Advantage 3000 USER MANUAL REV. 1.8
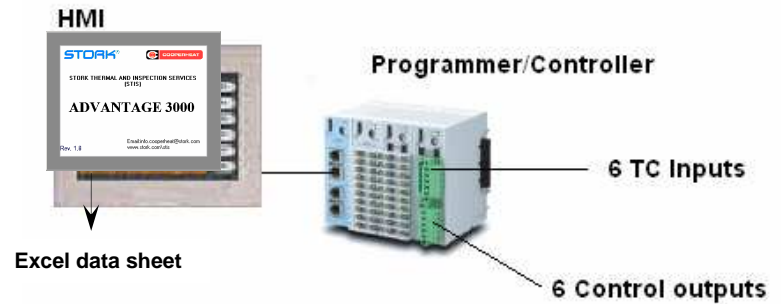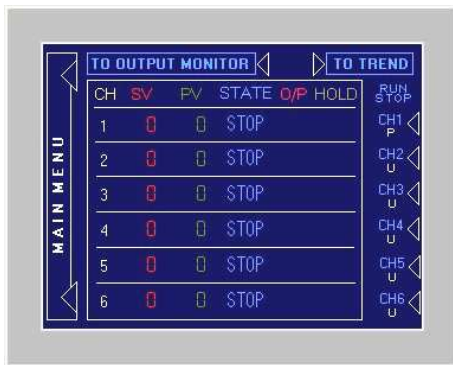
Excel data sheet

HMI

Programmer/Controller

6 TC Inputs

6 Control outputs

1) Introduction
2)
The Advantage 3000 is the latest innovation on Heat Treatment control technology which combines user friendly operation with state of the art control and data logging as well. The heart of the Advantage 3000 is the Full color TFT touch-screen from which you can set-up and run your system. The control is done by a dedicated rack-mounting system that is located inside the cabinet.

Benefits:
User friendly operation
Cost and time saving installation
Better protection against dust and Heavy-duty environments
Build-in data logger
Copy .csv file to USB function

Calibration function
Real time trend-charts (paperless recorder)
Output status monitor
Step function
Lock function against unauthorized operation
PID settings with Auto tuning

Basic features:
Colour TFT touch-screen
6 loop controller
Free selectable programmer/slave combinations
Up to 8 ramp/soaks per program
Auto and Manual Hold function
℃ / F selection on base unit
0 ~ 2400 F only model available

2) Main Menu
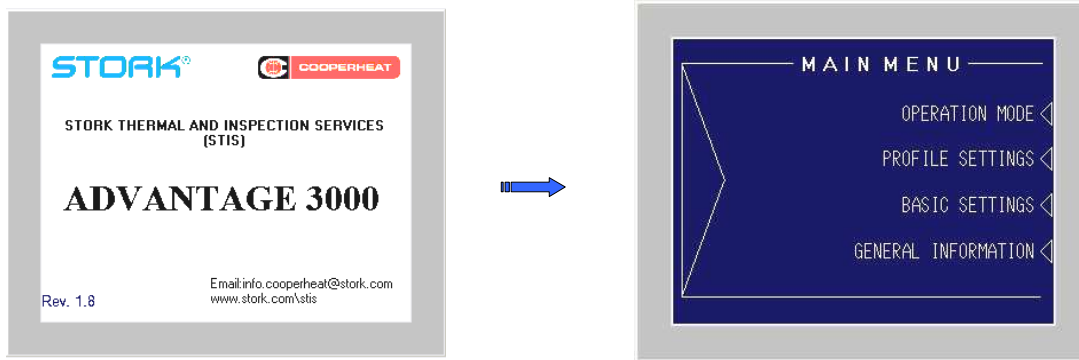
To exit the introduction screen, just touch the screen and swap to the Main Menu.

On the Main Menu, you can select to go to the "Operation mode", the "Profile setting mode" or the "Basic setting mode", by pushing the corresponding text. Push on General Information to go back to the introduction screen.

Lock function:

From the main menu, the operator can lock the complete system to prevent unauthorized operation by pushing the left down side corner for about 5 seconds. By pushing this touch-area, the system will automatically swap to the operation screen, where the start/stop buttons will be disabled. To return from the "operation run/stop lock" screen, push again the left down side corner for about 5 seconds.


In Lock mode, the operators still have the possibility to swap to the all channels trend, by pushing the text "TO TREND". Touching the trend screen just anywhere, returns you to the "RUN/STOP LOCK" screen.

---

3) Profile settings
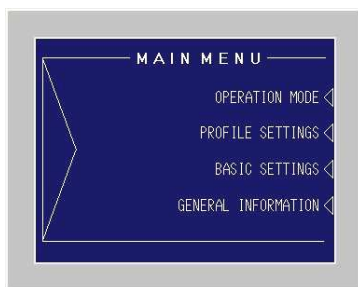
a) Push the "PROFILE SETTING" text to swap to the Profile Setting menu, where you can start setting the profile of channel number 1.

*Note that for all channels except channel 1, the operator can select whether that channel is unused, a programmer, or a slave (of the previous programmer). Due to this possibility, the system can have one programmer with five slaves, six individual programmers or just every combination in between.
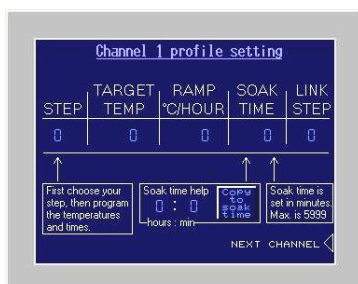
On the profile setting screen, there are five parameters that can be set for each step. First select the step you want to set by touching the step number. The keypad will pop-up and you can select the step you want to program, from step 1 to step 8. Always start your program in step number one!
Next, program the target set point for that step, ramp to set point in deg. per hour and soak time in minutes. Use the small "soak time help" to calculate your minutes and save them in the soak time by pushing the "copy to soak time" button. Max. is 99 hours and 59 minutes. Remember to do so for each step!

2

After setting the temperatures and times for the first step, you have to set the link-step. This is the step where the program jumps to, after the current step has elapsed. Setting range is 0 to 8, where "0" means no jump to another step. After setting the first step, increase the step number and repeat setting the values for that step. Due to that procedure, you can create a program of max. 8 ramps and 8 soaks that ends at the last step (number 8), or that keeps on repeating by setting the link-step at 1 in the last step.

Of course, it is also possible to repeat a part of the program by setting the link step at x (for example 4) in step 8. Step 4 till 8 will then be repeated till the operator pushes the stop button.

After you have set your program, push the "NEXT CHANNEL" text to swap to the next channel selection page.

b) On the "Channel selection screen" you can select each channel to be unused, programmer or slave of the previous programmer by pushing the corresponding text. You can go back to the previous channel at any time, by pushing "BACK".

After setting the channel function, push "NEXT". If you choose "programmer", you will automatically swap to the channel 2 profile setting screen. If you have selected "unused" or "slave", you will swap to the next channel selection screen.
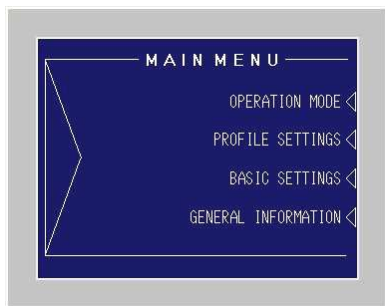From here, you repeat the same procedure to set all channels.

After you have set all six channels to be a programmer, slave or unused you will enter the "end setting" page that confirms that all channel have been set.

Also from the "End setting screen" you can go back to previous channel by pushing the "BACK" text.
Push "NEXT" to swap to the main menu.

4) Operation Mode

Push the "OPERATION MODE" text to swap to the Operation Mode, where you can RUN and STOP your programmers by pushing the corresponding channel number text (CH1 ~ CH6). For each channel, the "P", the "S" or the "U" indicates whether that channel is a Programmer, a Slave or Unused. Programmers can easily be recognized by the blue rectangle surrounding the channel number.
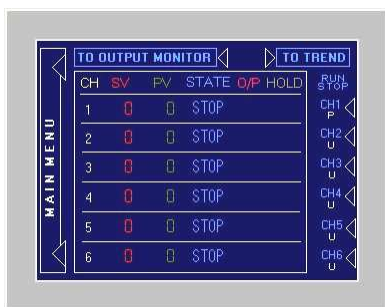
a) To RUN or STOP a program, toggle the corresponding programmer channel button (CH1 ~ CH6) for one second. The one second delay on these buttons is to prevent the operator for running and stopping channels by incident. The slaves belonging to that programmer will automatically follow. In the "STATE" table, you can see for each channel if it is in RUN or STOP mode. In the "O/P" (Output) table you can see which outputs are active. In the "HOLD" table you can see on the displayed "H" if that programmer is in Hold. The "H" will only be displayed on the programmers. On the yellow spots in the HOLD table, you can see which channel(s) are responsible for the programmer's hold. This can be the programmer itself, any of its slaves, or any combination.

3
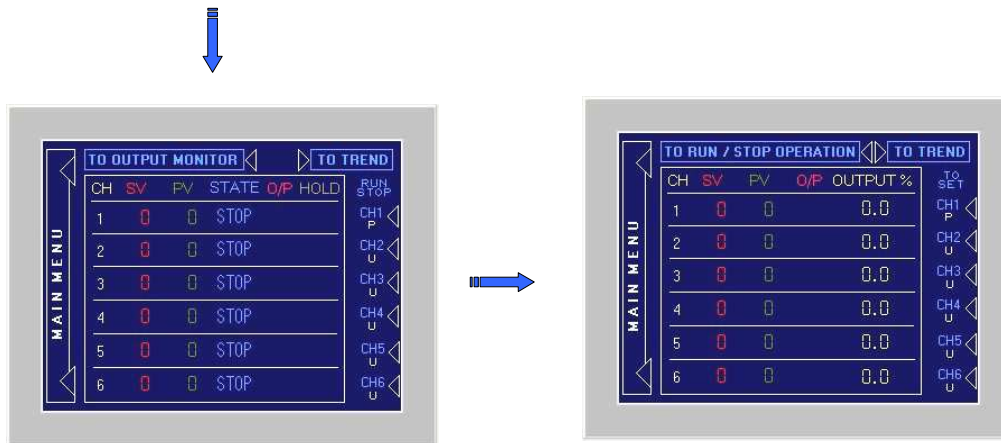
b) If you touch the "TO OUTPUT MONITOR" area on the operation RUN / STOP screen, you will swap to the output monitor screen, where you can view the output percentage per channel. Both screens look similar, however the function of the channel number buttons (CH1 ~ CH6) has changed.

c) On the "Output Monitor Screen" you can use these CH1 ~ CH6 buttons to enter the profile setting mode of the channels that are still in 'STOP' mode. If a channel is in "RUN" mode, the corresponding channel button will be ignored. After pushing the channel number button of a channel that is in STOP mode, you can swap the function of that channel between unused, programmer and slave mode. It is also possible to change the steps of an existing program. After changing the selected channel, push the next button to go the next channel that is in "STOP" mode. RUNNING channels will be ignored and you will automatically swap to the next channel that is in STOP mode, until you enter the "END SETTING" screen.

Touching the text "TO RUN/STOP OPERATION" on the output monitoring screen will swap you back to the operation RUN / STOP screen.

d) Touch the "TO TREND" text on both the RUN/STOP and Output Monitor screen to swap to the "all channels trend" screen where you can view all 6 Process valued at the same time over the last 6 hours.
Touching the trend screen just anywhere will return the operator to the previous screen.
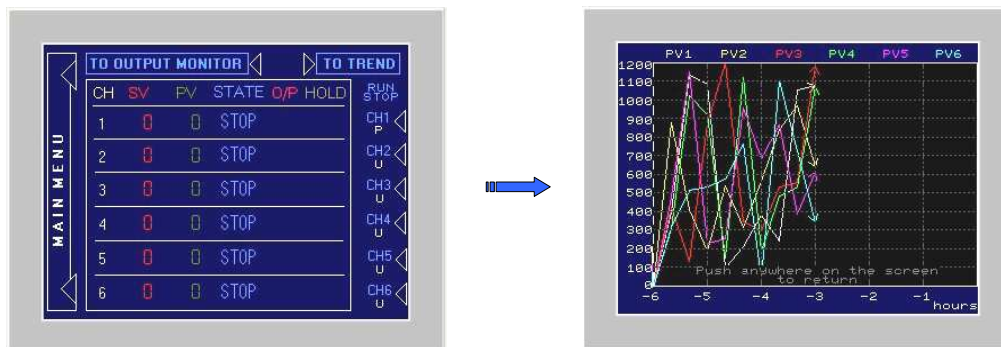
e) To swap to the "detail channel screen", you have to touch the blue rectangle program channel number. This means you can see the detail information of all different programmers by touching the corresponding channel.
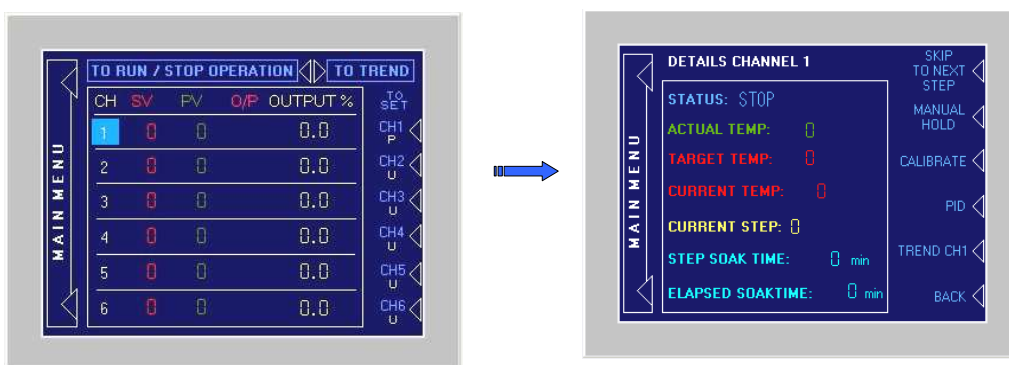
On the "detail channel screen" you can find use full information about the programmer status. Push the "BACK" text to return to the Operation RUN / STOP screen.

Extending soak time: While a program is running, you can easily change the soak time of the current step by touching the programmed time. The pop-up keypad will allow you to change this programmed time.

f) Push the "SKIP TO NEXT STEP" text to activate the step function. The running program will skip directly to the next step. Remember that each step exist of one ramp and one soak. So, if you push the step button, you will directly jump to the start of the next ramp.

**Note:
The elapsed soak time will reset when changing from ramp to soak state. This means that if you "STEP" while a soak is running, and jump to the start of a new ramp, the elapsed soaktime of the previous step will be shown until the ramped setpoint has reached the target setpoint of that step and start soaking.

g) Push the "Manual Hold" text to stop the programmer ramping or soaking. The temperature control will remain on its current setpoint. Push "Manual Hold" again to
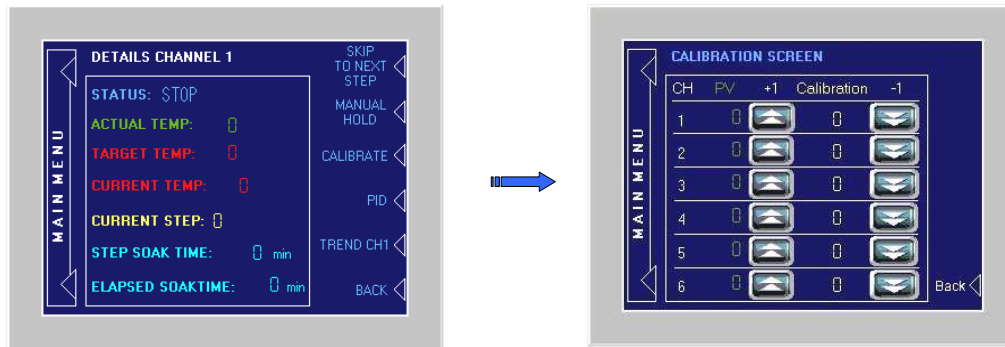
h) Push the "CALIBRATE" text to swap to the calibration screen. On the calibration screen the operator can add or subtract some degrees of the process values to calibrate the controller with your paper trend chard recorder. Touch the number to set the value by the pop-up keypad. Touch the up and down keys to directly add or subtract one.

i) Push the "PID" text to swap to the PID setting screen. The description of this screen can be found on the Basic settings chapter "c".

j) Push the "TREND CHx" text to swap to the channel trend screen, that shows the setpoint and process value of that specific channel. Touch the screen anywhere to return to the detail channel page.
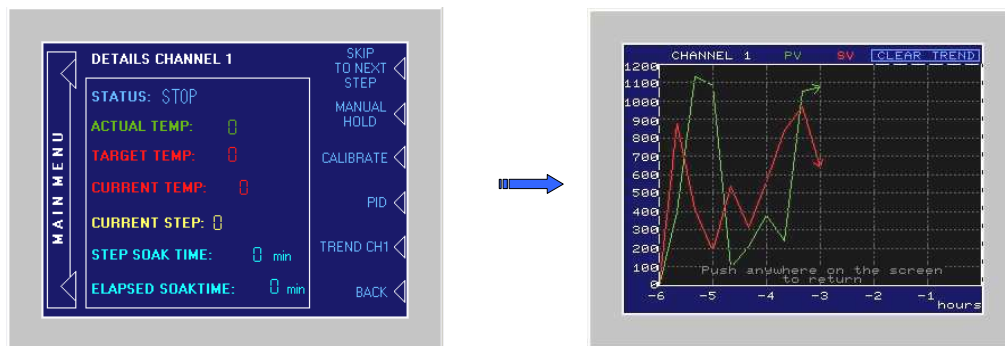
k) From the detail channel screen, push "Back" to return to the detail channel page.

Password protection: As the calibration screen is password protected, type "USER" in capital letters to enter the screen. After 1 minute not touching the screen, the password is timed-out and the operator has to type "USER" again if he wants to enter again of leave the calibration screen.
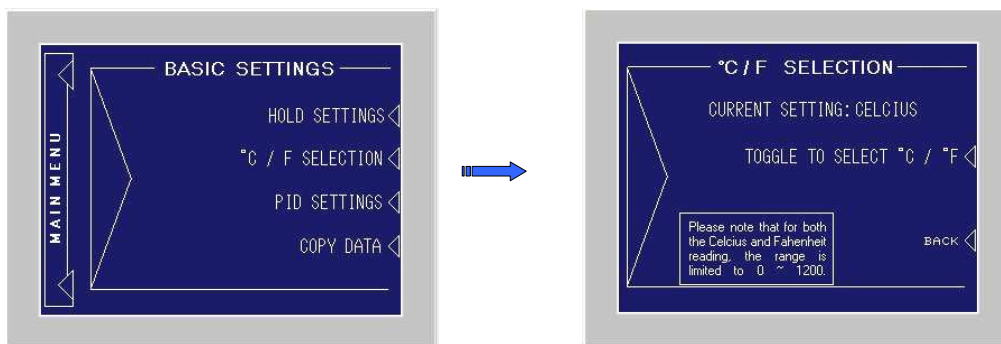
5) Basic Settings

5
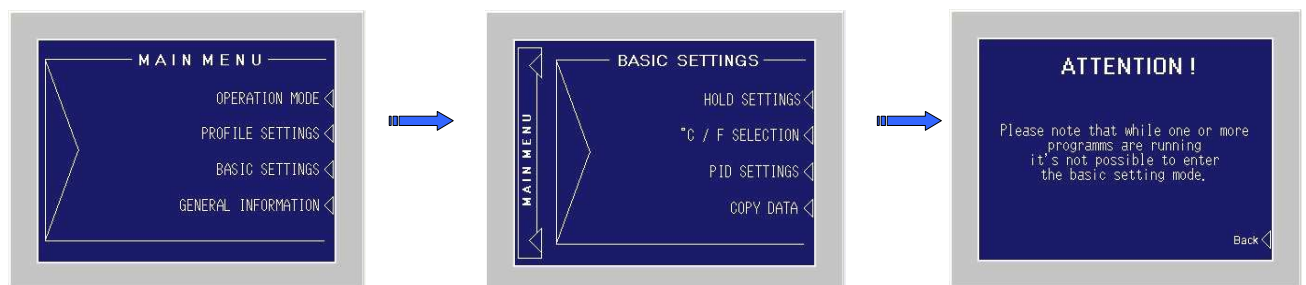
Touch the "BASIC SETTINGS" text on the Main Menu screen to swap to the Basic Setting screen. As the basic settings are Password protected, you have to type-in the word "p3t3r", to enter the "Basic Setting mode".
Please note that the BASIC SETTING mode is only mentioned for skilled personnel. As the BASIC SETTINGS do have serious influence on the control of the unit, all channels have to be in STOP mode. If one or more channels are still in RUN mode when you try to enter the "BASIC SETTINGS" mode, you will get an ATTENTION screen. Push "Back" to return to the BASIC SETTINGS and go back to the Operation RUN / STOP screen to STOP all channels, before you can enter the "BASIC SETTINGS" mode.

After you have entered the "BASIC SETTINGS" mode you can select if you want to change the HOLD SETTINGS, the display unit (℃ or F), or the PID parameters.
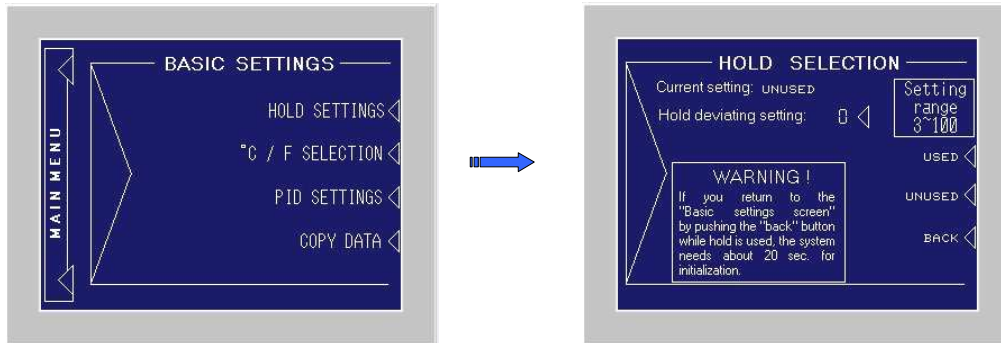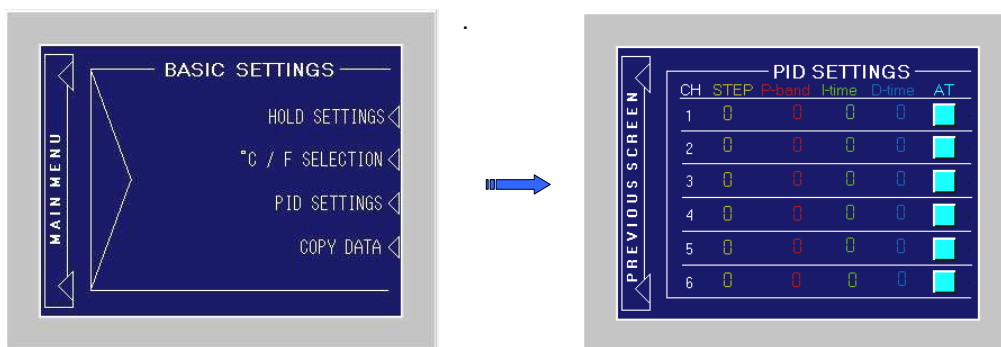

a) Push the "HOLD SETTINGS" text to enter the Hold setting menu, where you can switch between used and unused by pushing the corresponding text.
A small pop-up touchpad will allow the operator to set the correct value between 3 and 100. Factory settings for the HOLD function is "used" and a deviation value of "10" degrees. Push "BACK" to return to the Basic Setting menu.


b) Push the "℃ / F SELECTION" text to go to the selecti on screen, where you can switch between deg. Celsius and Fahrenheit by toggling the text. Push "BACK" to return to the Basic Setting menu. Please note that the Fahrenheit range is limited to 0~1200 degree. F, just like the Celsius range.

c) Push the "PID SETTINGS" text to enter the PID settings menu, where you can edit the PID settings. Please note that the factory settings are carefully chosen for this application and will work well in most situations.
Also, start the Auto tuning by pushing the "AT" button.

*Note that you can set different PID settings for each step of each channel. By touching the step-number, a small touch-pad will pop-up to change the step. After you have changed the step, you can edit the PID valued for that step using the same pop-up touchpad. Push "Back" to return to the "BASIC SETTINGS" screen.
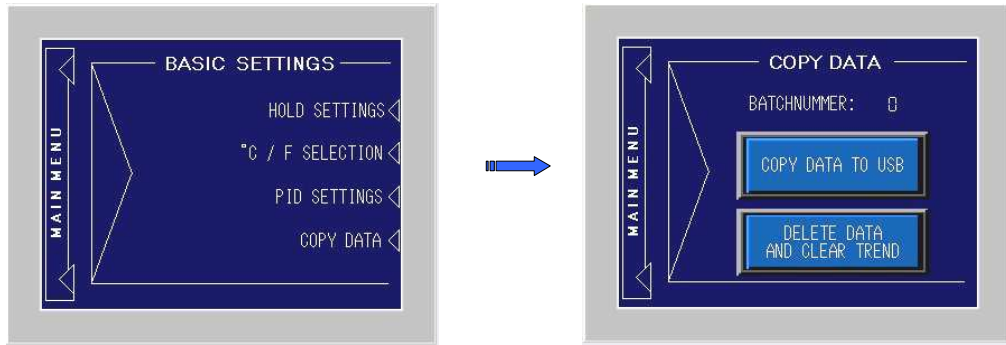
d) Push the "COPY DATA" text to enter the COPY DATA screen. A batch number can be set, that will be used as a file number when copying the data to your USB stick. Of course, make sure your USB stick is connected.
After copying the .csv file to your USB stick by just pushing the "COPY DATA TO USB" button, you can delete the log file by pushing the "DELETE DATA" button for 3 seconds.

By this action, the Batch number will be reset also and the "ALL CHANNELS" trend will be cleared as well! The individual channel trends must be cleared by hand. Return to the MAIN MENU by pushing the corresponding text at the left-side.

---

6) Extra settings

a) Brightness can be set by toggling the two top corners of the touch area. At the bottom, an eight step selection box is shown where you can select the brightness you like. After you selected the right brightness, just touch the "X" button and the selection box will disappear.