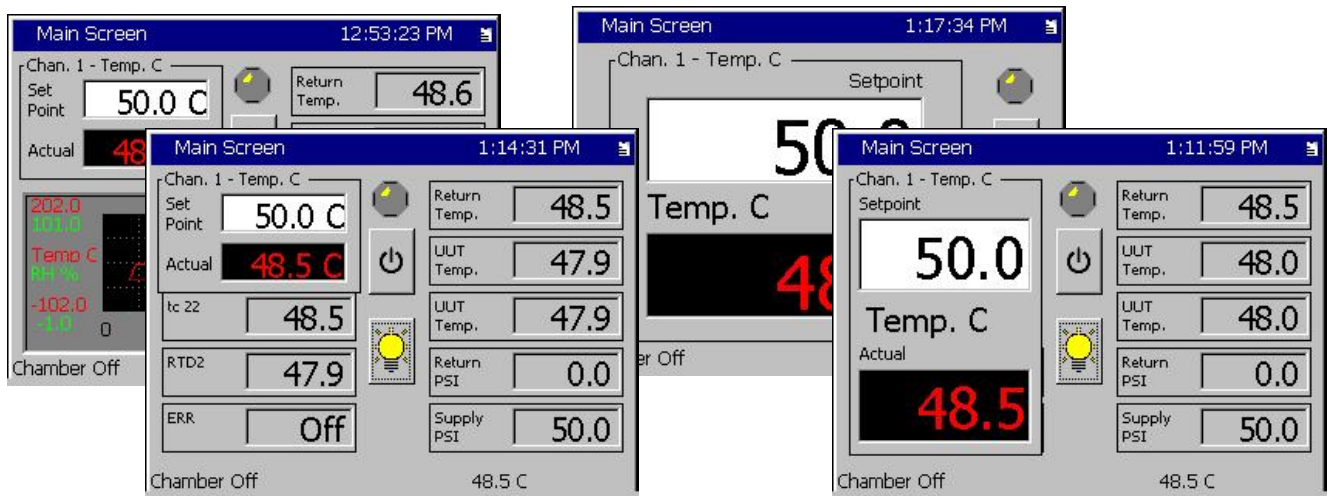


Main Screen Setup Options

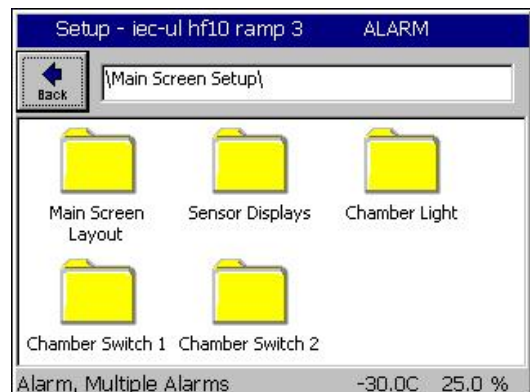


Introduction

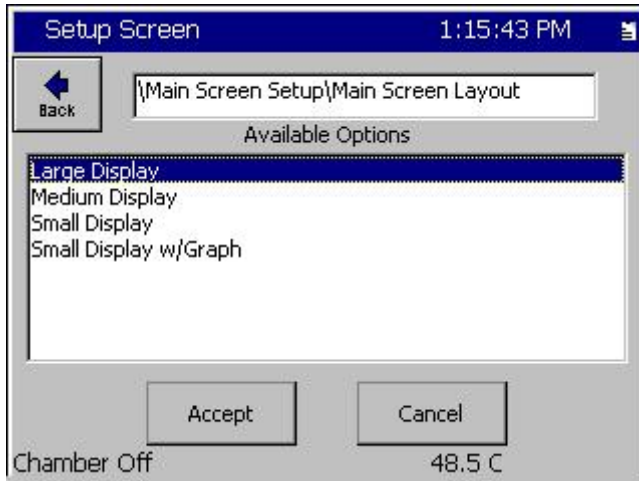
Tidal Engineering's Synergy Controllers, including the Synergy Micro 2, Synergy Quattro (2) , and ¼ DIN Synergy Nano (2) provide state-of-the-art usability and connectivity for environmental test control and data acquisition. They combine the functions of a chamber controller and a data logger. This application note describes some of the Main Screen setup options designed to support operators and technicians using these controllers in real chamber applications.

Main Screen Setup options include:

- Large, Medium, and Small Channel Text sizes.
- Process Graph
- Sensor Readings; up to 60 display sensors on the Main Screen (primary and secondary).
- Chamber Light Switch.
- Chamber Switches (2)



Main Screen Layout



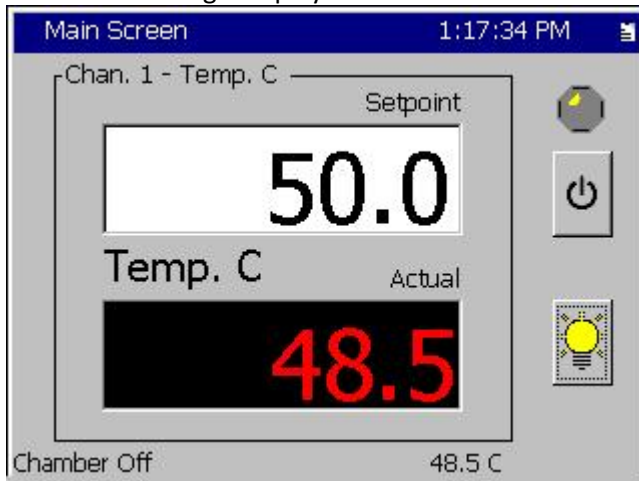
The Main Screen Layout offers Large, Medium, Small Channel Format Options.

These options control the layout of the Channel Frames on the Main Screen and provide the flexibility to handle multiple channels and sensors arrangements as shown below.

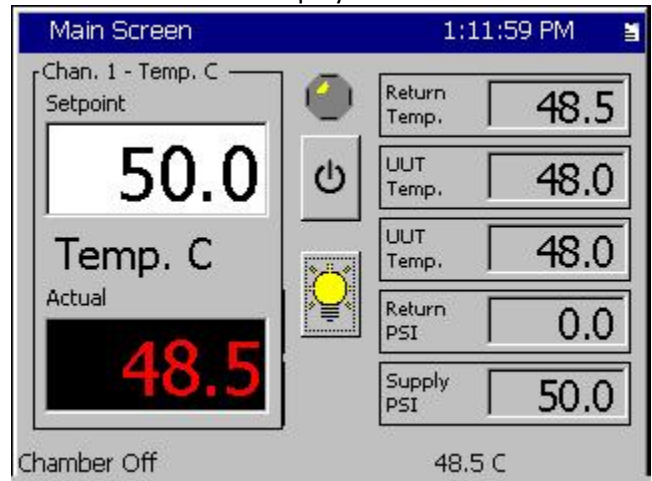
Typical:

- Large Display for Single Channel
- Medium Display for Single or Dual
- Small Display for Single, Dual and more.

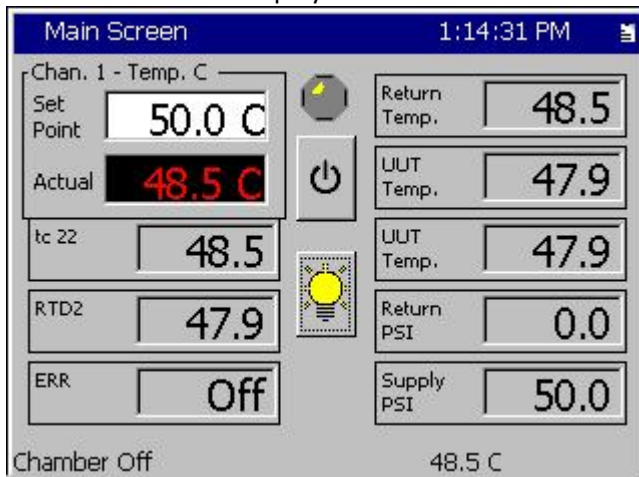
Large Display Channel Text



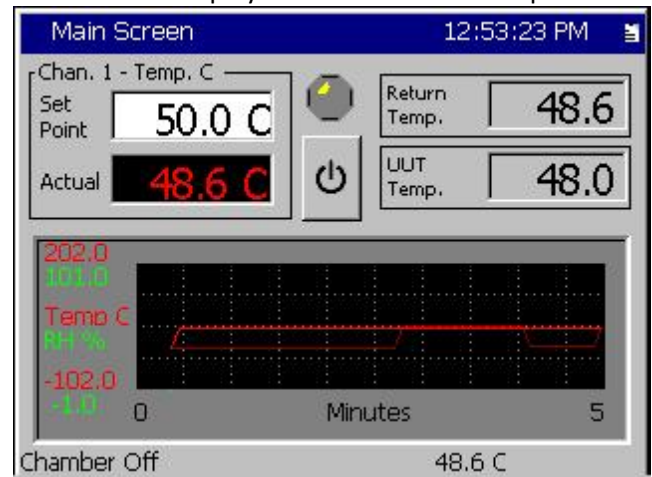
Medium Display Channel Text



Small Display Channel Text



Small Display Channel Text with Graph

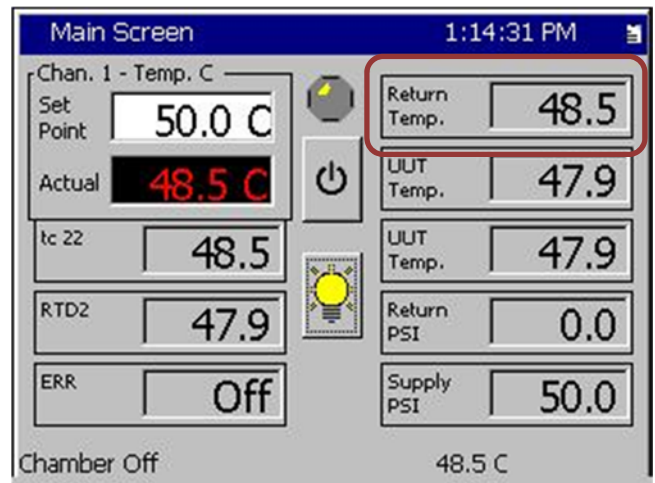
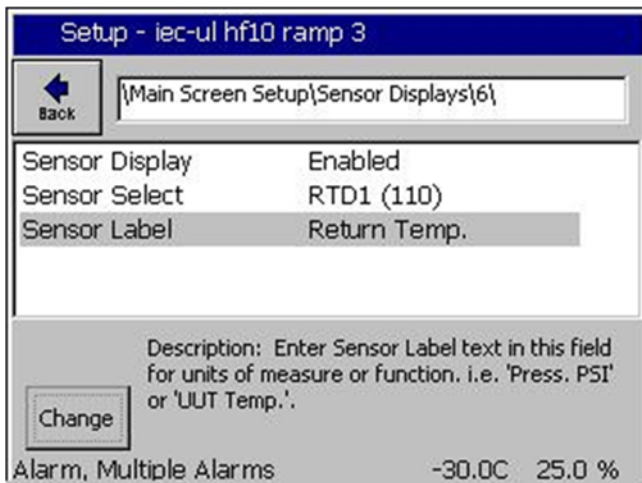
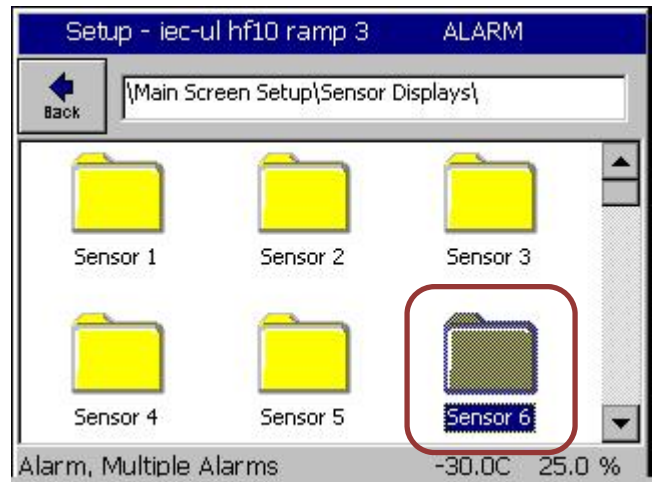
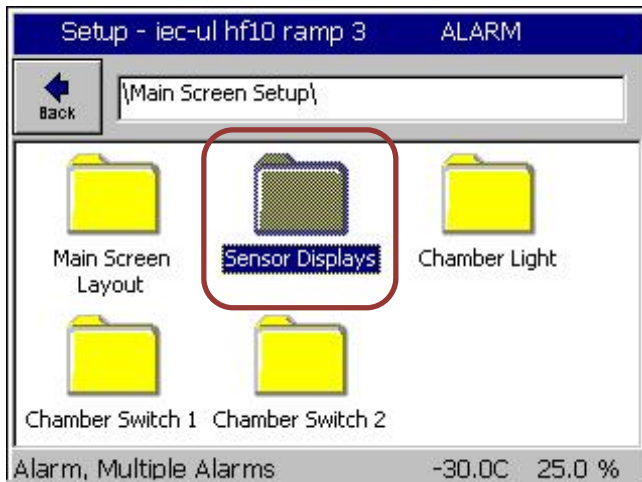


Sensor Displays

With Sensor Displays users can customize the Synergy Controller Main Screen to display additional control variables and sensors. These can be added to the primary Main screen and up to five additional secondary Main screens to display variables including:

- Compressor Pressures and Temperatures
- Auxiliary Sensors (Humidity, RPM, Velocity, Light)
- Heat and Cool PID outputs
- Logic Status
- UUT Temperature Sensors
- Fluid Flow variables.

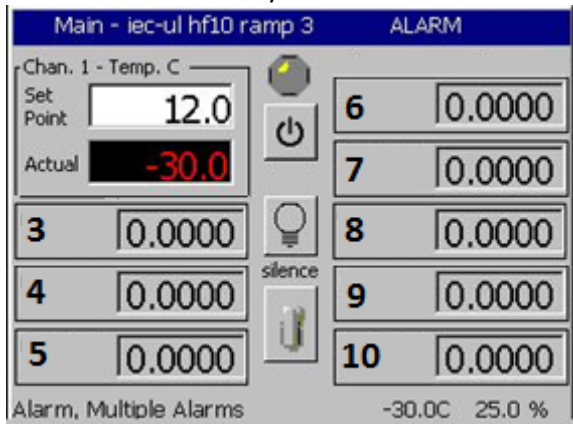
To setup a Sensor Display, browse to the Sensor folder for the Main Screen location (Location 6 in the example below) to enable the Sensor Display and select the Sensor and optional Sensor Label.



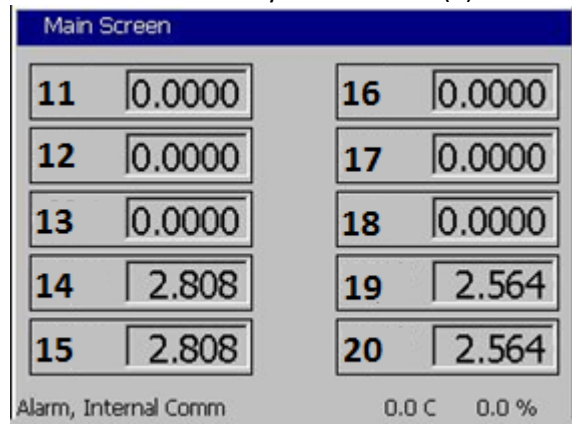
Sensor Display Locations

The following screenshots show the locations for the Sensor Displays on the primary Main Screen and up to five secondary Main screens. Press the Main Screen button to cycle from the primary Main screen thru the secondary Main screens. The controller will cycle thru all the screens that have Sensor Displays and then return to the Main Screen.

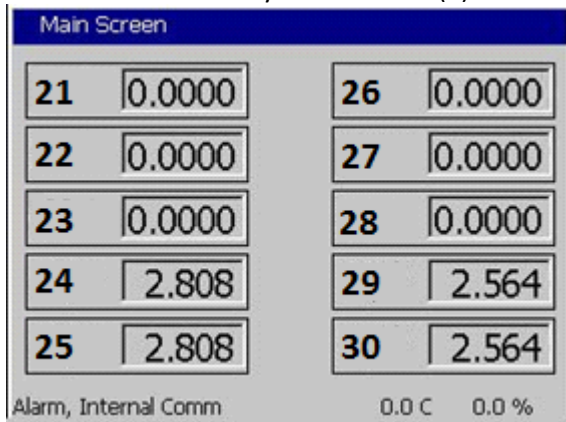
Primary Main Screen



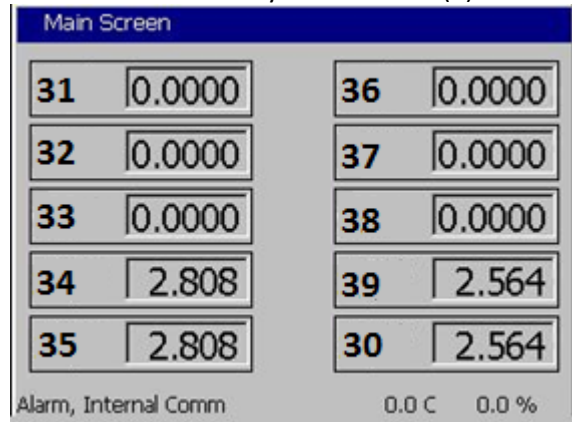
Secondary Main Screen (1)



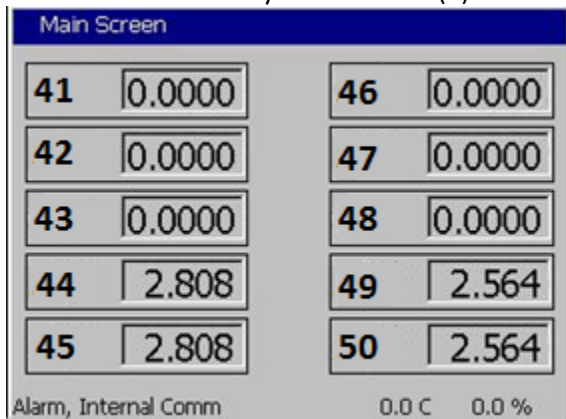
Secondary Main Screen (2)



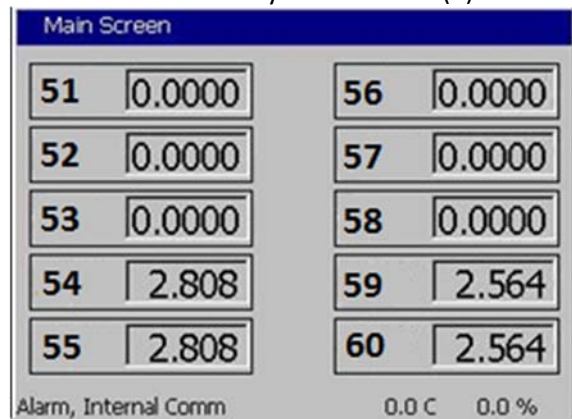
Secondary Main Screen (3)



Secondary Main Screen (4)



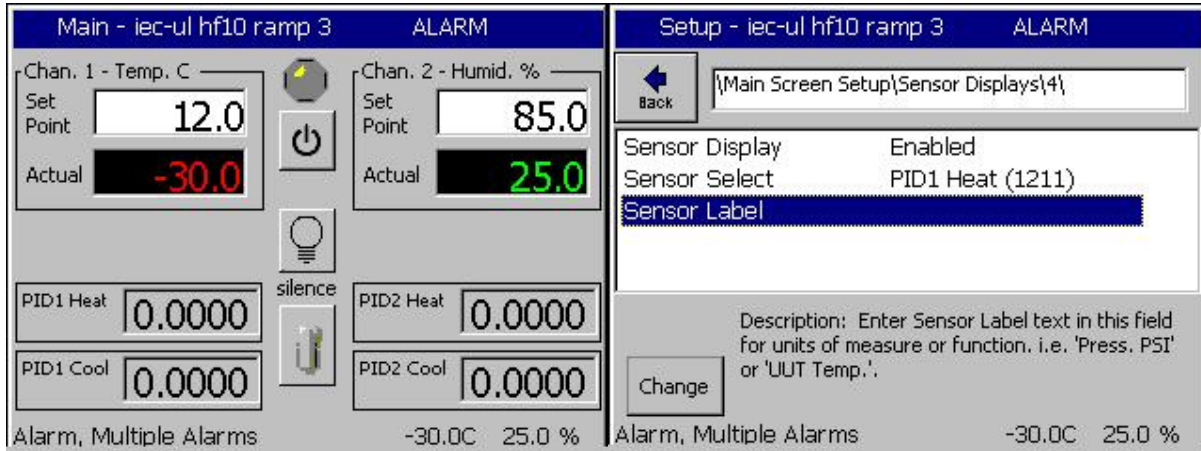
Secondary Main Screen (5)



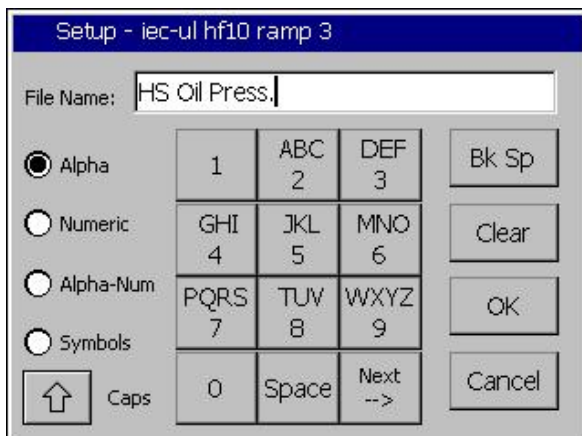
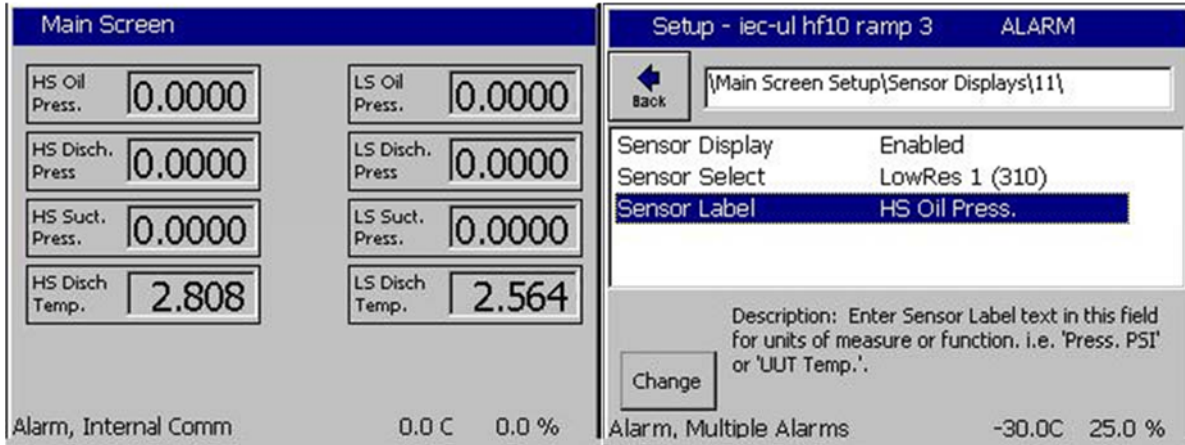
Sensor Display Labels

The Sensor Label parameter is optional, if it is left blank, the Sensor name will be displayed.

In the screenshots below, the Sensor Label parameters for the four PID values are left blank so the sensor names are shown.



In the Screenshot below, the Sensor Label is "HS Oil Press."



When setting up multiple Sensor Displays, it can be more convenient to add the Sensor Labels in Notepad or another text editor on a PC. Backup the controller settings to a USB Flash Disk, edit and then restore the settings.

The setup for the HS Oil Pressure Sensor in the example at the left are as follows:

```
= DSPCH11_ENABLED 1.000000 1 ""
= DSPCH11_SENSOR 310.000000 1 ""
= DSPCH11_UOM 0.000000 1 "HS Oil Press."
```

Chamber Light Switch

The Chamber Light switch can eliminate the requirement for a mechanical chamber switch when the chamber light is wired to an Event Output. The Chamber Light switch can also be used for other purposes; i.e. when it's convenient to have control of an output or logic function from the Main Screen.

The three parameters in the Chamber Light folder control are:

- Chamber Light Event – Event 1 thru 9 can be assigned to the Chamber Light switch
- Disable Output when Chamber Off – This parameter allows the chamber light to operate when the chamber is Off or alternatively, forces the output off when the chamber is off.
- Controller During Profile – This parameter allows the option to disconnect the Chamber Light event from the program (Profile) control. Alternatively, if this output is used for a different function, it might be necessary to allow the program to control it when a program is running and not allow the operator to control it from the main screen. When the Program is controlling the switch, the graphic on the Main screen serves as an indicator that shows the state of the output.

Setup - iec-ul hf10 ramp 3

Back | \Main Screen Setup\Chamber Light\

Chamber Light Event	Event 6
Disable Output when Chamber Off	No
Control During Profile	Switch

Description: Set this parameter to the Event Output that is wired to the chamber light. Set to None to disable this feature.

Change

Alarm, Multiple Alarms -30.0C 25.0 %

Main - iec-ul hf10 ramp 3

Chan. 1 - Temp. C	Set Point: 12.0	Actual: -30.0	Chan. 2 - Humid. %	Set Point: 85.0	Actual: 25.0
PID1 Heat	0.0000	PID2 Heat	0.0000	Purge	
PID1 Cool	0.0000	PID2 Cool	0.0000		

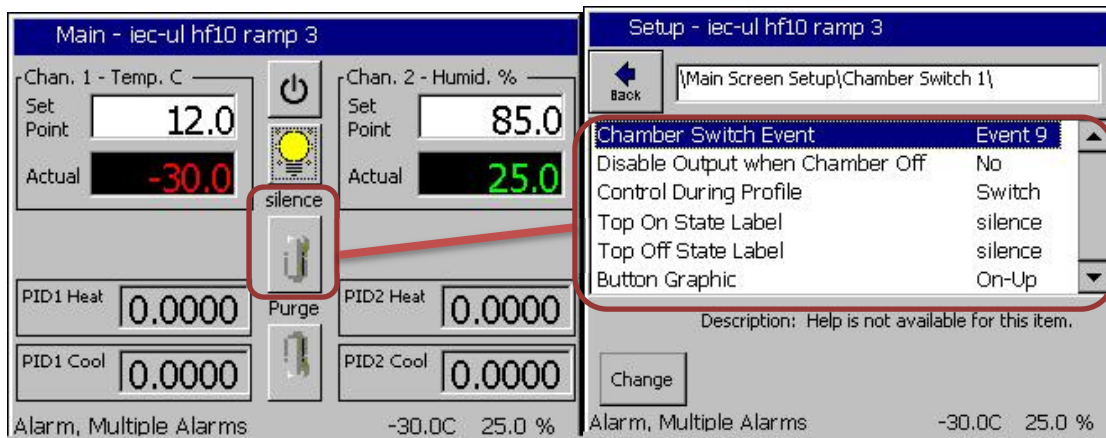
Alarm, Multiple Alarms -30.0C 25.0 %

Chamber Switch 1 and Chamber Switch 2

In addition to the Chamber Light switch, two other Main screen Chamber Switches are available that can be used eliminate the requirements for a mechanical switch when it's convenient to have control of an output or logic function from the Main Screen.

The Chamber Switch parameters include the same three parameters from the Chamber Light folder plus three additional parameters:

- Top On-State Label– This is the label displayed at the top of the switch in the On-State.
- Top Off-State Label – This is the label displayed at the top of the switch in the Off-State.
- Button Graphic– This parameter provides for the option to have the Switch graphic show the Toggle up in the On-State or Down in the On-State.



Appendix A - Main Screen Setup for Channel PID Outputs

The primary Main Screen in the screenshots below shows Sensor Displays for Heat and Cool, Humidify and Dehumidify PID Values. The setup folders are also shown.

The first screenshot shows the main control screen for 'iec-ul hf10 ramp 3'. It features two channels: 'Chan. 1 - Temp. C' with a set point of 12.0 and an actual reading of -30.0, and 'Chan. 2 - Humid. %' with a set point of 85.0 and an actual reading of 25.0. Below these are PID controls for Heat and Cool for both channels, all set to 0.0000. A 'silence' button is also present. The status bar at the bottom shows 'Alarm, Multiple Alarms' and the current values '-30.0C 25.0 %'.

The second screenshot shows the 'Main Screen Setup' menu. It lists 'Available Options' for the sensor displays: 'Large Display', 'Medium Display', 'Small Display' (which is selected), 'Small Display w/Graph', and 'Small Display Up-Down'. 'Accept' and 'Cancel' buttons are at the bottom.

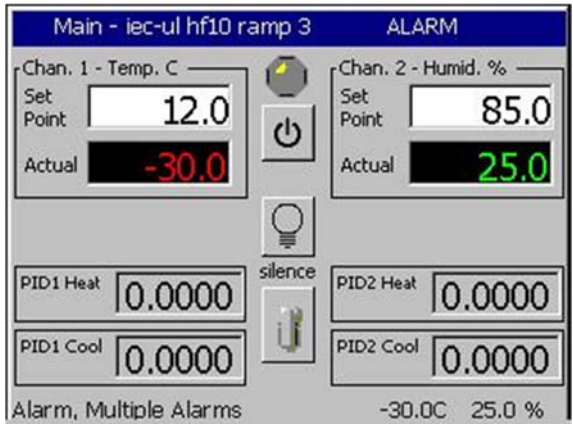
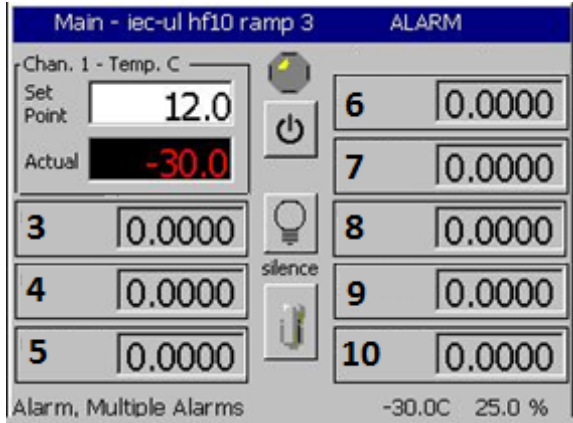
The next four screenshots show the configuration for individual sensor displays:

- Sensor Displays{4}**: Sensor Display is Enabled, Sensor Select is 'PID1 Heat (1211)', and Sensor Label is blank.
- Sensor Displays{5}**: Sensor Display is Enabled, Sensor Select is 'PID1 Cool (1212)', and Sensor Label is blank.
- Sensor Displays{9}**: Sensor Display is Enabled, Sensor Select is 'PID2 Heat (1221)', and Sensor Label is blank. A 'Change' button is visible.
- Sensor Displays{10}**: Sensor Display is Enabled, Sensor Select is 'PID2 Cool (1222)', and Sensor Label is blank. A 'Change' button is visible.

Each configuration screen includes a 'Description: Select this parameter and press the Change button to use the Sensor Select Wizard to choose the sensor.' and a 'Change' button. The status bar at the bottom of the last two screens shows 'Alarm, Multiple Alarms' and '-30.0C 25.0 %'.

Appendix A - Main Screen Setup for Channel PID Outputs-Continued

Main Screen



Corresponding Settings file entries

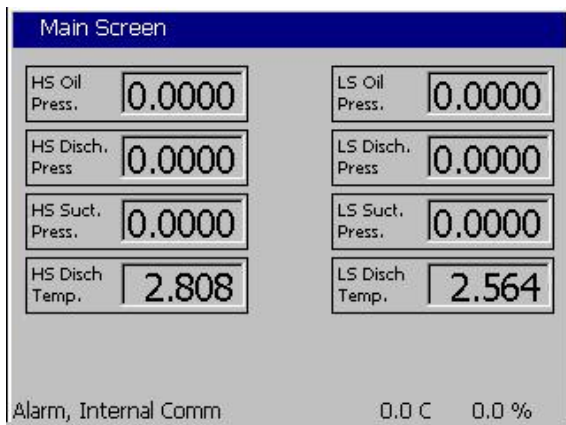
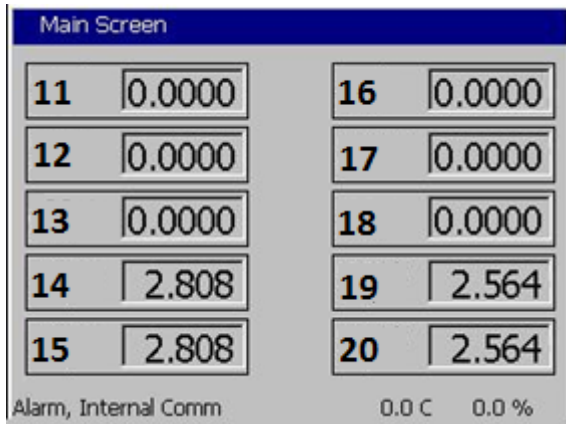
```

= COMMENT " 4"
= DSPCH4_ENABLED 1.000000 1 ""
= DSPCH4_SENSOR 1211.000000 1 ""
= DSPCH4_UOM 0.000000 1 " "
= COMMENT "5"
= DSPCH5_ENABLED 1.000000 1 ""
= DSPCH5_SENSOR 1212.000000 1 ""
= DSPCH12_UOM 0.000000 1 ""
= COMMENT "9"
= DSPCH9_ENABLED 1.000000 1 ""
= DSPCH9_SENSOR 1221.000000 1 ""
= DSPCH9_UOM 0.000000 1 ""
= COMMENT "10"
= DSPCH10_ENABLED 1.000000 1 ""
= DSPCH10_SENSOR 1222.000000 1 ""
= DSPCH10_UOM 0.000000 1 ""
    
```

Appendix B Compressor Pressure Transducers and Temperatures

The secondary Main Screen in the screenshots below displays a group of compressor instrumentation sensors. The corresponding settings are shown in the right column.

Main Screen (1)



Corresponding settings file entries

```
= COMMENT " 11"
= DSPCH11_ENABLED 1.000000 1 ""
= DSPCH11_SENSOR 310.000000 1 ""
= DSPCH11_UOM 0.000000 1 "HS Oil Press."
= COMMENT "12"
= DSPCH12_ENABLED 1.000000 1 ""
= DSPCH12_SENSOR 320.000000 1 ""
= DSPCH12_UOM 0.000000 1 "HS Disch. Press."
= COMMENT "13"
= DSPCH13_ENABLED 1.000000 1 ""
= DSPCH13_SENSOR 330.000000 1 ""
= DSPCH13_UOM 0.000000 1 ""HS Suct. Press."
= COMMENT "14"
= DSPCH14_ENABLED 1.000000 1 ""
= DSPCH14_SENSOR 211.000000 1 ""
= DSPCH14_UOM 0.000000 1 "HS Disch. Temp."
= COMMENT "15"
= DSPCH15_ENABLED 0.000000 1 ""
= DSPCH15_SENSOR 0.000000 1 ""
= DSPCH15_UOM 0.000000 1 " "
= COMMENT "16"
= DSPCH16_ENABLED 1.000000 1 ""
= DSPCH16_SENSOR 340.000000 1 ""
= DSPCH16_UOM 0.000000 1 "LS Oil Press."
= COMMENT "17"
= DSPCH17_ENABLED 1.000000 1 ""
= DSPCH17_SENSOR 350.000000 1 ""
= DSPCH17_UOM 0.000000 1 " LS Disch. Press."
= COMMENT "18"
= DSPCH18_ENABLED 1.000000 1 ""
= DSPCH18_SENSOR 360.000000 1 ""
= DSPCH18_UOM 0.000000 1 " LS Suct. Press."
= COMMENT "19"
= DSPCH19_ENABLED 1.000000 1 ""
= DSPCH19_SENSOR 212.000000 1 ""
= DSPCH19_UOM 0.000000 1 " LS Disch Temp."
= COMMENT "20"
= DSPCH20_ENABLED 0.000000 1 ""
= DSPCH20_SENSOR 110.000000 1 ""
= DSPCH20_UOM 0.000000 1 ""
```



About the Synergy Family

Tidal Engineering's Synergy Controllers, the ¼ DIN Synergy Nano, Synergy Micro 2 and the Synergy Quattro provide state-of-the-art usability and connectivity for environmental test control and data acquisition. They combine the functions of a chamber controller and a data logger and are designed to improve test efficiency by supporting both factory automation and test and measurement protocols and standards.

Synergy Controller feature highlights includes:

- ➔ Color touch screen
- ➔ Ethernet, RS-232 and GPIB communications
- ➔ Built in 100 MB Data logger with USB drive support
- ➔ Data Acquisition, up to 64 T-type thermocouples (Optional)
- ➔ Built-in Web Server for remote control; WebTouch Remote™
- ➔ Compatible with Synergy Manager for PC based control, monitoring and programming.
- ➔ Built-in FTP Server for factory automation and test and measurement applications

For more information regarding these controllers please see the full Synergy Controller Technical Manual on our website at <http://www.tidaleng.com/synergy.htm>

About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems.

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