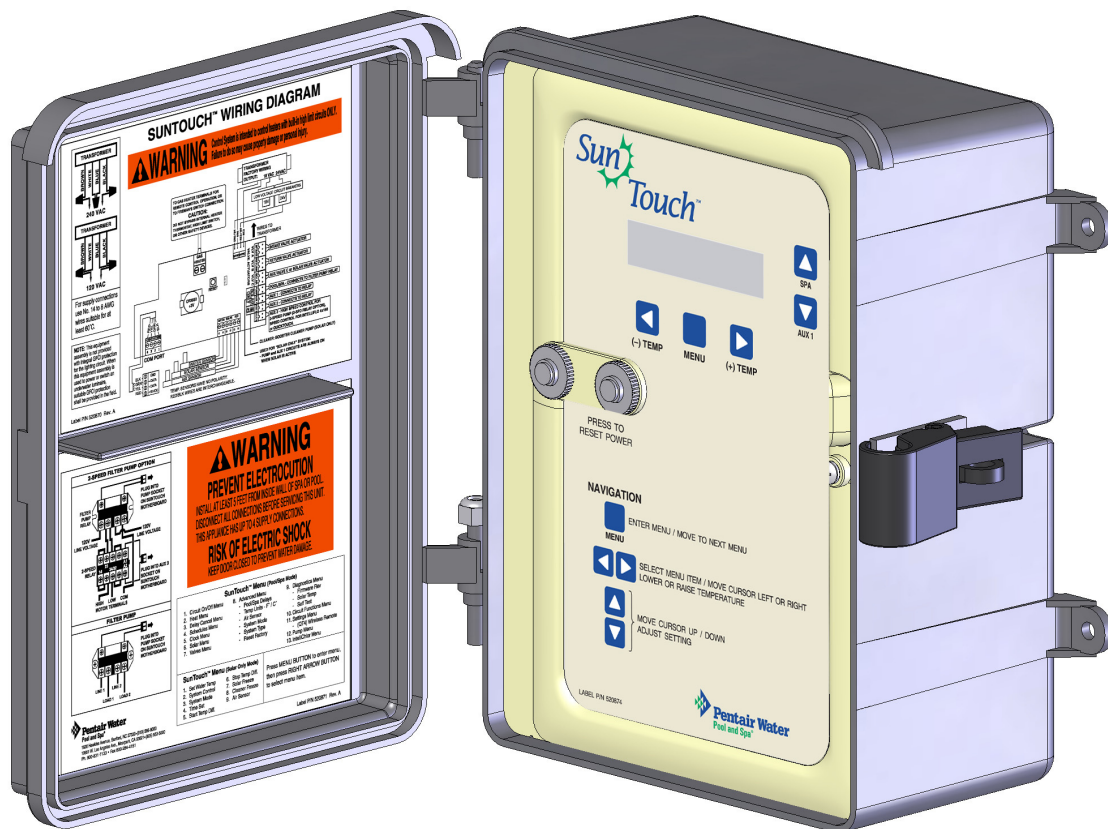


SunTouch™ Pool and Spa Control System



Installation and User's Guide

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

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IMPORTANT SAFETY PRECAUTIONS



Important Notice:

Attention Installer: This manual contains important information about the installation, operation and safe use of this product. This information should be given to the owner and/or operator of this equipment. When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:



WARNING: IMPORTANT SAFETY INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS. READ AND FOLLOW ALL INSTRUCTIONS.



- **DANGER! RISK OF ELECTRIC SHOCK, WHICH CAN RESULT IN SERIOUS INJURY OR DEATH.** Before attempting installation or service, ensure that all power to the circuit supplying power to the system is disconnected/turned off at the circuit breaker.
- Grounding (earth bonding) is required. The SunTouch Power Center should be installed by a qualified professional and grounded.
- **Read Safety Precautions and Important Instructions. Before attempting any electrical wiring, be sure to read and follow Safety Instructions. Wiring should only be performed by a qualified professional.**



WARNING - Before installing this product, read and follow all warning notices and instructions which are included. Failure to follow safety warnings and instructions can result in severe injury, death, or property damage. Call (800) 831-7133 for additional free copies of these instructions.



WARNING - Water temperature in excess of 100 degrees Fahrenheit may be hazardous to your health. Prolonged immersion in hot water may induce hyperthermia. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above normal body temperature of 98.6° F (37° C). The symptoms of hyperthermia include drowsiness, lethargy, dizziness, fainting, and an increase in the internal temperature of the body.

The effects of hyperthermia include: 1) Unawareness of impending danger. 2) Failure to perceive heat. 3) Failure to recognize the need to leave the spa. 4) Physical inability to exit the spa. 5) Fetal damage in pregnant women. 6) Unconsciousness resulting in danger of drowning.



WARNING - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.



WARNING - The use of alcohol, drugs, or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.




WARNING - Control System is intended to control heaters with built-in high limit circuits **ONLY**. Failure to do so may cause property damage or personal injury. All water will be routed through the heater assembly.



WARNING - Do not use this product to control an automatic pool cover. Swimmers may become entrapped underneath the cover.

IMPORTANT SAFETY PRECAUTIONS (Continued)

General Installation Information


1. All work must be performed by a licensed electrician, and must conform to all national, state, and local codes.
2. Install to provide drainage of compartment for electrical components.
3. If this system is used to control underwater lighting fixtures, a ground-fault circuit interrupter (GFCI) must be provided for these fixtures. Conductors on the load side of the ground-fault circuit-interrupter shall **not** occupy conduit, junction boxes or enclosures containing other conductors unless such conductors are also protected by a ground-fault circuit-interrupter. Refer to local codes for details.
4. A terminal grounding bar stamped  is located inside the SunTouch Power Center. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment (no smaller than 12 AWG or 3.3 mm). The bonding lug(s) provided on this unit are intended to connect a minimum of one No. 8 AWG for US installation and two No. 6 AWG for Canadian installations solid copper conductor between this unit and any metal equipment, metal enclosures or electrical equipment, metal water pipe, or conduit within 5 feet (1.5 m) of the unit.
5. The electrical supply for this product must include a suitably rated switch or circuit breaker to open all ungrounded supply conductors to comply with Section 422-20 of the National Electrical Code, ANSI/NFPA 70.1987. The disconnecting means must be readily accessible to the tub occupant but installed at least 10 ft. (3.05 m) from the inside wall of the pool.
6. Supply conductor must be sized to support all loads.

Safety Notice


Important Safety Instructions

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

READ AND FOLLOW ALL INSTRUCTIONS.

 **WARNING** - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

 **WARNING** - Water in excess of 100 degrees Fahrenheit may be hazardous to your health.

 **WARNING** - For units intended for use in other than single-family dwellings, a clearly labeled emergency switch shall be provided as part of the installation. The switch shall be readily accessible to the occupants and shall be installed at least 10 feet (3.05 m) away, adjacent to, and within sight of, the unit.

Technical Support

Sanford, North Carolina (8 A.M. to 5 P.M. ET)

Moorpark, California (8 A.M. to 5 P.M. PT)

Phone: (800) 831-7133

Fax: (800) 284-4151

Web sites

visit www.pentairpool.com and staritepool.com

SunTouch™ System Overview

SunTouch Control System Overview

Welcome to the Pentair SunTouch pool and spa control system - The next generation in intelligent control systems. The SunTouch control system can be easily configured to operate in “Solar Only” mode for solar systems, or in “Pool/Spa” mode for shared equipment systems, or single body pool or spa systems. The SunTouch system is also compatible with the IntelliChlor® salt chlorine generator for pool water sanitizing, and with the IntelliFlo® 4x160 variable speed pump. For a complete list of SunTouch systems and optional equipment see to page 38.

SunTouch Solar Mode

The SunTouch Solar system offers automatic solar heating control using a differential temperature control designed especially for solar-heated swimming pool, spas, and hot tubs. Whenever solar energy is available, SunTouch will automatically activate a motorized three-port solar valve and/or the optional solar booster pump which controls the water flow direction, and pump pool water through the solar collectors. The filter pump timer can be set so the filter pump is operating during that time of the day when solar energy is available.

If you are using a pool cleaner booster pump for your pool, SunTouch will disable the pump for five minutes whenever the solar system turns on. This protects the pump from possible damage caused by residual air within the solar panels.

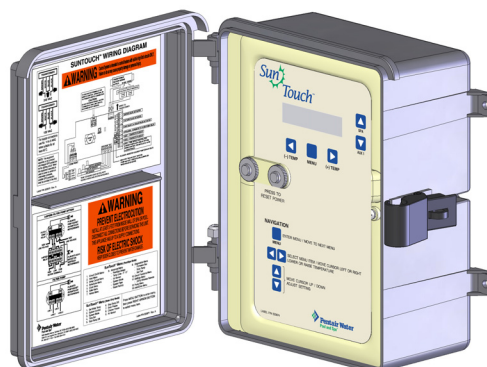
Note: For information about setting up and operating SunTouch as a solar only system, see page 4.

SunTouch Pool/Spa Mode

SunTouch Pool/Spa mode provides automation controls for pool and spa shared equipment systems, or for pool only or spa only (single body) systems. With the addition of two valve actuators, SunTouch can be configured to control your pool and spa heating and filtration schedules and additional features such as pool lights, automatic cleaners, or waterfalls.

Using the optional QuickTouch® (QT4) wireless remote controller you can control up to four circuits to activate the spa circulation, and for operating three auxiliary pieces of equipment (such as lights, jet pump, air blower, waterfall, etc.). For more information, see “Main Menu: QuickTouch (QT4) Wireless Remote,” on page 28.

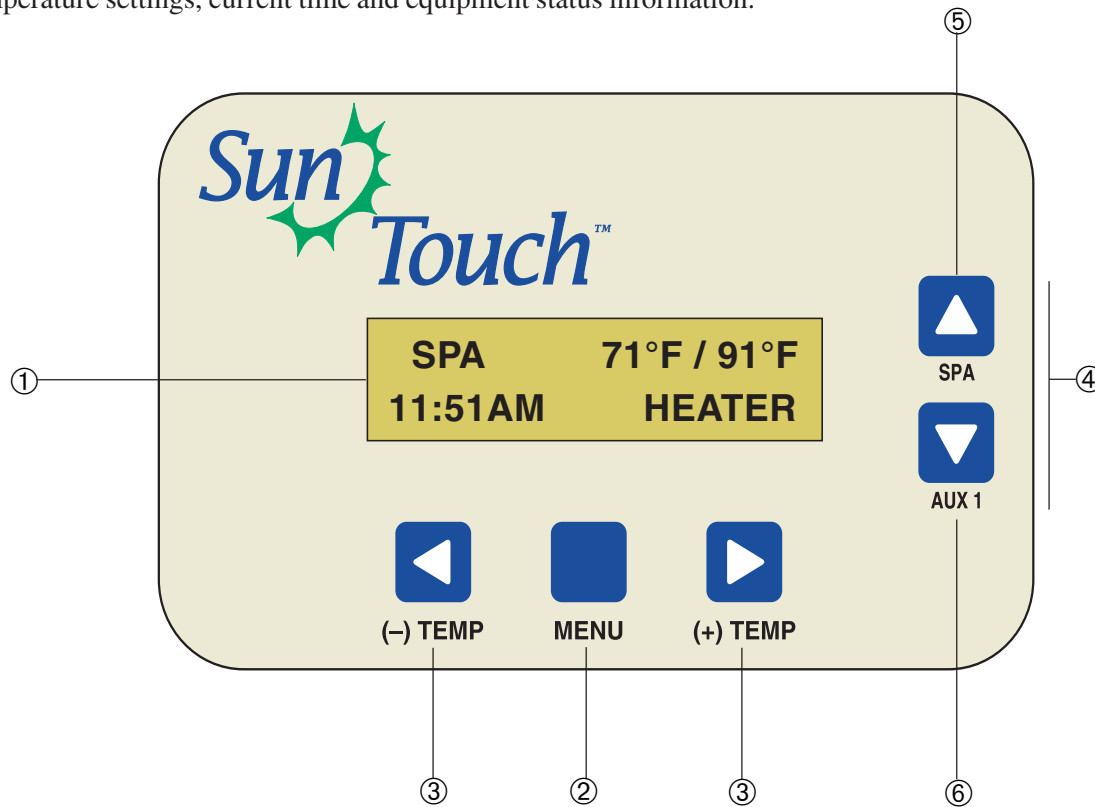
Note: For information about setting up and operating SunTouch as a standard pool and spa controller in “Pool/Spa” mode, see page 9.



SunTouch Power Center



SunTouch Control Panel

Use the SunTouch control panel buttons to program and control pool and spa operations. You can schedule daily operations to run automatically using the SunTouch menu features, and manually adjust temperature settings, switch lights on and off, and setup pool/spa equipment. The SunTouch LCD displays the current temperature settings, current time and equipment status information.

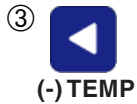


SunTouch Control Panel
(Pool/Spa mode - Shared Equipment System)

SunTouch Control Buttons

- ① **Liquid Crystal Display (LCD):** The main system display consists of a 16 x 2 alphanumeric character LCD with backlighting for easy viewing.
Pool and Spa status display: While SunTouch is in normal day-to-day operations, the main status screen will toggle between the pool (or spa) set and current temperature, and the current air temperature (if an air sensor is installed, see page 24 for details). The current system time is displayed on the lower left side of the screen. The heating source (if enabled) is displayed on the lower right side of the screen. To switch the pool circuit on and display the pool temperature, the pool circuit must be set to “On” (see Circuit On/Off Menu (1/13) on page 13 for details). To activate the Spa, press the Up arrow button to view the current Spa temperature. For more information about the spa Up arrow button, see page 3.
- ②  **MENU button:** Use the MENU button to access the Main Menu items. There are 13 menu items to select from. Press the MENU button to view each of the 13 menu items. The Main Menu items are displayed along with its menu number (1/13). Use the Menu button to scroll through the 13 menu items. To exit a menu item at any point, press the Left button to return to the main status screen. If no menu activity is detected after five minutes, the main screen is displayed. All menu settings are permanently saved and retained in the SunTouch control panel even after power is removed from the control panel. For descriptions of the Main Menu items using “Pool/Spa” mode see page 13.
- 

Control Buttons (Continued)



Set temperature
Actual temperature

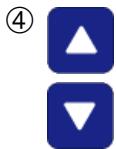
POOL 71°F / 91°F
11: 51AM HEATER

SPA 71°F / 91°F
11: 51AM HEATER

Left button: While in the Main menu, use the Left arrow button to exit the main menu and return to the Main status screen.

Right button: While in the Main menu, use the Right arrow button to select a setting or parameter, or scroll through the available selected menu items. To exit the Main menu, press the Left arrow button.

(-)TEMP) and (+)TEMP button temperature controls: When in Pool/Spa mode, press the (-) TEMP button to lower set temperature or the (+) TEMP button to raise the set temperature for the pool or spa water. *Note: The pool filter pump circuit must be switched on to display the current pool temperature settings. “HEATER” is displayed on the lower line of the main screen indicating the current heat source is switched on (enabled). For more information about selecting a heat source, see the “Selecting a Heat Source” on page 10. For information about switching on the filter pump circuit, see “Main Menu: Circuit On/Off (1/13)” on page 13. These buttons are only used in Pool/Spa mode. For information about Pool/Spa mode, see page 9.*



SPA 71°F / 91°F
11: 51AM HEATER

Up and Down arrow button: While in the Main Menu, use the Up and Down arrow buttons to adjust or change a menu item parameter or setting. The Up button increases a value, or toggles a setting. The Down arrow button decreases a value, or toggles a setting. After changing a menu item setting or value, it is automatically saved.

SPA (Up arrow button): Use this button to switch the spa on and off. When the spa is activated, the main screen will display the actual and set point temperature setting. Press this button to activate the filter pump and rotate the valves and circulate pool water to the spa. To enable heat for the spa when this circuit is switched on, either switch on the heat source or switch on *Manual Heat* from the Heat menu. HEATER (or SOLAR) is displayed when the heat source is enabled. If the Spa button is pressed, while the filter pump is active (see page 13 to enable the pool filter pump), the spa valves will rotate to circulate water to the spa. When the Spa (Up arrow) button is pressed to switch the spa off, the filter pump will rotate the valves to circulate water to pool and continue to operate in pool mode. The Spa button function is only used in Pool/Spa mode. For information about Pool/Spa mode, see page 9. *Note: For Single Body systems, the UP arrow button is used for the HI-TEMP/LO-TEMP temperature control. For more information about the HI-TEMP/LO-TEMP button temperature control, see page 33.*



AIR 71°F
11: 51AM AUX 123

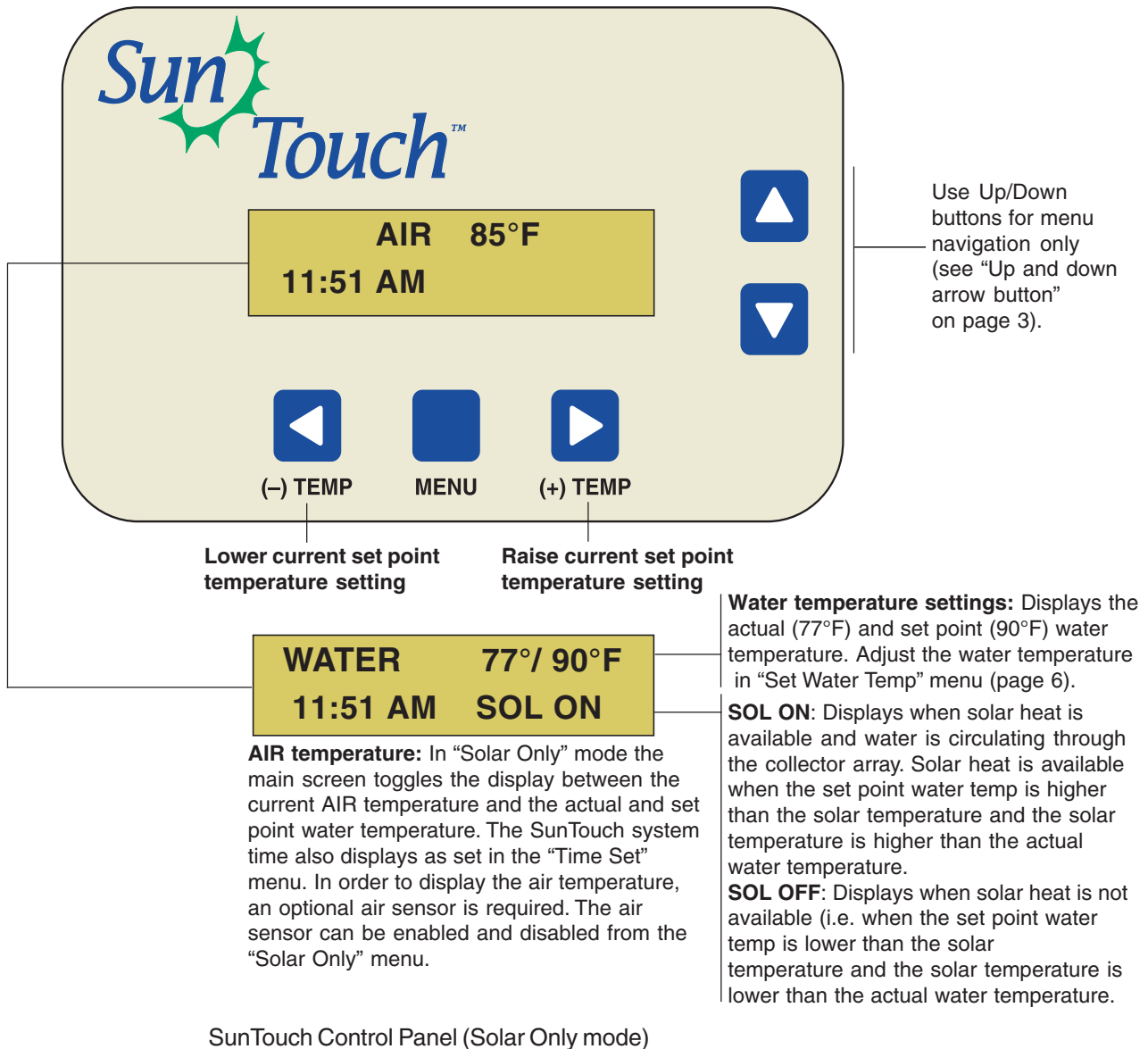
AIR 71°F
11: 51AM AUX D23

AUX 1 (Down arrow On/Off button): Use the AUX 1 (Down arrow) button to manually switch the AUX 1 relay output on and off. You can also switch AUX 2, and AUX 3 on and off from the “Circuit On/Off menu. The number 1, 2, and 3 will be displayed on the main screen when the auxiliary circuits are switched on. The AUX 1, AUX 2 and AUX 3 functions are only used in “Pool/Spa” mode. For information about “Pool/Spa” mode, see page 9.

Note: In the example shown (left), AUX D is displayed, indicating that AUX 1 is currently in “delay” mode and is not yet active. The same applies when AUX 2 or AUX 3 are in “Delay” mode. See “Assigning Circuit Functions” on page 26 for more information.

SunTouch Main Status Screen (Solar Only)

The SunTouch “Solar Only” main status screen display description is given below.



SunTouch Solar Only System

The SunTouch “Solar Only” system is factory ready and to operate. From the main menu you can adjust the water temperature setting, set the start and stop differential temperatures, and set the solar and cleaner freeze protection feature. If additional features are required, such as a solar booster pump, you can access the “Pool/Spa” mode (shared equipment) menu features. For more information about these modes, refer to “Solar Only Menus,” on page 6, and “Pool/Spa Mode Menus (Shared Equipment)” on page 12.

Operating SunTouch in Solar Only Mode

SunTouch Solar Only mode

In “Solar only” mode, you can control your SunTouch solar system to heat your pool and spa. From the control panel you can set the temperature, and the differential temperature controls for the water up heat up to the set temperature. After the temperature is reached, the solar system is automatically switched off.

Solar Only auxiliary outputs (Filter pump, booster pump, cleaner and time clock)

Filter pump: In “Solar Only” mode, the Filter pump is controlled externally by the time clock, which ensures the Filter pump is running before the Booster pump switches on.

Booster pump: To increase water pressure through the collector array, a high voltage booster pump can be used in addition to the main Filter pump. The Booster pump will switch on at the same time as the Filter pump, assuming solar heat is available. When using a Booster pump, connect it to the AUX 1 relay in the SunTouch Power Center. For SunTouch solar booster kit (P/N 520857) information, see page 38.

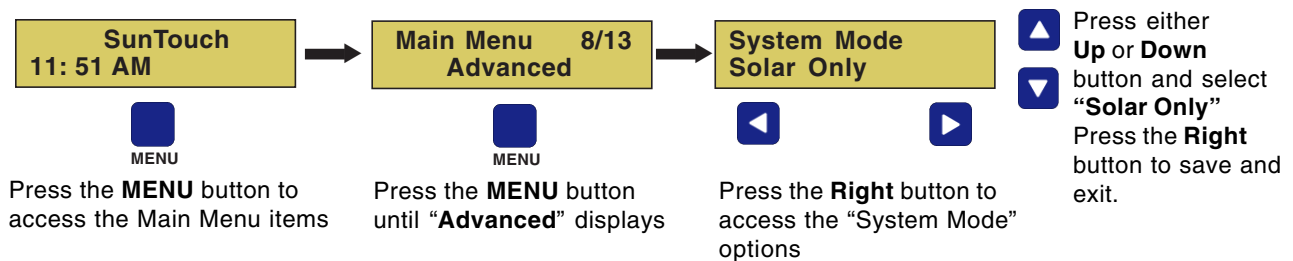
- Pump output on the SunTouch motherboard is on whenever solar heat is available and off whenever Solar heat is *not* available
- AUX 1/Booster pump is on whenever Solar heat is available and off whenever solar heat is *not* available
- AUX 2 (Cleaner): The cleaner is off for five minutes when solar heat is detected.
- The three actuated solar valves are off whenever solar heat is not available.

SunTouch Pool/Spa Mode

In Pool/Spa mode you can fully automate your pool and spa, pool only or spa only operations. The additional SunTouch menu features let you create customized schedules for your pool and spa equipment, heat temperatures, and chlorination settings to switch on and off at a set day and time. For maintenance and service purposes, the control panel allows manual control of all pool and spa operations. For information about Pool/Spa mode, see page 9.

Setting up SunTouch for Solar Only mode from Pool/Spa mode

To setup the SunTouch controller for “Solar Only” mode while in Pool/Spa mode:

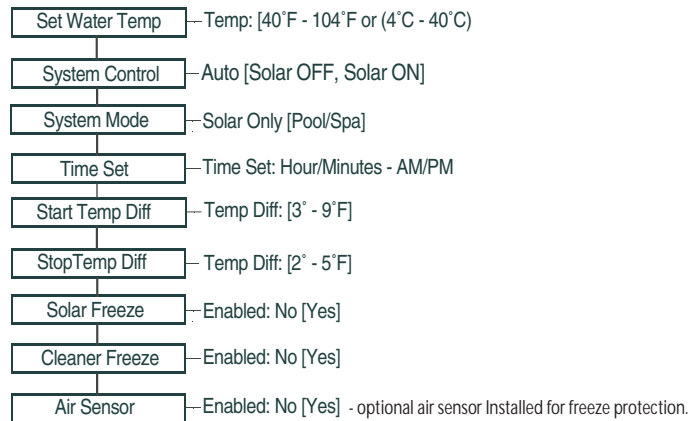


To continue to set the solar heat settings, press the **RIGHT** arrow button to enter the solar water temperature settings.

Note: If the SunTouch system is configured to operate as a “SOLAR ONLY” controller, all menu settings are available from the “Solar Only” menu (see page 6) with the exception of changing the degree units from Fahrenheit to Celsius (see page 22), which can be changed in the “Pool/Spa” mode menu (see page 9 for more information).

Solar Only Menus

The SunTouch “Solar Only” mode menus are shown below:



Adjusting the water temperature setting (Solar Only mode)

If you have already set the pool and spa water temperature in the “SET WATER TEMP” menu and you need to adjust the water set point temperature, use the (-) **TEMP** or (+) **TEMP** buttons to adjust the water temperature.

- Press the (-) **TEMP** or (+) **TEMP** button to lower or raise the set temperature to the desired level. The water temperature can be adjusted from 40° F to 104° F (4° C to 40° C). When solar heat is available SOL ON is displayed on the lower display line. SOLAR ON or SOLAR OFF indicates that solar heat is available or not available. Degree units are displayed in either Fahrenheit or Celsius (see page 22). *Note: To display the air temperature setting on the main screen, verify that the air sensor is enabled in the Main menu, see “Advanced Menu,” on page 24.*

Current air temperature (displays if optional air sensor is enabled in the Solar Only menu)

AIR 59°F
11: 51 AM



Actual temperature Set temperature

WATER 71°F / 91°F
11: 51AM SOL ON

Solar heat is available



Lower water set point temperature



Raise water set point temperature

Solar Only Menus

The following SunTouch main menu features are available when SunTouch is configured in “Solar Only” mode. The main menu features are as follows:

Set Water Temperature

To set the water temperature:

Set Water Temp
Temp: 81°F

Menu button: The Set Water Temp menu is displayed.

Up/Down button: Adjust to the desired set temperature from 40° F to 104° F or (4° C to 40° C). This allows the solar system to heat the water up to set point temperature. After the set point temperature is reached, the solar system is automatically switched off. To determine your optimum water temperature setting, set the “Set Temperature” settings to 100° F and observe the water temperature over a period of a few days. When the maximum desired temperature of the pool is reached, set the temperature again. Once this setting is identified, it will not be necessary to change the set temperature again.

Left button: Press the Left button to return to the main status screen.

Solar Only Menus (Continued)

System Control

Use this feature to operate the SunTouch solar system in “AUTO” mode, or manually switch solar on or off.

**System Control
AUTO**

Menu button: The Set Water Temp settings is displayed.

Right button: Press the button to display the “System Control” setting.

Up/Down button: The selections are:

AUTO: Automatically switch the system on whenever solar energy is available. Use “AUTO” for normal operation and adjust the desired temperature setting for the pool, spa. In “AUTO” mode, SunTouch will heat the pool or spa (rotate valve to solar position) when the pool/spa sensor temperature is 3° or more higher than the collector sensor temperature, and the pool or spa temperature is less than the high limit temperature setting. When the two sensor temperatures are within 2° or the pool or spa sensor is above the high limit setting SunTouch will stop heating and return the valve to the pool position.

SOLAR ON: Manually switch the solar system on regardless of solar energy being available. This position should be used only to test the solar system operation. *Note: The filter pump timer must be set so that the filter pump operates during the time of the day when solar energy is available.*

Note: Pool Pressure Cleaner Delay: Whenever the solar system is turned on, an electronic delay automatically turns off the pool pressure cleaner for five minutes. This protects the pump from damage caused by air in the solar panels at system start-up. The pressure cleaner is connected to AUX 2 which will be always set to on.

SOLAR OFF: Manually switch the solar system off.

Left button: Press the Left button to return to the main status screen.

System Mode

This feature allows you to configure the SunTouch system to operate in “Solar Only” mode or in “Pool/Spa” mode. For more information about Pool/Spa mode, see page 11.

**System Mode
Solar Only**

Menu button: The Set Temp settings is displayed.

Right button: Press the button until the System Mode setting is displayed.

Up/Down button: Select Solar Only for solar mode, or Pool/Spa mode.

Left button: Press the Left button to return to the main status screen.

Time Set

The SunTouch time is displayed on the main screen.

To set the SunTouch system time.

**Time Set
02:25 PM**

Menu button: The Set Temp settings is displayed.

Right button: Press the button until the Time Set setting is displayed.

Up/Down button: Set the hour in your location. Note the AM or PM setting.

Right button: Move to the minutes setting.

Up/Down button: Set the minutes.

Left button: Press the Left button to return to the main status screen.

Solar Only Menus (Continued)

Start and Stop Temp Differentials: Use this feature to adjust the start and stop temperature deferential settings to start and stop solar water heating.

**Start Tem Diff
Temp Diff: 6°**

Menu button: The Solar Status setting is displayed.

Right button: Press the button until the “Start Temperature Deferential” setting is displayed.

Up/Down button: Adjust the temperature differential to start heating from 3° to 9°. For example, if “Start” is set to 3°, this ensures that the solar collector water temperature has to deviate by at least 3° to the specified set point temperature (in the Heat (2/13) menu, on page 14) before it switches on. Once the solar system is on, the actual water temperature will start converging towards the set water temperature as it is heating. This ensures that it will not continually be switching on and off.

**Stop Tem Diff
Temp Diff: 3°**

Right button: Move to the “Stop Temperature Differential” setting.

Up/Down button: Set the temperature differential to stop heating from 2° to 5°. This setting sets how close to the target set point temperature to switch off solar heat.

Left button: Press the left button to return to the main status screen.

Solar Freeze protection: Use this feature to enable freeze protection for the solar equipment.

**Solar Freeze
Enabled: Yes**

Menu button: The Set Water Temp setting is displayed.

Right button: Press the button until the Solar Freeze setting is displayed.

Up/Down button: Select “Yes” to enable solar freeze protection or “No” to disable freeze protection. If “Yes” is selected, the circuit will switch on if the air temperature drops to 36° F (2° C). This feature is used to protect the system plumbing from being damaged during freezing conditions. *Note: When freezing conditions are detected by the air sensor, the filter pump will be switched on and water will circulate continuously through the system.*

Left button: Press the Left button to return to the main status screen.

Cleaner Freeze protection: Use this feature to enable freeze protection for cleaner equipment.

**Cleaner Freeze
Enabled: Yes**

Menu button: The Set Water Temp setting is displayed.

Right button: Press the button until the Cleaner Freeze setting is displayed.

Up/Down button: Select “Yes” to enable cleaner freeze protection or “No” to disable freeze protection. If “Yes” is selected, the circuit will switch on if the air temperature drops to 36° F (2° C). This feature is used to protect the cleaner equipment from being damaged during freezing conditions. *Note: When freezing conditions are detected by the air sensor, the filter pump will be switched on and water will circulate continuously through the system.*

Left button: Press the Left button to return to the main status screen.

Air Sensor (freeze protection requirement): Freeze protection for solar systems (“Solar Only” mode) requires an optional ambient air temperature sensor (see page 38 for details). The air sensor must be enabled to display the current air temperature on the main status screen. The optional air temperature sensor is used to protect the system plumbing and equipment against freeze damage. For information about freeze protection for circuits, valves and auxiliaries, see page 9. To enable or disable the air sensor:

**Air Sensor
Enabled: Yes**

Menu button: The Set Water Temp setting is displayed.

Right button: Press the button until the Air Sensor is displayed.

Up/Down buttons: Select **Yes** to enable the sensor. Select **No** to disable the sensor (and not display the air temperature on the main status screen).

Left button: Press the Left button to return to the main status screen.

Freeze Protection in Solar Only mode

The SunTouch freeze protection function is active once the optional air sensor is installed and enabled (see page 8). Freeze protection is enabled whenever the outside temperature is 36° F or lower. When freezing conditions are detected by the air sensor the filter pump will be switched on and water will circulate continuously through the system. It's important that the air sensor be permanently placed in the shade and away from windy locations. In the event of a power failure, the system will be unprotected. Recirculating water to protect your system from freezing is not recommended in climates where freezing temperatures occur frequently and last for extended periods.

CAUTION *If you live in a location where freezing conditions occur and there is no air sensor installed or the air sensor is not enabled, your system will be unprotected.*

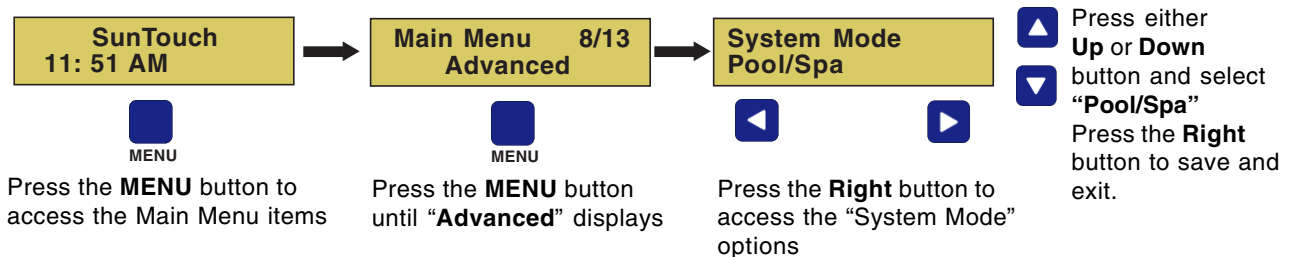
Operating SunTouch in Pool/Spa mode (Shared Equipment)

SunTouch Pool/Spa Mode

Using SunTouch in the Pool/Spa mode allows pool and spa operations to be fully automated. The SunTouch menu features let you create customized schedules for your pool and spa equipment, heat temperatures and chlorination settings to switch on and off at a time and day. For maintenance and service purposes, the control panel allows manual control of all pool and spa operations.

Setting up SunTouch to Operate in Pool/Spa Mode

To setup SunTouch to operate in Pool/Spa mode (shared equipment):

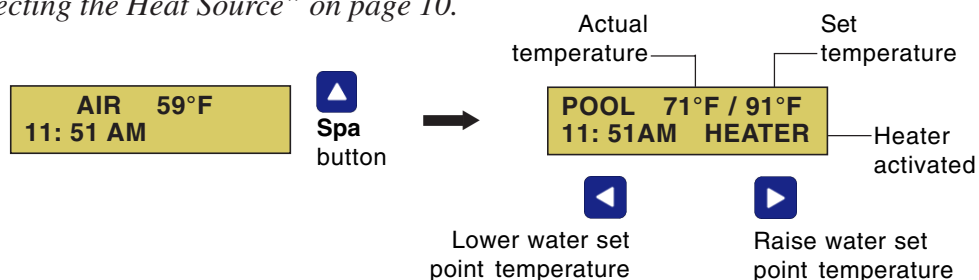


Press the **LEFT** arrow button to save and exit the main menu. *Note: For the Pool/Spa menu settings, see page 12.*

Adjusting the water temperature setting in Pool/Spa mode

After setting the pool water temperature in the Heat menu (see page 14), you might occasionally need to adjust the water set point temperature. Use the (-) **TEMP** and (+) **TEMP** buttons to set the water to the desired temperature.

To adjust the spa set point water temperature: Press the **Spa (Up arrow)** button to display the actual and set point water temperature settings. As shown below, the heat setting displayed on the left side (71° F) is the actual water temperature and on the right side the set point temperature (91° F) is displayed. The set point temperature is set in the Heat menu. *Note: For Information about selecting the heat source, refer to "Selecting the Heat Source" on page 10.*



Adjusting the water temperature setting in Pool/Spa mode (Continued)

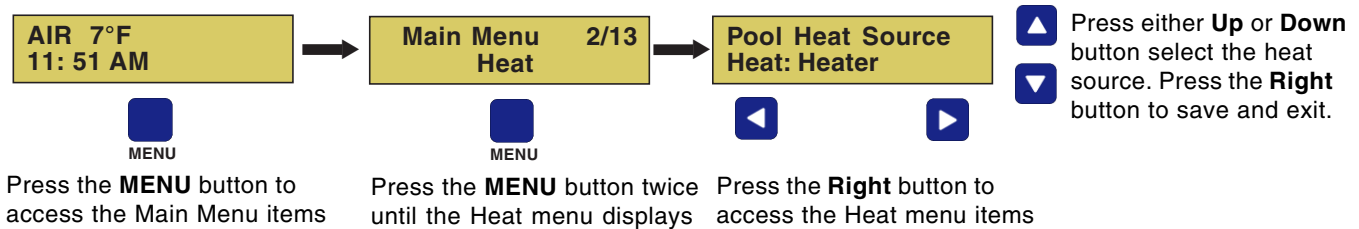
- **Adjusting the pool water temperature:** To display the pool water temperature settings, first activate the “Pool” circuit. To activate the circuit, press the **MENU** button, then press the **RIGHT arrow** button, then press the **Up or Down** arrow button. The pool water temperature settings are displayed.
- Press the **Left or Right** button to adjust the pool water set temperature. The currently selected heat source is displayed on the lower display line. The spa water temperature can be adjusted from 40° F to 104° F (4° C to 40° C). Degree units are displayed in either Fahrenheit or Celsius (see page 22).

Note: To display the air temperature setting on the main screen, the air sensor must be enabled. For more information see “Advanced Menu,” on page 24.

Selecting the heat source

From the Heat menu you can set the spa and pool water temperature and select the heat source. The spa or pool water will heat to the settings specified. The SunTouch system is compatible with solar and conventional heaters. The SunTouch will use the heating source that is selected.

To select the heat source:



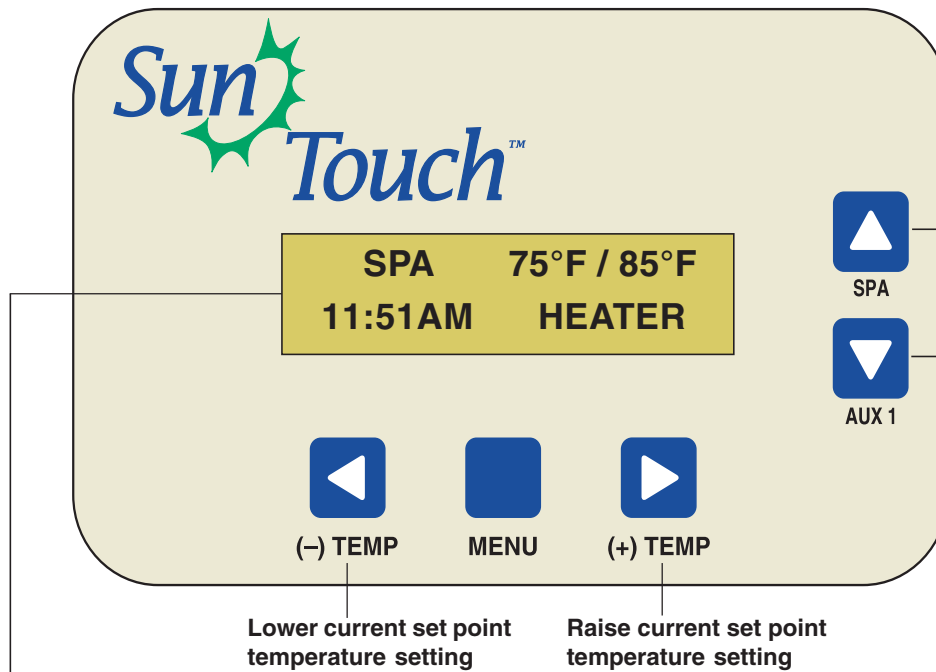
The heat source selections are:

- **OFF** - No heating, even though the filter pump and other circuits may be operating.
- **HEATER** - Use gas heater only. Use the UP arrow button to switch the filter pump then the heater on. Once the heater is switched on it will continue heating the water until the heater’s current highest set point temperature triggers the heater sensor (approximately 104° F or 40° C). Note that setting the “Heat Source” to “Heater” does not activate the filter pump. The filter pump must first be switched on before the heater switches on. The heater will not run if water flow is not detected. Do not activate the heater without running the pump.
- **SOLAR** - Solar heating system selected as the only heat source. Solar heat can be switched on and off in the “Solar” menu (see page 20). When solar energy is active the solar relay is switched on to activate the booster pump (if installed) and rotate the valves to divert water through the solar collector panels.
- **SOLAR PREF.** - (Solar Preferred) - Used when solar and gas heating are combined. This feature uses solar heating energy when it is most effective, then switch to gas heating when solar heating is not available. In order to display “Solar Pref.” on the main screen, enable “Solar” in the Solar menu (see page 20).

Note: Solar Only mode - If a solar heating system is the only heat source, enable solar in the “Solar” menu (see page 20).

SunTouch Main Status Screen (Pool/Spa mode - Shared Equipment)

Use the SunTouch display to view daily pool and spa operations. The “Schedule” menu feature (page 17) is typically used for these operations. For manual spa operation, pressing the SPA Up button will activate the spa circuit, switch on the filter pump, display the current spa water, air temperature setting, and heat source. To activate the pool circuit and activate the filter pump, display the current pool water and air temperature, and heat source, set the menu feature “Circuit On/Off” to “ON.” If the AUX 1 (Down arrow) button is assigned to a light circuit, use this button to manually switch the lights on/off. Lights and other installed equipment are setup from the “Circuit Function” menu (page 26). Before using the SunTouch system, familiarize yourself with the status screen and control buttons.



Spa button: Switch the spa on and off and display current temperature settings. Press this button to activate the filter pump and rotate the valves and circulate pool water to the spa. To enable heat for the spa when this circuit is switched on, either switch on the heat source or switch on “Manual Heat” from the “Heat” menu.

AUX 1 button: Press this button to manually switch on the AUX 1 relay (number 1 is displayed). AUX 1 can be assign to operate accessory equipment such as pool and spa lights.

Note: For information about **HI-TEMP (UP arrow button)** circuit controls for single body systems, see page 33.

AIR 77°F FRZ
11: 51AM AUX 1

AIR: Displays the outside ambient air temperature via the air sensor located near the pool area. To display the air temperature setting, the air sensor must be enabled (see “Advanced” menu, page 24). The main status screen toggles between the pool, spa and air temperature settings. Degree units are displayed in either Fahrenheit or Celsius. If the top display line displays “SunTouch”, no spa or pool function is active and air sensor is not enabled.

AIR 77°F FRZ
11: 51AM AUX 1

FRZ: Indicates the air sensor is connected and enabled, and freeze protection is active (see page 26).

POOL 75°F / 85°F
11:51AM HEATER

SPA/POOL: Press the SPA (Up arrow) button to display the current spa water temperature settings. If the pool filter pump is switched on from the “Circuit On/Off” menu or a programmed schedule, “POOL” is displayed with the current pool water temperature settings. “SPA” and “POOL” are displayed alternatively if both are active. The filter pump will switch off while the pool/spa valves are rotating into position. For information about **HI-TEMP/LO-TEMP** controls for this button (single body system) see page 33.

HEATER: Displays the heat source (**Heater, Solar Prf., Solar**) being used as specified in the “Heat” menu settings (see page 14). If heat is enabled, when the pool filter pump is switch on, the heat source is displayed.

75° F / 85° F: Displays the actual spa or pool water temperature (75° F) and the set point temperature (85° F) as set in the “Heater” menu (see page 14). To adjust set temperature setting use the (-) TEMP and (+) TEMP buttons.

Time: Displays the SunTouch system time as set in the “Clock” menu setting (see page 19).

AIR 77°F
11: 51AM AUX 123

AUX 1 2 3: Displays AUX 1, 2, 3 (lower line) when these auxiliary relay circuits are switched on. Press the AUX 1 (1) button to manually switch auxiliary 1 on or off. AUX 2, and AUX 3 can be switch on and off manually from the “Circuit On/Off” menu (page 13). Auxiliary functions are assign in the “Circ. Function” menu (page 26).

AIR 77°F
11: 51AM AUX D

AUX D: “D” indicates the selected circuit (AUX 1,2,3) is in “delay” mode. For example, if AUX 2 is assigned to a cleaner, when the auxiliary circuit 2 is switched on via the “Circuit On/Off” menu setting, this will force the filter pump on for five (5) minutes before the cleaner pump switches on. See “Circuit Functions Menu” (page 26) for more information.

Pool/Spa Mode Menus (Shared Equipment)

Circuit On/Off 1/13	Filter Pump: [On/Off] - Default Off - See page 13 AUX 1, AUX 2, AUX 3 [On/Off]
Heat 2/13	Pool Temperature [40° F - 104° F] or [4° C - 40° C] - see page 14 Pool Heat Source [Off/Heater/Solar/Solar Prf] - To display "Solar/Solar Prf" must be first enabled in "Solar" menu. Spa Temperature [40° F - 106° F] or [4° C - 41° C] Spa Heat Source [Off/Heater/Solar/Solar Prf] - To display "Solar/Solar Prf" must be first enabled in "Solar" menu. Manual Heat: [ON / OFF] - Default Off - See page 15
Delay Cancel 3/13	[Delayed Cancelled] Press Right button to cancel delays. - see page 16
Schedules 4/13	Schedules: [Pool / Spa / AUX 1 / AUX 2 / AUX 3] - see page 17 Program: 4/4 [Add, Edit, Skip, Delete] Schedule: Start/Stop [08:00A - 05:00P] 12:00 AM - 11:59 PM - 12 Hours
Clock 5/13	Time Set: 06:00 AM [Hour/Minutes - AM/PM] - see page 19
Solar 6/13	Solar Status: Enabled [NO / YES] - Default No - see page 20 Start Temp Diff: Temp Diff [6 %] Stop Temp Diff: Temp Diff [3 %] Heat Pump: [Yes/No] - Default No
Valves 7/13	Valves Circuit: [NONE, SPA, POOL, AUX 1, AUX 2, AUX3, SOLAR, HEATER, FREEZE] - see page 21
Advanced 8/13	Heater Delay: [No / Yes] - See page 22 Temp Units: [FAHRENHEIT / CELSIUS] Calibrate Water: Temp 10° F Calibrate Air: Temp 90° F Calibrate Solar: Temp 100° F Air Sensor: [On/Off] - (Default On) - See page 24 System Mode: [Pool/Spa/Solar Only*] System Type: [Shared Equipment, Single Body] Reset Factory: [Erase ALL? (No / Yes)]
Diagnostics 9/13	Firmware Rev (System firmware revision level) - see page 25 Solar Temp [Fahrenheit/Celcius - Status display only] - (Displays if Solar is enabled in Heat menu) Self Test
Circ. Functions 10/13	Pool Circuit: Freeze [OFF / ON] - Default Off - see page 26 Spa Circuit: Freeze [OFF / ON] AUX 1 Circuit: [Generic, Solar, Pool, Floor Cleaner, Spillway, Cleaner] - Freeze [OFF / ON] AUX 2 Circuit: [Generic, Solar, Floor Cleaner, Spillway, Cleaner] - Freeze [OFF / ON] AUX 3 Circuit: [Generic, Solar, Floor Cleaner, Spillway, Cleaner] - Freeze [OFF / ON]
QuickTouch 11/13	QuickTouch - Assign 1 - 4 circuits) - see page 28 1, 2, 3, 4 [None, Spa, Pool, AUX 1, AUX 2, AUX 3, Solar, Heat Boost, Heat Enabled]
Pumps 12/13	SINGLE SPEED [TWO SPEED, INTELLIFLO 4] - see page 29 Two Speed - Pump Circuits 1 - 4 [None, Spa, Pool, AUX 1, AUX 2, AUX 3, Solar Heater, Pool Heater, Spa Heater, Freeze] IntelliFlo 4 - Circuit 1 - 4 - Set pump speed 1 - RPM: [400-3450] - 750 Default 1 - Pump Circuit - [None, Spa, Pool, AUX 1, AUX 2, AUX 3, Solar Heater, Pool Heater, Spa Heater, Freeze] 2 - RPM: [400-3450] - 1500 Default 2 - Circuit - [None, Spa, Pool, AUX 1, AUX 2, AUX 3, Solar, Heater, Freeze] 3 - RPM: [400-3450] - 2350 Default 3 - Circuit - [None, Spa, Pool, AUX 1, AUX 2, AUX 3, Solar, Heater, Freeze] 4 - RPM: [400-3450] - 3110 Default 4 - Circuit - [None, Spa, Pool, AUX 1, AUX 2, AUX 3, Solar, Heater, Freeze]
IntelliChlor 13/13	IntelliChlor: Enable [No / Yes] - see page 31 Pool %: (0% - 100%) - 50 (Default) Spa %: (0% - 100%) - 8 (Default) Super Chlr: (No/Yes) - No (Default) Run Hours: (0 -72) - 0 (Default) IntelliChlor - Salt Level: Displays current salt level (xxxx) ppm - Status: OK - NO ERRORS (SUPER CHLORINATE, COM LINK ERROR, CHECK FLOW / PCB, LOW SALT, VERY LOW SALT, HIGH CURRENT, CLEAN CELL!!, LOW VOLTAGE)

Note: (*) See page 6 for "SOLAR ONLY" main menu.

Pool/Spa Mode Menus

The following describes the 13 menus provided for Pool/Spa Mode. Each menu item and its number (1 through 13) is displayed on the top line of the main screen.

Circuit On/Off Menu (1/13)

Use the “Circuit On/Off” feature to manually switch the pool filter pump, AUX 1, AUX 2, and AUX 3 relay output ON or OFF. Switching these circuit on or off will override programmed schedules that might already be assigned to circuits. For more information about schedules, see “Schedules Menu” on page 17.

Pool Filter Pump On/Off: Use the “Circuit On/Off” Pool setting, to manually switch the pool filter pump relay on or off. When the pool filter pump is set to on, the valve actuator will rotate to isolate the pool water from the spa water, and switch the heater on (if enabled in the “Heat” menu). When this circuit relay is switched on manually, it remains on until either you switch it off manually or the default 12 hours has elapsed. For example, if the filter pump is scheduled to automatically run from 9:00 AM to 5:00 PM daily, then the filter pump is switched on manually at 9:00 PM, it will run continuously until the next day at 5:00 PM then switch off. The schedule will then continue from then on. The top display line on the main status screen will alternately display the current water temperature and the current air temperature (if the air sensor is enable, see page 24 for details). If the pool filter pump is on, and the spa is switched on using the Up arrow button, the main status screen will alternately display the current water temperature between “Pool” and “Spa” mode. For HI-TEMP, LO-TEMP controls (SunTouch single body system), see page 33.

Main Menu 1/13 Circuit On/Off
Circuit On/Off Pool: ON
Pool 77°F / 79°F 9:45 AM HEATER

Menu button: Select the Circuit On/Off menu (1/13).

Right button: Select the “Circuit On/Off” Pool On/Off setting. Use this function to manually switch the pool filter pump on or off.

Note: The Solar auxiliary relay (Valve C) on the SunTouch motherboard can operate a solar booster pump which will switch on when the filter pump is running. Solar heat must also be available and the water must be below the set point temperature setting. For more information, see “Solar Menu” on page 20.

Up/Down button: Press the Up or down button to toggle the setting on or off. After changing the setting the main status screen displays the current water temperature. To adjust the set point temperature, use the Left and Right arrow buttons.

Left button: Press the Left button to return to the main status screen.

AUX 1 2: Use this feature to manually switch the auxiliary relay output circuit on or off. These auxiliary circuits can be assigned to operate the pool and spa system valves, lights and other equipment. When the AUX 1 or AUX 2 circuit relay is switched on manually, it remains on until either you switch it off manually, the default 12 hours has elapsed. For example, if the filter pump is scheduled to automatically run from 9:00 AM to 5:00 PM daily then the filter pump is switched on manually at 9:00 PM, it will run continuously until the next day at 5:00 PM then switch off. The schedule will then continue from then on.

Main Menu 1/13 Circuit On/Off
Circuit On/Off AUX 2: ON
AIR 71°F 11: 51AM AUX 23

Menu button: Select the Circuit On/Off menu to manually switch AUX 1, AUX 2 relay on or off

Right button: Press the Right button until AUX 1, AUX 2, or AUX 3 is displayed.

Up/Down button: Press the Up or down button to toggle the AUX circuit on or off.

Left button: Press the Left button to return to the main status screen.

AUX 3: The AUX 3 circuit can be used as an extra assignment to control pump speeds or a valve actuator (see page 26 for details). For example, AUX 3 can be assigned to control the high speed function of a 2-Speed pump or one of the four speeds of the IntelliFlo 4x160 pump. The pump speed control can be selected/activated via a scheduled program or switched on/off manually. You can also assign a button on the four-function QuickTouch wireless remote (optional equipment) to control the high-speed pump function.

Circuit On/Off Menu (1/13) Continued

Pool 77°F / 79°F
9:45 AM AUX 1

To return to the menu items, press the Left button.

Note: The AUX 1 relay circuit can also be switched on or off using the control panel Down arrow button. When the Down arrow button is pressed to switch the AUX 1 circuit on, AUX 1 is displayed.

Heat Menu (2/13)

Use the heat menu settings to specify the set point temperature and select the heat source for the pool and spa. The water will begin to heat whenever the heater is manually switched on. To switch the heater on, press the Spa button (Up arrow button) or switch the Filter Pump to “On” (see Circuit On/Off on page 13) even if the heater is set to off. The spa will also begin to heat when switched on by the optional QuickTouch wireless remote. The SunTouch system allows for solar and conventional heaters. The SunTouch will use the heating source that is selected. The heat source selections are:

- **OFF** - No heating even though pump and other circuits may be operating.
- **HEATER** - Use gas heater only. Use the UP arrow button to switch the filter pump then the heater on. Once the heater is switched on it will continue heating the water until the heater’s current highest set point temperature triggers the heater sensor (approximately 104° F or 40° C). Note that setting the “Heat Source” to “Heater” does not activate the filter pump. The filter pump must first be switched on before the heater switches on. The heater will not run if water flow is not detected. Do not activate the heater without running the pump.
- **SOLAR** - Solar heating system selected as the only heat source. Solar heat can be switched on and off in the “Solar” menu (see page 20). When solar energy is active the solar relay is switched on to activate the booster pump (if installed) and rotate the valves to divert water through the solar collector panels.
- **SOLAR PREF.** - (Solar Preferred) - Used when solar and gas heating are combined. This feature uses solar heating energy when it is most effective, then switch to gas heating when solar heating is not available. In order to display “Solar Pref.” on the main screen, enable “Solar” in the Solar menu (see page 20).

Pool Temperature and Heat Source settings

To set the pool temperature and switch the heater on or off:

Main Menu 2/13
Heat

Pool Temperature
Temp: 75°F

Pool Heat Source
Heat: Heater

Menu button: Select the Heat menu.

Right/Left button: Select the pool temperature setting.

Up/Down button: Adjust to the desired pool set point temperature (from 40° F to 104° F or 4° C to 40° C).

Right button: Access the pool heat source setting.

Up/Down button: Select the heat source options: **Off, Heater, Solar Preferred** or **Solar**.

Left button: Press the Left button to return to the main status screen.

Heat Menu (2/13) (Continued)

Spa Temperature and Heat Source

To set the spa temperature and switch the heater on or off:

Main Menu 2/13
Heat

Menu button: Select the Heat menu.

Right button: Select the spa temperature setting.

Up/Down button: Press the button until the Spa Temperature setting displays. Adjust to the desired spa set point temperature (from 40° F to 104° F or 4° C to 40° C).

Spa Temperature
Temp: 85°F

Right button: Select the spa heat source setting.

Spa Heat Source
Heat: Heater

Up/Down button: Select the heat source options: **Off, Heater, Solar Preferred or Solar.**

Left button: Press the Left button to return to the main status screen.

HI-TEMP/LO-TEMP (Pool or Spa) Control Button

When SunTouch is operating as a single body (pool only or spa only, see page 33), the **HI-TEMP (UP arrow)** button is assigned to manually control the pool or spa water temperature. Use this button to switch the filter pump and heater on or off. The heater must be enabled in the “Heat 2/13” menu (page 14) to activate the heater. To manually switch on or off the heater, use “Manual Heat” in the “Heat 2/13” menu. The heat temperature settings are displayed on the main screen. This button can also be assigned for LOW temperature control (see page 34).

Manual Heat (Off/On)

By default, the Manual Heat spa feature is set to “On.” This allows your spa to begin to heat whenever it is manually switched on using the Spa button (Up arrow button) regardless of the of the heat source setting in the Heat menu. You can also use the QuickTouch (QT4) wireless remote controller to switch your spa on. The Manual Heat feature allows you to schedule your spa to filter daily with the heater set to off, and then be ready to heat whenever the Spa button is pressed. This feature will not work for solar systems, only heaters.

Manual Heat

To enable or disable spa manual heat when switched on manually:

Main Menu 2/13
Heat

Menu button: Select the Heat menu.

Right button: Select the Manual Heat setting.

Manual Heat
Manual Heat: On

Up/Down button: Select **Off** to disable or **On** to automatically begin spa heating whenever the spa is switched on manually when the set temperature is higher than the water temperature, and the Spa is manually switched on. The heater will switch off when the water temperature rises above the set temperature or the circuit is switched back on.

Left button: Press the Left button to return to the main status screen.

Delay Cancel Menu (3/13)

Use the Delay Cancel feature for service or testing purposes. Normally, there is no need to cancel any of the following delays except for servicing or testing the system. For convenience, on a onetime basis, the Delay Cancel feature will cancel the following safety delays.

- **Heater Cool-Down Delay Cancel:** Shuts Filter Pump off immediately.
- **2-Speed Filter Pump five-minute START on HIGH SPEED Delay Cancel:** Shifts pump to low speed.
- **Automatic Pool Cleaner START Delay:** Starts Cleaner Pump immediately, without normal delay in which the filter pump first runs for 5 minutes.
- **Automatic Pool Cleaner SOLAR Delay:** Allows Cleaner Pump to run even though solar delay has shut it off for 5 minutes.

Some heaters require a cool-down cycle before being switched off. This can be setup in the menu to run the filter pump an additional ten minutes to dissipate residual heat built up inside the heater combustion chamber. The Delay Cancel feature is mainly for use by service technicians when it's necessary to shut the filter pump off immediately, and know the heater has not been running. Heaters manufactured by Pentair do not require this cool-down period and do not need the delay to be set up.

Delay Cancel

To activate Delay Cancel:

Main Menu 3/13
Delay Cancel

Menu button: Press the Menu button until Delay Cancel displays.

Right button: Use the Right button activate Delay Cancel for one time only. "Delay Cancelled" is displayed, then the Main status screen is displayed.

Left button: Press the Left button to return to the main status screen.

Schedules Menu (4/13)

Scheduled start and stop programs can be assigned to pool, spa and auxiliary circuits (AUX 1, AUX 2, AUX 3) functions. The start and stop times can be programmed to run automatically within a 12 hour period. The default run time for a scheduled circuit is 8:00 AM to 5:00 PM which can be adjusted in 15 minutes increments. A maximum of four scheduled programs can be setup for any one circuit, with a total of six programs for all circuits combined.

To program a circuit:

Add a new program to a circuit

Main Menu 4/13
Schedules

Press the **Menu button** to select the Schedules menu (4 of 13).

Press the **Right button** to schedule an available circuit.

Schedule [Pool]
Prg: 0/0 - Add

Press the **Up/Down button** to select the circuit to program. The circuits are: **Pool, Spa, AUX 1, AUX 2, AUX 3**. If there existing programs assigned to circuits, use these buttons to scroll through the each programmed circuit.

Schedule [Pool]
Prg: 0/0 - Add

Press the **Right button** twice to move to the mode settings (**Add, Edit Delete**). To add a program, Use the **Up/Down button** to select **Add**. Press the **Right** button. "Edit" is displayed (blinks on and off) and the circuit number will increment from zero to one (1/1). At this point there are still three available circuit that can be assigned to the circuit.

Schedule [Pool]
Prg: 1/1 - Edit

Mode settings

- **Add:** Add up to four programs to the selected circuit.
- **Delete:** Delete the current program
- **Edit:** Move to the Start/Stop time for the current circuit program.

Set the start and stop time

Schedule [Pool]
Start: 8:00 AM

Press the **Right button** to move to Start time setting for the circuit.

Press the **Up/Down button** to set the time to automatically start the circuit. Adjust the start time in 15 minutes increments for AM or PM.

Schedule [Pool]
Stop: 4:30 AM

Press the **Right button** to move to Stop time setting.

Press the **Up/Down button** to set the time to automatically stop the circuit. Adjust the stop time in 15 minutes increments for AM or PM.

Main Menu 4/13
Schedules

Press the **Right button** twice to set to edit another program.

Schedule [Pool]
Prg: 0/0 - Add

or

POOL 71°F / 91°F
11: 51AM HEATER

Press the **Left button** to return to the main status screen.

Schedules Menu (4/13) (Continued)

Schedule your Spa or Pool

You can set a daily start and stop time to switch the filter pump on and rotate the pool or spa valves into the “Spa” or “Pool” position. The heater will automatically heat the spa or pool water up to the set point temperature as set in the “Heat” menu (see page 14). If the pool has a separate jet pump or blower controlled by AUX 1 and/or AUX 2, these need to be scheduled separately. You can also program when to filter and heat your pool, and switch light or auxiliary circuits on or off.

You can create schedules to automatically run equipment like pool filtration or lights. Any circuit can be set to switch on and off on every day of the week. When a relay is switched on manually, it remains on until you either switch it off manually, or the next time the relay is scheduled to be switched off. For example, if the filter pump is scheduled to automatically run from 3:00 PM to 5:00 PM daily then the filter pump is switched on manually at 9:00 PM, it will run continuously for 12 hours until the next day at 5:00 PM then switch off. The programmed schedule will then continue from then on. Default run time for the a scheduled program is 12 hours. If you program the start and stop times the same the schedule will run for 24 hours if scheduled to run for one day. A spa or pool program can be overridden using the Spa button (Up arrow) or set Circuit On/Off pool filter pump to on in the Circuit On/Off menu (see page 13).

Edit an existing program

1. Press the Menu button until Schedules (menu 4) is displayed then press the **Right button**.
2. Press the **Up/Down button** to scroll through the circuits with their assigned programs.
3. Press the **Right button** to move to the first digit of the program number for the circuit. For example (2/4), two is the second program of four assigned programs.
4. Press the **Up/Down button** to select the desired program number.
5. Press the **Right button** to move to the mode setting.
6. Press the **Up/Down button** until Edit is displayed. To edit the start and stop time for the circuit, press the **Right button** to move to the Start setting.

Delete a program

1. Press the Menu button until Schedules (menu 4) is displayed then press the **Right button**.
2. Press the **Up/Down button** to scroll through the circuits with their assigned programs.
3. Press the **Right button** to move to the first digit of the program number for the circuit. For example (3/4), one is the third program of four assigned programs.
4. Press the **Up/Down button** to select the desired program number.
5. Press the **Right button** to move to the mode setting. Press the **Up/Down button** until “Del” is displayed.
6. Press the **Right button** to delete the program 1. The program counter now displays (3/4). If you want to delete the other three programs, repeat steps 3 through 6.

Clock Menu (5/13)

Use the Clock menu to set the SunTouch system time. The current time in hours, minutes and AM/PM is displayed on the main screen. The system clock settings are used for the SunTouch system scheduled operations. The SunTouch system clock will continue to run even if power is removed from the SunTouch system at the enclosure.

Clock

To set the system time:

Main Menu 5/13
Clock

Menu button: Select the Clock menu.

Right button: Select the clock settings.

Up/Down button: Adjust the hour to the current time in your location including AM/PM).

Time Set
11:30 AM

Right button: Move to the minutes setting.

Up/Down button: Adjust the minutes to the current time.

Left button: Press the Left button to return to the main status screen.

Solar Menu (6/13)

Use the solar settings to setup solar or configure solar as a heat pump:

Setting Up Solar Control: Ensure that the solar temperature sensor is installed.

Installing Solar Heating: First, install the solar sensor at the collectors and connect to the SunTouch enclosure. If “Heat Pump” is selected and is being used in place of a solar heating system, install Solar sensor near the SunTouch Enclosure. Connect the wires to the SOLAR screw terminals according to the wiring diagram on page 51. Plug the solar valve actuator cable into three-pin socket marked **VLV C** on the SunTouch motherboard. If a solar booster pump is being installed, connect the pump to a power relay and plug a low voltage cable from relay into the two-pin socket marked SOLAR on the SunTouch motherboard.

To access the Solar menu:

Solar

To enable a solar heater and set the temperature start and run time settings:

Main Menu 6/13
Solar

Menu button: Select the Solar menu.

Right button: Select the solar settings menu.

Solar Status
Enable: No

Up/Down button: Select **Yes** or **No** to enable solar. If Yes is selected, Solar will be displayed in the main screen.

If solar is enabled, the solar pump relay will switch on when the water temperature is lower than the set temperature setting, and the solar sensor temperature is higher than the water temperature. It might be necessary for you to adjust the pool and spa set temperature settings separately. The correct temperature setting will be used, which also depends on what position the pool and spa suction valve is currently in.

Start Tem Diff
Temp Diff: 9

Right button: Select the Start Temperature Differential setting.

Up/Down button: Adjust the temperature differential to start heating from 3° to 9°. For example, if “Start” is set to 3°, this ensures that the temperature has to deviate by 3° at least to the specified set point temperature (in the Heat menu, on page 18) before it switches on. Once the solar system is on it will start converging as it is heating. This ensures that it will not continually be switching on and off.

Stop Tem Diff
Temp Diff: 9

Right button: Select the Stop Temperature Deferential setting.

Up/Down button: Set the temperature differential to stop heating from 2° to 5°. This setting sets how close to the target set point temperature to switch off solar heat.

Enable
Heat Pump: Yes

Right button: Move to the “Enable Heat Pump” setting.

Up/Down button: Select **Yes** or **No** to enable solar as a heat pump. Select **Yes** if a heat pump is being used in place of a solar heating system. If Solar is set to heat pump, Valve A is free to be used by other circuits.

Left button: Press the Left button to return to the main status screen.

Valves Menu (7/13)

This feature allows you assign a circuit to the extra valve output (Valve C) on the SunTouch motherboard. The SunTouch system can drive the auxiliary valve actuator for applications such as solar heating and water features and for freeze protection. By assigning any one of the auxiliary (AUX 1, AUX 2, AUX 3) circuits to control the valve actuator, you can conserve auxiliary circuits for high voltage relays for controlling pumps and lights.

Note: When solar heating is enabled in the “Solar” menu (see page 20) and is not configured as a heat pump, Valve C is dedicated for controlling the solar heating valve actuator. Also, only “SOLAR” is displayed when solar is enabled. To select other circuits (AUX 1, AUX2, etc.) solar must be switched off.

Valve Circuit

To assign a circuit to Valve C:

Main Menu	7/13
Valve	

Valve Circuit	
[SPA]

Menu button: Select the Valve menu.

Right button: Select the Valves settings.

Up/Down buttons: Select a circuit to assign to Valve C. The circuits names are: None, Spa, Pool, AUX 1, AUX 2, AUX 3, Solar, Heater and Freeze (protection).

Note: Freeze protection function protects the pool, plumbing, and equipment against freeze damage. If the outside air temperature sensor falls below 36° F, freeze protection is activated and the pool/spa filter pump relay is switched on to circulate the pool water.

Left button: Press the Left button to return to the main status screen.

Advanced Menu (8/13): Pool/Spa Delays

The pool and spa delays feature allows you to assign a delay function to the following equipment.

- **Heater Cool-Down Delay Cancel:** Shuts Filter Pump off immediately. Some heaters require a cool-down cycle before being switched off. This can be setup to run the filter pump an additional ten minutes to dissipate residual heat built up inside the heater combustion chamber. You can also cancel the delay feature. For information about using the cancel delay feature, refer to “Delay Cancel” on page 16.
- **2-Speed Filter Pump five (5) minute START on HIGH SPEED Delay Cancel:** Shifts pump to low speed.
- **Automatic Pool Cleaner START Delay:** Starts Cleaner Pump immediately, without normal delay in which the filter pump first runs for five (5) minutes.
- **Automatic Pool Cleaner SOLAR Delay:** Allows Cleaner Pump to run even though the solar delay has shut it off for five (5) minutes.

Delays

To assign the delay feature:

Main Menu 8/13
Advanced

Menu button: Select the Advanced menu.

Right button: Select the pool and spa delay setting.

HeaterDelay
Enabled: Yes

Up/Down buttons: Select **Yes** to enable or **No** to disable delays for the pool and spa circuits.

Left button: Press the Left button to return to the main status screen.

Advanced Menu (8/13): Temp Units - F° / C° (Fahrenheit/Celsius)

The temperature settings for the water, solar and air can be displayed in either Fahrenheit or Celsius on the Main screen.

Fahrenheit/Celsius

To change the temperature units:

Main Menu 8/13
Advanced

Menu button: Select the Advanced menu.

Right button: Select the Fahrenheit or Celsius setting.

Temp Units
[FAHRENHEIT]

Up/Down buttons: Select either Fahrenheit or Celsius units for temperature settings displayed on the Main screen.

Left button: Press the Left button to return to the main status screen.

Advanced Menu (8/13): Calibrate water, air and solar sensors

The SunTouch system includes two temperature sensors for monitoring water and ambient air temperature. An additional air sensor for controlling solar heating systems can also be installed for solar systems. Generally, these sensors are accurate and do not require calibration. However, long plumbing runs and water features can cause temperatures at a body of water to be different from the temperature sensor reading. You can manually recalibrate the sensors to adjust for this. You only need to calibrate one body of water, since the temperature sensor is common to both the pool and spa.

Calibration

Before you start, you'll need an accurate all weather thermometer. When calibrating the air sensor, wait until the sensor is not in direct sunlight. For the air temperature sensor, make sure that the sensor is located in the shade for accurate readings.

To calibrate the water temperature sensor:

Main Menu 8/13
Advanced

Menu button: Select the Advanced menu.

Calibrate Water
Temp: 72 F

Right button: Press the button until Calibrate Water is displayed.

Up/Down buttons: To adjust the temperature use these buttons to raise or lower the water temperature to match the corresponding thermometer temperature reading. When calibrating the water sensor, first switch off the heater. Check that the "Pool" filter pump circuit is set to "ON" to switch on the pool filter pump or press the Spa button (**Up button**) to circulate the water. Place the thermometer in the spa or pool water. Take an accurate temperature reading.

Calibrate Air
Temp: 77 F

Right button: Select Calibrate Air.

Up/Down buttons: To adjust the temperature use these buttons to raise or lower the water temperature to match the corresponding thermometer temperature reading. When calibrating the air sensor, place the thermometer next to the air sensor. The air sensor is normally located near or under the SunTouch enclosure, not inside the enclosure. Take an accurate temperature reading in the shade.

Calibrate Solar
Temp: 73 F

Right button: Select Calibrate Solar.

Up/Down buttons: To adjust the solar temperature use these buttons to raise or lower the water temperature to match the corresponding thermometer temperature reading. Be sure that the solar sensor is in the sun for accurate readings.

Left button: Press the Left button to return to the main status screen.

Advanced Menu (8/13): Air Sensor

If an optional ambient air temperature sensor is installed, the sensor must be enabled to display the current air temperature on the main status screen. The optional air temperature sensor is used to protect the system plumbing and equipment against freeze damage. For information about freeze protection for circuits, valves and auxiliaries, see page 26. The air sensor can be ordered separately (see page 38 for details).

To enable or disable the air sensor:

Main Menu 8/13
Advanced

Menu button: Select the Advanced menu.

Right button: Select the air sensor setting.

Up/Down buttons: Select **Yes** to enable the sensor. Select **No** to disable the sensor and not to display the air temperature in the main status screen.

Left button: Press the Left button to return to the main status screen.

Air Sensor
Enabled: Yes

Advanced Menu (8/13): System Mode

From the System Mode menu you can configure the SunTouch system to operate as a Solar Only mode system or as a Pool/Spa mode system (shared equipment). For more information about the “Solar Only” mode menu, see page 4. For more information about Pool/Spa mode, see page 9.

Main Menu 8/13
Advanced

Menu button: Select the Advanced menu.

Right button: Select the system mode setting.

Up/Down button: Select Solar Only mode to configure SunTouch as a solar system. Select Pool/Spa mode to configure SunTouch as a stand-alone pool and spa automatic controller which include solar capabilities.

Left button: Press the Left button to return to the main status screen.

System Mode
Pool/Spa

Advanced Menu (8/13): System Type

From the System Type menu you can configure the SunTouch system for a pool and spa system (shared equipment), or as a Single Body of water system (pool only or spa only). For the “Single Body” system menu structure, see page 33.

Main Menu 8/13
Advanced

Menu button: Select the Advanced menu.

Right button: Select the system type setting.

Up/Down button: Select Shared Equipment to configure SunTouch for a pool and spa system. Select Single Body to configure SunTouch as a single body of water system.

Left button: Press the Left button to return to the main status screen.

System Type
Shared Equipment

Advanced Menu (8/13): Reset Factory

SunTouch system configuration data is stored and retained in “Flash” memory in an EEPROM located on the SunTouch motherboard. The SunTouch user system configuration data can be erased to restore the factory defaults settings. If the optional QuickTouch QT4 wireless controller is installed it will need to be reconfigured.

Reset to factory default settings

Main Menu 8/13
Advanced

Reset Factory
Erase All? Yes

Erase Memory?
[YES]

SunTouch
7:30 AM

Menu button: Select the Advanced menu.

Right button: Press this button until Reset Factory setting is displayed.

Up/Down button: Select Yes to continue. Select No to exit the setting.

Right button: Press this button to continue. “Erase Memory” is displayed.

Up/Down button: Select Yes to continue. Select No to exit the setting.

Right button: Select Yes to erase system data and restore the factory default settings. The display will return to the main screen. **CAUTION:** *This procedure will erase all system settings.* Select No to exit the setting.

Diagnostics Menu (9/13): Firmware Rev

Displays the current firmware revision for the SunTouch system.

Main Menu 9/13
Diagnostics

Firmware Rev
Rev: 1.0

Menu button: Select the Diagnostics menu.

Right button: View the SunTouch system firmware revision.

Left button: Press the Left button to return to the main status screen.

Diagnostics Menu: Solar Temp

Displays the current solar temperature.

Main Menu 9/13
Diagnostics

Solar Temp
Temp: 77 F

Menu button: Select the Diagnostics menu.

Right button: Press the button until Solar Temp displays. Use this feature for testing purposes and to verify the sensor temperature is connected and operating correctly.

Left button: Press the Left button to return to the main status screen.

Diagnostics Menu: Self Test

To run a system self test:

Main Menu 9/13
Diagnostics

Enter
Self Test? Yes

Status: Passed
Code: None

Menu button: Select the Diagnostics menu.

Right button: Press the button until Enter Self Test displays.

Up/Down button: Select Yes to continue. Select No to exit the Diagnostics menu.

Right button: Start the SunTouch self test. The test includes testing the control panel, air and water sensors and valves. Follow the on-screen instructions.

After the test has been completed, the status screen will display the results. A successful test will display - Status: Passed - Code: None.

Left button: Press the Left button twice to return to the main status screen.

Circuit Functions Menu (10/13)

Assigning Circuit Functions

From the Circuit Functions menu you can assign special logic to the auxiliary relay circuits AUX 1 and AUX 2. For example, when setting up an automatic pool cleaner pump, you could assign AUX 1 the circuit function FLOOR CLEANER. With this "Cleaner" logic the cleaner pump would force the filter pump on, and the cleaner pump would start after a delay of five minutes. The cleaner pump would automatically shut off whenever the spa and/or solar is switched on.

Using AUX 3 circuit: The AUX 3 connector on the SunTouch motherboard cannot be connected to a dedicated relay, however, it can be used as an extra assignment to control pump speeds or valve actuators. For example, AUX 3 can be assigned to control the high speed function of a 2-Speed pump or one of the four speeds of the IntelliFlo 4x160 pump. The pump speed control can be selected/activated via a scheduled program or switched on/off manually. Also, If VLV C is not enabled for solar, an additional pump could be connected to VLV C for a waterfall feature and AUX 3 could be assigned to control the valve actuator to divert water for the waterfall feature.

Freeze Protection

Freeze protection switches on a circuit if the outside air temperature sensor detects the temperature is getting close to freezing (below 36° F). The system will switch on the circuits that have been assigned freeze protection, and runs the circuits for every 15 minutes to stop the pipes from freezing. For pool and spa combination the valves will rotate between the pool and spa. During this process the cleaner will be switched off. This is especially important if there is a pool and spa combination. If freeze protection is set to both the spa and pool circuits, the filter pump (and booster pump if installed) switches on and the pool and spa valves alternate every 15 minutes to keep the water moving in both the pool and spa. This process continues until the freeze condition is over.

Circuit Functions

To assign a circuit function and freeze protection: *Note: The air sensor **must** be enabled for freeze protection (see page 24):*

Main Menu 10/13 Circ. Functions	Menu button: Select the Circ. Functions menu.
Pool Circuit Freeze: OFF	Right button: Set freeze protection for the pool circuit.
Spa Circuit Freeze: OFF	Up/Down buttons: Select Yes or No.
AUX 1 Circuit [GENERIC]	Right button: Set freeze protection for the spa circuit.
AUX 1 Circuit Freeze: OFF	Up/Down buttons: Select Yes or No.
	Right button: Choose the type of logic needed for the AUX 1 circuit.
	Up/Down buttons: Set the type of circuit to use. The functions are: GENERIC, SOLAR, FLOOR CLEANER, SPILLWAY, CLEANER. This is the circuit that you wish to assign the function logic to. For a description of the preset circuit types, see "Preset Circuit Functions," on page 26. <i>Note: For in-floor cleaning systems with two main valves which need to alternate every 20 minutes. This feature allows a motorized three-way valve to rotate every 20 minutes during pool filtration cycle.</i>
	Right button: Set freeze protection for AUX 1 circuit.
	Up/Down buttons: Select Yes or No. If "Yes" is selected, the circuit will switch on if the air temperature drops to 36° F (2° C). <i>Note: for the POOL circuit the filter pump will have freeze protection. For the SPA circuit the filter pump will run and the pool/spa valves will switch between pool and spa at 15 minutes intervals throughout the freeze condition. For the FLOOR CLEANER circuit freeze protection is generally not needed for pool cleaner pumps since they get water flow from the filter pump. Just make sure that POOL has freeze protection.</i>
	Repeat the process to assign functions for AUX 2 and AUX 3 as described above.
	Left button: Press the Left button to return to the main status screen.

Circuit Functions Menu (10/13) (Continued)

Preset Circuit Functions

Generic	No special Logic. Simple On/Off control of a circuit with all the programmable capabilities.
Solar	Works with automatic pool cleaner pumps or cleaner valve actuator. It does the following: <ul style="list-style-type: none"> - Forces the filter pump on 5 minutes before the cleaner pump switches on. - Switch the cleaner off when the spa is on. - Switch the cleaner off for 5 minutes when the solar heating begins.
Floor Cleaner	This setting moves a 3-way valve every 20 minutes alternating flow between 2 cleaner system valves that feed the pop-up heads.
Spillway	For pool/spa combinations where the spa is raised above the pool. This setting moves the return valve so that the filter pump pulls the water from the pool and returns it to the spa, creating a water fall effect. Automatic pool cleaners are turned off when this feature is turned on.
Cleaner	Works with automatic pool cleaner pumps or cleaner valve actuator. It does the following: <ul style="list-style-type: none"> - Forces the filter pump on 5 minutes before the cleaner pump switches on. - Switch the cleaner off when the spa is on. - Switch the cleaner off for 5 minutes when the solar heating begins. - Cleaner "Delay" starts each time Solar is switched on. - Manual override SPA "ON" <ul style="list-style-type: none"> - Overrides the cleaner until the spa is turned off. - Whenever the cleaner delay starts - restarts after 5 minutes delay. - Forces the two speed pump output "ON."

Settings Menu (11/13): QuickTouch® (QT4) Wireless Remote

The QuickTouch QT4 wireless remote controller provides switching of up to four circuits. For example, you can use the QT4 wireless remote to activate the spa circulation, and for operating three auxiliary pieces of equipment (such as heat enabled, lights, jet pump, heat boost, air blower, waterfall, etc.).

Each of the four functions on the QT4 wireless controller has an on and an off button. To switch a circuit on or off, press and hold the appropriate button for at least a full second.

The QT4 buttons can be assigned to any available circuit. However, the QT4 has the following preset circuits assigned to the four buttons:

- The SPA button activates the spa circuit (same as the Up button on the SunTouch control panel.)
- A button activates the AUX 1 circuit.
- B button activates the AUX 2 circuit.
- C button activates the AUX 3 circuit.

Assign QT4 buttons

To assign circuits to the QuickTouch wireless controller buttons:

Main Menu 11/13 QuickTouch	Menu button: Select the QuickTouch menu.
QuickTouch SPA - [SPA]	Right button: Assign the SPA button to a circuit.
QuickTouch 1 - [HEAT BOOST]	Up/Down buttons: Choose a circuit to assign to the SPA button. The circuit selections are: None, Spa, Pool, AUX 1, AUX 2, AUX 3, SOLAR, HEAT BOOST, HEAT ENABLED. Selecting “None” does not assign a circuit.
QuickTouch 2 - [POOL]	<i>Note: The “Heat Boost” feature will switch on the heater for seven minutes to increase the spa water temperature. Each time the spa Heat Boost button is pressed, the temperature will increase about 1° F. The temperature will not go beyond the 104° F (40° C) limit.</i>
QuickTouch 3 - [AUX1]	Right button: Assign button A to a circuit 1. Use the Up/Down buttons to select a circuit for button A. Repeat the process for Buttons B (AUX 2 circuit 2) and C (AUX circuit 3).
	Left button: Press the Left button to return to the main status screen.

Pump Menu (12/13)

From the Pump menu you can setup SunTouch to operate a single-speed pump, or assign up to four circuits to a two-speed pump or an IntelliFlo 4 pump. You can also assign four custom speeds (RPM) for the IntelliFlo 4 pump.

Single speed filter pump

For a single-speed pump there are no circuit assigned. The pool filter pump schedule program determines when the pump is switched on and off. If the heat source is enabled in the “Heat” menu (see page xx), when the pool or spa circuit is activated the selected heat source is also enabled. The default time before the filter pump will switch off is 12 hours. If the pool/spa circuit is switched off and the heater is operating, only the heater will turn off, then the filter pump will automatically switch off after 10 minutes to allow the heater to cool down. Pentair heaters do not require a cool down time. To override the “heater cool-down,” press the Filter Pump button again to switch off the pump.

To select a single-speed pump.

Main Menu 12/13
Pumps

Menu button: Select the Pumps menu.

Pump Type
[SINGLE SPEED]

Right button: Press the button to select the pump settings.

Up/Down buttons: Select Single Speed. A single-speed pump has no assigned circuit. The pool filter schedule determines when the pump is switched on and off. For more information, see Schedules Menu on page 17.

Right button: Press this button to exit to the main menu items.

Left button: Press the Left button to return to the main status screen.

Two-speed filter pump

For a two-speed filter pump, a two-speed relay installed must be assigned as AUX 1, AUX 2 or AUX 3 so that the pump will operate at low speed when required.

Assigned circuits will automatically switch a two-speed filter pump to high speed when these circuits are switched on setup in the Schedules menu. If a two-speed pump is assigned to solar, a cleaner or a pump, when activated the pump will automatically run for five minutes in high speed then switch to low speed. For example, when on, the filter pump will switch to high speed whenever the JETS or CLEANER is on. **Note: There must be a two-speed relay installed in the SunTouch enclosure in order for the “Two-Speed” pump menu feature to work.**

Main Menu 12/13
Pumps

Menu button: Select the Pumps menu.

Pump Type
[TWO SPEED]

Right button: Press the button to select the pump settings.

Up/Down buttons: Select Two Speed.

Pump Circuits
1 - [SPA]

Right button: Move to the circuit settings for a two-speed pump. You can assign up to four circuit to the pump.

Up/Down buttons: Select up to four circuit to the pump. The circuit selections are: None, Spa, Pool, AUX 1, AUX 2, AUX 3, SOLAR, HEATER, and FREEZE.

Right button: Move to the second circuit settings for the pump. Use the UP/DOWN button to select the circuit. If necessary, repeat this process to assign the third and fourth circuit for the pump.

Left button: Press the Left button to return to the main status screen.

Pump Menu (12/13) (Continued)

IntelliFlo® 4 pump

From the IntelliFlo 4x160 menu you can assign a circuit for the IntelliFlo 4x160 pump to control four different pump speeds. The pump speed can be adjusted to run from 400 to 3450 RPM in increments of 10 RPM. For more information about the IntelliFlo 4x160 pump, refer to the IntelliFlo 4x160 Installation and User's Guide (P/N 357269).

To assign up four circuits and speeds for the IntelliFlo 4 pump:

Main Menu 12/13
Pumps

Menu button: Select the Pumps menu.

Right button: Press the button to select the pump settings.

Pump Type
[INTELLIFLO 4]

Up/Down buttons: Select IntelliFlo 4.

Right button: Move to the speed and circuit settings for the IntelliFlo 4 pump. You can assign up to four custom speeds and four circuits to the pump.

Pumps
1 - RPM: 3400

Up/Down buttons: Select the first speed option and circuit for the pump. The speed can be set from 400 to 3450 RPM in increments of 10 RPM. The default speed for each circuit is the same as the four speed buttons on the IntelliFlo 4 control panel. The preset speed for each button on the pump is: Speed 1 button 750 RPM, Speed 2 button 1500 RPM, Speed 3 button 2350 RPM, and Speed 4 button 3110 RPM.

Right button: Move to the first circuit setting for the pump. The circuit selections are: None, Spa, Pool, AUX 1, AUX 2, AUX 3, SOLAR, HEATER, and FREEZE.

Right button: Move to the second circuit settings for the pump. Use the UP/Down button to select the custom speed for the pump. If necessary, repeat this process to assign the third and fourth custom pump speed and circuit setting.

Left button: Press the Left button to return to the main status screen.

IntelliFlo 4 external control

The SunTouch system communicates with the IntelliFlo 4 pump via a two-wire RS-485 cable. For information about connecting the RS-485 communication cable from SunTouch to the IntelliFlo pump, refer to the IntelliFlo 4x160 Installation and User's Guide (P/N 357269).

Freeze Protection

Freeze protection protects the pool, plumbing, and equipment against freeze damage. If the outside air temperature sensor falls below 36° F (2° C), freeze protection is activated and the pool/spa filter pump relay is switched on to circulate the pool water. To enable freeze protection for a circuit, see page 26. In order to use the SunTouch freeze protection function, an optional sensor is required to monitor the air temperature. To enable freeze protection and display the outside air temperature on the main screen, the "AIR SENSOR" must be enabled (see Advanced Menu 8/13 on page 24). Freeze protection is enabled whenever the outside temperature is 36° F or lower. When freezing conditions are detected by the air sensor, SunTouch will switch the filter pump on and circulate pool water continuously through the pool and spa.

Note: If multiple AUX circuits are set to "ON," the circuit will run the pump at the highest assigned speed of the active circuit.

IntelliChlor Menu (13/13)

The IntelliChlor electronic chlorination system needs to be connected to the SunTouch system to use the following IntelliChlor settings. While in normal operating mode (Pool, Spa mode or Spa Fill (Spillway), SunTouch will control the chlorinator output level. When IntelliChlor is connected to the SunTouch, chlorination levels can only be changed from the SunTouch control panel. The IntelliChlor control panel will be disabled. The amount of chlorine introduced into the pool is determined by the amount of salt in the water, the water temperature and the amount of time the pool operates in “Pool/Spa” mode. **Note:** While in “Freeze Protection” mode, IntelliChlor will not operate during the time that the filter pump is operating. For more information, refer to the IntelliChlor Electronic Chlorine Generator User’s Guide (P/N 520589).

IntelliChlor

To setup IntelliChlor electronic chlorine generator:

Main Menu 13/13
IntelliChlor

Menu button: Select the IntelliChlor menu.

IntelliChlor
Enable: YES

Right button: Enable or Disable IntelliChlor setting.

Up/Down buttons: Select YES to enable or NO to disable IntelliChlor.

IntelliChlor
Pool %: 50

Right button: Move to set the chlorine level for the pool.

Up/Down buttons: Set the percentage amount of chlorine to produce in the pool. Set the chlorination output level for the pool/spa water from 0 to 100%. SunTouch will determine the chlorinator output level when the system is operating in “Spa” or “Pool” mode. The amount of chlorine introduced into the pool/sap is determined by the amount of salt in the water, the water temperature and the amount of time the pool/spa operates in these modes mode. Use the Up button to increase the percentage level, and the Down button to decrease the percentage level.

IntelliChlor
Spa %: 0

Right button: Move to set the chlorine level for the spa.

Up/Down buttons: Set the percentage amount of chlorine to produce in the spa. Set the percent level from 0% to 100% (Super Chlorination). Use the Up button to increase the percentage level, and the Down button to decrease the percentage level. **Right button:** Move to the Super Chlorination settings (see below). If you do not want to Super Chlorinate the pool/spa, press the Right button to skip these settings until the salt level/status screen displays.

Salt: 2900 ppm
[OK - NO ERRORS]

IntelliChlor status and error messages:

Up/Down buttons: The current pool/spa salt level (ppm) is displayed on the screen. If an IntelliChlor error is detected, an error message will be displayed on the screen. To view the IntelliChlor status and error messages, see “IntelliChlor Status and Error Messages” on page 32. Press the Right button to return to the main menu items.

IntelliChlor
Super Chlor: YES

SuperChlorination:

Up/Down buttons: Select YES to enable Super Chlorination or “NO” to disable SuperChlorination.

IntelliChlor
Run Hours: 12

Right button: Move to the Super Chlorination “Run Hours” setting.

Up/Down buttons: Set the number of hours to run Super Chlorination. 24 hours is the default setting. The run hours can be set from 0 to 72 hours. Use the Up button to increase the run hours, and the Down button to decrease the run hours.

Salt: 3200 ppm
[SUPR CHLRINATE]

Right button: Move to the Super Chlorination salt level setting.

Up/Down buttons: Set the salt level in ppm. Settings are from 0 to 12750 ppm in 50 ppm increments. Use the Up button to increase the salt ppm level, and the Down button to decrease the salt ppm level.

Left button: Press the Left button to return to the main status screen.

IntelliChlor Menu (13/13): Status and Error Messages

If an error alert, or warning is detected by IntelliChlor, the error message will be displayed on the SunTouch control panel screen. All status and error messages can be viewed from the IntelliChlor menu. For troubleshooting information, refer to the IntelliChlor Electronic Chlorine Generator User's Guide (P/N 520589).

To view the IntelliChlor status and error messages:

Main Menu 13/13
IntelliChlor

Menu button: Select the IntelliChlor menu.

Right button: Press the button until the Salt status screen is displayed.

Displays the current IntelliChlor chlorination system status.

Salt: 3200 ppm
[OK - NO ERRORS]

Left/Right button: Press the Left or Right button to return to the main status screen.

IntelliChlor status and error messages:

SALT LEVEL: Displays the current salt level. Values from 0 to 12750 ppm in 50 ppm increments.

IntelliChlor Status and Error messages:

SUPER CHLORINATE: IntelliChlor is in Super Chlorination mode. For information

COM LINK ERROR: Check cable from IntelliChlor to SunTouch motherboard.

Check FLOW/PCB: Check IntelliChlor electrolytic cell controller. Refer to IntelliChlor User's Guide troubleshooting information.

LOW SALT: Add salt to pool water. The water salt level is between 2500 ppm and 2950 ppm. The IntelliChlor will continue to produce chlorine at a reduced level.

VERY LOW SALT: Not enough salt in pool. The water salt level has fallen below 2500 parts per million (ppm). IntelliChlor will not produce chlorine until additional salt is added manually.

HIGH CURRENT: Check IntelliChlor electrolytic cell controller. Refer to IntelliChlor User's Guide troubleshooting information.

CLEAN CELL!: Cell has calcium build up and requires cleaning. Refer to IntelliChlor User's Guide for cleaning instructions.

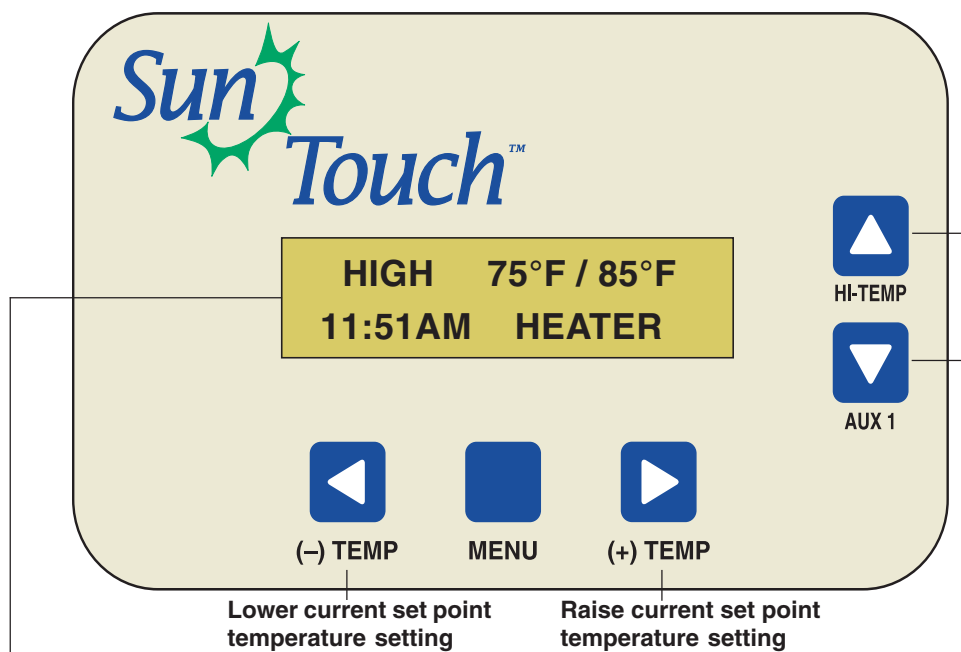
LOW VOLTAGE: Check IntelliChlor electrolytic cell controller. Refer to IntelliChlor User's Guide troubleshooting information.

OK - NO ERRORS: IntelliChlor is in normal operating mode.

About Super Chlorination: The Super Chlorination feature is used to introduce large amounts of chlorine into the pool water if there has been heavy rain fall, many bathers in the pool, cloudy water conditions, etc. When Super Chlorination is enabled, the system will switch on the filter pump, set the pool/spa valves to the correct position, and set the IntelliChlor chlorine generator to maximum output. This process continues for 24 hours. At the end of the Super Chlorination process, the pool will return to normal operation. It is possible to manually stop the Super Chlorination process and switch off the filter pump in the "Circuit On/Off" menu (see page 13). When the filter pump is switched on again, the Super Chlorine process will resume for the duration of time left.

SunTouch Main Status Screen (Pool/Spa Mode - Single Body System)

Use the SunTouch display to view the daily operations of your spa or pool. Using the UP arrow button (HI-TEMP) to manually switch the filter pump on and off and activate the heater. LOW temperature control can also be assigned to the UP arrow button. The “HIGH” and “LOW” circuit can be programmed to run at a specific time and heat setting. These circuits are assigned in the “Circuit Functions” menu (see page 26). Before using SunTouch to operate a single body system (pool only or spa only), familiarize yourself with the status screen and control buttons.



HI-TEMP/LO-TEMP button: Turn heater and filter pump on or off. To activate the heater when this button is pressed, first select heat source in the “Heat 2/13” menu (page 14). To manually switch on or off the heater, use “Manual Heat” in the “Heat 2/13” menu. The heat temperature settings are displayed on the main screen. This button can also be assigned for LOW temperature control (see page 34).

AUX 1: When this button is pressed, the circuit relay connected to AUX 1 is switched on and the number 1 is displayed on the lower right-side of the screen. AUX 1 can also be switched on and off manually from the “Circuit On/Off” menu (see page 13). Auxiliary functions are assigned in the “Circ. Function” menu (see page 26). AUX 1 can be assigned to operate accessory equipment such as pool and spa lights.

AIR 77°F FRZ 11: 51AM AUX 1 **AIR:** Displays the outside air temperature via the air sensor located near the pool area. This screen toggles between the “Pool” or “Spa” display (see below). To display the air temperature setting, the air sensor must be enabled (see “Advanced” menu on page 24). Degree units are displayed in either Fahrenheit or Celsius. If the top display line displays “SunTouch”, it indicates no spa or pool function is active and the air sensor is not enabled.

AIR 77°F FRZ 11: 51AM AUX 1 **FRZ:** Indicates the air sensor is connected and enabled, and “Freeze Protection” is active (see page 26).

HIGH 75°F / 85°F 11:51AM HEATER **HIGH:** When the Up arrow button is pressed or this circuit is scheduled to operate, the “HIGH” filter pump circuit is switched on and current water temperature settings are displayed with the type heat source being used. “HIGH” and “LOW” are displayed alternatively if both circuits are active.

LOW 75°F / 85°F 11:51AM HEATER **LOW:** When the Down arrow button is pressed or this circuit is scheduled to operate, the “LOW” filter pump circuit is switched on and current water temperature settings are displayed with the type heat source being used. “HIGH” and “LOW” are displayed alternatively if both circuits are active.

HEATER: Displays the heat source (**Heater, Solar Prf., Solar**) as specified in the “Heat” menu settings (see page 14). If heat is enabled, when the pool filter pump is switched on, the heat source is displayed.

75° F / 85° F: Displays the actual spa or pool water temperature (75° F) and the set point temperature (85° F) as set in the “Heater” menu (see page 14). To adjust set temperature setting use the (-) TEMP and (+) TEMP buttons.

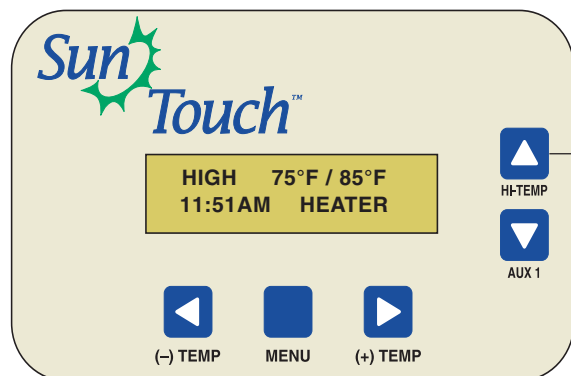
Time: Displays the SunTouch system time as set in the “Clock” menu setting (see page 19).

AIR 77°F 11: 51AM AUX 123 **AUX 1 2 3:** Displays AUX 1, 2, 3 (lower line) when these auxiliary relay circuits are switched on. Press the AUX 1 (1) button to manually switch auxiliary 1 on or off. AUX 2, and AUX 3 can be switched on and off manually from the “Circuit On/Off” menu (page 13). Auxiliary functions are assigned in the “Circ. Function” menu (page 26).

AIR 77°F 11: 51AM AUX D **AUX D:** “D” indicates the selected circuit (AUX 1,2,3) is in “delay” mode. For example, if AUX 2 is assigned to a cleaner, when the auxiliary circuit 2 is switched on via the “Circuit On/Off” menu setting, this will force the filter pump on for five (5) minutes before the cleaner pump switches on. See “Circuit Functions Menu” (page 26) for more information.

High/Low Temperature Circuit Control (Single Body System)

HI-TEMP / LO-TEMP Circuit Control



Use **HI-TEMP button** to switch on the heater and filter pump for high temperature control. To activate the heater when this button is pressed, first select the heat source in the “Heat 2/13” menu (page 14). To manually switch on or off the heater, use “Manual Heat” in the “Heat 2/13” menu. The HIGH circuit can be programmed to switch on and off at a specific time (see “Schedules” page 17). Freeze protection (see page 26) can also be assigned to the HIGH circuit. The heat temperature settings are displayed on the main screen.

LOW Temperature control circuit: The HI-TEMP (UP arrow button) can be assigned as a low temperature control button. Use the LOW temperature circuit to switch on the heater (when heater is enabled) and filter pump. To activate the heater when this circuit is enabled, first select the heat source in the “Heat 2/13” menu (page 14). To manually switch on or off the heater, use “Manual Heat” in the “Heat 2/13” menu. The LOW circuit can be programmed to switch on and off at a specific time (see “Schedules” page 17). Freeze protection (see page 26) can also be assigned to the LOW circuit. The heat temperature settings are displayed on the main screen. For more information, see the SunTouch main menu on page 35.

SunTouch Single Body System Notes

- The “SPILLWAY” circuit selection in the “Circ.Functions” menu has no function.
- When using a 2-Speed relay, AUX 3 is assigned to the “HIGH” circuit.

Setting up SunTouch to operate as a Single Body system

To setup SunTouch as a “Single Body” of water system (pool only or spa only):

Main Menu 8/13
Advanced

Menu button: Select the Advanced menu (8/13).

Right button: Select the System Type setting.

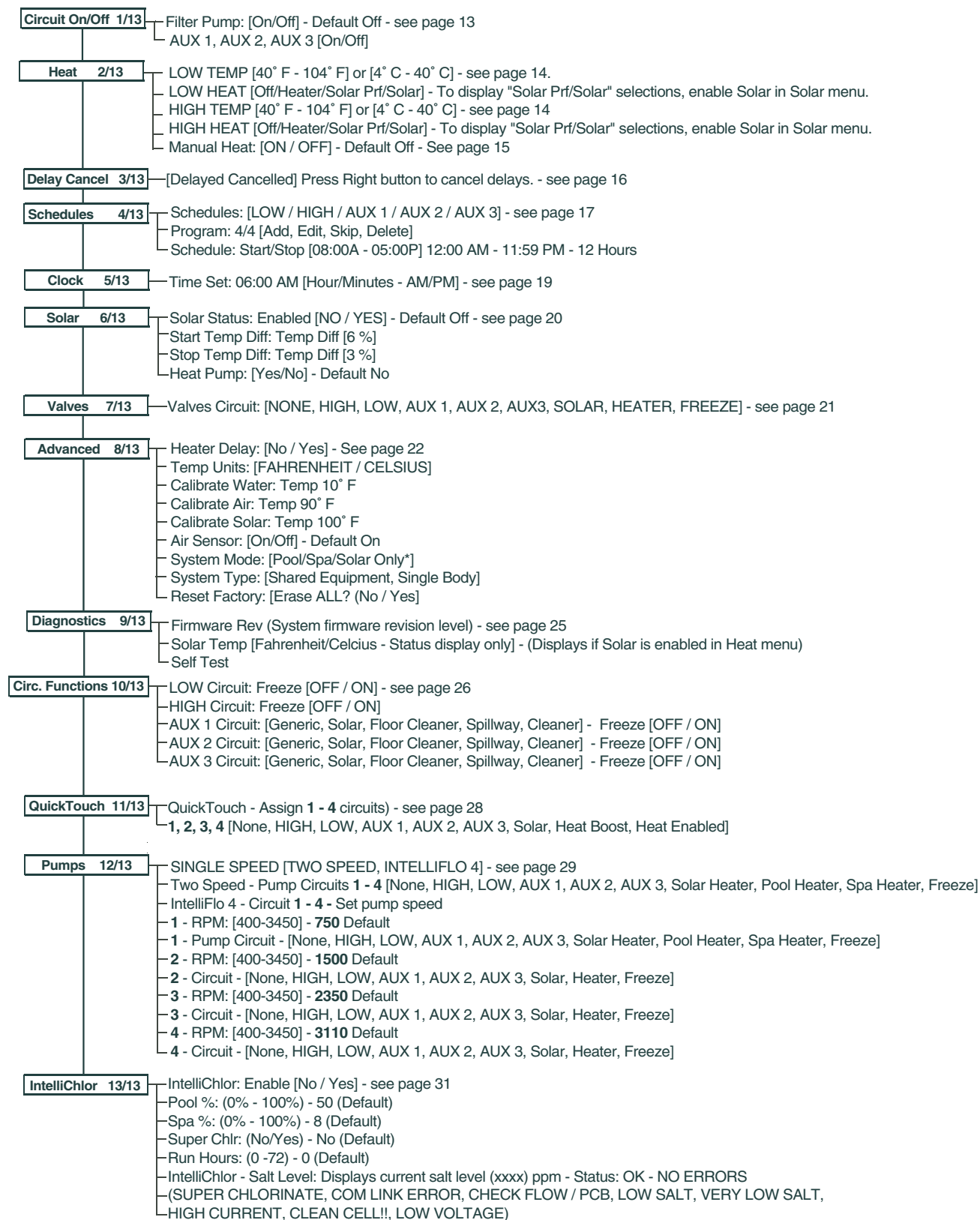
System Type
Single Body

Up/Down button: Select Single Body to configure SunTouch as a single body of water system.

Left button: Press the Left button to return to the main status screen.

Pool/Spa Mode (Single Body of Water) Menus

For menu descriptions, see “The Pool/Spa Mode Menus” on page 13.



Note: (*) "SOLAR ONLY" menus see page 6.

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Section 2

Installation and Setup

SunTouch System Installation Steps Summary

The recommended SunTouch system installation steps are:

- 1 **Review, prepare and install SunTouch Power Center (pages 44):** Review high voltage connections. Prepare and install the SunTouch Power Center at the equipment pad. AC power for SunTouch should be provided from the main-panel circuit breaker located at the house.
- 2 **Remove SunTouch Power Center knockouts, install conduit and low voltage wire to the Power Center (page 48).**
- 3 **Install Auxiliary Relays and Valve Actuators (page 53-55):** Install auxiliary relays, valve actuators, and connect actuator cables to the SunTouch motherboard (VLV A, VLV B, or VLV C).
- 4 **Install Temperature Sensors and Heat Thermostat (page 56):** Install water and air sensors. Connect sensor cable plugs to the SunTouch motherboard.
- 5 **Optional Equipment - Connecting IntelliChlor and IntelliFlo 4x160 pump (page 51):** Connect the IntelliChlor and IntelliFlo 4x160 communication cable to the SunTouch motherboard to connector COM PORT.
- 6 **SunTouch System Start-up (page 60):** Perform a system start-up procedure.
- 7 **Setting up SunTouch after equipment installation via main menu (page 61):** Configure the SunTouch control panel via the main menu for installed equipment.

Required Tools

- 3/16 in. diameter drill (for mounting the SunTouch Power Center)
- 5/16 in. diameter drill (for mounting water temperature sensor)

SunTouch Solar Package Contents

SunTouch Solar (P/N 520819)

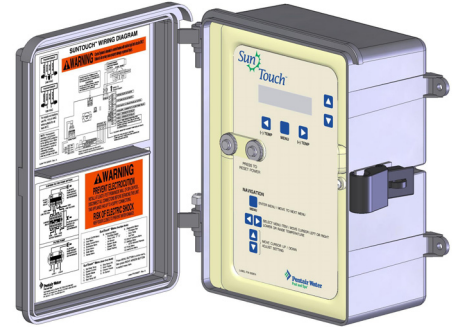
- SunTouch Power Center - QTY 1
- Valve actuator assembly (P/N 263045) - QTY 1
- Solar valve (P/N 263047) - QTY 1
- Temperature sensors (20 ft. water, solar 40 inches) - QTY 2

SunTouch Solar with non-solar 3-way valve (P/N 520856)

- SunTouch Power Center - QTY 1
- Actuator (P/N 263045) - QTY 1
- Valve, three-way (P/N 263026) - QTY 1
- Temperature sensors - (20 ft. water, solar 40 inches) - QTY 2

SunTouch Booster Pump Version (P/N 520857)

- SunTouch Power Center - QTY 1
- Relay (P/N 520106) - QTY 1
- Temperature sensors (20 ft. water, solar 40 inches) - QTY 2



SunTouch Power Center

SunTouch Pool/Spa Package Contents

SunTouch Single Body (P/N 520859)

- SunTouch Power Center - QTY 1
- Relay (P/N 520106) - QTY 3
- Temperature sensors (20 ft. water, air 40 inches) - QTY 2

SunTouch Power Center (P/N 520820)

- SunTouch Power Center - QTY 1
- Actuator (P/N 263045) - QTY 2
- Relay (P/N 520106) - QTY 3
- Temperature sensors (20 ft. water, air 40 inches) - QTY 2

Accessories

- QuickTouch remote controller kit (P/N 520148)
- Relay (P/N 520106)
- Temperature sensor (P/N 520272)
- Two-Speed pump relay (P/N 520198)
- Emergency Shut-Off Switch with audible alarm (P/N ES03)

Replacement Parts

- SunTouch Power Center door (P/N 520814Z)
- SunTouch Power Center door Latch (P/N LXLATCH)
- Temperature sensor kit (20 ft.) - (P/N 520272)
- SunTouch circuit board (P/N 520645Z)
- QuickTouch remote controller (P/N 520129)
- QuickTouch antenna replacement (P/N 520241)
- QuickTouch circuit board assembly (P/N 520419)
- Standard transformer kit (P/N 520841Z)

Optional Equipment

- IntelliChlor Electronic Chlorine Generator Electrolytic Cell (model IC20 (P/N 520554) or IC40 (P/N 520555))
- IntelliFlo 4x160, pump (P/N 011013)



CVA-24T Valve Actuator
(P/N 263045)

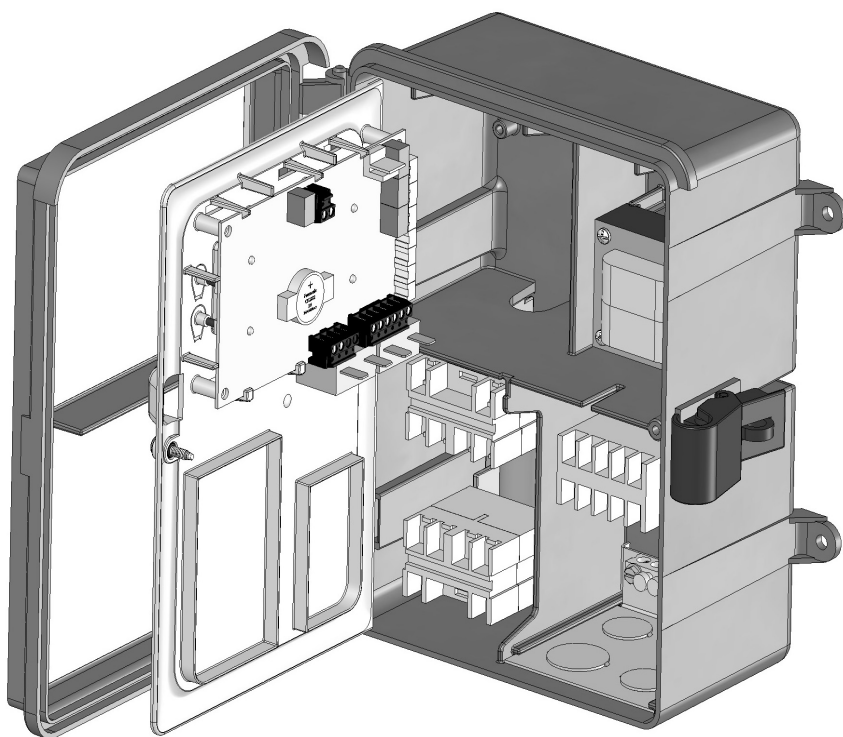


PTV-2TS 3-Port Valve
(P/N 263047)



10 k Ω Temperature Sensor
(P/N 520272)

SunTouch System Overview



QuickTouch (QT4)
Wireless remote kit
(P/N 520148)
(Optional)

Temperature Sensors
(Water, Air and Solar)

SunTouch enclosure (with two
resettable circuit breakers
(18 VAC and 24 VAC).

Electrical Ratings:

Input:
120/240 VAC, 60/50 Hz,
820/410 mA maximum.

Output:
120 VAC, 20 FLA/120 LRA,
1.5 HP.
277 VAC, 17 FLA/120 LRA,
3.0 HP.
20 AMP Tungsten, 50/60 Hz.

- **Pumps**
Filter, Cleaner, Spa Jet -
1.5 HP 120 VAC
3 HP 277 VAC
20 FLA/120 LRA, 120 VAC
17 FLA/102 LRA, 277 VAC
- **Pool/Spa Lights**
1.5 KW 120 VAC Tungsten
4.8 KW 240 VAC Tungsten
20 AMP, 277 VAC Ballast
- **Pool/Spa Valve**
Suction and return.
24 VAC valve actuator,
shared equipment only
- **Valve actuators**
Valve A (intake), Valve B
(return), Valve C (Solar)
- **Heater**
Gas, Electric, and Solar
- **Relays**
25 AMP, 277 VAC

Optional equipment

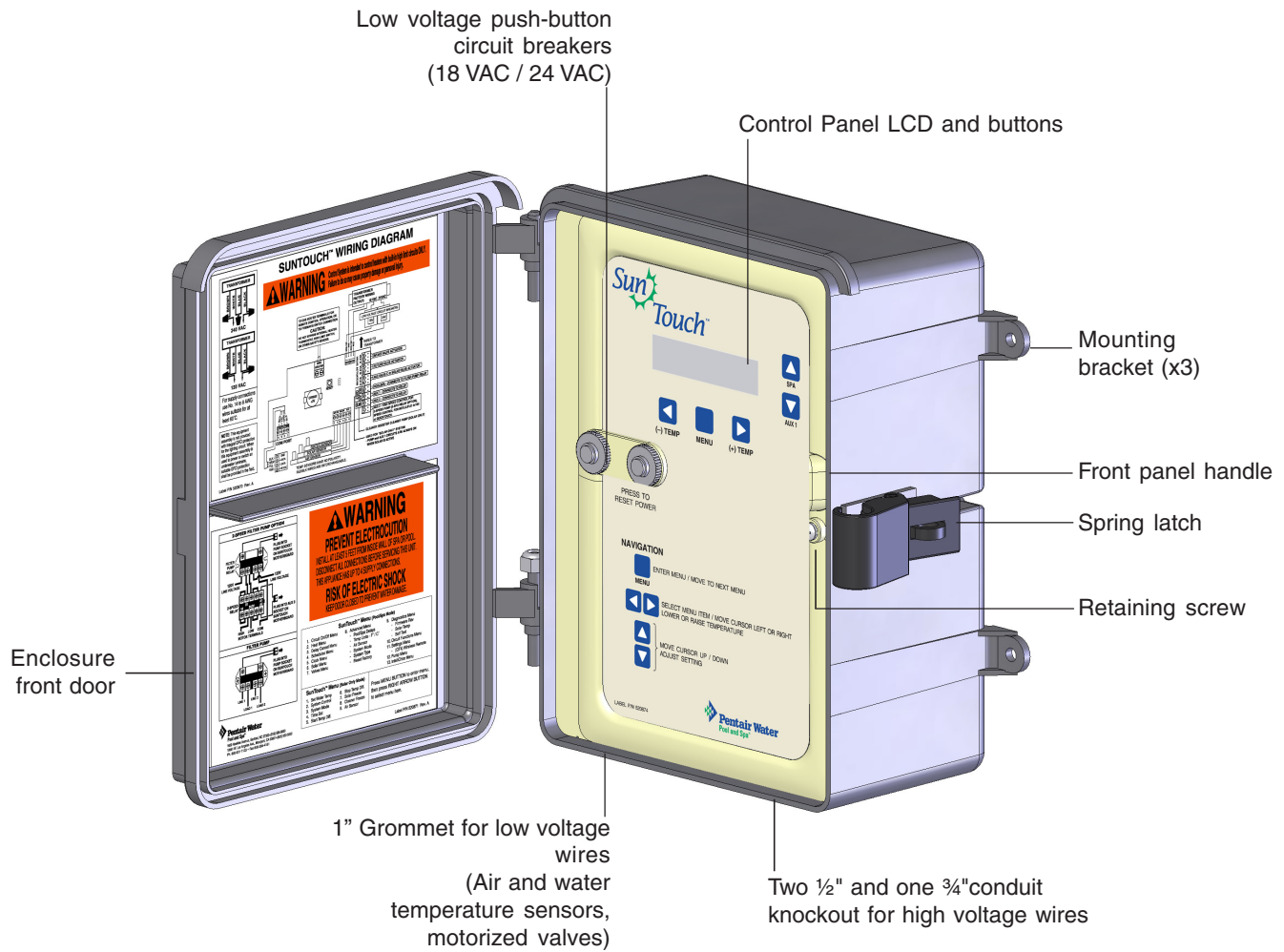


- IntelliChlor Salt Chlorine
Generator (SCG)
- IC20 P/N 520554/520556
- IC40 P/N 520555/520556
- Power Center
P/N 520556



- IntelliFlo 4x160
P/N 011013
(see page 30)

SunTouch Power Center (Front View)



SunTouch Power Center (Front View)
(14" H x 12" W x 4 3/4" D)

Plumbing Requirements

It is important that the pool and spa plumbing system be in accordance with local codes and the Recommended Hydraulic Schematics. Before starting, please review the diagrams and the following recommended guidelines:

The spa should be at or above the level of the pool.

- 1 If the spa is attached to the pool, provide a dam between the two bodies of water to allow the spa to overflow into the pool. If the spa is not attached to the pool, an overflow, sufficient in size to carry a full pump-flow, must be installed at the water level in the spa.
- 2 Plumb a three-port **Intake Valve** (VLV A) on the suction-side of the filter pump, so that the center port of the valve is connected to the pump inlet. Connect the spa suction to one side of the Intake Valve, and the pool suction to the other side.
- 3 Plumb a three-port **Return Valve** (VLV B) on the return-side of the heater, so that the return water will enter the valve through the center port.

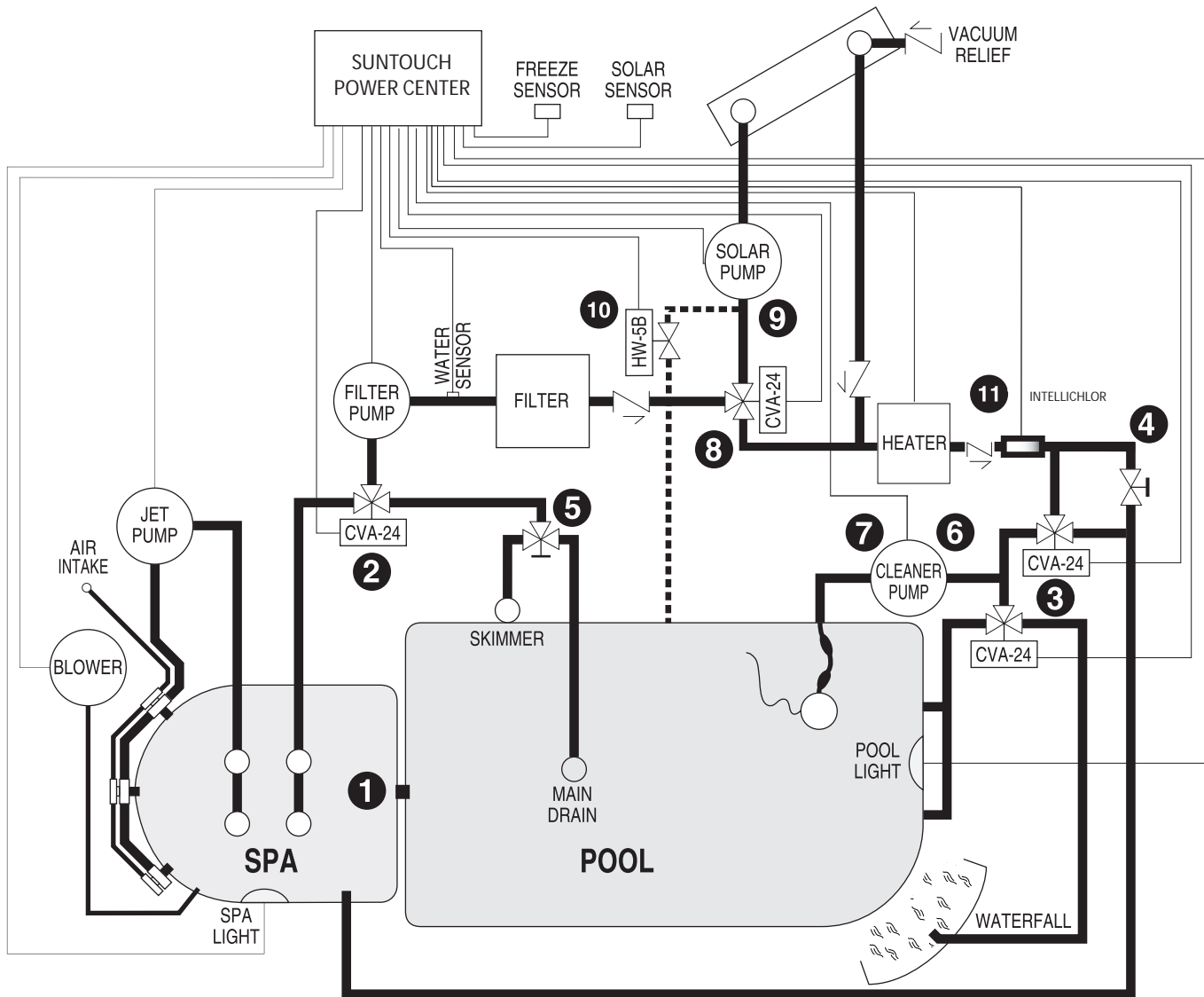
Connect the spa return to one side of Return Valve, and the pool return to the other side.

- 4 If required, install a spa makeup line (consisting of a manual gate or ball valve, for elevated spas install a check valve) to bypass the pool return line. This will enable some of the chemically-balanced water from the pool to cycle through the spa. The manual valve will allow the amount of bypass to be adjusted.
- 5 For systems which incorporate a skimmer, it is possible to balance the amount of suction between the skimmer and main drain for maintenance purposes. This is easily accomplished by installing a manual three-port mixing valve at the suction line. Plumb one port to the skimmer and the other to the main drain.
- 6 If a “non-booster pump” pressure-side pool cleaner is being used, plumb a manual three-port valve between the filter pump and filter, with the third port plumbed to the pool cleaner line, and install a motorized two-port **Pool Cleaner Valve** at this line. The motorized valve will automatically open whenever the SunTouch activates the pool cleaner.
- 7 If a booster pump pool cleaner is being used, plumb the booster pump so that its suction-side is connected to the pool return, after the heater, and as close to the ground as practical.

- 8 Plumb the solar feed and return lines between the filter and the heater. Install a three-port valve at the feed line. Use a solar valve (P/N 263047), to allow automatic draining of the panels.
- 9 A solar booster pump should be used when the distance to the panels exceed 200 ft., or the panels are elevated higher than 25 ft.
- 10 Glazed solar panels require a drain valve to allow draining of the panels. This prevents damage from overheating water. Install a drain valve at the solar feed line and connect to the pool fill line.

Equipment Location

All equipment, with the exception of the spa-side remote, must be located at least 10 ft. from the water's edge.

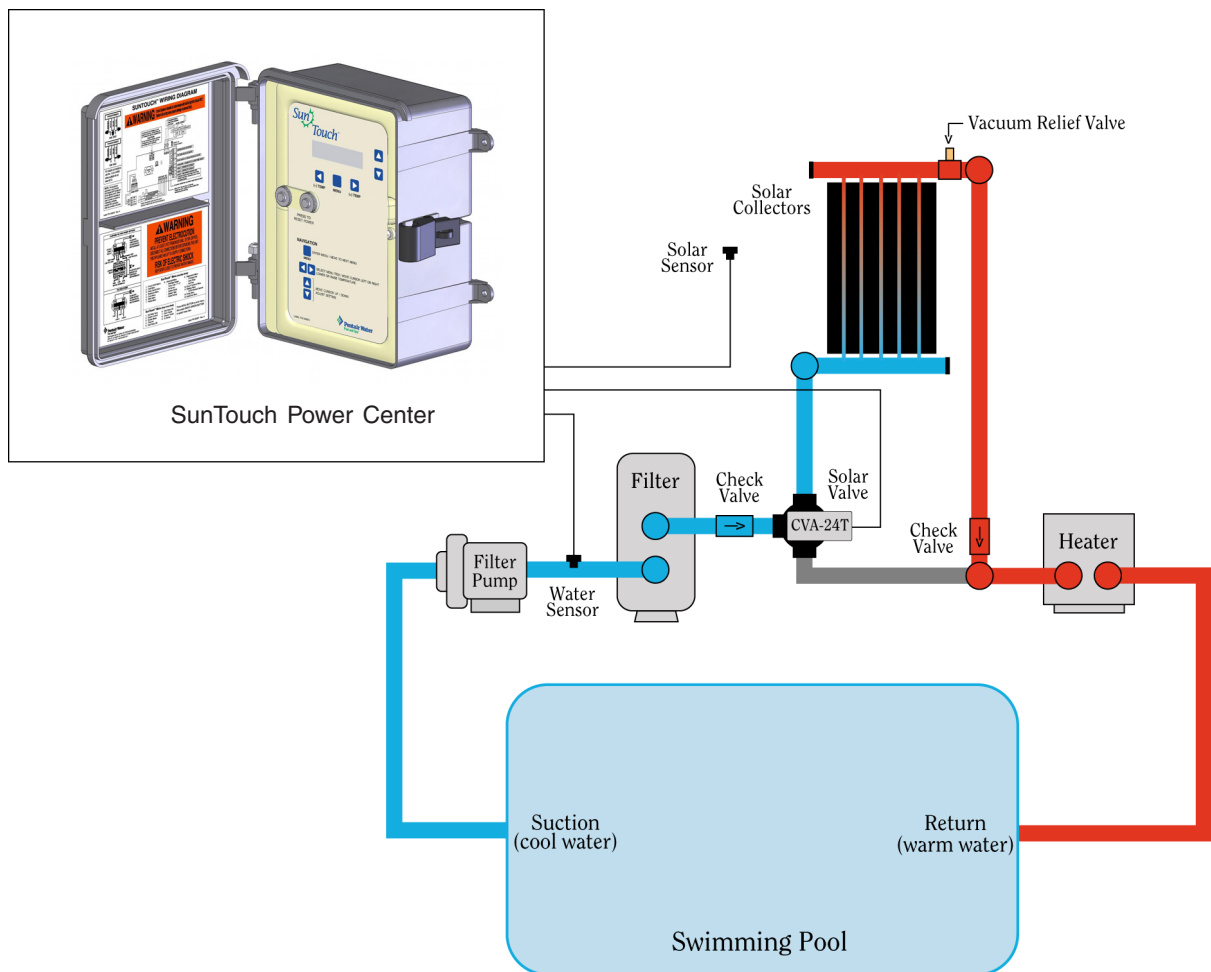


Recommended Hydraulic Schematic for Shared Equipment System

Solar Hydraulics System


Plumb the SunTouch solar system in accordance with recommended hydraulics shown below.

- 2" diameter plumbing is advised to ensure maximum flow of water through the solar panels. A solar booster pump should be added if panels are installed at a very high elevation.
- It is recommended that the solar panels are mounted in a way that gravity will allow draining whenever the filter pump is not on.
- For systems with glazed panels, damage can occur from overheating if the filter pump is still running after the solar has turned off. To enable glazed panels to automatically drain whenever the solar turns off (even if the filter pump is still running), a 1/2" motorized solar drain valve should be plumbed from the solar feed line, through a check valve, to a zero psi point (such as pool fill line or jet air intake).



Recommended Hydraulic Schematic for Single Body Equipment System

SunTouch Power Center High Voltage Connections

 **WARNING** BEFORE OPENING THE FRONT PANEL OF THE SUNTOUCH POWER CENTER TO ACCESS THE HIGH VOLTAGE COMPARTMENT AND LOW VOLTAGE RACEWAY, SWITCH THE MAIN POWER OFF INTO THE HOME AT THE MAIN CIRCUIT BREAKER BOX, AND SWITCH OFF THE MAIN POWER TO THE SUNTOUCHPOWERCENTER.

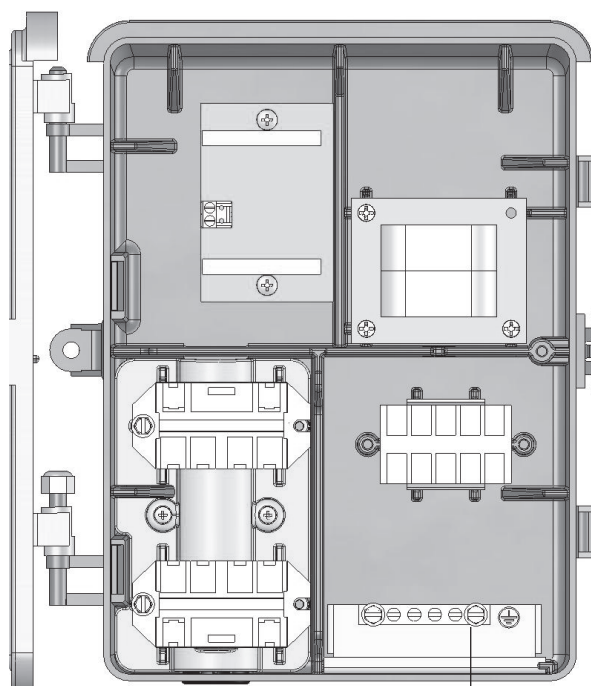
SunTouch Power Center Location

Before installing the SunTouch Power Center read the following guidelines:

- AC power for the SunTouch Power Center must be provided from the main circuit breaker panel located at the house.
- All electrical equipment must be installed at least five (5) feet from pool and/or spa, and comply with all national, state, and local codes.
- Install the SunTouch Power Center no less than five (5) feet from pool or spa near to the pumps, heater, valves, and sensors. Mount the Power Center outside or inside a pool equipment house or other enclosure.
- Before choosing the final location for the SunTouch Power Center, consider the length of the wires and valve wires that have to be connected to the enclosure. Make sure to consider cable lengths for the sensors to the SunTouch Power Center location. The air temperature sensor cable is 3 feet long and the water temperature sensor is 20 feet long.
- Mount the SunTouch Power Center on a flat vertical surface or wall so that the conduit knockouts are located at the bottom of the enclosure. Upper and lower brackets are provided to mount the Power Center to a vertical surface.
- DO NOT mount the SunTouch Power Center horizontally. Water can enter the conduit knockouts and cause damage to the system and an electrical shock hazard.
- Consider the SunTouch Power Center location when routing the conduit carrying the AC power to the SunTouch Power Center, and the conduit that will be run to the high voltage equipment.
- All SunTouch high voltage double pole relays and are rated at 3HP/30A at 240 VAC (1½ HP/30A at 120 VAC).
- Install the SunTouch Power Center so that drainage is provided for all electrical components.
- Motors should have built-in thermal protection.
- Allow for unobstructed access to the front of the SunTouch Power Center for the owner or service personnel.
- The SunTouch Power Center provides grounding screw terminals for grounding all equipment. All equipment including the SunTouch Power Center must be bonded to earth ground.

Grounding and Bonding to the SunTouch Power Center

Connect a ground wire from the primary electrical panel to the SunTouch ground bus bar. Also ground each piece of high voltage (120 VAC or 240 VAC) equipment that is connected to the SunTouch Power Center relays. The SunTouch Power Center must also be connected to the pool bonding system using an 8 AWG (minimum) wire. An earth terminal for bonding is provided on the grounding bus bar inside the Power Center. For input AC wiring information, see page 50.



Grounding Bus Bar
(three terminals for
relays and one for main
AC ground wire)

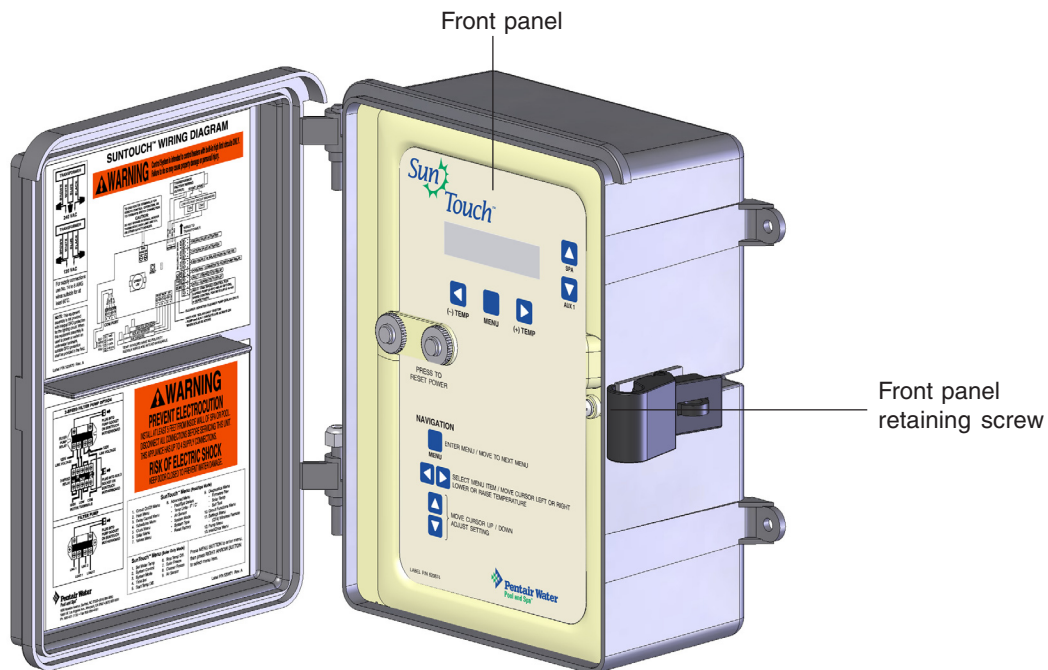
Preparing the SunTouch Power Center

Before mounting the SunTouch Power Center, first open the front door and the front panel to access the conduit knockouts and low voltage raceway.

Opening the front panel

To access the SunTouch Power Center electronics compartment:

1. Unlatch the front door,
2. Loosen the retaining screw on front panel. Open the hinged front panel to access the electronics compartment.
3. Proceed with:
 - **Mounting the SunTouch Power Center**, page 47
 - **Removing Electrical Conduit Knockouts**, page 48
 - **Installing Conduit and Wire to the SunTouch Power Center**, page 49
 - **Transformer Connections**, page 50
 - **SunTouch Motherboard Connections**, page 51
4. After all electrical connections have been completed, close the front panel and secure it with the retaining screw.



SunTouch Power Center (Shared Equipment System)

Mounting the SunTouch Power Center

The SunTouch Power Center can be mounted on a flat vertical surface, such as a wall or post.

Note: Select a convenient location to mount the SunTouch Power Center, making sure that the location is greater than 5 feet from the pool or spa and no further than 15 feet from the pool/spa valve.

To mount the SunTouch Power Center:

1. Position the SunTouch Power Center against the vertical flat surface. If wall anchors are being used, support the SunTouch Power Center in position (horizontally level and square) against the surface and mark the bracket hole pattern on the wall.
2. Secure the Power Center with three (3) screws in the mounting bracket holes. If using wall anchors, use 3/16" drill and set the anchors and secure the enclosure with screws.

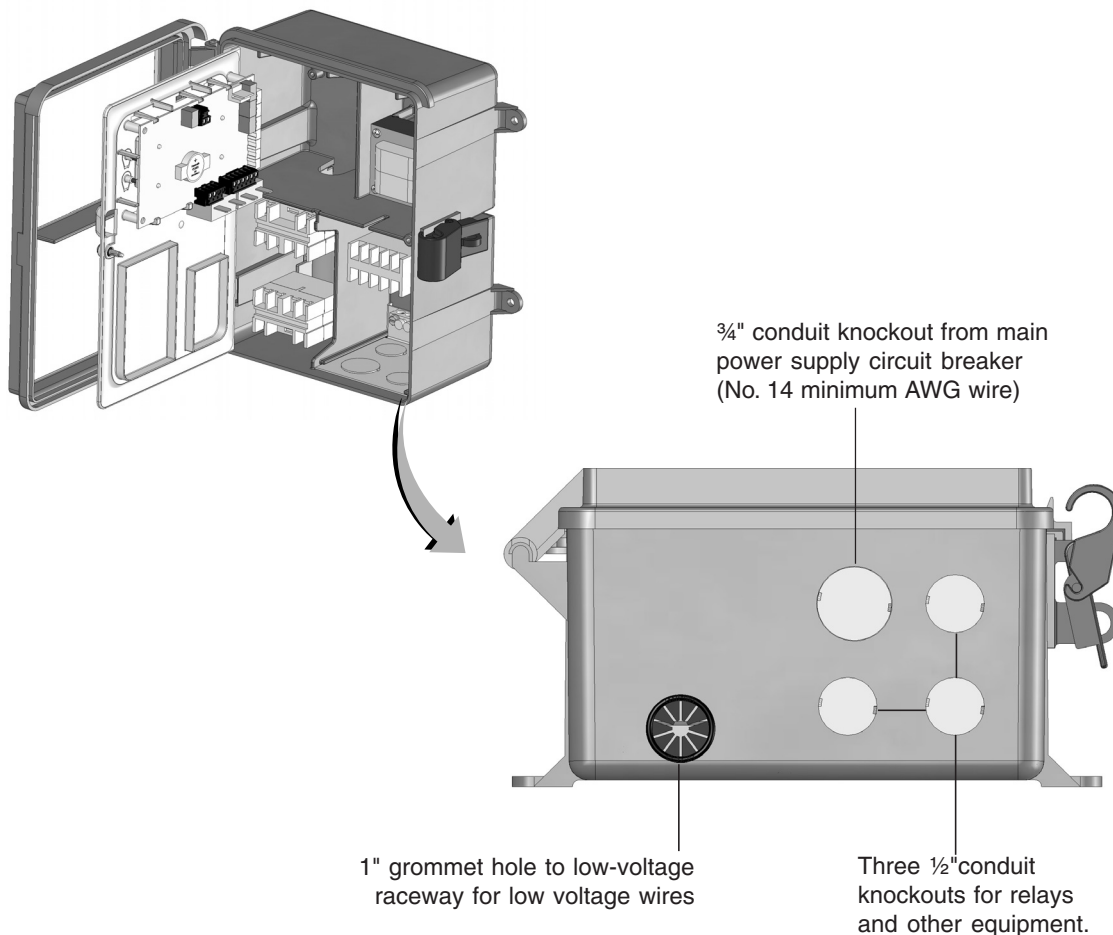


SunTouch Power Center Mounting Brackets

Removing Electrical Conduit Knockouts

Before installing SunTouch power center electrical conduit, read the following recommended guidelines. Remove the power center conduit knockouts as needed:

- Determine the number of low and high voltage circuits being used in the SunTouch power center, the conduit size and runs needed based on the wire size, and the number of conductors within the conduit.
- The conduit knockouts are located underneath of the SunTouch power center. There are three ½" and one ¾" conduit knockouts. It is recommended to use ¾" conduit for the main AC power conductors.
- There is one 1" grommet hole located underneath the power center to access the low-voltage raceway. Use this opening for low voltage cables (sensor wires, IntelliFlo 4x160 and IntelliChlor cables).
- Follow manufactures instructions when installing and testing of ground fault circuit breakers (GFCB) and interrupters (GFCI).



SunTouch Power Center Conduit Knockouts

Installing Conduit and Wire to the SunTouch Power Center

- Use No. 14 (min.) to No. 6 (max.) AWG for power relay circuits depending on the power requirement. Be sure to follow all regulation safety codes for the number and size of conductors that can be installed in various sizes of conduit.
- Supply circuit must be protected by suitable circuit breaker.
- To avoid obstruction into the SunTouch power center, when using electrical conduit complete the installation of the conduit before concrete is poured. Also, underground conduit should be positioned in well compacted soil. Ensure that all conduit joints are well sealed and watertight.

⚠ WARNING! When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:



IMPORTANT SAFETY INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS. READ AND FOLLOW ALL INSTRUCTIONS.

- **DANGER! RISK OF ELECTRIC SHOCK, WHICH CAN RESULT IN SERIOUS INJURY OR DEATH.** Before attempting installation of service, ensure that all power to the circuit supplying power to the system is disconnected/turned off at the circuit breaker.
- Grounding (earth bonding) is required. The SunTouch Power Center should be installed by a **qualified professional**.
- **Read Safety Precautions and Important Instructions (page iv and v). Before attempting any electrical wiring, be sure to read and follow Safety Instructions. Wiring should only be performed by a qualified professional.**

TO AVOID AN ELECTRICAL HAZARD - Do not connect the power source conductors to the SunTouch power center until all electrical connections for all equipment (heaters, pumps, motorized valves, and lights etc.) have been completed.

- Follow manufactures instructions when installing and testing of ground fault circuit breakers (GFCB) and interrupters (GFCI).
- For the main AC power conduit, it is recommended to use the 3/4" conduit knockout located directly under the enclosure.
- Use the 1" grommet low voltage raceway opening located on the underside of the SunTouch power center for the temperature sensor wires. For connection information (see page 51).

⚠ CAUTION All of the electrical wiring methods and materials used to complete the electrical installation of the SunTouch Pool/Spa Control System must be in accordance with the National Electrical Code or the Canadian Electric Code, as well as any local electrical codes in effect at the time of installation.

⚠ CAUTION All electrical materials used for the SunTouch installation must be accomplished by, or be under the direct supervision of a qualified electrician.

Transformer Connections

High Voltage Wiring

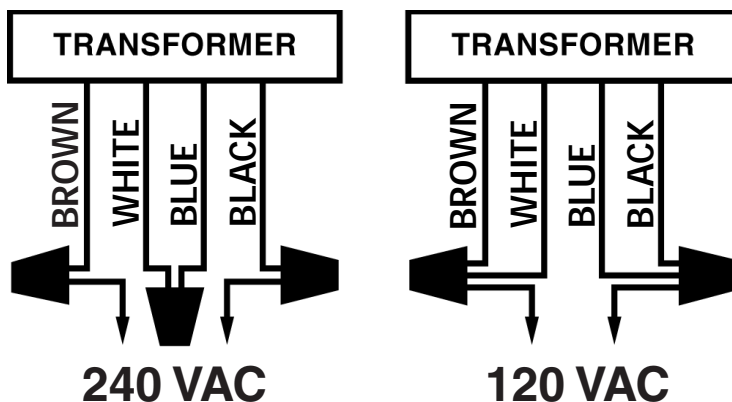
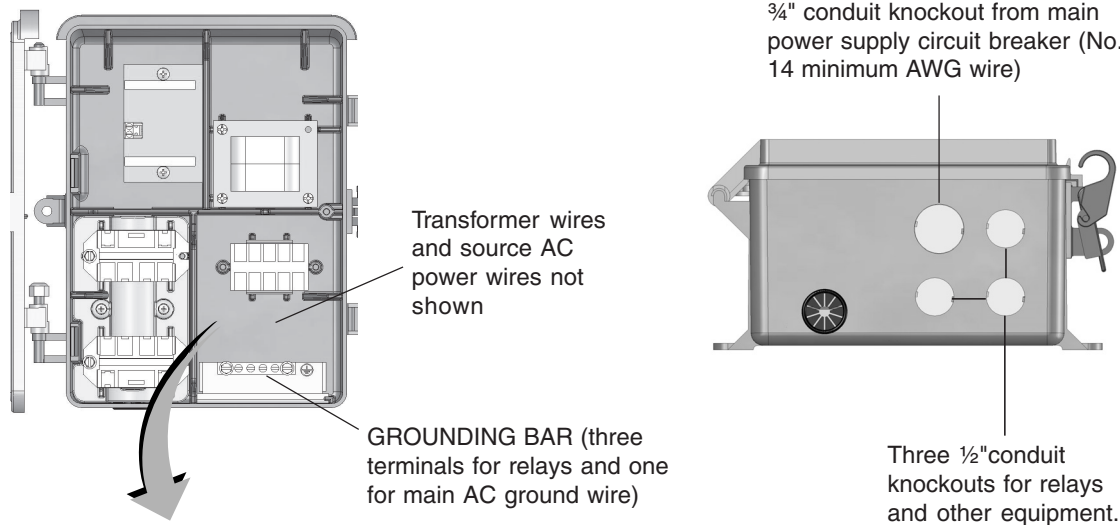
The high voltage wiring section is located inside the SunTouch enclosure. The SunTouch system can be connected either to 120 VAC or 240 VAC. The SunTouch system should be wired to receive continuous power (connect directly to sub-panel). The maximum current rating is 820/410 mA at 120/240 VAC 60 Hz/50 Hz.

- For the AC power wire into the SunTouch Power Center from the main circuit breaker at the house, use a three conductor cable. Follow manufactures instructions when installing and testing of ground fault circuit breakers (GFCB) and interrupters (GFCI).

Connect input AC wires to the SunTouch Power Center transformer wires as follows:

120 VAC: Connect one wire to the Brown/White wires and one wire to the Blue/Black wires. One wire must be connected to the grounding bar (see page 45).

240 VAC: Connect one wire to Black wire and one wire to Brown wire. The White/Blue wires are connected together. One wire must be connected to the grounding bar (see page 45).

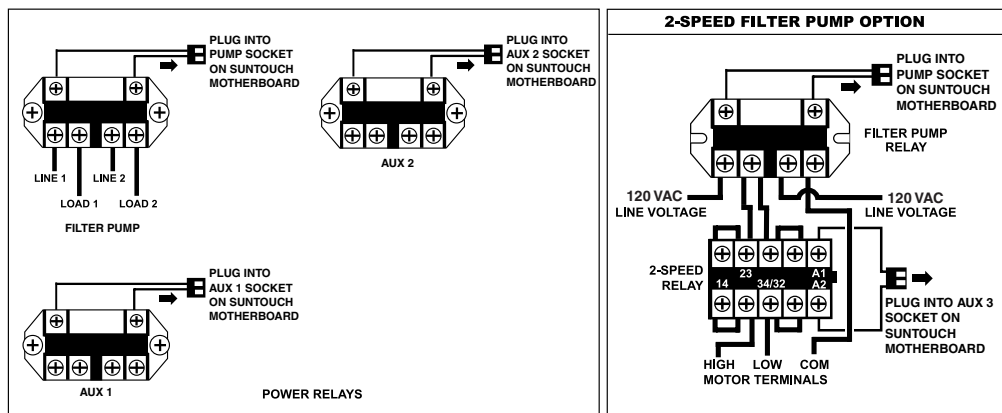
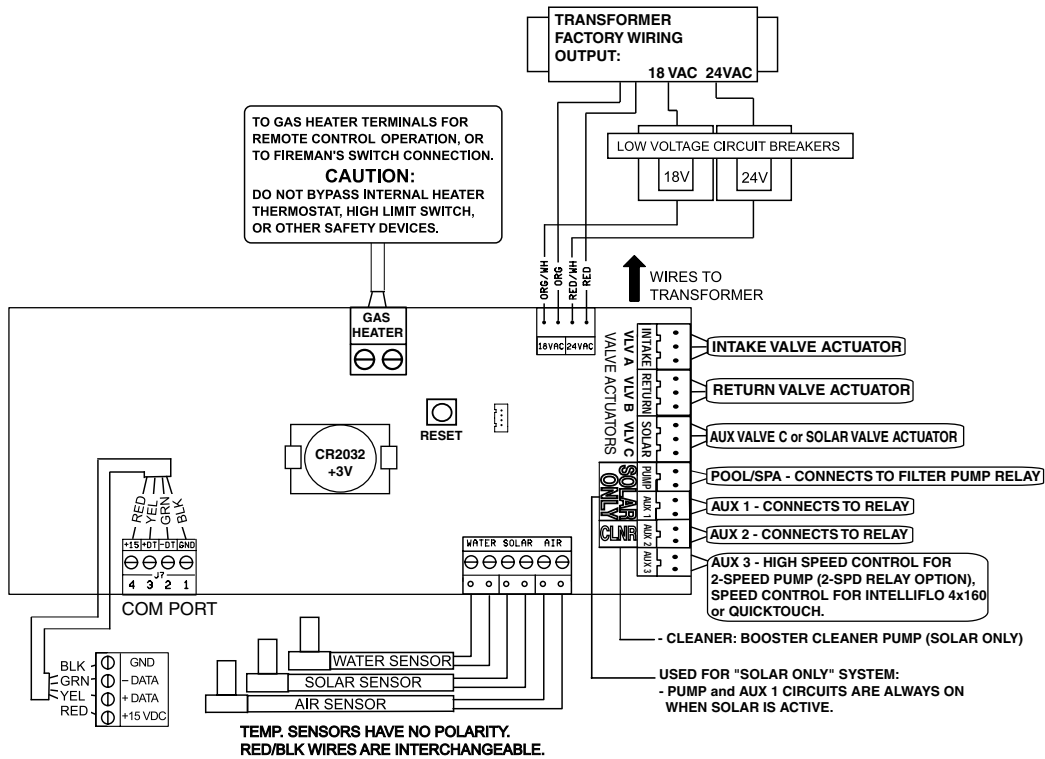


SunTouch Motherboard Connections

The SunTouch system motherboard is mounted onto the back of the control panel located in the Power Center. The motherboard provides the voltage connections to switch the filter pump, heater, auxiliary relays, motorized valves, and connections for temperature sensors. To access the motherboard, refer to “Accessing the SunTouch Motherboard,” on page 52.

Equipment Power

- It is recommended to connect the filter pump relay to an independent circuit breaker. Follow manufactures instructions when installing and testing of ground fault circuit breakers (GFCB) and interrupters (GFCI).
- The SunTouch Power Center can house a maximum of three power relays. Connect pumps and other high-voltage equipment to the power relays.



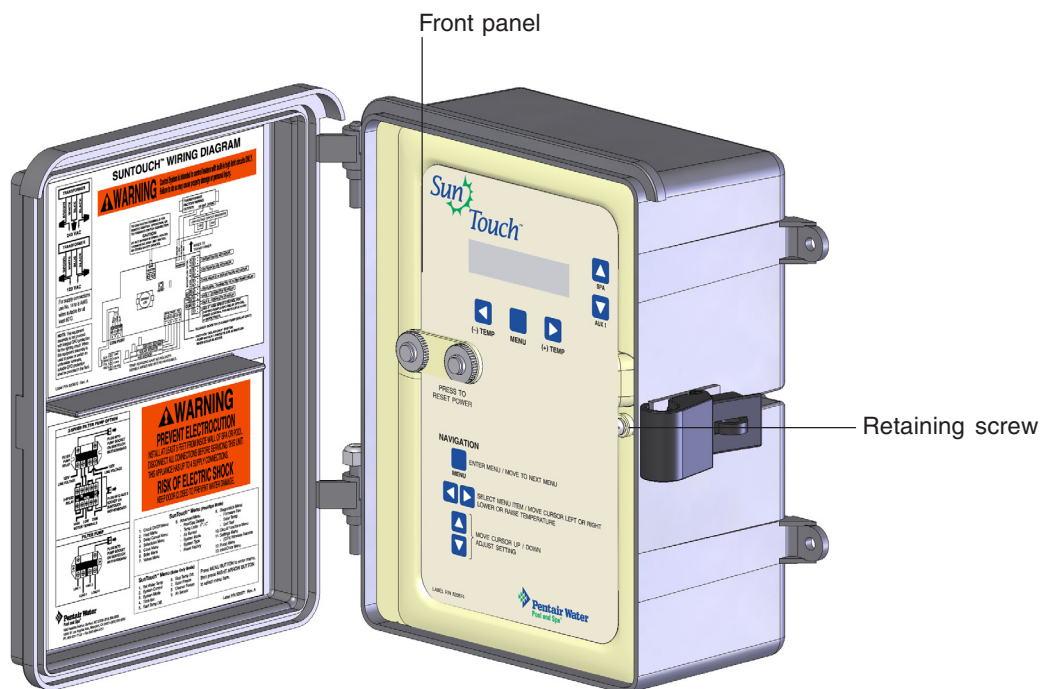
SunTouch Motherboard Connections

Accessing the SunTouch Motherboard

The SunTouch motherboard provides connectors for three auxiliary relays, valve actuators and sensors.

To access the SunTouch Power Center electronics compartment:

1. Loosen the retaining screw on the front panel. Open the hinged front panel to access the electronics compartment.
2. Proceed with:
 - **Installing Auxiliary Relays**, page 53
 - **Installing the Valve Actuator**, page 55
 - **Installing and Connecting Temperature Sensors**, page 56
 - **Connecting SunTouch to Heaters**, page 57
3. After all electrical connections have been completed, close the front panel and secure it with the retaining screw.



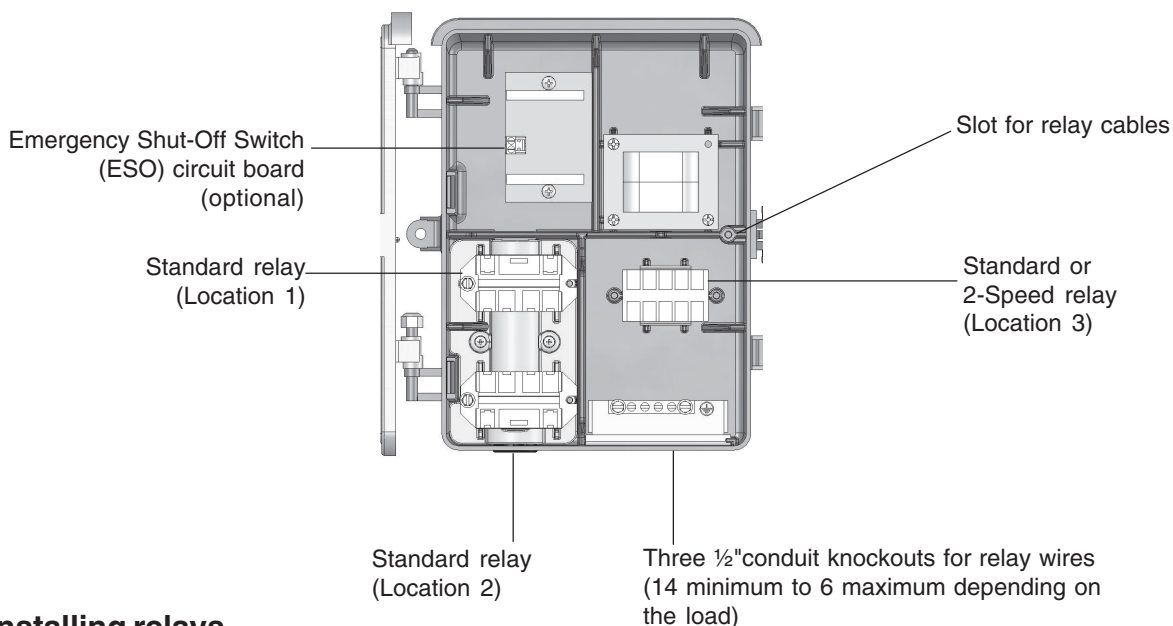
SunTouch Power Center (Shared Equipment System)

Installing Auxiliary Relays

There can be a maximum of three standard auxiliary relays installed in the SunTouch Power Center. Depending on the SunTouch kit, relays may not be included in the kit. Relays must be installed at the site. When using a 2-Speed pump, the optional 2-Speed relay (P/N 520198) can be installed, replacing the standard relay which is located in the right-side of the Power Center. For more information about SunTouch kits, see page 38. All SunTouch high voltage double pole relays and are rated at 3HP/30A at 240 VAC (1½ HP/30A at 120 VAC).

Relay locations

A standard relay can be installed in any one of the three locations provided in the SunTouch Power Center with the exception of the an optional 2-Speed relay, which can only be installed in the right-side compartment of the Power Center. Power Center relay locations are shown below.



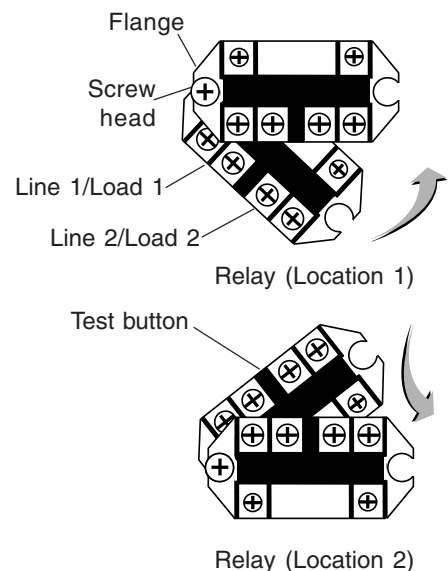
Installing relays

To install a standard relay in the SunTouch Power Center:

1. **Standard relay (Location 1):** Position the relay coil up in the relay compartment at about a 30 degree angle. Slide the tip of the relay flange under head of the left-side screw. Rotate the relay upward to align the right-side flange with the screw hole. Using a 1/4 in nut driver, secure the relay in place with the retaining screw.

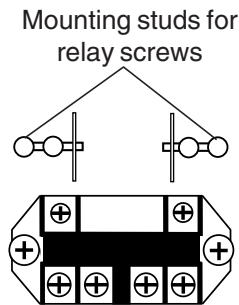
Standard relay (Location 2): Position the relay (coil facing upward) in the relay compartment at about a 30 degree angle. Slide the tip of relay flange under head of the left-side screw. Rotate the relay downward to align the right-side flange with the screw hole. Using a 1/4 in nut driver, secure the relay in place with the retaining screw.

Relay Test button: For testing relay connectivity, with power applied, press the lever on the top (line/load side) of the relay.

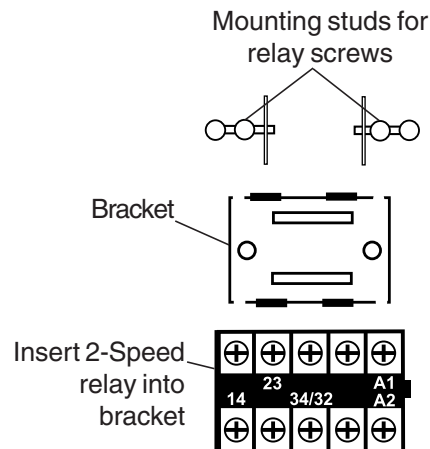


Installing relays (Continued)

Standard relay (Location 3): Position the relay (coil facing upward) on top of the mounting studs. Align the relay flanges with the screw holes. Using a 1/4 in nut driver, secure the relay in place with the two retaining screw.



2-Speed Relay (location 3): Position the relay bracket on top of the mounting studs. Align the bracket with screw holes. Using a 1/4 nut driver, secure the bracket with the two retaining screws. Insert the relay (coil facing to the right-side) into the relay bracket and snap in place.



2. Route the relay cable into the slot between the low voltage compartment and the transformer compartment to the SunTouch motherboard.

Note: If there is an Emergency Shut-Off Switch (ESO) circuit board installed in the SunTouch Power Center, connect the relay wires to the ESO circuit board. For more information, see “Emergency Shut-Off Switch Installation,” on page 73.

3. Connect the relay plugs onto the PUMP, AUX 1 or AUX 2 two-pin socket on the motherboard.

2-SPEED RELAY CONNECTION: The 2-Speed relay cable plug is connected to AUX 3 which controls the pump’s high speed output. The AUX 3 output can only be used for a 2-Speed relay or to control one of the four speeds for an IntelliFlo 4x160 pump. For installation and operation information, refer to the Two-Speed Relay User’s Guide (P/N 520210).

Note: The IntelliChlor and IntelliFlo 4x160 pump does not require a relay connection, it connects to the COM Port (J11) connector.

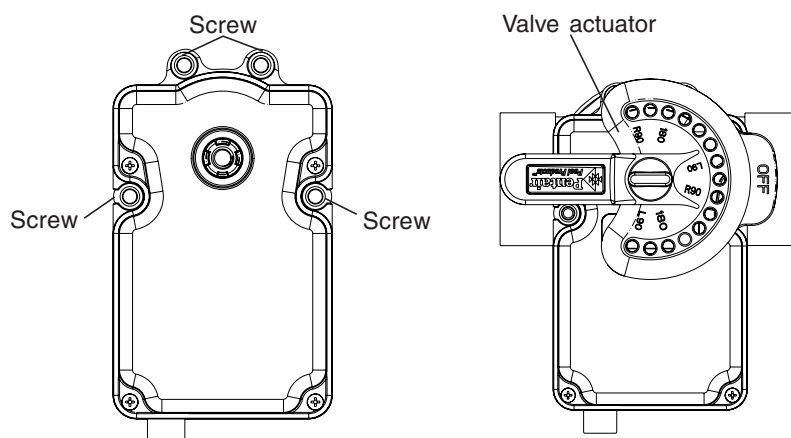
Note: For SunTouch motherboard wiring connections, refer to “SunTouch Motherboard Connections,” on page 51.

Installing Valve Actuators

For shared equipment systems there are two motorized valve actuators (CVA-24T, P/N 263045) included with the SunTouch kit.

To install a valve actuator:

1. Remove the valve knob, handle and the four screws, from the valve cover (indicated with arrows).
2. Align the splines of the actuator shaft over the shaft of the valve.
3. If the actuator is not aligned with the mounting holes on the valve cover, rotate the actuator (while still attached to the valve) until the actuator is positioned correctly over the valve.
4. Secure the actuator with the screws provided. Only use self-tapping screws when required.
5. Mount the valve handle and knob onto the actuator.



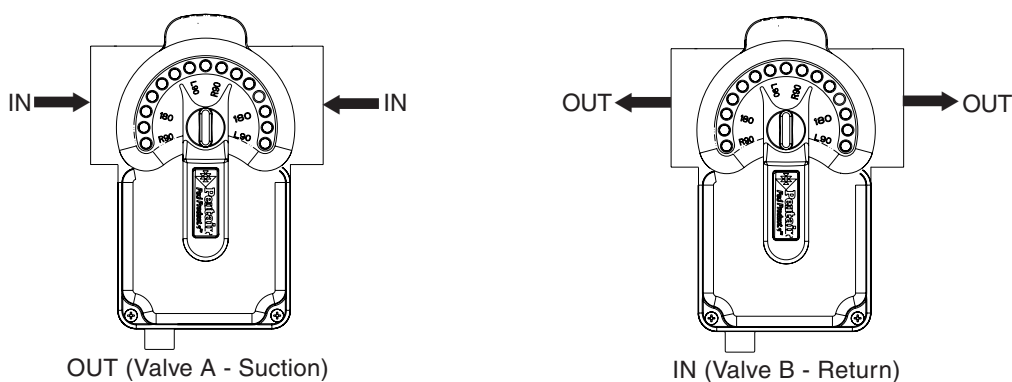
6. At the SunTouch Power Center, route the cable up through the 1" grommet and low voltage raceway to the motherboard (see page 48).
7. **Connecting of valve actuators to the SunTouch Motherboard (see page 51):**
 - Connect **VALVE A** cable plug into the **IN-TAKE** (suction) 3-pin socket.
 - Connect **VALVE B** cable plug into the **RETURN** 3-pin socket.

Note: For more information, see Item 2 and 3 of Plumbing requirements on page 41. Excess cable can be coiled in the SunTouch enclosure low voltage raceway. Do not coil the wire in upper low voltage compartment.

For Solar Heating: Use **VALVE C** for a solar valve actuator when solar heating is being used.

Adjusting the valve position

If the valve rotates to the wrong position, adjust the switch on the back of the actuator between ON1 and ON2 positions. This will rotate the valve to the correct position. The following diagram shows the standard plumbing and valve actuator position.



Installing and Connecting Temperature Sensors

Water Temperature Sensor

To install the water sensor:

1. Select a convenient location to mount the water sensor in the plumbing system between the filter pump and filter. Drill a 5/16" diameter hole in one side of the pipe,
2. Insert tip of sensor into the hole. Use the band clamp to secure the sensor to the pipe. Tighten the clamp just enough so that the o-ring begins to flatten. Do not overtighten
3. Run 22 gauge two-conductor cable (included) between the sensor SunTouch motherboard. Route the wire up through the low voltage raceway to the motherboard.
4. Fasten the cable to the plumbing with cable ties.
5. Cut off the excess wire and the strip conductors ¼ inch. Use waterproof connectors (provided) to connect the sensor to cable. Insert the wires into the **WATER SENSOR** screw terminals (**J9**) on right-side of the motherboard. For SunTouch motherboard wiring connections, refer to “SunTouch Motherboard Connections,” on page 51.

Ambient Air Temperature Sensor (for freeze protection)

The SunTouch system will automatically detect an installed air sensor to protect the system if freezing conditions occur. By default, the air sensor is always ON. Freeze protection for a “Solar Only” system requires an additional air sensor (P/N 520272). To disable the air sensor, see “Advanced Menu (8/13): Air Sensor” on page 24.

To install the air sensor:

1. Mount the sensor in the open air, in a shaded area, away from air conditioners. During the winter months, to avoid freeze damage to pool and spa equipment, mount the air sensor in a shaded area to assure proper temperature readings. The SunTouch main screen displays the current ambient air temperature.
2. Route the wire through the low voltage raceway to the motherboard.
3. Fasten the cable to the plumbing with cable ties.
4. Cut off the excess wire and the strip conductors ¼ in. Insert the wires into the **AIR** screw terminals (**J9**) on right side of the motherboard.

Solar Temperature Sensor

Run a two-conductor cable between the sensor and the SunTouch enclosure.

To install the solar sensor:

1. Mount the sensor on a flat surface, with the same exposure to sun as the solar collectors (next to the collectors is recommended) or any sunny location. Do not let the sensor touch the panels.
WARNING: DO NOT DRILL HOLE AND CLAMP SENSOR INTO SOLAR PIPE. For glazed panels, install the sensor between collector and glazing.
2. If necessary, splice a two-conductor extension wire to the sensor. Run two-conductor cable between the sensor and the SunTouch Power Center. Use waterproof connectors to connect the sensor to the cable. Use twisted pair 20 AWG outdoor rated sensor wiring and be sure the wire connections are protected from the environment. Use shielded cable for long runs or runs near other electrical wiring.
3. Strip the conductors ¼ in. Insert the wires into the **SOLAR SENSOR** screw terminals (**J9**) on right side of the motherboard.

Connecting SunTouch to Heaters

The SunTouch Power Center provides a set of low voltage dry contacts that can be connected to most gas heaters or heat pumps with 24 VDC control circuits. Refer to the diagram below for a generic heater connection. Refer to your heater documentation for specific wiring instructions for connecting the heater to an external control (typically using a two-wire remote control connection). For connection to millivolt or line voltage heaters, contact Pentair Technical Support (see page iv).

Connecting to a standard heater

The following installation instructions are for gas heaters and heat pumps with low voltage thermostats.

To connect a standard heater to SunTouch:

1. Switch the power OFF to the heater.
2. Run a two-conductor cable from the heater thermostat area to the low voltage raceway to the motherboard in the SunTouch Power Center. Use 105° C temperature rated wire for connection to the heater. When connecting wires inside the heater, be cautious of HOT internal parts of the heater. Refer to the heater owners manual for the manufacturer's recommendations for the minimum temperature rating for wires..
3. Strip the conductors ¼ in. Insert the wires into the **GAS HEATER** two-screw terminals (**J12**) on the motherboard. For SunTouch motherboard wiring connections, refer to "SunTouch Motherboard Connections," on page 51.
4. At the heater, connect the wires in accordance with heater manufacturer's instructions. For older heaters without instructions for remote operation, connect the wires to the Fireman's switch connections in series with the thermostat, pressure switch, and other safety switches.
5. Do NOT disconnect or wire around the thermostat, pressure switch, high limit switch, or other safety devices.
6. Switch ON the main power switch of the heater. Note, SunTouch does not control the AC power to the heater.
7. Set the heater thermostat to the maximum hottest setting.

Connecting to a Pentair MiniMax, MasterTemp

To connect a Pentair MiniMax, MasterTemp, or Purex Laars heater to SunTouch:

1. Switch the power OFF to the heater.
2. Remove the factory installed jumper from the “Ext Switch” connector.
3. Connect the two-wire cable from **J12** on the SunTouch motherboard to the “Ext Switch” terminal as shown below. **CAUTION:** Be sure that the wires from the heater to the SunTouch Power Center are not near or touching any line voltage wires in the heater. Failure to follow these instructions may cause the heater to malfunction.
4. Set the Power (Thermostat Select) switch to either “Pool” or “Spa.”
5. Set the “Pool” and “Spa” thermostats to their maximum position.

Connecting to a StaRite heater

To connect a StaRite heater to SunTouch (including Pentair MaxiTherm heater):

1. Switch the power OFF to the heater.
2. Remove the upper jacket and open the control box.
3. Remove the jumper for the “Fireman’s switch.”
4. Connect the two-wire cable from **J12** on the SunTouch motherboard to the Fireman’s Switch connector block as shown below. Use 105° C temperature rated wire for connection to the heater. When connecting wires inside the heater, be cautious of HOT internal parts of the heater. Refer to the minimum temperature rating for wires recommended by the manufacturer. See the heater owners manual for details.
5. Switch ON the main power toggle switch of the heater. Note, SunTouch does not control the AC power to the heater.
6. Set the heater thermostats to the maximum position.

SunTouch Solar System Installation

- To ensure maximum flow of water through the solar panels, a solar booster pump should be added if panels are installed at a very high elevation.
- It is recommended that the solar panels are mounted in a way that gravity will allow draining whenever the filter pump is not on.
- For systems with glazed panels, damage can occur from overheating if the filter pump is still running after the solar has turned off. To enable glazed panels to automatically drain whenever the solar turns off (even if the filter pump is still running), a 1/2" motorized solar drain valve should be plumbed from the solar feed line, through a check valve, to a zero psi point (such as pool fill line or jet air intake).

SunTouch Solar System Start-Up

1. Switch power on to the SunTouch Power Center.

Note: If pool cleaner protection has been added to the system, the pool cleaner pump motor should be activated whenever the pool cleaner timer is on. Momentarily turn pool cleaner timer on and off to check that the motor is operating correctly.

2. If pool cleaner protection has been added to the system, the pool cleaner pump motor should be activated whenever the pool cleaner timer is on. Momentarily turn pool cleaner on and off to check the motor is operating correctly.
3. Check that Solar Valve is in "solar bypass" position, diverting water away from solar panels. If Solar Valve is staged incorrectly (diverting water to the solar panels), reverse switch on back of Valve Actuator (change from ON1 to ON2, or vice-versa). The Valve Actuator will automatically rotate to the correct position.
4. Check that Solar Valve has rotated from the "solar bypass" position to the "solar" position, diverting water through the solar panels.
5. The system is now ready to be operated as desired.

Pool Cleaner Protection

Recommended for use in pool systems which utilize a "booster pump" pool cleaner. This feature automatically turns off the pool cleaner pump for a few minutes whenever solar is initiated. This will protect the pump from damage caused by air in the solar panels at system start-up.

SunTouch Pool/Spa Controller System Start-Up

Perform the following start-up procedures to ensure that the SunTouch enclosure is installed correctly.

Before you power up the SunTouch enclosure check the following:

Check Electronics

Check that the following plugs are seated correctly on the motherboard:

- Relay connectors - **PUMP - AUX1 - AUX2**
- Temperature sensors connectors **WATER, SOLAR, AIR (J9)**
- Transformer wire harness (**J10**) attached to the motherboard.
- Heater control connector **ELEC HTR (J12)** or two-wire screw terminal.

Refer to "Summary System Installation Steps Summary," on page 37, and "SunTouch Motherboard Connections on page 51.

SunTouch System Test

The following describes how to test the main control panel to activate the heater, valves and pumps. Before testing the system, be sure that all pool and spa equipment has been properly installed and connected to the SunTouch enclosure.

Testing Valve Actuators and Filter Pump

Use the following steps to test the valve actuators (CVA24T - P/N 263045) for proper rotation.

To test the valve actuators and pool/spa filter pump:

1. Power up the SunTouch Power center.
2. Press the **MENU** button. Circuit On/Off is displayed. Press the **Right arrow** button access the pool filter pump circuit. Press the **Up or Down arrow** button and select ON. Press the **Left arrow** button to return to the main status screen. POOL and the temperature setting will be displayed as shown below.
3. The pool filter pump should be operating. Water will be removed from the pool and returned to the pool.

POOL 71°F / 91°F
11: 51AM HEATER

Testing the auxiliary relays

To verify that AUX 1, AUX 2 and AUX 3 relays outputs are operating correctly:

1. Power up the SunTouch Power center.
2. Press the **MENU** button. Circuit On/Off is displayed. Press the **Right arrow** button access the AUX 1 setting. Press the **Up or Down arrow** button and select ON. Press the **Left arrow** button to return to the main status screen. The auxiliary number will be displayed as shown below.
3. Repeat step 2 to test AUX 2 and AUX 3 relay.

AIR 71°F
11: 51AM AUX123

Setting up the SunTouch System for the First Time (after equipment installation)

Use the following steps if you are setting up the SunTouch system for the first time.

Note: The following setup steps assume that the SunTouch enclosure is installed at the equipment pad and ready for operation.

The recommended first time installation steps for the SunTouch system are:

1. Set the system mode and type (page 24)

System Mode: Configure the SunTouch system to operate in “Solar Only” or “Pool/Spa” mode.

System Type: Configure the SunTouch system to operate as a “Shared Equipment” system or as a “Single Body” system (pool only or spa only).

2. Set the system date and time: Solar only (page 6) (For Pool/Spa mode, see page 9)

Set the system time for “Solar Only” and time and date for “Pool/Spa” mode.

3. Assign a circuit function to a circuit name (for Pool/Spa mode, see page 26)

Assign “Circuit Functions” (menu 10/13) to circuits. From the Circuit Type menu, you can assign special logic to a circuit by selecting one of the available circuit functions. If an auxiliary circuit (AUX) is assigned GENERIC (simple ON/OFF when the button is pushed) then nothing needs to be done.

4. Configure valve actuators (controlled by AUX circuit) - (For Pool/Spa mode, see page 21)

The SunTouch system can drive two auxiliary valve actuators for applications such as solar heating and water features. Assign which circuits will activate valves A (intake) and B (return). Auxiliary valve actuators can be controlled by any AUX circuit. Valve C is automatically assigned to solar if “Solar” is enabled in the “Solar” menu.

5. Set up optional equipment, solar, two-speed pump (Fro Pool/Spa mode, see page 26, 31)

Set up additional equipment such as solar, 2-speed pump, and optional equipment if required. Set up the control panel to operate with the optional IntelliFlo 4x160 pump, and IntelliChlor chlorine generator (see page 31). To configure SunTouch for special equipment:

- Is solar heating available? Is solar being used for a heat pump?
- What circuits will turn 2-Speed pumps to High Speed?
- Cool-down cycle for the heater - Lets you set circuits that switch the filter pump to high speed.
- Do you want to delay turning off the filter pump for 10 minutes when the heater is turned off?
- Do you want the spa to heat whenever the Spa button is pressed?

6. Configuring the heater system options Pool/Spa mode (page 14)

Set the type of heat source being used (Heater, Solar, Solar Preferred).

7. Configure the QuickTouch wireless remote buttons (page 28)

Assign four circuits to the QuickTouch remote buttons. Once you have checked that all buttons operate properly, place labels on remote buttons.

8. Schedule on/off times for circuit (page 17)

Set times for automatic circuit activation. Up to 6 total programs can be created for all circuits combined. One circuit can have up to a maximum of 4 programs (4/4). All user created programs are active all the time; so check that there are not conflicting automated times.

Section 3

Troubleshooting

Troubleshooting

Use the following troubleshooting information to help resolve problems that may occur when using the SunTouch system. If by following the recommended actions you are still unable to resolve the problems, please contact Technical Support (see page vi).

Frequently Asked Questions (FAQ)

How do I setup a two-speed pump?

A two-speed pump operates using two relays and one or more circuits. The first relay turns the pump on or off. Assuming this is a filter pump, this circuit is controlled by the pool and spa circuits or any other circuit that may be tied to the filter pump (such as circuits with freeze protection, etc.). The second relay (AUX 2) switches the pump from low speed to high speed. The default condition is low speed. Up to three circuits may be assigned to trigger the pump to high speed. However, if three relays are being used, two relays must be located outside the SunTouch enclosure. The SunTouch enclosure which houses two relays. Note: These circuits do not switch the pump on.

To configure a two-speed pump relay, refer to “Settings Menu: 2-Speed Pump,” on page 29. For relay location and wiring (see page 51). The 2-Speed pump relay connector is plugged into the AUX 3 output socket on the SunTouch motherboard.

Can I switch the heater on and change the temperature from the spa?

The heater may be switched on from the spa location using the QuickTouch wireless remote controller (optional), see page 28 for setup details.

How do I switch on solar heating?

The system must first be configured for solar heating. Go to the “Heat” menu (see page 14) and enable “Solar” as the heat source. *Note: Do not set solar as a heat pump. Then the heating method must be selected for each body of water.*

SunTouch Error Messages

Error Messages

If the system detects that a sensor is not connected to the SunTouch Power Center or it is defective, an error message is displayed in the Diagnostics menu (page 25). The following lists the sensor errors.

Error Message	Possible Cause	Solution
Air Err (Displays on the Main Screen)	Air sensor not connected to the SunTouch motherboard.	Check that the air sensor plug is connected to J21 connector on the motherboard. Check that the sensor wire is connected properly.
Air Temperature Err (Displays in the "Diagnostics" menu)	Air sensor not connected to the SunTouch motherboard.	Check that the air sensor plug is connected to J21 connector on the motherboard.
Water Temperature Err (Displays in the "Diagnostics" menu)	Water sensor not connected to the SunTouch motherboard.	Check that the water sensor plug is connected to J21 connector on the motherboard.
Solar Temperature Err (Displays in the "Diagnostics" menu)	Solar sensor not connected to the SunTouch motherboard.	Check that the solar sensor plug is connected to J21 connector on the motherboard.

Self Test Error Codes

The "Self Test" feature is intended for use by service personnel. If after performing a control panel self test (see Diagnostics menu page 25) there were no errors detected, Code 0 is displayed, indicating that there were no problems and the test was successful. If a problem is detected during the test, an error code is displayed upon completion of the test. For example Code 1 would indicate a problem with the display. If multiple errors are detected, multiple code numbers are displayed. For example, Codes 4, 2, 1, would indicate problems detected with the buttons, LCD contrast, LCD backlight on the control panel.

The following lists the control panel self test error codes.

Error Code Table

Error Code	Description
Code 0	PASS - The control panel has no problems
Code 1	LCD backlight
Code 2	LCD contrast
Code 4	Switch (buttons)
Code 5	UART loopback test

Resetting the System Fuses

The SunTouch Power Center provides two resettable fuses to protect the 18 VAC and 24 VAC circuits. The fuses are located on the front panel of the SunTouch Power Center. Press the fuse button to reset the fuse. See page 40 for fuse locations.

Problem Solving a Solar System

SunTouch solar is not operating

Verify the circuit breaker at sub-panel is not tripped. If the 3 AMP Circuit Breaker on the on SunTouch is tripped, it is most often due to a defective Circuit Board or Valve Actuator. Try disconnecting each one separately to determine which one is at fault.

Solar will only operate when the solar temperature is 5° warmer than the water temperature.

Inspect the appropriate sensor cable and wire connections and replace the appropriate temperature sensor if necessary. An ohm meter can be used to take a reading of the sensors. See table on page 68.

If the temperature sensors are not at fault, replace the SunTouch circuit board.

Water flow to panels switch does not operate the valve actuator

If the valve actuator does not operate when using the WATER FLOW TO PANELS Switch (sliding switch between ON and OFF), either the valve actuator or the SunTouch circuit board is at fault.

First verify that the toggle switch located on the valve actuator is either in the ON1 or ON2 position.

With a voltmeter, check the output voltage of the VLV1 socket located on the SunTouch circuit board. When the WATER FLOW TO PANELS Switch is in the OFF position, the top and middle pins should read 24 VAC. When the WATER FLOW TO PANELS switch is in the ON position, the top and bottom pins should read 24 VAC.

If voltage readings are correct, replace the valve actuator. If voltage readings are incorrect, replace the SunTouch circuit board.

Checking The Temperature Sensors

Disconnect temperature Sensor wires from the SunTouch circuit board, and test sensor using an ohm meter. See table on page 68.

Testing the Solar System

To test the SunTouch in “SOLAR ONLY” mode: Set the “System Control” menu setting to “SOLAR ON” verify the valve(s) are in the solar position. Then set the menu setting to “SOLAR OFF” and verify the valve is in the normal recirculating pool position. If the valve(s) positions are working in reverse, toggle the valve switches and test again.

Temperature vs. Resistance Data

SunTouch systems use 10k Ω thermistor sensors. When the solar sensor is disconnected from the SunTouch system, the sensor will read 10k Ω at 77° F (25°C). Refer to the tables on the following pages for the resistance at other temperatures. The resistance reading for any given temperature should be accurate to $\pm 0.5^\circ\text{F}$. For any given temperature, the resistance reading should be accurate to $\pm 1\%$. Be sure that the solar sensor is connected to the SunTouch system before making any DC voltage measurements. The reading should be accurate to $\pm 2\%$.

Temp (F°)	Resistance (Ω)	Temp (F°)	Resistance (Ω)	Temp (F°)	Resistance (Ω)			
-50	-58	669,500	25	77	10,000	95	203	787
-45	-49	471,500	27	80	9,298	96	205	761
-40	-40	336,200	29	85	8,250	99	210	701
-35	-31	242,500	30	86	8,056	100	212	679
-37	-35	280,100	32	90	7,331	102	215	646
-34	-30	234,100	35	95	6,530	104	220	596
-32	-25	196,300	38	100	5,826	105	221	587
-29	-20	165,100	40	104	5,326	107	225	552
-30	-22	176,800	41	105	5,209	110	230	510
-26	-15	139,300	43	110	4,663	113	235	472
-25	-13	130,300	45	113	4,367	115	239	444
-23	-10	118,000	46	115	4,182	116	240	438
-21	-5	100,200	49	120	3,757	120	248	389
-20	-4	97,000	50	122	3,602	125	257	341
-18	0	85,350	52	125	3,381	130	266	300
-15	5	72,910	54	130	3,047	135	275	264
-12	10	62,480	55	131	2,985	140	284	234
-9	15	53,640	57	135	2,750	145	293	208
-10	14	55,300	60	140	2,487	150	302	185
-7	20	46,230	63	145	2,251			
-5	23	42,300	65	149	2,083			
-4	25	39,910	66	150	2,041			
-1	30	34,560	68	155	1,854			
0	32	32,600	70	158	1,752			
2	35	30,000	71	160	1,686			
5	40	26,100	74	165	1,535			
5	41	25,400	75	167	1,480			
7	45	22,760	77	170	1,400			
10	50	19,900	79	175	1,278			
13	55	17,440	80	176	1,256			
15	59	15,700	82	180	1,168			
16	60	15,310	85	185	1,071			
18	65	13,480	88	190	980			

IntelliChlor Error Messages

IntelliChlor status and error messages are displayed in the “Chlorinator” menu (see page 32). Use the following information to resolve IntelliChlor system problems. To access the IntelliChlor menu, press **Menu > Diagnostics > Chlorinator**.

Status Message	Possible Cause	Solution
OK-NO ERRORS	IntelliChlor normal operating mode.	N/A
SUPER CHLORINATE	IntelliChlor is in "Super Chlorination" mode for 24 hours.	IntelliChlor is in "Super Chlorination mode (see page 32 for details)
COM LINK ERROR	IntelliChlor communication error with EasyTouch motherboard.	Check cable from IntelliChlor to EasyTouch motherboard.
CHECK FLOW/PCB	Check IntelliChlor electrolytic cell.	Refer to IntelliChlor User's Guide troubleshooting information.
LOW SALT	Add salt to pool water.	The water salt level is between 2500 ppm and 2900 ppm. The IntelliChlor will continue to produce chlorine at a reduced level. See IntelliChlor User's Guide for details.
VERY LOW SALT	Not enough salt in pool.	The water salt level has fallen below 2500 parts per million (ppm). IntelliChlor will not produce chlorine until additional salt is added manually. See IntelliChlor User's Guide for details.
HIGH CURRENT	Check IntelliChlor electrolytic cell.	Check IntelliChlor electrolytic cell controller. Refer to IntelliChlor User's Guide troubleshooting information.
CLEAN CELL!!	Cell has calcium build up and requires cleaning.	Cell has calcium build up and requires cleaning. Refer to IntelliChlor User's Guide for cleaning instructions.
LOW VOLTAGE	Check IntelliChlor electrolytic cell.	Refer to IntelliChlor User's Guide troubleshooting information.

System Problem Diagnosis

Use the following information to resolve system problems.

Problem: SunTouch LCD fails to operate.

Symptom	Possible Cause	Solution
SunTouch enclosure has no power - (screen, blank, no LEDs, buttons not working).	Bad wiring run from Outdoor Control Panel/motherboard in the Load Center.	Verify cable and ensure no connections are broken. In some cases a wire is broken under the insulation. The two center wires of the four conductor cable are suspect (Green and Yellow)
SunTouch control panel LCD lights up, but fails to operate correctly.	Defective Cable/wiring	Verify cable and ensure no connections are broken. In some cases a wire is broken under the insulation. The two center wires of the four conductor cable are suspect (Green and Yellow)

Problem: The Quick Touch remote will not work, or will not work dependably.

Symptom	Possible Cause	Solution
POWER LED does not light on the Receiver board located in the plastic clam shell.	EasyTouch Load Center does not have power	Ensure power is being supplied and that the power center operates correctly without the receiver installed
	Defective cable or connection to the Load Center	Verify the function of the board using known good cable set. Check all wiring
	Defective Receiver board	Contact Technical Support
COMM LINK LED does not light or blink. In normal operation LED will blink at least every 2 seconds	Defective cable or connection to the Load Center	Verify the function of the board using known good cable set
	Defective receiver board	Replace receiver board
Address switches are incorrectly configured	Verify that the address switches on the transmitter and handheld receiver board are correct and match	Transmitter battery has failed
	Replace Transmitter battery	Defective Transmitter or Receiver
Unit functions, but some circuits do not work, or operate the incorrect circuit	QuickTouch configuration is incorrect	See page 28 to setup buttons
Unit fails to operate, or fails to operate dependably at range	Excessive electrical noise	Relocate the receiver away from "noisy" electrical equipment such as blower motors
	Too many obstructions between the transmitter and receiver	Relocate the receiver away from ground metal and obstructions
	Receiver unit is too near the ground	Relocate the receiver to maximize the distance between the receiver antenna and the ground

Problem: The Quick Touch remote will not work, or will not work dependably (Continued).

Symptom	Possible Cause	Solution
Unit seems to turn on or off circuits without the user / transmitter	A near by home is operating a similar wireless unit	Select an alternate address code for the transmitter and receiver. Change the DIP switches on both Transceiver and remote to an alternate, but matching setting.
Unit dependably turns equipment ON, but once equipment is running it does not dependably turn equipment OFF, or range is greatly reduced when equipment is running	Undue electrical noise is being produced by one or more pieces of equipment in close proximity to the receiver.	Relocate the Receiver away from equipment such as blower motors. Relocate the receiver in a location that provides fewer obstructions to the area the user commonly operates the transmitter.
Unit operates, but has greatly reduced range compared to prior function	Transmitter Battery is failing.	Replace Transmitter battery (type 2032 3V).

IntelliFlo 4x160 Warning and Alarm Conditions

The IntelliFlo 4x160 alarms and warnings are indicated by flashing LEDs on the control panel. For example, if a “Drive Temperature” warning occurs, the LED will blink two times, then Off, then blink two times. This sequence is repeated until the condition is cleared.

- **Warning condition:** If a warning condition occurs the pump will continue to run but at a reduced speed. The Green LED executes a sequence of blinks to indicate which alarm or warning has occurred.
- **Alarm condition:** If an alarm condition occurs the pump will drive stop running. The red LED flashes continuously to indicate the presence of an alarm. The alarm LEDs will reset when the condition clears.

See “Pump Menu (12/13) on page 29 for setup information. For IntelliFlo troubleshooting information, see the IntelliFlo 4x160 Installation and User’s Guide (P/N 357269).

Alarm and warning LED sequence

Number of time the LED will blink	Alarm	Description	Action
2	Drive Temperature Warning	Excessive drive temperature	<ol style="list-style-type: none"> 1. Ensure the motor fan has adequate area for ventilation. 2. Stop motor and allow to cool. 3. Run motor at a higher speed to improve cooling air flow.
5	Unknown alarm	Electron failure	<ol style="list-style-type: none"> 1. Cycle power to reset pump. 2. Replace drive.
6	Drive Temperature Alarm	Excessive drive temperature	<ol style="list-style-type: none"> 1. Ensure the motor fan has adequate area for ventilation. 2. Run motor at a higher speed to improve cooling air flow.
7	Power Out Alarm	Supply voltage low	Ensure proper supply voltage.
8	Over current Alarm	Excessive drive current	<ol style="list-style-type: none"> 1. Examine fluid/mechanical system for source of overload. 2. De-energize motor and determine if motor spins freely. 3. Replace drive.
9	Over voltage Alarm	Excessive voltage on drive buss	<ol style="list-style-type: none"> 1. Rapid switching between speeds can cause excessive voltages on the drive's DC buss. 2. Ensure proper supply voltage.

Wiring SunTouch to the IntelliChlor Salt Chlorine Generator

Be sure to check the wire color and function of the IntelliChlor salt chlorine generator before connecting it to the SunTouch COM port on the motherboard. See the wiring table below for the pin configuration.

Failure to wire the salt chlorine generator properly can permanently damage the SunTouch system or chlorine generator. See “IntelliChlor Menu (13/13) on page 31 for setup information.

Wiring Description (SunTouch to IntelliChlor)

SunTouch COM port wiring color connection	Description	IntelliChlor Salt Chlorine Generator
RED	+15 VDC	RED
YELLOW	+ DATA	BLACK
GREEN	- DATA	YELLOW
BLACK	GROUND	GREEN

SunTouch Specifications

- Power: 95 VAC to 135 VAC, 0.82 AMP 50/60 Hz. or 192 VAC to 288 VAC, 0.41 AMP 50/60Hz
- Valve Actuator Output: 24VAC, 50/60 Hz. 0.65 AMP maximum (3 pin connector)
- Relay Outputs: 3HP@240V, 1.5HP@120V, booster pump, pool sweep interlock, filter pump or lights. Three (3) relays provided.
- Sensors (thermistor type, 10K Ω 77° F (25° C). Two sensors required for solar and pool temperatures. Freeze protection requires an additional sensor for air temperature.
- Start Temperature Differential (Solar): 3° - 9°
- Stop Temperature Differential (Solar): 2° - 5°
- Set Temperature limit: 40° F to 104° F (4° C to 40° C) calibrated scale
- Freeze Protection: On at 35° F, off at 38° F

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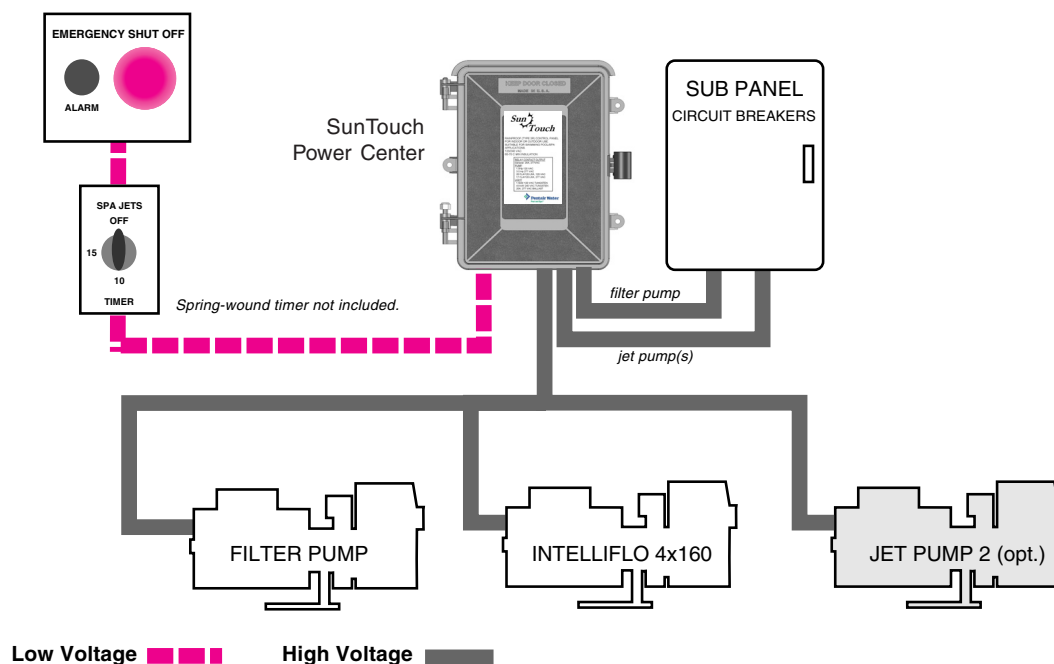
Emergency Shut-Off Switch (ESO3)

Emergency Shut-Off switch

The SunTouch system can be used for commercial spa applications that require an Emergency Shut-Off (ESO3) switch. It can be installed with new or existing pool and spa system. In the event of an emergency, the spa can be shut off by pushing the red emergency button. This action interrupts power to the filter pump, jet pump, an optional auxiliary pump, air blower, or equipment connected to AUX 1, or AUX 2. Pulling the emergency button back out will return the pumps to normal operation, and shut off the alarm.

Location

Select a convenient location to mount the Emergency Shut-Off switch. Provide a double-gang electrical box. The electrical box must be rated for outdoor use if the Emergency Shut-Off is located outside. Provide and install a standard spring-wound timer for the jet pump and filter pump. Install cable, using plastic or metallic conduit where cables run underground.

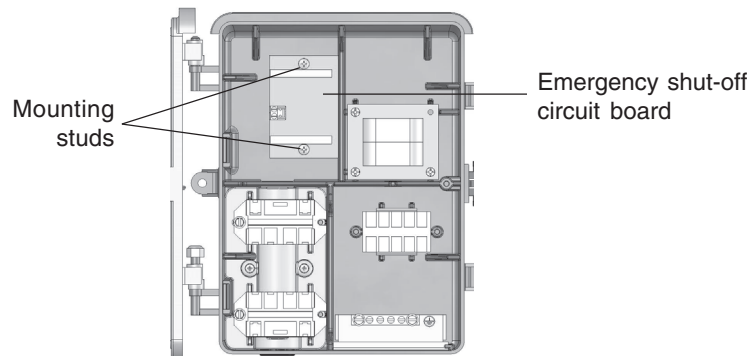


Installing the ESO Circuit Board

To access the SunTouch Power Center electronics compartment:

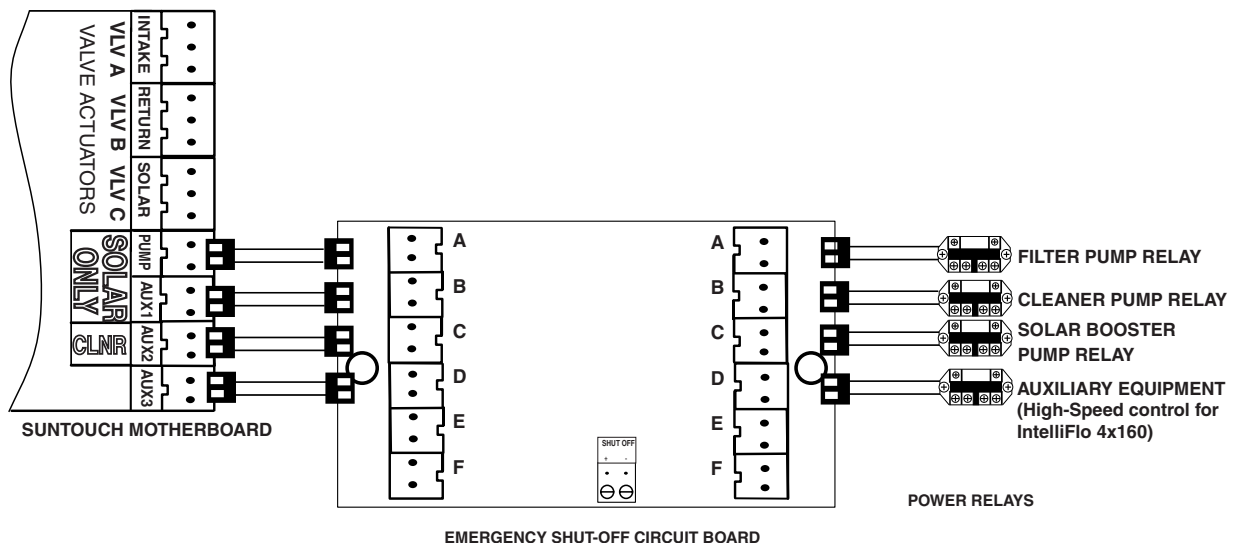
Safety Notice: Important Safety Instructions - When installing and using this electrical equipment, basic safety precautions should always be followed. Before installing the Emergency Shut-Off Switch, read all safety information on page i through iv.

1. Switch the main power OFF to the SunTouch Power Center.
2. Unlatch the front door,
3. Loosen the retaining screw on the front panel. Open the hinged front panel to access the electronics compartment.
4. Mount the Emergency Shut-off Switch circuit board on the two mounting studs. Secure the circuit board with the two retaining screws.



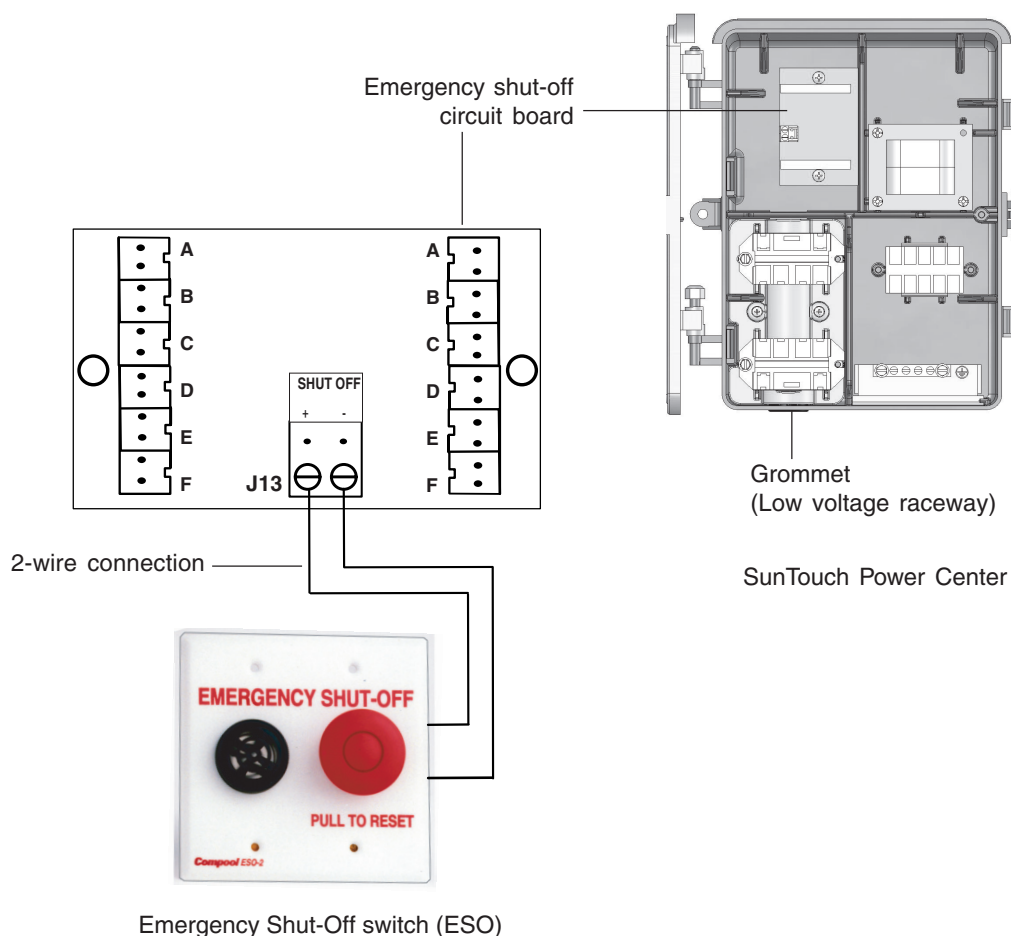
SunTouch Power Center

5. **Connecting relay plugs:** Connect the relay cable plugs to the two-pin sockets on the right-side of the Emergency Shut-Off Switch circuit board. Connect the corresponding relay cable plugs from the SunTouch motherboard to the left-side of the Emergency Shut-Off Switch circuit board as shown below. For SunTouch motherboard connections, see page 51.



Installing the ESO Circuit Board (Continued)

6. **Connecting the ESO switch:** Route a two-wire cable through grommet located on the left-side of the SunTouch Power Center, up into the low voltage raceway to the ESO switch circuit board.
7. Connect the two wires to J13 on the ESO switch circuit board. Connect the other end of the cable to the emergency switch as shown below.
8. Verify that all cable connections are connected correctly. Close the front panel and secure it with the retaining screw. The Emergency Shut-Off Switch installation is complete.



Glossary

Control Panel: The five button controller with LCD (liquid crystal display) is connected to the SunTouch motherboard located in the Power Center.

High Voltage Compartment: The high voltage compartment in the SunTouch Power Center for the transformer.

IntelliChlor: Electronic salt chlorinator. Uses a process known as electrolysis to produce sodium hypochlorite (liquid chlorine) from a low concentration of salt added to the pool water. Model IC 20 Cell (P/N 520554) for pools up to 20,000 U.S. gallons (75,000 liters) and model IC 40 Cell (P/N 520555) for pools up to 40,000 U.S. gallons (151,000 liters).

Low Voltage Compartment: Top compartment of SunTouch Power Center for low voltage wiring.

Low Voltage Raceway: Vertical space in the left side of SunTouch Power Center for low voltage wires.

Motherboard: The SunTouch circuit board mounted behind the control panel.

Power Center: Plastic enclosure for housing the SunTouch power relays, transformer, and circuit breakers. Used for distributing power for controlling the SunTouch system.

Relay: A low-powered device used to activate a high-powered device. SunTouch relays are used to trigger equipment such as pumps, and lights. Relays connect to the SunTouch motherboard.

Screw Terminal Connector: Removable connector that may attach to SunTouch motherboard circuit board with multiple sockets (anywhere from 2 to 6) to receive wires from controllers and sensors; wires held by screw terminals; multiple wires of a small enough gauge (usually 22 AWG) may be coupled to a single socket of a terminal connector.

Salt Chlorine Generator (SCG): Automated pool chlorinator that sanitizes using salt water (see IntelliChlor).

Transceiver: Used by the QuickTouch wireless remote controller. Circuit board with attached antenna that sends radio frequency (wireless) transmissions.

Notes

Notes



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