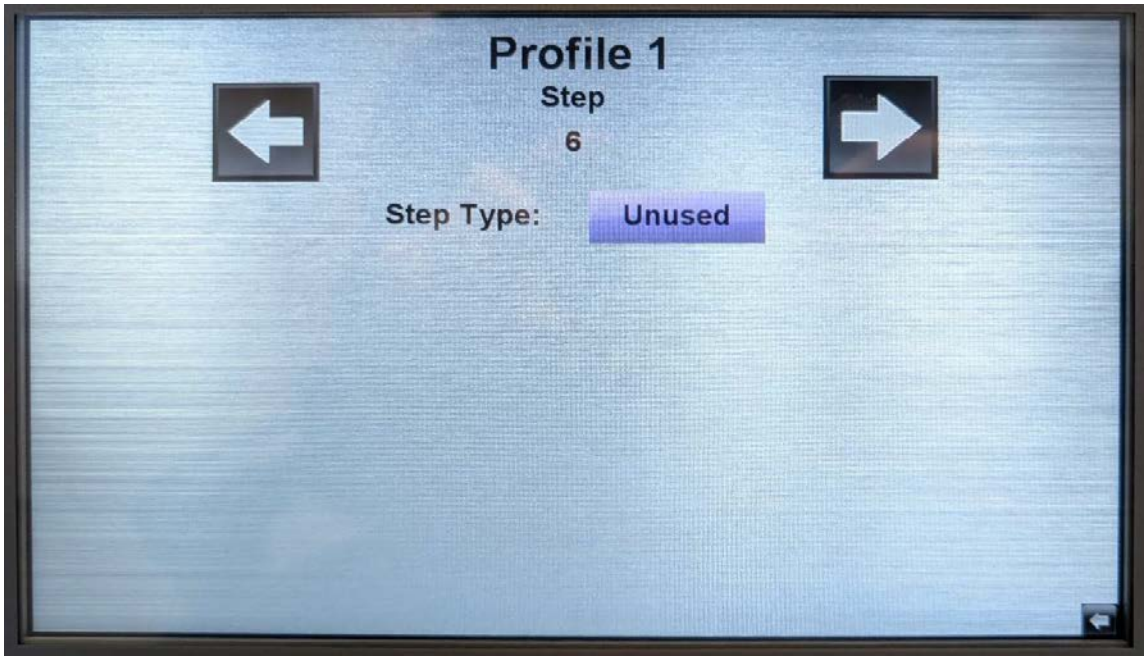
"**Soak**" lets you enter the hours and minutes you want that step to hold its temperature for.

"**Ramp**" lets you enter the temperature you want to reach and at what rate you want the temperature to rise/fall.

"**End**" marks the last step in the profile. There are three different options for end steps which can be cycled through by clicking on the green button. The first option is "**Return to User Set Poin**t", the second option is "**Turn Control Loops Off**" and the third option is "**Hold Last Set Point from Profile**". When finished setting up your recipe, hit the "**Done**" button at the bottom.



"**Unused**" has no values to input, there is no step to be performed. This step is used after the "**End**" step.



Data

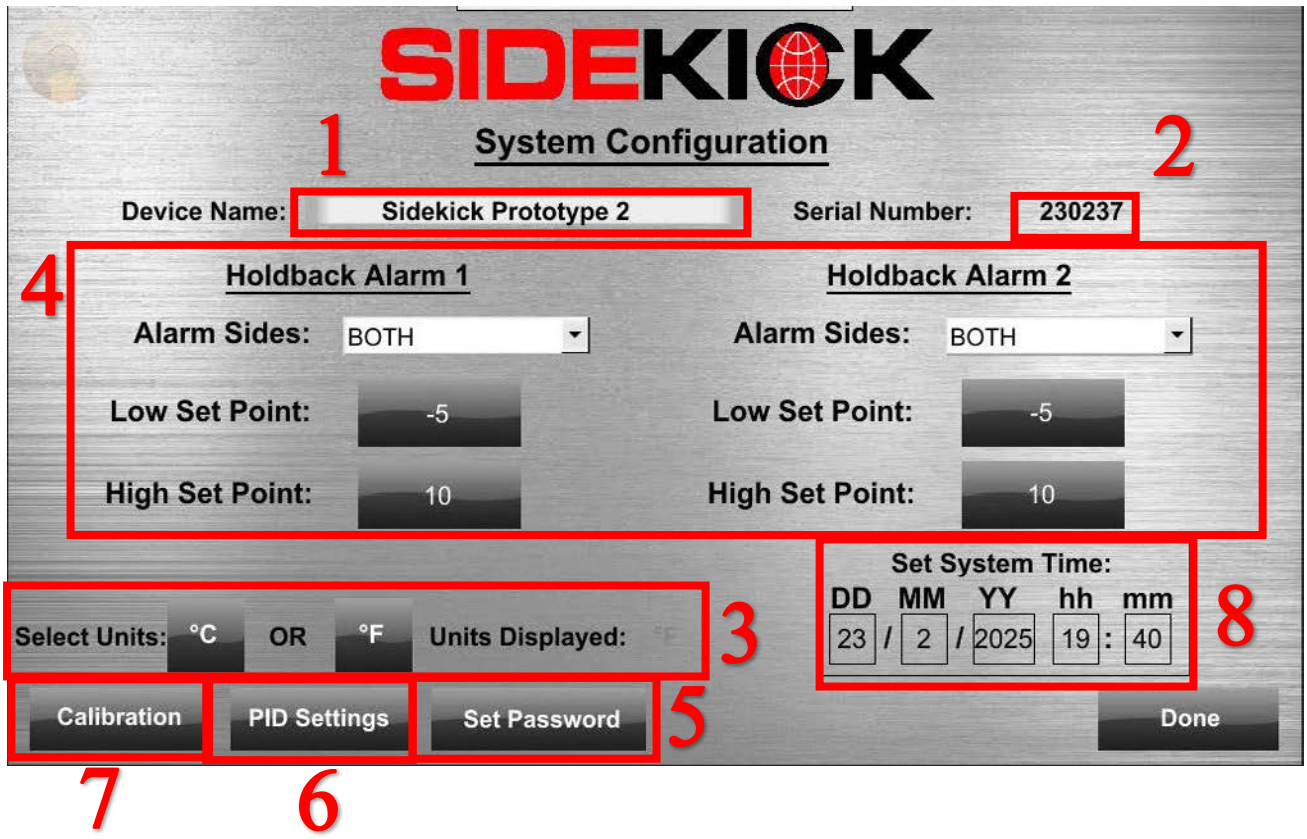
This screen is where you will download cycle data to a USB drive. This is how the screen will appear when there is no USB inserted.

Once a USB has been inserted the screen will appear like this:

You can then hit the “Download to USB” button, the screen will appear like this when the data is being downloaded to the USB. The screen will tell you once the download is complete.

You can delete the data samples saved on the HMI by clicking on the “Delete Data” button at the bottom. The delete data button is only available if you are logged in as “Engineer”.

Settings



1: **Device Name –** This box allows you to enter a device name which will be displayed across the other screens as well. This will help you individually name each controller to keep better organization.

2: **Serial Number –** This will display the serial number of the HMI.

3: **Select Units –** You can toggle between °C and °F by tapping which button you want. You must be logged in as Operator or Engineer to see or use these buttons.

4: **Hold Back –** Here you can control and set the holdback alarm. “Low” is the value how far below your set point your temperature needs to drop to activate the low end of the alarm. “High” is the value how far above your set point your temperature needs to rise to activate the high end of the alarm. “Type” is where you to choose which end of the alarm you want on. You can choose to activate just the low end of the alarm, just the high end of the alarm or both ends of the alarm.

If your post weld cycle’s temperature goes beyond the setpoint by the amounts in the holdback section, then the cycle will pause and wait for the channel to get back within bounds before it will continue to run.

5: **Password Reset –** This will launch a pop-up window where you can reset the passwords to login to the User Mode and Eng Mode. To see and use this button you will need to be logged in as Engineer.

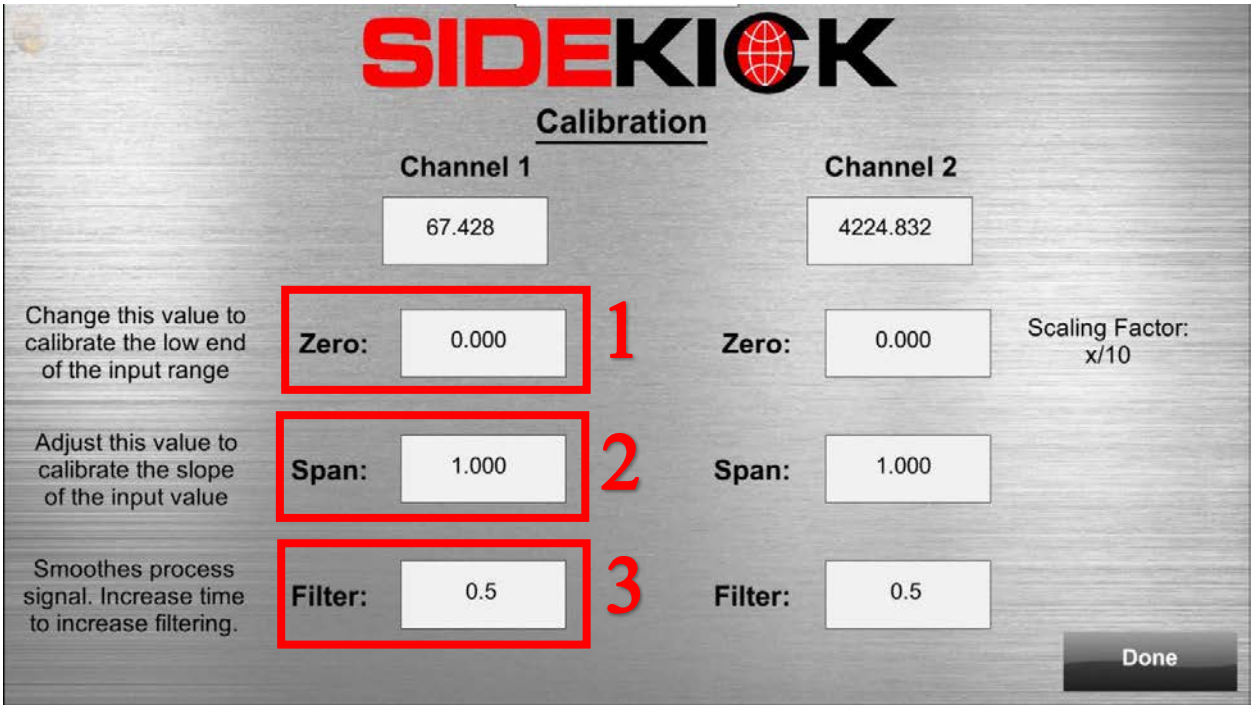
6: **PID Settings –** This will open a pop-up window to the PID Settings. To see and use this button you will need to be logged in as Engineer.

7: **Calibration –** This will open the calibration screen. To see and use this button you will need to be logged in as Engineer.

8: **Date and Time –** This is the current date and time of the controller. To update it, simply touch on the item that is wrong and enter the correct value.

Calibration

This screen is where you can adjust the calibration values on each channel.



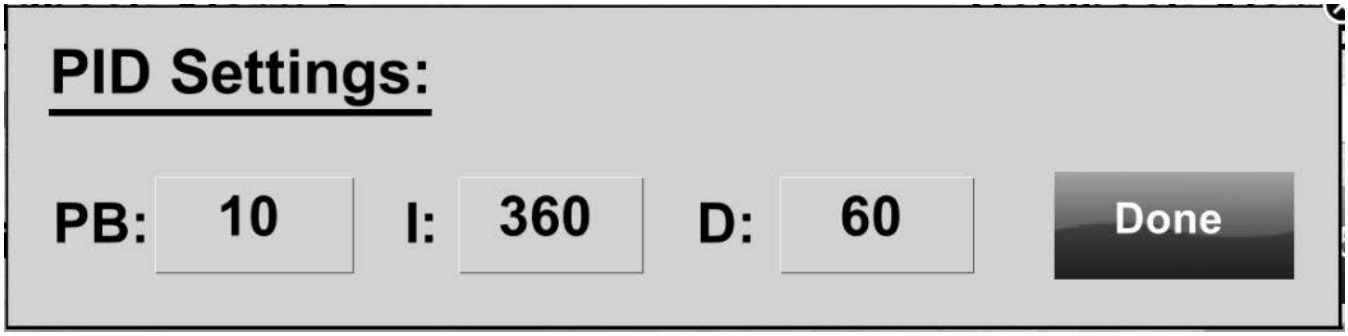
1: **Zero –** Calibrates the low end of the input range.

2: **Span –** Calibrates the slope of the input value.

3: **Filter –** Smoothens the process signal. Increasing the time increases the filtering.

PID Settings

This screen allows you to adjust the PID parameters controlling the cycle. The values of “PB”, “I”, and “D” can be changed by hitting the input box beside them.



Please do not change these values from default unless you are sure you know what you are doing.

As a basic explanation:

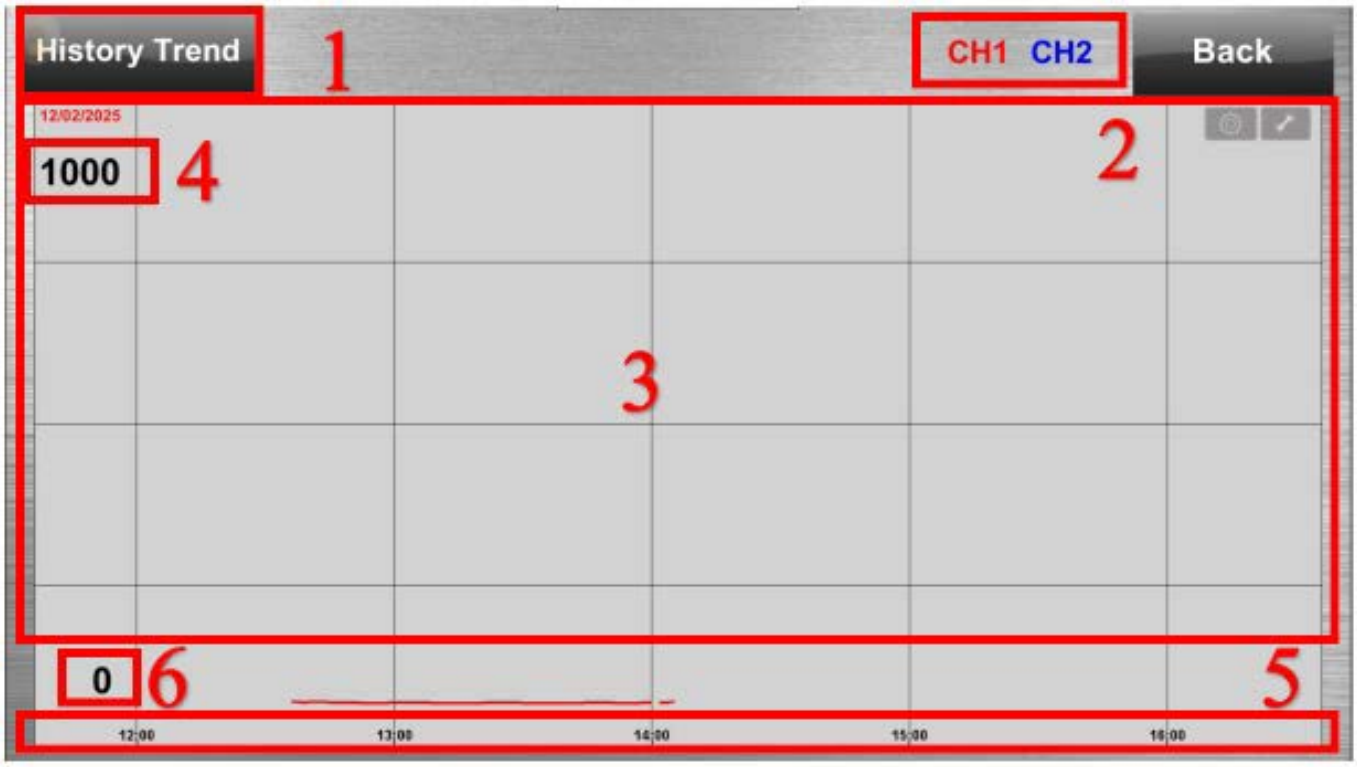
The value for PB will define how aggressive the system is. Which means that the higher this number is the more power it will put out with smaller differences between the temperature and setpoint.

The value for I determines the time filter for acting on the difference between the setpoint and the temperature OVER A LONG PERIOD OF TIME. Modifying this value can cause unstable power requests causing your cycle to have large temperature swings.

The value for D determines the time filter for acting on the difference between the setpoint and the temperature over short periods of time. Lowering this number will make the system react more to small changes in measured temperature and increasing it will make the system slower to respond and will also cause the overall system to react slower.

Trend

This screen will display a chart of the recorded channel temperatures.



1: **History Trend –** This changes the chart so that it will show data from before the cycle started.

2: **Channel Legend –** Each channel is represented on the chart with a different colour. This legend lets you know which colour is which channel.

3: **Chart Area –** This is where the data will be displayed.

4: **Y-Axis Max Value –** This number is the upper limit of the charts Y-axis. You can set the maximum temperature shown by tapping that number and entering your desired value.

5: **X-Axis Scroller –** These buttons allow you to scroll through the time frame that the data was recorded in.

6: **Y-Axis Min Value –** This number is the lower limit of the charts Y-axis. You can set the minimum temperature shown by tapping that number and entering your desired value.